CARBON DIOXIDE SEALING CAPACITY:

TEXTURAL OR COMPOSITIONAL CONTROLS?

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Principal Author: Constantin Cranganu

Student Authors: Hamidreza Soleymani, Sadiqua Azad, and Kieva Watson

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Submitted by:

Brooklyn College of the City University of New York

2900 Bedford Avenue

Brooklyn, NY 11210

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ABSTRACT
This research project is aiming to assess the carbon dioxide sealing capacity of most common seal-rocks, such as shales and non-fractured limestones, by analyzing the role of textural and compositional parameters of those rocks.

We hypothesize that sealing capacity is controlled by textural and/or compositional parameters of caprocks. In this research, we seek to evaluate the importance of textural and compositional parameters affecting the sealing capacity of caprocks. The conceptual framework involves two testable end-member hypotheses concerning the sealing capacity of carbon dioxide reservoir caprocks.

Better understanding of the elements controlling sealing quality will advance our knowledge regarding the sealing capacity of shales and carbonates. Due to relatively low permeability, shale and non-fractured carbonate units are considered relatively impermeable formations which can retard reservoir fluid flow by forming high capillary pressure. Similarly, these unites can constitute reliable seals for carbon dioxide capture and sequestration purposes. This project is a part of the comprehensive project with the final aim of studying the caprock sealing properties and the relationship between microscopic and macroscopic characteristics of seal rocks in depleted gas fields of Oklahoma Panhandle. Through this study we examined various seal rock characteristics to infer about their respective effects on sealing capacity in special case of replacing reservoir fluid with super critical carbon dioxide ($scCO_2$).

To assess the effect of textural and compositional properties on $scCO_2$ maximum retention column height we collected 30 representative core samples in caprock formations in three counties (Cimarron, Texas, Beaver) in Oklahoma Panhandle. Core samples were collected from various seal formations (e.g., Cherokee, Keys, Morrowan) at different depths. We studied the compositional and textural properties of the core samples using several techniques. Mercury Injection Porosimetry (MIP), Scanning Electron Microscopy SEM, and Sedigraph measurements are used to assess the pore-throat-size distribution, sorting, texture, and grain size of the samples. Also, displacement pressure at 10% mercury saturation (P_d) and graphically derived threshold pressure (P_c) were determined by MIP technique. SEM images were used for qualitative study of the minerals and pores texture of the core samples. Moreover, EDS (Energy Dispersive X-Ray Spectrometer), BET specific surface area, and Total Organic Carbon (TOC) measurements were performed to study various parameters and their possible effects on sealing capacity of the samples.

We found that shales have the relatively higher average sealing threshold pressure (P_c) than carbonate and sandstone samples. Based on these observations, shale formations could be considered as a promising caprock in terms of retarding $scCO_2$ flow and leakage into above formations. We hypothesized that certain characteristics of shales (e.g.,

fine pore size, pore size distribution, high specific surface area, and strong physical chemical interaction between wetting phase and mineral surface) make them an efficient caprock for sealing super critical CO_2.

We found that the displacement pressure at 10% mercury saturation could not be the ultimate representative of the sealing capacity of the rock sample. On the other hand, we believe that graphical method, introduced by Cranganu (2004) is a better indicator of the true sealing capacity.

Based on statistical analysis of our samples from Oklahoma Panhandle we assessed the effects of each group of properties (textural and compositional) on maximum supercritical CO_2 height that can be hold by the caprock. We conclude that there is a relatively strong positive relationship (+.40 to +.69) between supercritical CO_2 column height based on P_c and hard/ soft mineral content index (ratio of minerals with Mohs hardness more than 5 over minerals with Mohs hardness less than 5) in both shales and limestone samples. Average median pore radius and porosity display a strong negative correlation with supercritical CO_2 retention column height. Also, increasing bulk density is positively correlated with the supercritical CO_2 retention column height. One of the most important factors affecting sealing capacity and consequently the height of supercritical CO_2 column is sorting of the pore throats. We observed a strong positive correlation between pore throat sorting and height of CO_2 retention column, especially in shales. This correlation could not be observed in limestone samples. It suggests that the pore throat sorting is more controlling the sealing capacity in shales and shales with well sorted pore throats are the most reliable lithology as seal.

We observed that Brunauer–Emmett–Teller (BET) surface area shows a very strong correlation with CO_2 retention column height in limestone samples while BET surface area did not display significant correlation in shales. Pore structure based on SEM micrographs exhibits strong correlation with CO_2 retention column height in limestones. Both intercrystalline and vuggy structures have negative correlations while intergranular texture has positive correlation in limestone with respect to CO_2 retention column height. Textural effects observed on SEM micrographs did not show statistically significant correlation with supercritical CO_2 retention column height in shale samples.

Finally, we showed that increasing hard/soft mineral index is strongly correlated with the displacement pressure in limestone samples. Vuggy texture displays a relatively strong and negative correlation with displacement pressure values at 10% mercury saturation in shale samples.

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EXECUTIVE SUMMARY

The primary goal of this project was to investigate the factors controlling sealing capacity of the caprocks and their respective contributions to seal integrity. Better understanding of the elements controlling sealing quality will advance our knowledge regarding the sealing capacity of shales and carbonates. Due to relatively low permeability, shale and non-fractured carbonate units are considered as relatively impermeable formations which can retard reservoir fluid flow by forming high capillary pressure. Similarly, these unites can constitute reliable seals for carbon dioxide capture and sequestration purposes. This project is a part of the comprehensive project with the final aim of studying the caprock sealing properties and the relationships between microscopic and macroscopic characteristics of seal rocks in depleted gas fields of Oklahoma Panhandle. Through this study we examined various seal rock characteristics to infer about their respective effects on sealing capacity in special case of replacing reservoir fluid with super critical carbon dioxide ($scCO_2$).

To assess the effect of textural and compositional properties on $scCO_2$ maximum retention column height we collected 30 representative core samples in caprock formations in three counties (Cimarron, Texas, Beaver) in Oklahoma Panhandle. Core samples were collected from various seal formations (e.g., Cherokee, Keys, Morrowan) at different depths. We studied the compositional and textural properties of the core samples using several techniques. Mercury Injection Porosimetry (MIP), Scanning Electron Microscopy SEM, and Sedigraph measurements were used to assess the pore-throat-size distribution, sorting, texture, and grain size of the samples. Also, displacement pressure at 10% mercury saturation (P_d) and graphically derived threshold pressure (P_c) were determined by MIP technique. SEM images were used for qualitative study of the minerals and pores texture of the core samples. Moreover, EDS (Energy Dispersive X-Ray Spectrometer), specific surface area, and Total Organic Carbon (TOC) measurements were performed to study various parameters and their possible effects on sealing capacity of the samples.

We found that shales have the relatively higher average sealing threshold pressure (P_c) compared to carbonates and sandstone samples. Based on these observations, shale formations could be considered as a promising caprock in terms of retarding $scCO_2$ flow and leakage into above formations. We hypothesized that certain characteristics of shales (e.g., fine pore size, pore size distribution, high specific surface area, and strong physical chemical interaction between wetting phase and mineral surface) makes them an efficient caprock for sealing super critical CO_2.

Also, we tried to find out whether caprock sealing capacity is controlled by textural and/or compositional properties. We argue that the displacement pressure at 10% mercury saturation could not be the ultimate representative of the sealing capacity of the rock sample. On the other hand, we believe that graphical method, introduced by Cranganu (2004) is a better indicator of the true sealing capacity.

Based on statistical analysis of our samples from Oklahoma Panhandle we assessed the effects of each group of properties (textural and compositional) on maximum supercritical CO_2 height that can be hold by the caprock. We conclude that there is a relatively strong positive relationship (+.40 to +.69) between supercritical CO_2 column height based on P_c and hard/ soft mineral content index (ratio of minerals with Mohs hardness more than 5 over minerals with Mohs hardness less than 5) in both shale and limestone samples. Average median pore radius and porosity display a strong negative correlation with supercritical CO_2 retention column height. Also, increasing bulk density is in favor of supercritical CO_2 retention column height. One of the most important factors affecting sealing capacity and consequently the height of supercritical CO_2 column is sorting of the pore throats. We observed a strong positive correlation between pore throat sorting and height of CO_2 retention column especially in shales. This correlation could not be observed in limestone samples. This fact suggests that the pore throat sorting is more controlling the sealing capacity in shales than other lithologies and, consequently, shales with well sorted pore throats are the most reliable lithology as seal.

We observed that Brunauer–Emmett–Teller (BET) surface area shows a very strong correlation with CO_2 retention column height in limestone samples while BET surface area did not show significant correlation in shales. Pore structure based on SEM micrographs exhibits strong correlation with CO_2 retention column height in limestones. Both intercrystalline and vuggy structures have negative correlations while intergranular texture has positive correlation in limestone with respect to CO_2 retention column height. Textural effects observed on SEM micrographs did not show statistically significant correlation with supercritical CO_2 retention column height in shale samples.

Through this research we emphasized on studying the supercritical CO_2 retention column height based on P_c values. However, we also looked at displacement pressure values at 10% mercury saturation as an important parameter which is used frequently in literature. We showed that increasing hard/ soft mineral index is strongly in favor of the displacement pressure in limestone samples. Vuggy texture displays a relatively strong and negative correlation with displacement pressure values at 10% mercury saturation in shale samples.

REPORT DETAILS

1. Introduction

Human activity since the industrial revolution has had the effect of increasing atmospheric concentration of greenhouse gases such as carbon dioxide (CO_2) and methane (CH_4). The high use of fossil fuels (more than 80% of the world's current energy consumption, is foreseen to continue well into this century (IEA, 2004), and is the major contributor to increased anthropogenic emissions of CO_2.

Carbon dioxide is a major compound identified as affecting the stability of the Earth's climate. A significant reduction in the volume of greenhouse gas emissions (mainly CO_2) to the atmosphere is a key parameter for mitigating climate change. To meet mid- and long-term targets in reducing either CO_2 emissions or their intensity, various mitigations approaches need to be considered, foremost among them being CO_2 capture and sequestration (CS), which will play an important role at least in the first half of this century if reduction targets are to be met (IEA, 2004).

In this context, CS is the removal of CO_2 directly from large anthropogenic sources and its injection and retention in geological media or in oceans for significant periods of time (centuries to millennia). Although the oceans represent possibly the largest potential CO_2 sink, ocean sequestration involves issues of poorly understood physical and chemical processes, sequestration efficiency, cost, technical feasibility, and environmental impact. In addition, ocean circulation and processes may bring to the fore legal, political, and international limitations to this technology. Thus, CO_2 sequestration in geological media appears to currently be the best available option for the long-term sequestration of CO_2, and indeed this option is being actively pursued in the United States (Klara et al., 2003), but also in Canada (Benion and Bachu, 2005), northern Europe (Förster et al., 2006) and Australia (Varma et al., 2007). Furthermore, for landlocked regions that are major energy and power producers, such as the Ohio Valley in the United States or Alberta in Canada, sequestration in geological media is the best and likely only option currently available for increasing CO_2 sinks. By making possible the continued use of coal as fuel for power generation, CS is a technology that contributes to the stability and security of energy systems in North America and elsewhere, and provides a bridge from the current fossil-fuel based energy systems to a hydrogen-based economy for late this century (Klara et al., 2003).

Geological storage of CO_2, or the injection and long-term stabilization of large volumes of CO_2 in the subsurface in saline aquifers, in existing hydrocarbon reservoirs (depleted and/or underpressured), in salt caverns, or in unmineable coal seams, is one of the more technologically advanced options available (Figure 1). Until efficient, alternative energy options can be developed, geological storage of CO_2 provides a mechanism to reduce carbon emissions significantly whilst continuing to meet the global demand for energy.

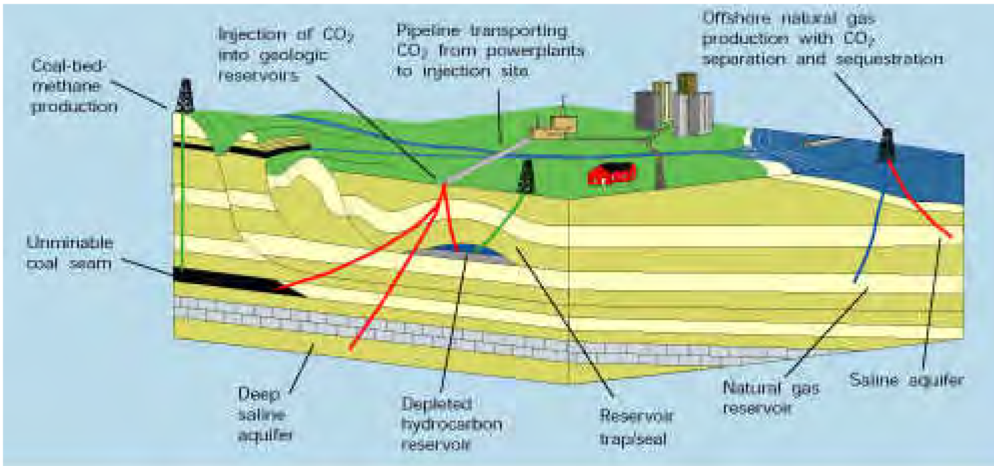

Figure 1. Potential CO_2 sequestration reservoirs and products (Diagram from U.S. Geological Survey Fact Sheet 26-03, March 2003 – Online Version 1.0. http://pubs.usgs.gov/fs/fs026-03/fs026-03.html)

Among various potential strategies designed to reduce or limit gaseous carbon production from fossil fuel use (carbon fixation in plants, photochemical conversion, electrochemical storage and conversion, etc.), carbon dioxide sequestration in subsurface reservoirs may be considered a viable alternative (Figure 1). In the mid-1990s, Statoil pioneered the first geologic storage project at Sleipner West in the North Sea. Nearly 1 MMmt CO_2/year is removed from natural gas and injected into a salt-water filled sandstone formation deep under the North Sea (Benson, 2005a). Another example is the Weyburn reservoir (Canada), where, until 2004, 1.9 MMmt CO_2/year have been injected (White et al., 2004).

Global sequestration capacity in depleted oil and gas fields is estimated between ~450,000 MMmt CO_2 (Benson, 2005b) and ~923,000 MMmt CO_2 (Moritis, 2005). Department of Energy is expecting that reductions of CO_2 by capture and sequestration will reach almost 5,000 MMmt CO_2/year by 2050 (DOE, 2005).

Injection of CO_2 to enhance oil recovery, seasonal underground gas storage, and pilot projects in Norway, Canada and elsewhere demonstrate that carbon sequestration is technically feasible. However, additional scientific challenges are raised by long-term sequestration. An improved understanding of the petrophysics, geophysics, hydrogeology, geochemistry, and geomechanics is needed to develop performance assessment and screening criteria so that this technology option can be implemented safely, efficiently, and predictably (Rudnicki and Wawersik, 1999). While there is a proven technology capable of injecting CO_2 in underground natural storage facilities, much care should be taken to characterize the potential reservoirs in terms of geometric, structural, and hydrologic properties.

To prevent the injected CO_2 from leaking into adjacent layers above the storage formation, the sealing pressure of a seal rock (caprock) has to be determined in order to choose an injection pressure that ensures the differential pressure across the seal rock is smaller than the sealing pressure or breakthrough pressure (Berg, 1975; Schowalter, 1979; Hildebrand et al., 2002, 2004; Li et al., 2005, 2006; Chiquet et al., 2007). Otherwise, the caprock will leak, the injected CO_2 will penetrate into and through seal rock, forming a continuous gas phase in the interconnected channels, will migrate into upper layers, and will finally escape back into atmosphere.

Investigations of gas leakage through caprocks have been reported in the literature (e.g., Wollenweber et al., 2007; Hildenbrand et al., 2002, 2004; Kroos et al., 1992, 2005). Two main mechanisms have been recognized to be responsible for migrations of gases through seal rocks into adjacent upper layers (Kroos et al., 1992): (1) molecular diffusion through the water-saturated pore space of the seal rock and (2) pressure-driven volume flow or compressible slow Darcy flow of a free gas phase.

Molecular diffusion is a ubiquitous but slow process that is only considered significant in geological timescales. The slow Darcy flow involves capillary pressure phenomena ("gas breakthrough") and two-phase flow. This pressure-driven flow is strongly influenced by the geologic and hydrodynamic conditions of the system, including the reservoir, the cap rock, and the overburden formations, as well as the properties of the fluids in both the reservoir and the cap rock (Li et al., 2005). Slow Darcy flow occurs when the pressure difference across the seal rock is sufficiently high to overcome the sealing capacity of the seal rock. In principle, the sealing capacity of a seal rock is given by the capillary forces across the interface of the wetting phase (usually brine), which saturates the seal rock, and non-wetting phase (oil or gas), which accumulates in the reservoir. It should be mentioned that the possible leakage of the injected CO2 may also occur through wellbores (Wilson and Monea, 2004), but this proposal refers only to caprocks.

Caprock refers to a relatively low permeable formation overlying or sealing the fluid flow in porous, permeable formation (reservoir). Generally, any formation can be a potential caprock for the hydrocarbons as long as the threshold capillary pressure (P_c) of the caprock is greater than the buoyancy pressure created by the density differences between brine and height of the hydrocarbon column. It is widely accepted that retention of $scCO_2$ for relatively long periods of time (thousands of years) is both highly affected and controlled by permeability (both absolute and relative) and capillary sealing capacity of caprocks.

One of the challenging steps in every CS projects is selecting a proper injection site both in terms of seal capacity and seal integrity. Evaluation and estimate of the reservoir capacity in depleted non-fractured (single porosity-single permeability) reservoirs with enough geophysical data (seismic and well logs) is a relatively trivial task. In fact, estimating capacity of the reservoir is one of the initial stages in exploration, decision making and production of the new hydrocarbon reservoirs. In contrast, there is usually little or no information available regarding the seal formations in oil and gas fields. Generally, petroleum companies are more interested in having more information on properties of productive formations. That's because more data in productive units of reservoir or additional information on petrophysical properties (i.e., permeability, porosity) will favor decision making and production plans.

On the other hand, a relatively accurate seal integrity assessment is a crucial step in every CS project including new formations and depleted reservoirs. Since in this study we are dealing with depleted reservoirs in Oklahoma Panhandle, we know that the seal formations had enough sealing ability to hold hydrocarbons for long period of time (geologic time). Considering the fact that caprock was tight enough to hold the gas over geologic time why it is necessary to reevaluate the caprock integrity for CS project. The answer lies in the different mechanical properties of the fluid systems. Comparing interfacial tension of CO_2/brine system and CH_4/brine, the first system of fluids has much lower interfacial tension in comparison with latter. This will result in lower breakthrough pressure in caprock for CO_2/ brine system. Considering interfacial differences, it is possible that the seal formation is not tight enough to hold $scCO_2$ at same or higher pressure of the initial reservoir gas cap (CH_4).

There are numerous factors affecting the sealing capacity in various ways. It is possible to divide these factors based on different scales and prospects of operation. For instance, textural and compositional parameters can be assessed in microscopic scale, while faults, joints, and fractures systems could be studied in prospect scale. In this study we focused on microscopic scale properties of the caprock by studying core samples. Our ultimate goal in this stage of the project is to reveal the existing correlations between the measured parameters and the maximum supercritical CO_2 height that can be held by the caprock. Mapping, characterizing, and studding the parameters affecting the sealing capacity over macroscopic or prospect scale (fractures, joints, and faults) is highly important. In fact, study of the fractures and other important structural features is indispensable phase in validation and study of the potential sequestration site and should be addressed in detail as future suggested research.

It is widely accepted that retention for relatively long periods of time (thousands of years) of carbon dioxide sequestrated in an underground reservoir is affected and controlled by permeability (both absolute and relative) and capillary sealing capacity of cap rocks. Our project is largely focused on studying the capillary sealing capacity of most common seal-rocks, such as shales and limestones that can represent the caprock of a CO_2 sequestration reservoir. (The permeability study will be carried out later). It is hypothesized that seal capacity is controlled by textural and/or compositional parameters of caprocks.

The capillary sealing capacity of caprocks is mainly controlled by *textural parameters*: (e.g., the pore-throat size, distribution, geometry, and sorting, grain size, degree of bioturbation, specific surface area, preferred orientation of matrix clay minerals, and orientation and aspect of ratio of organic particles) and *compositional parameters* (e.g., silt content, ductility, compaction, mineralogical content, proportion of soft, deformable mineral grains to rigid grains, cementation, organic matter content, carbonate content, and ash content) (Gruber, 1995; Krushin, 1997; Dawson and Almon, 1999; Edwards et al., 1999; Sutton et al., 2004, 2006). Among these, pore-throat size is particularly important for estimating sealing capacity, but other parameters may also play a significant role.

In this research we seek to differentiate between the relative importance of textural and compositional parameters mentioned above. The conceptual framework involves two testable end-member hypotheses concerning the sealing capacity of carbon reservoir caprocks:

Hypothesis 1: The sealing capacity of caprocks is mainly controlled by their textural parameters.

Hypothesis 2: The sealing capacity of caprocks is mainly controlled by their compositional parameters.

These two end-member hypotheses are not mutually exclusive, nor are they intended to be exhaustive. For example, it may be possible to find caprocks whose sealing capacity is due equally to both types of parameters. However, these end-member hypotheses constitute a useful concept to approach the problem. To differentiate between these two hypotheses, geological, petrophysical, and geochemical data have been collected and used to constrain the predominant factor(s) of sealing capacity.

Overall, the current research will fill a gap in our national database regarding the sealing capacity of the most known caprocks (shales and limestones), with special reference to existing and potential carbon sequestration reservoirs. Most of the similar studies have been carried out in other countries (Canada, Australia, or Germany).

1.1. Study area – Regional geology and stratigraphy

Our study area is represented by three depleted gas fields (Keyes, NE Rice, and S. Guymon) and adjacent areas from Oklahoma Panhandle (Cimarron, Texas, and Beaver counties) (Figure 2).

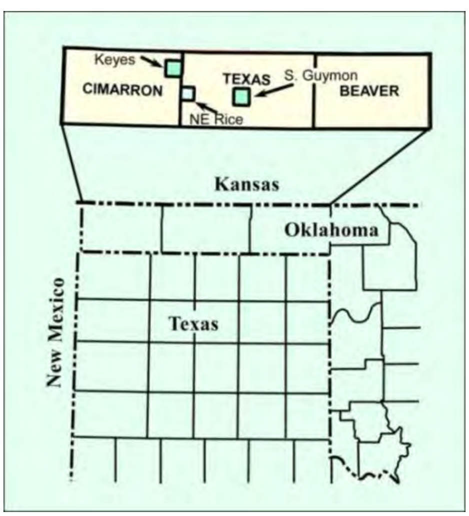

Figure 3. The three depleted gas fields from Oklahoma Panhandle representing our study area (from Puckette, 2006)

Figure 2. Major geologic provinces of Oklahoma (from Johnson, 2008)

Geological information about the area draws upon on studies by Hart et al., 1976, and Johnson, 1989 and

2008. According to Figure 3, the three counties mentioned above are part, form west to east, of the Dalhart Basin, the Cimarron Arch and the Anadarko Shelf with a north-eastern extension of the Anadarko Basin.

The rocks investigated in this research are of the Upper Mississippian, Pennsylvanian, and Permian ages (Figure 4 and Table 1).

The Upper Mississippian in our study area is represented by Chester group, dipping from about 5,500 ft. in Keys field to about 6,500 in S. Guymon area and to about 8,500 ft. in Beaver County (Figure 4). The sediments belonging to Chester group consist mainly of shallow-marine limestones, cherty limestones, and shales.

The Pennsylvanian represented a period of major changes in the geology of the studied area and surrounding regions of Oklahoma: both orogeny and subsidence in the south concomitantly with gently raising and partial lowering of large areas in the north. Pennsylvanian rocks are predominantly marine shales with intercalations of sandstones, limestones, and conglomerates.

Situated above Chester group, the Pennsylvanian beds on our area are represented by Morrow group (mostly shales), Atoka group (mostly shales), Cherokee and Marmaton groups (mostly shales and gypsum), Kansas City-Lansing group (mostly gypsum and shales) and Heebner shale.

The thickness of the Pennsylvanian strata varies is on average 2,000 ft. Overlying the Upper Mississippian, they dip from about 3,500 ft. in the west to about 8,000 ft in Beaver County (Figure 4).

Overlaying the Pennsylvanian, several formations of *Permian* age have been identified in Oklahoma Panhandle. Rocks of Permian age underlie all of the Oklahoma Panhandle. These rocks thicken east-southeastward toward the center of the Anadarko basin, and exceed 1,000 ft. throughout the area. Lithologically, the Permian beds are represented by carbonates, red beds, and evaporates. They crop out along the Beaver and Cimarron Rivers and their tributaries in Beaver County. The red beds consist primarily of dark-reddish-brown rocks comprised of sandstone, siltstone, shale, and sandy shale. Most of the sandstone is fine to very fine grained. Silt is a common constituent in both the shale and sandstone as is halite and gypsum. Stratigraphically, the Permian sequence in the Oklahoma Panhandle comprises Council and Chase Groups, overlain by Wellington formation (mainly shale), a thin layer of Cimarron anhy-

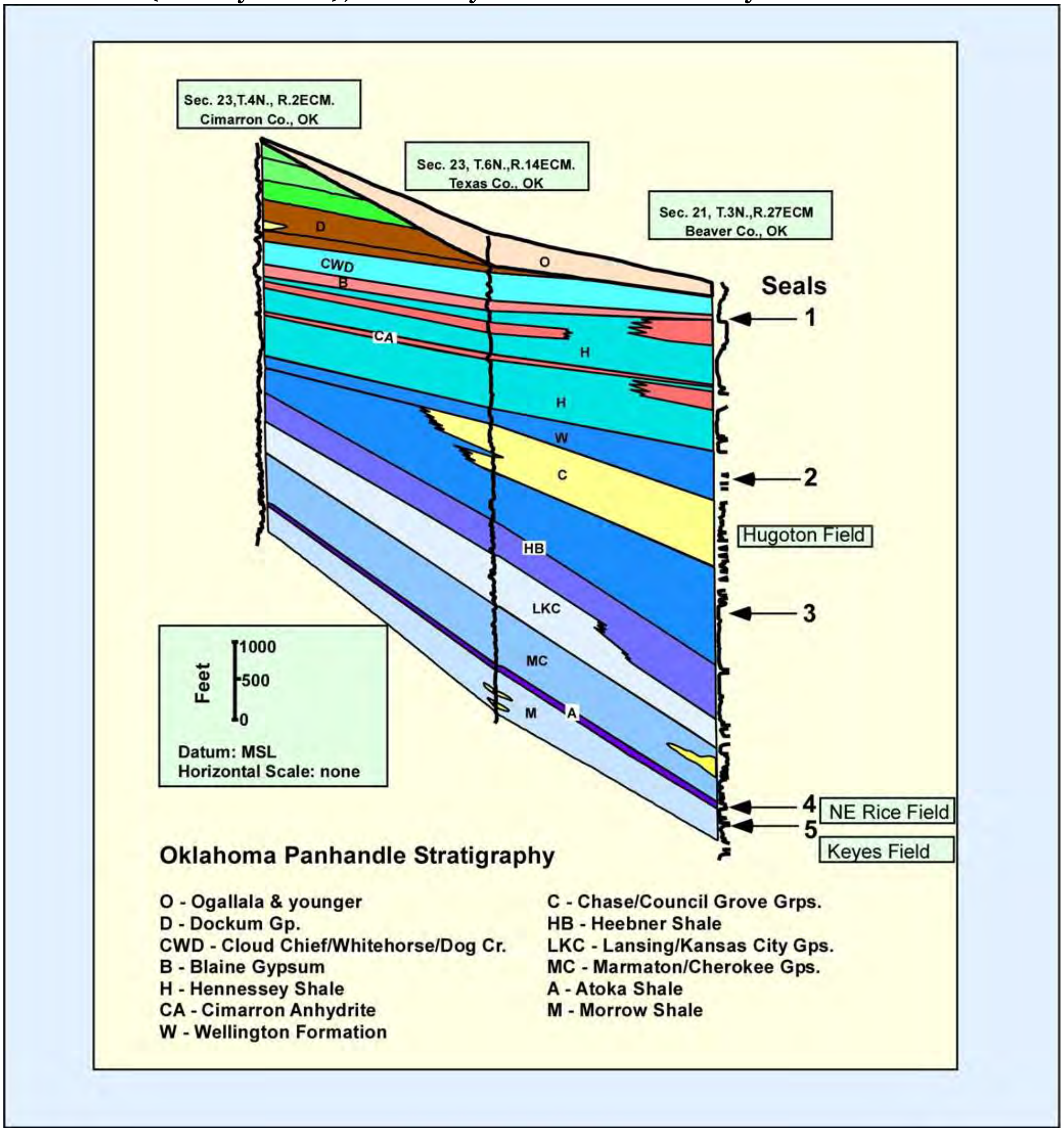

Figure 4. Oklahoma Panhandle Stratigraphy (from Puckette, 2006). The numbers represent the major seal intervals: 1 – Hennessey shale; 2 –Wellington formation; 3 – Upper Morrow/Atoka shales; 4 – Lower Atoka shale; 5 – Lower Morrow shale

drite, Hennessey shale, a thin layer of Blaine Gypsum, and Cloud Chief/White Horse formations (Figure 4).

The Permian layers extend from above the Pennsylvanian strata up to the surface. In some places, the Permian is covered by younger formations of Triassic age (Dockum gypsum) or Tertiary and younger age (e.g., Ogallala aquifer formation).

1.2. Sample locations and lithology

We analyzed 30 samples selected from wells drilled in the three depleted gas fields (Keyes, NE Rice, and S. Guymon) and adjacent areas from Oklahoma Panhandle (Cimarron, Texas, and Beaver counties) (Figure 5).

Oklahoma Panhandle is located in extreme north-western part of Oklahoma State, comprising three counties: Cimarron, Texas, and Beaver. In this research, we used 30 core samples acquired from pre-existing wells in this region (Figure 1). It should be noted that number of samples were recovered at different depths from the same well. Table 1 includes well head coordinates, counties, formation, sample depths and their respective lithologic sample descriptions.

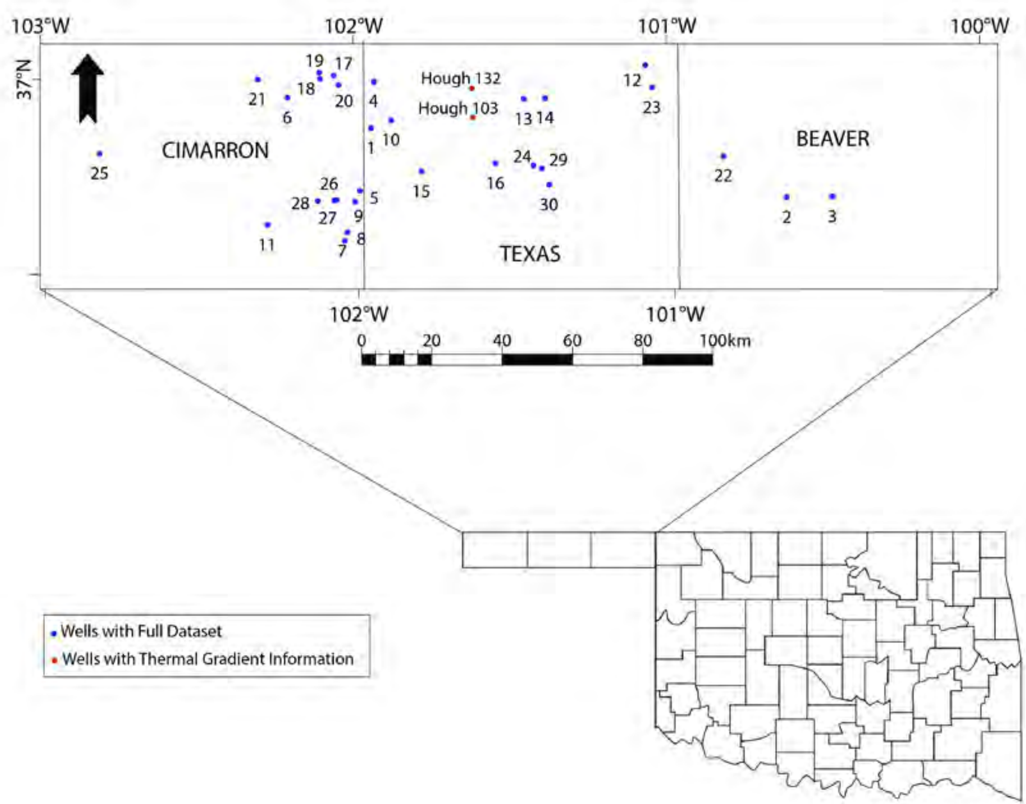

Figure 5. Blue dots indicate the location of the 30 representative core samples collected from the seal rock formations. Two red dots indicate additional wells providing only geothermal gradient information.

Depth of our samples ranges between 816 m – 2,067 m with mean depth of 1 510m. Burial depth has known effects on porosity and density of the rocks. In most sedimentary basins increasing burial depth will decrease the porosity (increase in density) of the rocks. High temperature and pressure can also reduce the permeability by improving the ductility of the formation.

Pressure of the $scCO_2$ after injection will be determined by hydrostatic pressure which is function of the burial depth. Similarly, temperature of the formation in subsurface is a direct function of the depth. As it will be discussed later, formation temperature is one of the key considerations in CS project. “Cool” formations are relatively more favorable for sequestration purposes.

TABLE 1. Sample locations and lithologic descriptions

ID #	FILE #	Well Name	County	Formation	Depth (m)	Lat (N°)	Long (W°)	Sample Description
1	120	Ferguson-1	Texas	Morrowan	1354	36.84	-101.95	Gray MG quartz sandstone
2	277	Mocane Plant-SWD1	Beaver	Cimarron	470	36.62	-100.63	Red FG siltstone
3	601	Shrauner-2	Beaver	Marmaton	1173	36.62	-100.49	Gray MG limestone
4	868	Quigley 1-A	Texas	Purdy	1382	36.96	-101.94	Black FG fissile shale
5	878	Hartly-1	Texas	Cherokee	1390	36.68	-101.99	Black FG lime mudstone
6	900	Conover-5	Cimarron	Morrowan	1380	36.92	-102.21	Light brown FG quartz sandstone
7	1081	Steele A-3	Cimarron	Topeka	1072	36.58	-102.03	Pink FG mudstone
8	1461	Spence-2	Cimarron	Topeka	1070	36.55	-102.04	White FG limestone
9	1712	Treece-1	Texas	Morrowan	1536	36.65	-102.01	Brown CG limestone
10	2177	Brewer-2	Texas	Morrowan	1726	36.86	-101.88	Black FG calcareous shale
11	2472	Prothro 41-34	Cimarron	Topeka	1083	36.60	-102.29	Light gray FG limestone
12	2609	Knop 1-A	Texas	Chase	852	36.98	-101.07	Pink FG calcareous siltstone
13	3088	Dailey 1-B	Texas	Chester	2014	36.90	-101.46	Black FG fissile shale
14	3115	Myers 1-D	Texas	Keyes	1995	36.90	-101.39	Dark gray medium – CG mudstone
15	3138	Stonebraker 1-AP	Texas	Marmaton	1792	36.72	-101.79	Light gray MG sandy limestone
16	3141	Stonebraker AN-4	Texas	Cherokee	1909	36.74	-101.56	Black FG fissile shale
17	3146	Purdy 1-A	Cimarron	Keyes	1406	36.97	-102.11	Red FG lime mudstone
18	3149	Purdy 1-C	Cimarron	Morrowan	1396	36.97	-102.09	Dark gray FG shale
19	3150	Purdy 1-E	Cimarron	Unknown	1397	36.99	-102.11	Black FG shale
20	3355	Schluckebier-Unit 3	Cimarron	Keyes	2040	36.95	-102.05	Black FG layered calcareous shale
21	3780	Durham-1	Cimarron	Cherokee	1215	36.97	-102.31	Dark Gray FG lime mudstone
22	3952	Gabler 2-7	Beaver	Chester	2067	36.73	-100.83	Black FG very fissile calcareous clayey mudstone
23	3979	Harrison&Goodwin GU-1	Texas	Atoka	1971	36.92	-101.05	Black FG calcareous shale
24	4157	State-1	Texas	Morrowan	1828	36.73	-101.44	Purple layered FG mudstone
25	4164	State-1	Cimarron	Mississippian	1666	36.79	-102.82	Gray FG shale
26	4224	Durham-1	Cimarron	Morrowan	1386	36.66	-102.07	Black FG shale
27	4211	Rowan Trust-1	Cimarron	Morrowan	1367	36.66	-102.07	Black FG calcareous shale
28	4226	Sparkman-1	Cimarron	Morrowan	1381	36.66	-102.13	Black FG shale
29	4458	Nash-A1	Texas	Morrowan	1828	36.73	-101.44	Pinkish white lime mudstone
30	4515	Ara 2-36	Texas	Cherokee	1783	36.68	-101.39	Black FG shale
CG – coarse grained; MG – medium grained; FG – fine grained								

The samples are identified as shales (13), mudstones (8), limestones (5), sandstones (2), and siltstones (2). Sample pictures are found in Annex A. An example is presented in Figure 8.

2. Experimental methods

2.1. Mercury Intrusion Porosimetry (MIP)

Pore systems consist of relatively large voids, or pores, distributed among smaller passages called pore throats. Pore-throat sizes and their distribution in reservoir and non-reservoir rocks can be estimated by capillary-pressure curves derived from mercury intrusion porosimetry (MIP). The MIP data are obtained by forcing mercury at pressures up to 413,685 kPa (60,000 psi) into small voids and pore throats within the rock sample. Pore throats control access to larger voids (pores) because greater pressures are required to force mercury, or other nonwetting fluid, into smaller spaces (Purcell, 1949; Keighin, 1997). Thus pores are bottle-necks in the system, and it is necessary to exceed their critical capillary pressure in order to inject mercury into pores. Mercury injection pressure is increased in a stepwise manner and time for equilibration between pressure increments is allowed. The step pressure is plotted against mercury saturation (Figure 6 and Annex A).

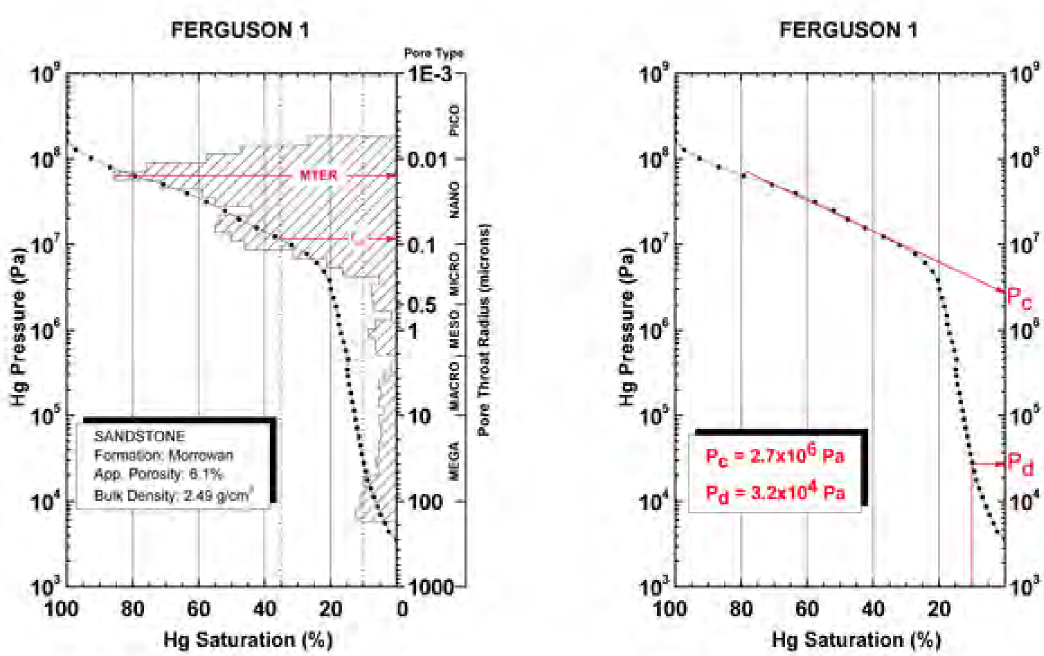

Figure 6. Capillary-pressure curves obtain by MIP. (P_c – capillary pressure; P_d – displacement pressure measured @10% Hg saturation)

120
FERGUSON-1
Gray Medium Grained Sandstone

File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
120	Texas	Morrowan	1354	36.84	-101.95

Intrusion Data Summary		
Median Pore Radius (Volume)	0.028	µm
Median Pore Radius (Area)	0.00985	µm
Average Pore Radius	0.018825	µm
Bulk Density	2.49	g/cm³
Apparent (skeletal) Density	2.65	g/cm³
Porosity	6.1	%

Organic Content		
TOC	1.29	wt% HC

Pore Structure Summary		
Pc	2.70	MPa
Pd (@ 10% Hg saturation)	0.03	MPa
BET Surface Area	8.1997	m²/g
Median Grain Size	71.446	µm
R35	0.085	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.015	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
7.50	43.6	33.7	9.30	0.4	3.1	0	7.50	43.6	33.7	9.30

Figure 7. Sample #1 (120). Sample picture, MIP parameters, TOC measurements, and XRD measurements. This figure is part of Appendix A.

The relationship between applied pressure P and the minimum size pore D into which mercury will be forced to enter is based on Washburn equation (Washburn, 1921):

$$D = -4\gamma \cos\theta / P \tag{1}$$

where γ is the interfacial tension of mercury-air system (0.485 N/m), and θ is the air-mercury-solid contact angle (140°).

MIP technique provide data for the determination of porosity, permeability, port type, pore distribution and pore sorting, average pore-throat radius (APR), median pore-throat radius (MPR), maximum threshold-entry radius (MTER), and other petrophysical properties (Figure 7 and Appendix A).

We used MIP technique to analyze 30 caprock samples selected from wells drilled in the three depleted gas fields (Keyes, NE Rice, and S. Guymon) and adjacent areas from Oklahoma Panhandle (Cimarron, Texas, and Beaver counties) (Figure 5).

A significant issue regarding the measurements was determining how representative the samples are for caprocks of the Oklahoma Panhandle. Based on production information included in the scout cards of each well, the sampling procedure ensured that most areas of interest were sampled. Major modification of many of the properties to be measured occurs during extraction and storage of core samples. The samples are not in situ, they reside in core warehouses, and are undoubtedly desiccated and not representative of their in situ properties. Consequently, our main concern during sampling was to select only those cores that were the freshest, thus assuring that the residing time in the core warehouse was minimal.

Following suggestions made by other researchers (e.g., Aplin et al., eds., 1999; Yang and Aplin, 2007) necessary corrections for effects of clay desiccation to compensate the missing of original fluids were applied.

Before using our MIP technique, we considered alternative methods that may preserve the original fluids in place: porous plate, vapor desorption, and centrifuge methods (e.g., Newsham et al., 2004; Al-Hinai et al., 2008). The major drawbacks of the aforementioned methods are their longer time of experimentation (one month for a single measurement) and relatively low range of operating pressures (1000 – 1250 psi). Unlike the porous plate technique, MIP is very fast, often requiring only hours of operation rather than days or weeks (Newsham et al., 2004). In addition, MIP technique is capable of generating injection pressures up to 60,000 psi and thus allows investigating low porosity and low permeability rocks.

2.1.1. Petrophysical Parameters

Samples were cut from core slabs, prepared and analyzed in a Micromeritics AutoPore 9500 using the method described by Deming et al., 2002; Cranganu, 2004; Villa, 2005; and Cranganu and Villa, 2005, 2006, and 2013.

The parameters apparent porosity, average pore-throat radius, median pore-throat radius and maximum threshold entry radius were determined according to Webb, 2001:

Apparent porosity, Φ (%), is measured by capillary-pressure analysis to a pressure of 60,000 psi (~414 MPa) and is defined as:

$$\Phi(\%) = \frac{V_{tot}}{V_b} \times 100 \tag{2}$$

where V_{tot} is the total intrusion volume of mercury required to fill all accessible pores of the sample and is calculated as:

$$V_{tot} = V_j \tag{3}$$

Here, the j^{th} data point (measurement step) is the first such that:

$$P_{j+1} \le P_j - 10 \text{ and } P_{j+1} \le P_j \times 0.995 \tag{4}$$

where P_j is the head-corrected pressure as stored by the instrument.

V_b is the bulk volume of mercury at atmospheric pressure and is calculated as:

$$V_b = V_p - V_m \tag{5}$$

where V_p is user-entered volume of penetrometer and V_m is the volume of mercury in pene-trometer.

Average Pore-Throat Radius, APR (μm). The idealized cylindrical geometry of the pore throats in the system is a function of the radius of the cross sectional circular area of the pore throat. This average value, expressed in microns, is calculates as follows:

$$\text{APR}(\mu\text{m}) = 2 \times \frac{I_{total}}{A_{total}} \tag{6}$$

where I_{tot} is the total specific intrusion volume of sample and A_{tot} is the total specific pore area of sample. Both parameters are calculated by the instrument.

Median Pore-Throat Radius, MPR (μm), is calculated as the arithmetic average of the median pore radius by volume (MPRV) and the median pore radius by area (MPRA).

MPRV is calculated as follows:

$$\text{MPRV} = \text{MPRV}_\text{k} \tag{7}$$

where MPRV_k is calculated from P_k (head-corrected pressure as stored), and P_k is inter-polated from I_k and the collected data. I_k is defined as:

$$\begin{aligned} \text{I}_\text{k} &= \frac{\text{I}_\text{tot}}{2} \\ \text{I}_\text{tot} &= \frac{\text{V}_\text{tot}}{\text{W}_\text{s}} \end{aligned} \tag{8}$$

where V_{tot} is defined by Equation (3) and W_s is user-entered sample weight.

MPRA is calculated as follows:

$$MPRA = MPRA_k \tag{9}$$

where $MPRA_k$ is calculated from Pk (head-corrected pressure as stored), and Pk is interpolated from A_k and the collected data. A_k is defined as:

$$A_k = \frac{A_{tot}}{2} \tag{10}$$

where A_{tot} is the total specific pore area.

Commonly, MPRV and MPRA differ, because the smaller pores contribute more to the total pore surface area than do larger pores for a given increment of mercury imbibition. Therefore, the area distributions have a tendency to shift to the smaller pore sizes where compared to pore volume distributions (Tanguay and Friedman, 2001).

Maximum Threshold-Entry Radius, MTER (μm) is the entry radius at which significant invasion of a sample with mercury occurs (Tanguay and Friedman, 2001). The recognition of this parameter is based on a histogram (Figure 2) created with the incremental percentage of intrusion (times 10 to emphasize the values) and the size of the pore throat radius to which it is equivalent. MTER is the largest radius of the largest population of ubiquitous pore-throat sizes in a sample. The peak or peaks on the histogram reflect the distribution of the different pore-throat radius populations in a rock sample (Pore-Throat Size Distribution or PTD). One peak represents a unimodal distribution; two peaks represent a bimodal distribution, and multiple peaks represent a multiple (no mode) distribution (Figure 8).

These distributions are linked to the locations of voids in the rock and they are important in determining if one, two, or more pore-throat systems dominate the pore geometry of a geo-logic formation. In turn, this determination has consequences in recognizing the presence of one significant fluid invasion (unimodal distribution), two significant fluid invasions (bimodal distribution0, or no significant fluid invasion (no mode distribution).

As suggested by Hartmann (pers. comm., 2005), the distributions of pore throats represented by more than one mode are due to either the sample having two different pore throat types corresponding to laminations or to the presence of connected vugs in a microcrystalline dolomite or calcite matrix, or grainstone, where the itergranular is the largest port size, and micritized itergranular (microcrystalline) is the smallest pore throat size.

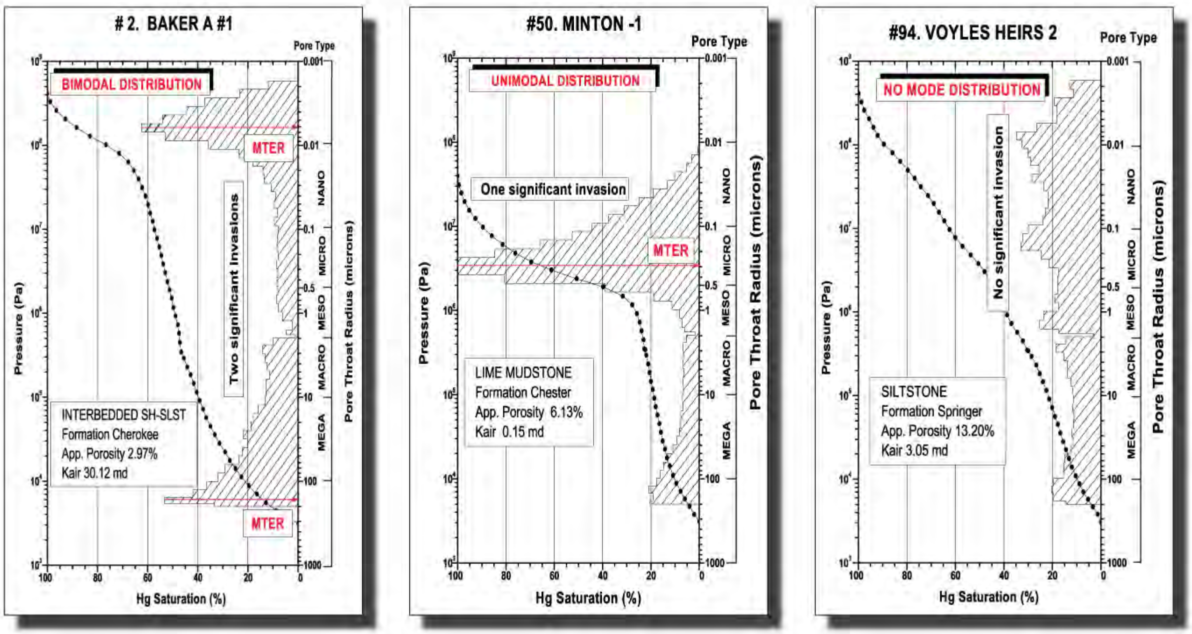

Figure 8. Pore-throat size distribution (PTD): unimodal (a single significant fluid invasion), bimodal (two significant fluid invasions, one at a higher pore-throat size and another at lower pore-throat size), and no mode (no significant fluid invasion is present) (from Cranganu and Villa, 2013)

Pore-Throat Sorting, PTS, is a measure of the sorting of the sizes of the pore throats in a sample. Measurements of PTS from intrusion capillary curves have been both qualitative and quantitative. Jennings (1987) proposed the following formula for PTS:

$$\mathrm{PTS} = \left[\frac{3^{\mathrm{rd}}\ \text{Quartile Pressure}}{1^{\mathrm{st}}\ \text{Quartile Pressure}}\right]^{1/2} \tag{11}$$

where the first and third-quartile pressures are obtained directly from the capillary pressure curve and reflect the 25 and 75% mercury saturation pressures adjusted for irreducible saturation. A PTS value of 1.0 represents a perfectly horizontal plateau, while values much above 5.0 pertain to curves displaying little or no plateau development.

Hartmann and Beaumont (1999) and Tanguay and Friedman (2001) measured the sorting of pore throats by visual graphic analysis of the steepness of the plateau of the capillary curves. In general, a horizontal plateau indicates a well sorting of the pore throats (Figure 9). The values used are PS - Poorly sorting; MS - Medium Sorting, and WS - Well Sorting. According to Tanguay and Friedman (2001), well-sorted pore-throat sizes (WS) are characterized graphically by a MTER at less than 20% mercury saturation, along with a horizontal to sub-horizontal plateaued injection curve that has a unimodal pore-throat size distribution. Capillary-pressure curves of pore throats that have a moderately sorting size distribution (MS) are generally sinusoidal in shape and have a MTER between 10 and 40% mercury saturation. Finally, capillary-pressure curves of pore throats that have a poorly sorted pore-throat size distribution (PS) are generally oblique or diagonal and have little to no plateau and a poorly defined MTER.

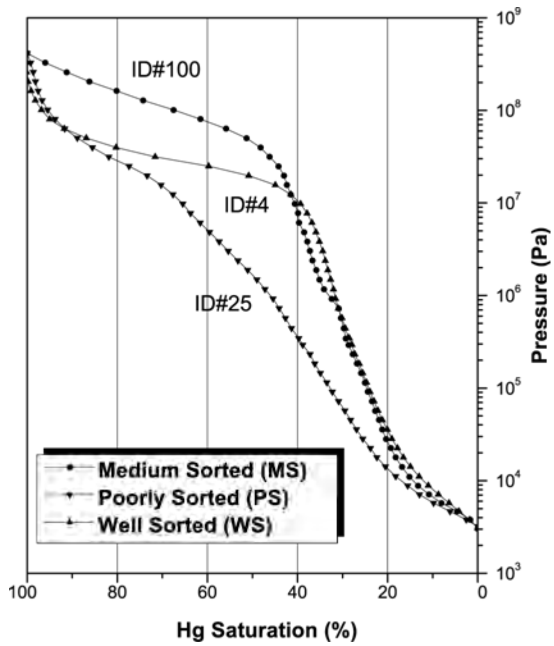

Figure 9. Pore-throat sorting (PTS): poorly sorted (PS), medium sorted (MS), and well sorted (WS) (from Cranganu and Villa, 2013)

The significance of PTS centers on the rock's ability to accept oil saturation. Jennings (1987, p. 1199) described the petrophysical role of pore throat sorting in reservoir analysis in these terms: "In well-sorted rocks, once a threshold buoyancy pressure is obtained, oil will rap-idly saturate the porosity up to the maximum capacity. Poorly sorted rocks require a pressure increase over a much broader range to obtain the same level of oil saturation."

Port Type (PT) concept was used by Coalson et al. (1985) as a link between the Pore-Throat Radius at 35% mercury intrusion, R35 (μm), values and characterization of the pore systems by size. Pore systems in rocks are characterized by port types, which are measurable characteristics that can represent the reservoir quality. Extending Martin et al. (1997) classification, five petrophysical flow units with different reservoir performances are distinguished by ranges of R35 (Figures 6 and 8, Appendix A):

Megaport – flow units are defined as having an R35 ranging above a threshold of 10 μm. Production of medium-gravity crudes can readily attain tens of thousands of barrels per day from a megaport flow unit if zonal thickness and other factors are constant.

Macroport – flow units having slightly smaller pore throat sizes that, with all other constraints held constant, are capable of thousands of barrels of oil per day. These flow units are defined as having an R35 ranging between 2 and 10 μm.

(1) *Mesoport* – flow units having an R35 ranging between 0.5 – 2 μm. These units may allow only hundreds of oil day with all other factors held constant.
(2) *Microport* – flow units having an R35 ranging between 0.1 – 0.5 μm. Although numerous tight gas reservoirs have these R35 properties, microport flow units are mostly non-reservoir zones. Wells with mostly microport flow units produce at best a few barrels of oil per day on pump.
(3) *Nanoport* – flow units that have an R35 ranging of less than 0.1 μm. The nanoport flow units best characterize non-reservoir zones and are of far more interest as potential seals for higher quality reservoir downdip.

The complete MIP pictures of the 30 samples analyzed in this project are found in Appendix A.

2.2. Source-Rock Analysis (SRA) and Total Organic Carbon (TOC) Experimental Procedure

Organic carbon is simply the remnant parts of the living materials preserved in sedimentary rocks through geologic time. During burial these remnants go through many processes imposed by sedimentation process (temperature and pressure) and time. Thermal maturation is referred to cooking process in which organic content of the rock decomposed as result of pressure and heat and turn into oil, gas, and pure carbon. TOC content of the rock is the most important parameter in evaluation of the source rock. Also, growing demand in hydrocarbon production from unconventional reservoirs turn this parameter into one of the most important factors in exploration and production of the hydrocarbons. Generally organic carbon refers to kerogen with almost the same density as water. One of the differences between kerogen and oil is the fact that kerogen is insoluble in organic solvent but oil is soluble.

Along with the mineralogical content of the rock, TOC has considerable effect on ductility of the formation. Generally, higher TOC content is in favor of the formation ductility. Ductility is the measure of the elastic behavior of the rocks under shear stress. Ductile formations have the ability to remain seal after tectonic deformation. Since TOC content of the sample could have considerable effect on sealing capacity or other properties of the caprock it is important to involve this parameter in our analysis.

The standard classification of the organic matter in sediments is based on oxygen, Carbon, and hydrogen content of the sample. In this method weight of the pyrolyzable organic carbon dioxide in milligrams divided by total organic content is called oxygen index (OI) while pyrolyzable hydrocarbons in milligrams divided by total organic content is called hydrocarbon index (HI).

By cross plotting oxygen index versus hydrocarbon index it is possible to classify organic carbon to four distinctive group of kerogen. Determining different types of the kerogen is highly important since the type of the kerogen determines the final product that will be produced by kerogen. The first type of the kerogen is called type I. This type of kerogen is hydrogen rich and has high HI index (HI> 700). Kerogen type II in relatively intermediate in both oxygen and hydrogen content (HI≈600). In kerogen type III the HI index is considerably lower than previous types of kerogen. This type of kerogen mainly derived from cellulose of the plants. Last type of kerogen is very poor in hydrogen while it is relatively rich in oxygen content. This type of kerogen mainly produced from fungal bodies.

Typically results of the TOC measurements are described by the number of parameters*:

TOC% - Weight percentage of organic carbon

S1 = amount of free hydrocarbons in sample (mg/g)

S2 = amount of hydrocarbons generated through thermal cracking (mg/g) provides the quantity of hydrocarbons that the rock has the potential to produce through diagenesis.

S3 = amount of CO2 (mg of CO2/g of rock) - reflects the amount of oxygen in the oxidation step.

Ro = vitrinite reflectance (%)

T_{max} = the temperature at which maximum rate of generation of hydrocarbons occurs during pyrolysis.

Calculated results include:

Hydrogen index:

$$HI = \frac{100 \times S2}{TOC\%} \tag{12}$$

Oxygen index:

$$OI = \frac{100 \times S3}{TOC\%} \tag{13}$$

Production index:

$$PI = \frac{S1}{(S1 + S2)} \tag{14}$$

Table 2 shows the results of the TOC measurements for all 30 samples. We used TOC content (forth column) as the indicator of the organic carbon content in our samples. Our ultimate goal by measuring TOC content of the samples is to understand the role of the different organic carbon content on sealing capacity. Figure 10 is the plot of the total organic carbon and oil potential (S2) vs. depth for all the 30 samples. Also, Figure 11 shows the variation of the hydrogen, index (left) oxygen, index (middle), and production index (left). Figure 12 shows the scatter plot of the hydrogen index vs. maximum temperature (left) and Pseudo Van Krevelen graph (right).

*Source: http://www.spec2000.net/11-vs.htoc.htm

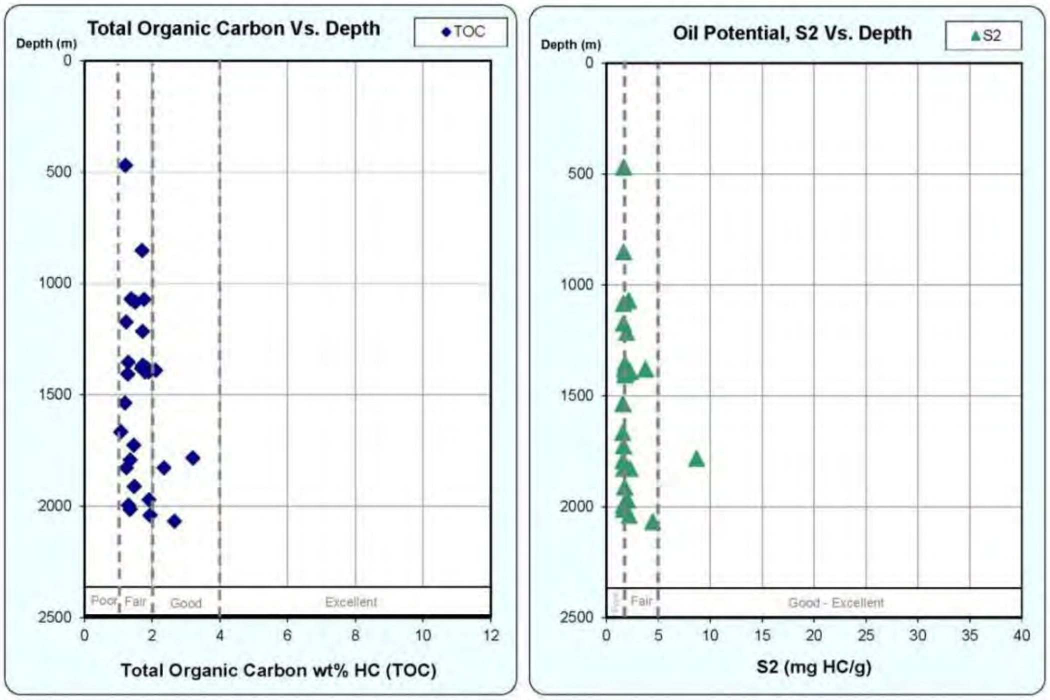

Figure 10. Plot of the total organic carbon (left) and oil potential (right) vs. depth for all the 30 samples.

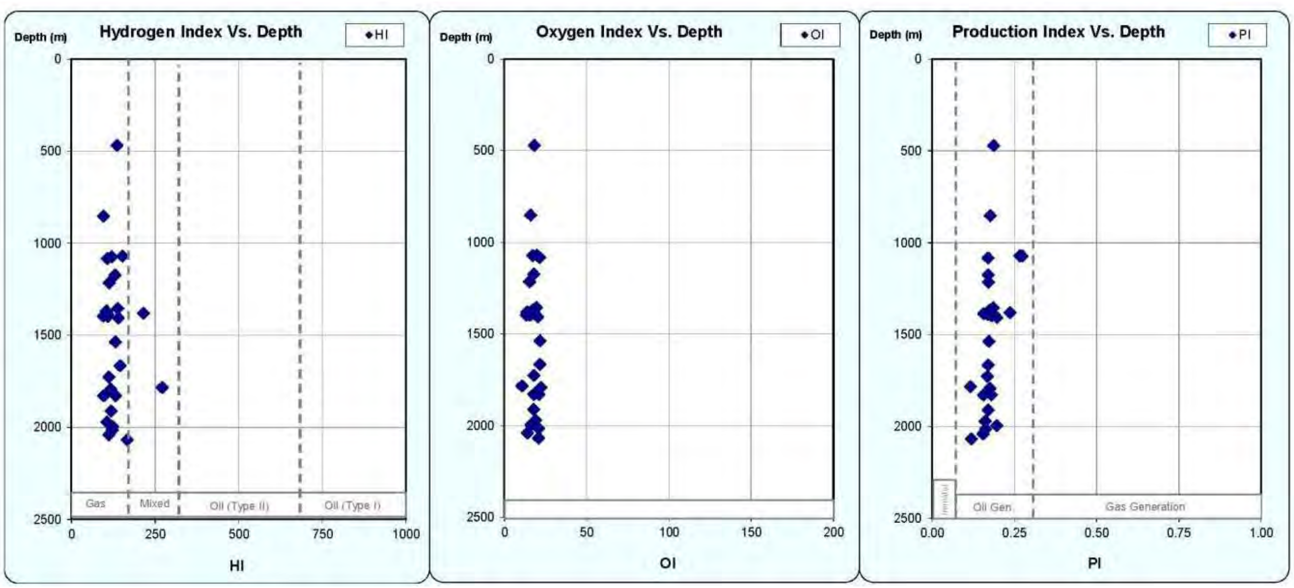

Figure 11. Variation of the hydrogen index (left), oxygen index (middle), and production index (right) vs. depth.

Table 2. Result of the TOC measurements for all 30samples.

Sample #	Depth	Sample Wt.	TOC	S1	S2	S3	Tmax	HI	OI	PI	
	m	mg	wt% HC	mg HC/g	mg HC/g	mg CO2/g	˚C	S2x100/TOC	S3x100/TOC	(S1/(S1+S2))	(S1/TOC)100
1	1354	98.1	1.29	0.41	1.79	0.25	324.4	138.76	19.38	0.19	31.78
2	470	100.3	1.21	0.38	1.65	0.22	327.9	136.36	18.18	0.19	31.4
3	1173	100.2	1.23	0.33	1.61	0.22	444	130.89	17.89	0.17	26.83
4	1382	98	1.85	0.41	1.97	0.25	441.7	106.49	13.51	0.17	22.16
5	1390	103.3	2.1	0.46	2.25	0.32	440.8	107.14	15.24	0.17	21.9
6	1380	100.9	1.74	1.17	3.75	0.24	419.3	215.52	13.79	0.24	67.24
7	1072	102.8	1.76	0.8	2.12	0.3	434.3	120.45	17.05	0.27	45.45
8	1070	102.6	1.38	0.77	2.12	0.27	432.7	153.62	19.57	0.27	55.8
9	1536	102.1	1.2	0.33	1.58	0.26	481.2	131.67	21.67	0.17	27.5
10	1726	100.9	1.45	0.33	1.63	0.26	436.7	112.41	17.93	0.17	22.76
11	1083	102.3	1.5	0.33	1.61	0.32	327.2	107.33	21.33	0.17	22
12	852	101.9	1.7	0.35	1.63	0.27	432	95.88	15.88	0.18	20.59
13	2014	105.2	1.35	0.32	1.64	0.28	450.4	121.48	20.74	0.16	23.7
14	1995	103.7	1.3	0.39	1.59	0.21	320.6	122.31	16.15	0.2	30
15	1792	103.4	1.35	0.34	1.59	0.3	431.1	117.78	22.22	0.18	25.19
16	1911	104.3	1.47	0.36	1.75	0.26	458.1	119.05	17.69	0.17	24.49
17	1406	100	1.28	0.44	1.79	0.26	326.2	139.84	20.31	0.2	34.38
18	1396	104.7	1.89	0.4	1.81	0.25	319.4	95.77	13.23	0.18	21.16
19	1397	98.8	1.79	0.43	1.96	0.28	437.4	109.5	15.64	0.18	24.02
20	2040	103.4	1.94	0.4	2.18	0.27	448.4	112.37	13.92	0.16	20.62
21	1215	103.2	1.71	0.4	1.93	0.26	443.1	112.87	15.2	0.17	23.39
22	2067	95.5	2.66	0.6	4.43	0.55	442.9	166.54	20.68	0.12	22.56
23	1971	99.8	1.91	0.39	2.03	0.36	448.4	106.28	18.85	0.16	20.42
24	1828	100.5	1.24	0.36	1.64	0.26	342.8	132.26	20.97	0.18	29.03
25	1666	104	1.07	0.32	1.56	0.23	339.8	145.79	21.5	0.17	29.91
26	1386	105.2	1.84	0.35	1.88	0.27	438.5	102.17	14.67	0.16	19.02
27	1367	105	1.72	0.38	1.8	0.3	436.3	104.65	17.44	0.17	22.09
28	1381	103	1.69	0.35	1.75	0.27	323.7	103.55	15.98	0.17	20.71
29	1828	99	2.35	0.42	2.27	0.42	445	96.6	17.87	0.16	17.87
30	1783	98.7	3.2	1.15	8.67	0.34	443.6	270.94	10.63	0.12	35.94

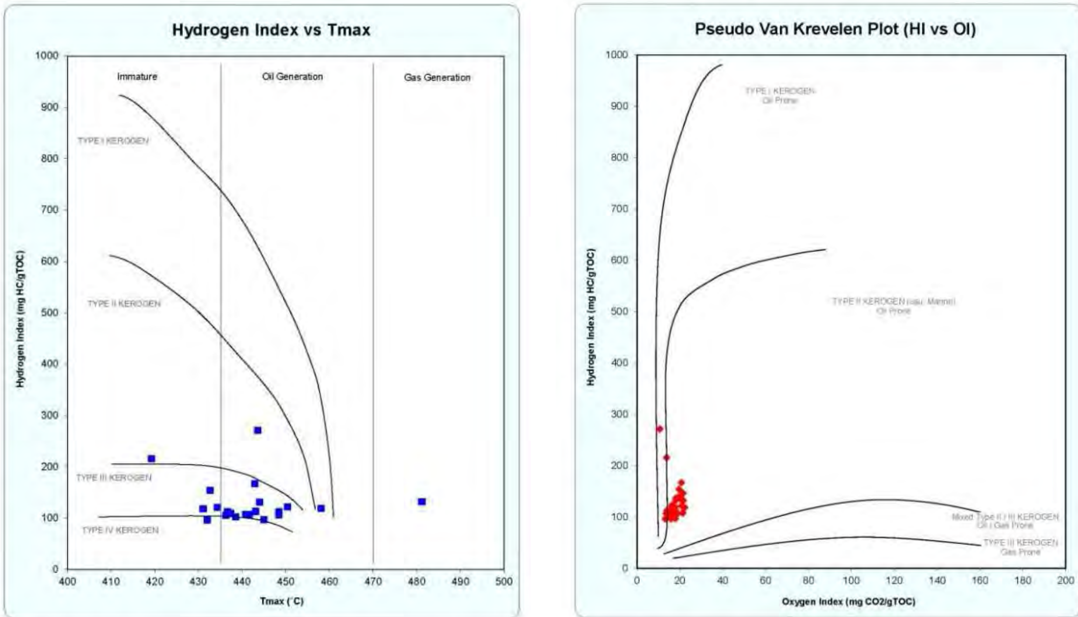

Figure 12. Plot of the hydrogen index vs. maximum temperature Tmax (left) and Pseudo Van Krevelen graph (right).

These measurements have been performed on 30 samples by *Corelab* in Houston, TX. Approximately 100 mg of crushed whole-rock and un-mineralized sample are pyrolyzed at 300°C for 3-4 minutes, followed by programmed pyrolysis at 25°C/min to 550°C, in helium atmosphere. During pyrolysis, a Flame Ionization detector (FID) measures the thermally distilled hydrocarbons (S1 peak). The second peak (S2), also measured by the FID, represents the hydrocarbons generated by pyrolytic degradation of the kerogen in the sample. The third peak (S3) represents the amount of CO_2 generated during pyrolysis. The temperature at which the maximum amount of S2 hydrocarbons is generated is referred to as the Tmax. Pyrolysis is followed by oxidation under air at 550-600°C. The CO and CO_2 evolved during pyrolysis and oxidation are continuously measured by an infrared cell (IR). The units of S1 and S2 are mg HC/g rock and the units of S3 are mg CO_2/g rock.

The *Hydrogen Index* (HI) (mg HC/g TOC) corresponds to the quantity of pyrolyzable organic compounds from S2 relative to the TOC in the sample. The *Oxygen Index* (OI) (mg CO_2/g TOC) corresponds to the quantity of CO_2 from S3 relative to the TOC. The *Production Index* (PI) is defined as the ratio S1/(S1 + S2).

The SRA instrument determines the amount of organic carbon by adding pyrolyzed carbon (PC) and residual carbon (RC). The pyrolyzed carbon is computed from: (1) the hydrocarbon compounds released in peaks S1 and S2, assuming that they contain about 83% of organic carbon; (2) the CO released during pyrolysis up to 500°C; and (3) the CO_2 released during pyrolysis up to 400°C. The residual carbon (S4) is measured during oxidation. The narrow temperature ranges are chosen in such a way as to avoid interference by the decomposition of carbonate minerals, thus contribution of mineral carbon to the TOC. This is important since the mineral matter in the samples is not removed by acid treatment prior to the analysis.

The instrument is calibrated often (every 10th sample) using a calibration standard that has a known set of parameters (TOC, S2, S3, and HI) and a blank (to allow establish a 'baseline'). Reproducibility of the standard's own values is critical to ensure accuracy of the unknown sample's pyrolysis data.

All SRA and TOC measurements are presented in Appendix B.

2.3. XRD Analyses[2] and Hard/Soft Index

X-rays analysis used for XRD measurements has one wavelength (they are all one "color"). Normally, a sample is a few grams of powder and is packed into a holder with a flat surface. The beam of x-rays enters the sample surface and is reflected by the very small crystals (crystallites) in the sample. When it is reflected the single beam of x-rays is split so the x-rays come out of the sample in several beams at different angles to the sample. The instrument has a detector that swings around the sample as the sample itself is rotated and registers the position and strength of these beams. This data is plotted by software as strength (intensity) vs. position (angle) to give a series of "peaks" or "lines", which is called the diffraction pattern.

Each chemical compound or phase reflects x-rays slightly differently and so has a different diffraction pattern. A mixture of compounds gives a pattern that is made up of the patterns of all the individual compounds. So, to identify the compounds present in a mixture the pattern obtained is compared to a large database of patterns. Often there are overlapping lines so experience and judgment are important. To give a guide when phase identification is complete the peaks are classified as major, minor or trace. XRD is used for identification of crystalline compounds or phases. Table 3 shows the XRD measurements with percent mineral content (e.g. Illite & Mica, Kaolinite, Chlorite, Quartz, K-Feldspar, Plagioclase, Calcite, Dolomite, Ankerite, Hematite, Pyrite) for every one of the 30 samples.

As suggested by Sutton et al. (2004), the ratio of the hard minerals over soft minerals could be an important parameter controlling the sealing capacity of the caprock. Basically, we divide minerals into two groups of hard and soft minerals. Hard minerals are the ones with the hardness of more than 5 on Mohs scale. Similarly, minerals with hardness of 5 and less are considered as soft minerals. Using this definition we can define Hard / Soft index as following ratio:

$$Hard\ /\ Soft = \frac{(Quartz + Orthoclase + Plagioclase + Hematite + Pyrite)}{(Mica + Illite + Chlorite + Calcite + Dolomite + Ankerite + Kaolinite)} \quad (15)$$

[2] Practical background information can be found at LSM Analytical Services website (www.lsmanalytical.com)

Sutton et al. (2004) showed that Hard/Soft index displayed a negative correlation with displacement pressure P_d in shales. They suggested that the cause of negative correlation might be due to the reduction of pores as result decreasing strength of the rock structure.

Calculated H/S index for our 30 samples is shown in the last column of Table 3.

Table 3. XRD measurements for all 30 samples.

Sample #	Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite	TOTAL	Hard/ Soft
1	7.5	43.6	33.7	9.3	0.4	3.1	0	0	0	0	0	100	0.15
2	60.5	7	12.8	4.3	1.7	3	0	0	0	7.6	0	100	0.21
3	0.8	0	0.6	1	0.3	0.6	96.7	0	0	0	0	100	0.02
4	21.5	19.8	10.1	5.6	1	1.9	0	0	0	0	0	100	0.17
5	10.2	10.2	18.1	37.4	1.9	4.5	7.3	0	0	0	2.2	100	1
6	3.2	49.1	23.3	11.4	0	10.7	0	0	0	0	0	100	0.29
7	8.5	0	4.6	11.6	0.5	1.2	7.3	64.9	0	0	0	100	0.16
8	0.6	0.4	0	1.4	0	0	96.4	1.2	0	0	0	100	0.01
9	2.4	6.6	59.1	8.7	2.6	5.2	14.5	0.9	0	0	0	100	0.2
10	8.1	9.9	10	14	0	0	32.5	0	0	0	0	100	0.23
11	19.1	5.4	7.6	5.6	1.8	3	43.8	3.4	0	0	0	100	0.13
12	10	0.5	3.6	5.9	0.8	1.2	1.4	72.9	0	0	0	100	0.09
13	24.5	21.9	14.8	10.7	0	0	0	0	0	0	0	100	0.17
14	4.1	17.3	33.4	15.4	0.4	0.9	6.9	0.9	9.7	0	0	100	0.23
15	3.7	3.8	3.4	30.3	1.4	4.7	32	3.2	17.5	0	0	100	0.57
16	15.6	55.3	7.2	3.1	0	0.9	0	0	0	0	0	100	0.05
17	12.4	4.1	2	10.4	1.5	3.3	39.7	5.8	0	8.9	0	100	0.38
18	11.5	46.8	6.6	12.9	0	0	0	0	0	0	0	100	0.2
19	7.7	7.7	0.6	58.9	0	0	7.9	2.8	0	0	0	100	2.21
20	10.4	19.6	9.6	23.6	0	0	6.1	0	0	0	0	100	0.52
21	12.5	12.9	26.3	11.3	2.7	7.2	10.1	1.9	0	0	2.7	100	0.38
22	3.8	23.3	19.4	5.7	0	0	0.5	0	0	0	0	53	0.12
23	23.6	1.6	10.7	16.5	0	0	19.6	0	0	0	0	100	0.3
24	27.6	3.6	7.8	19.6	1.4	3.3	2.6	0	0	13.3	0	100	0.9
25	45.9	14.7	13.4	13	1.2	2.4	0	0	0	0	1.8	100	0.25
26	14.4	20	10.8	23.8	0	0	4	0	0	0	0	100	0.48
27	29.5	20.1	15.7	5.3	0.5	0.8	0	0	0	0	0.9	100	0.11
28	31	29.7	11	8.6	0.1	0.4	0	0	0	0	0	100	0.13
29	11.4	9.8	7.1	15.8	0.5	0.6	30.8	0	3.1	0	3.8	100	0.33
30	12.1	23.2	15.1	13.5	1.1	6.6	0	1	0	0	3.7	100	0.48

These measurements have been performed on 30 samples by *K/T GeoServices, Inc.,* in Gunnison, CO. They provided mineralogy of the samples. The data submitted by lab include the tabular XRD data (weight percentage), the X-ray diffraction traces and a detailed description of sample preparation and analytical procedures.

Complete data concerning XRD measurements are found in Appendix C.

2.3.1. Discussion of Terminology and Limitations

Weight percentage data from X-ray diffraction methods are considered semi-quantitative. There are many factors affecting the results.

XRD methods can quantify crystalline material only. Organic non-crystalline material in large concentrations can be detected but not quantified. Therefore, any organic and/or non-crystalline material is not included in the accompanying results.

Detection limits for XRD are on the order of one to five weight percent. The detection limits differ for each mineral species.

Mineral standards used to determine calibration factors are often different from the actual minerals analyzed. Minerals such as feldspars that undergo solid solution are especially problematic. Clay minerals are problematic for this same reason. Clay minerals also have a wide range of crystallinities (poorly crystallized to well crystallized) which may compound this problem.

With this method the data always sums to 100%. This means that the percentages reported for each mineral are dependent upon the percentages reported for the other minerals. If one mineral is underestimated the others will be overestimated. Also, if one or more minerals are present but not detected then the percentages of the minerals that are detected will be overestimated.

Any or all of the above factors may affect the estimated weight percentages.

Data are formatted as weight percent, but are actually calculated as weight fractions. Therefore, slight rounding errors may be observed in the formatted data.

For this analytical method, the clay fraction is defined as the <4 micron ESD (Equivalent Spherical Diameter) fraction of the sample. Clay fraction does not mean clay minerals (phyllosilicates) only, it is a size term and as such this size fraction can and almost always does include non-clay minerals (quartz, plagioclase, etc.). This size fraction is used because it typically contains abundant clay minerals.

2.3.2. Clay Fraction (<4 Micron) XRD

2.3.2.1. Sample Preparation

Samples submitted for XRD analysis are first disaggregated using a mortar and pestle, weighed, and dispersed in de-ionized water using a sonic probe. The samples are next centrifugally size fractionated into a bulk (>4 microns) and a clay-size (<4 microns ESD) fraction. The clay suspensions are then decanted and vacuum-deposited on nylon membrane filters to produce oriented mounts. Clay mounts are attached to glass slides and exposed to ethylene glycol vapor for a minimum of 24 hours to aid in detection and characterization of expandable clays. The bulk fractions of each sample are dried and weighed in order to determine weight loss due to removal of clay-size materials.

2.3.2.2. Analytical Procedures

XRD analyses of the clay-size fractions of the samples are performed using a Siemens D500 automated powder diffractometer equipped with a CuKa radiation source (40 Kv, 35 mA) and a solid state or scintillation detector. The air-dried and glycol-solvated oriented clay mounts are analyzed over an angular range of 2-36 degrees 2 theta at a scan rate of 1 degree/minute. Quantitative analyses of the diffraction data are done using integrated peak areas (derived from peak deconvolution / profile-fitting techniques) and empirical reference intensity ratio (RIR) factors determined specifically for the diffractometer used for data collection. Determinations of mixed-layer clay type, ordering and percent expandable interlayers are done by comparing experimental diffraction data from the glycol-solvated clay aggregates with simulated one dimensional diffraction profiles generated using the program NEWMOD written by R. C. Reynolds.

2.4. Surface Area Measurements

Brunauer et al. (1938) proposed a method of measuring special surface area based on adsorption. Generally, when a vapor phase (including gas) is brought into contact to solid surface, a thin film of the vapor phase will attach to the external surface of the solid. This phenomenon could be explained by the weak Van der Waals attraction force between external solid surface and adsorbate. Such property could be used to measure the specific surface area of the porous material.

Adsorption could be measured by determining the amount of adsorbed gas over the range of gas pressure at constant temperature (isotherm) which is usually liquid nitrogen temperature (77 K). Similarly, desorption is the measured of the total gas removed by the pressure reduction. Nitrogen was used as the adsorbate phase in special surface area measurements of our samples. It should be noted that the nitrogen is the most common adsorbent but in some circumstances using other gases (CO_2, CO, Ar, O_2, C_4H_{10}) are common too.

BET is the most common method in describing specific surface area. BET equation expressed as below:

$$\frac{1}{W((P_0/P)-1)} = \frac{1}{W_m C} + \frac{C-1}{W_m C}\left(\frac{P}{P_0}\right) \tag{16}$$

where W is the total weight of the adsorbed gas, P/P_O is the relative pressure, W_m is the monolayer adsorbed gas quantity, and C is the BET constant. Slop (s) and intercept (i) are found in the linear plot of the $1/[W((P_O/P)-1)]$ versus P/P_O. These parameters could be expressed as:

$$s = \frac{C-1}{W_m C} \tag{17}$$

$$i = \frac{1}{W_m C} \tag{18}$$

weight of monolayer could be described as following equation:

$$W_m = \frac{1}{s+i} \tag{19}$$

Specific surface area (S) could be expressed by total surface area (S_t) divided by sample weight.

$$S_t = \frac{W_m N A_{cs}}{M} \tag{20}$$

$$S = \frac{S_t}{W} \tag{21}$$

where N is the Avogadro's number (6.023×10^{23}), M is the weight of adsorbate, A_{cs} is the adsorption cross section of the adsorbing species (for nitrogen it is 16.2×10^{-10}m).

Cross plot and the linear trend line of the relative pressure data versus adsorbed quantity of the gas shown in Figure 13 (left) and the relative pressure versus $1/[W((P_o/P)-1)]$ (right) for the sample #1. The slop and the intercept of trend line on the right plot in Figure 13 used in BET specific surface area calculations. Measured BET specific area for sample #1 is 8.1997 m^2/g. complete BET measurement reports are available in. Also, Table 4 contains the summary of BET surface area for all 30 samples.

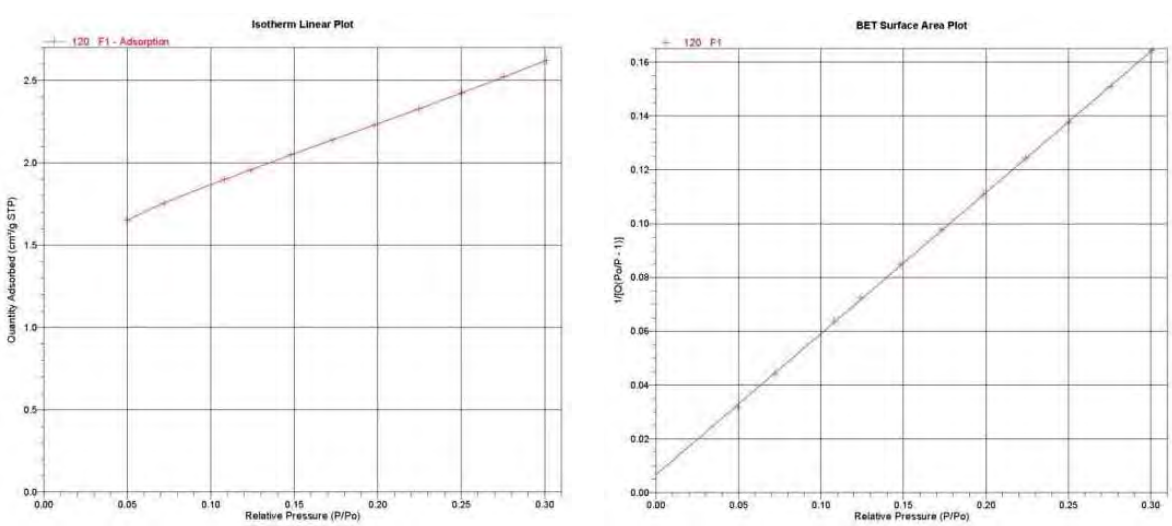

Figure 13. Cross plot and the linear trend line of the relative pressure data versus adsorbed quantity of the gas (left) and the relative pressure versus $1/[W((P_0/P)-1)]$ (right) for the sample #1. The slop and the intercept of the on the right plot in Figure 13 can be used to calculate BET specific surface area. Complete BET measurement reports are available in Appendix D.

These measurements have been performed by Micromeritics, in Norcross, GA. The surface area of 30 samples were analyzed on a Tristar 3020. This is a gas adsorption analyzer which uses the BET method to calculate an external surface area from the volume of gas adsorption in a pressure region of 0.05 to 0.3 relative pressure. The samples were degassed at 110 degrees C for 16 hours. If provided, one should always use the BET surface area instead of the single point method. The repeatability and accuracy of the method is dependent on the sample (typically better than 1 or 2%).

Appendix D contains full BET data of the 30 samples.

2.5. Grain Size Measurements

Sedimentation analysis based upon Stoke's Law provides a convenient method for determining particle size distribution (PSD). A single solid (or nonporous) sphere settling in a fluid has a terminal settling velocity which is uniquely related to its diameter. The SediGraph determines particle size distributions using the sedimentation method. Particle sizes could be determined by measuring the gravity-induced settling velocities of different size particles in a liquid with known properties. The rate at which nonporous particles fall through a liquid is described by Stokes' Law as:

$$D_{st} = \sqrt{\frac{18\mu V}{g(\rho_s - \rho_l)}} \tag{22}$$

where, D_{st} = Stokes' diameter, μ = fluid viscosity, ρ_s = density of the solid, ρ_l = density of the liquid, V = settling velocity, and g = acceleration due to gravity. Full description of the method is available at Micromeritics web site[3]. Figure 14 shows the histogram of the particle diameter and cumulative percent for the sample #1. Considering this graph, mean value for particle diameter is 85.757, median 71.446 and mode is 125.835. Particle dimension analysis for all 30 samples is available in Appendix E. Also, Table 4 contains the summery of particle size analysis for all 30 samples.

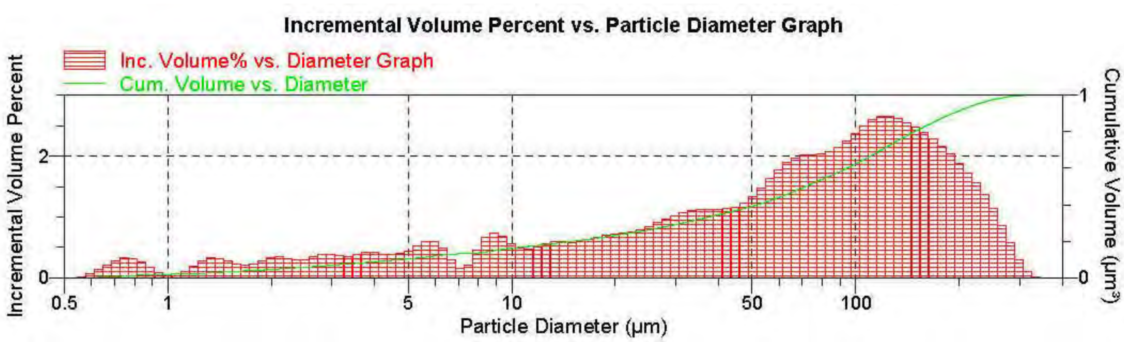

Figure 14. Particle dimension analysis histogram for sample #1. Considering this graph mean value for particle diameter is 85.757, median 71.446 and mode is 125.835. Particle dimension analysis for all 30 samples is available in Appendix E.

[3] source: Micromeritics website (http://www.micromeritics.com/)

Table 4. BET special surface area and median grain size data for all 30 samples

Sample #	BET Surface Area m^2/g	Median Grain size	Sample #	BET Surface Area m^2/g	Median Grain size
1	8.1997	71.446	16	8.5142	38.02
2	9.3872	28	17	5.2811	43.292
3	0.6087	93.794	18	9.7036	75.214
4	18.5175	24.322	19	12.2388	93.375
5	16.2197	59.789	20	5.3783	82.255
6	1.8399	101.595	21	18.2856	53.516
7	0.5047	41.648	22	10.0028	12.316
8	0.1797	46.41	23	8.5302	45.724
9	1.0966	144.292	24	22.0987	69.283
10	16.5203	44.367	25	11.007	62.61
11	16.3173	15.705	26	16.7063	27.859
12	0.8763	41.433	27	17.6279	17.606
13	14.3211	77.62	28	5.8016	47.335
14	0.836	142.815	29	9.383	84.271
15	1.6925	90.471	30	3.3217	79.57

The grains size measurements have been performed on 30 samples by Micromeritics, in Norcross, GA, using a Saturn digisizer 5205. This is a laser light scattering instrument. The samples were analyzed by placing the sample powder directly into the instrument. The samples were dispersed internally using filtered DI water containing 0.005% sodium metaphosphate. This sample and liquid mixture was probed using ultrasonic energy for 60 seconds prior to analysis. The mean, median, and mode are typically statistics for any Gaussian distribution. The 90, 50, 10 percentiles are the diameter where 90 percent of the particle are finer than that size, 50 percent of the particles are finer than that size, and 10 percent of the particle are finer than that size. The median and 50 percentile are by definition the same number.

2.6. SEM Analysis

Before using petrographic microscope scientists thought that in order to fully describe and classify the rocks it is enough to just study the physical structure of them. It is been almost two centuries ago that the advent of the petrographic microscope changed that approach forever. Generally, geologist use petrographic microscopy to examine two dimensional cross section of the rock sample. This technique enables geologists to determine mineralogy by studying the transmitted light through different minerals. Using petrographic microscope, it is possible to study rock fabric, texture, porosity, orientation of the minerals and matrix of the rock sample.

By introducing the SEM micrographs (details and theory could be found in Goldstein et al., 2003) geologists were enabled to take a giant step forward and study beyond the two dimensional analysis. By using SEM technique it is possible to look deep down at pores and texture of the sample and identify the distribution and fabric of the grains and pore spaces. Although this does not mean that the SEM can take over the regular microscopic analysis, information acquired using this method could be a valuable source of complementary information along with the regular petrophysical macroscopic study.

In this study we used SEM micrographs at several magnification ranges for 28 samples. As it was mentioned previously, we used this technique to find possible correlations between descriptive texture of the sample surface and supercritical CO_2 retention column height. In order to describe and analysis the possible effects of textural characteristics numerically, we separated three textural properties, namely, intercrystalline, intergranular, and vuggy texture. It should be noted that it is not possible to describe the micrographs by definite terms. In other words it is difficult to describe the sample texture just by terms vuggy or intergranular, simply because each sample dose not only consists of one type of texture. Instead, we proposed to describe the sample by using respective scores of each texture characteristic, reflecting the intensity of the specific type of fabric seen in samples. Using scores to describe qualitative parameters enables us to analysis those characteristics quantitatively. Figure 15 shows the SEM micrographs for sample #1 with different magnification. SEM micrographs for 28 samples are available in Appendix F. Also, Figure 16 shows the SEM micrographs for the sample #22. This sample shows intergranular fabric with clear vuggy texture. The respective descriptive scores in this sample is 3, 5, 1 out of 5 for granular, vuggy, intercrystalline respectively. Also, Table 5 summarized the description scores in all 28 samples.

One should bear in mind that scores used in describing each sample are completely based on grader observations. Therefore, the assigned descriptive scores are not accurately fixed and could be changed by different examiners. This introduce significant source of uncertainty and it should be considered in interpretation of the results. Nevertheless, since SEM micrographs are qualitative source of information this approach will help us to assess the effects of the rock fabric on sealing capacity in quantitative fashion.

Table5. SEM micrograph descriptions in all 30 samples.

Sample #	Rock Type	Intercrystalline	Intergranular	Vuggy
1	Sandstone	4	2	2
2	Siltstone	1	4	3
3	Limestone	4	2	1
4	Shale	1	5	1
5	Limestone	1	5	1
6	Sandstone	3	3	4
7	Limestone	5	1	3
8	Limestone	NA	NA	NA
9	Limestone	1	3	5
10	Shale	2	5	1
11	Limestone	2	5	1
12	Limestone	3	3	3
13	Shale	1	4	3
14	Limestone	4	1	4
15	Limestone	5	3	3
16	Shale	1	4	2
17	Limestone	2	4	2
18	Shale	2	4	2
19	Shale	2	4	1
20	Shale	2	4	1
21	Limestone	1	3	4
22	Mudstone	1	3	5
23	Shale	1	4	1
24	Limestone	1	4	2
25	Shale	1	3	3
26	Shale	2	4	2
27	Shale	1	3	3
28	Shale	1	3	2
29	Limestone	1	4	3
30	Shale	NA	NA	NA

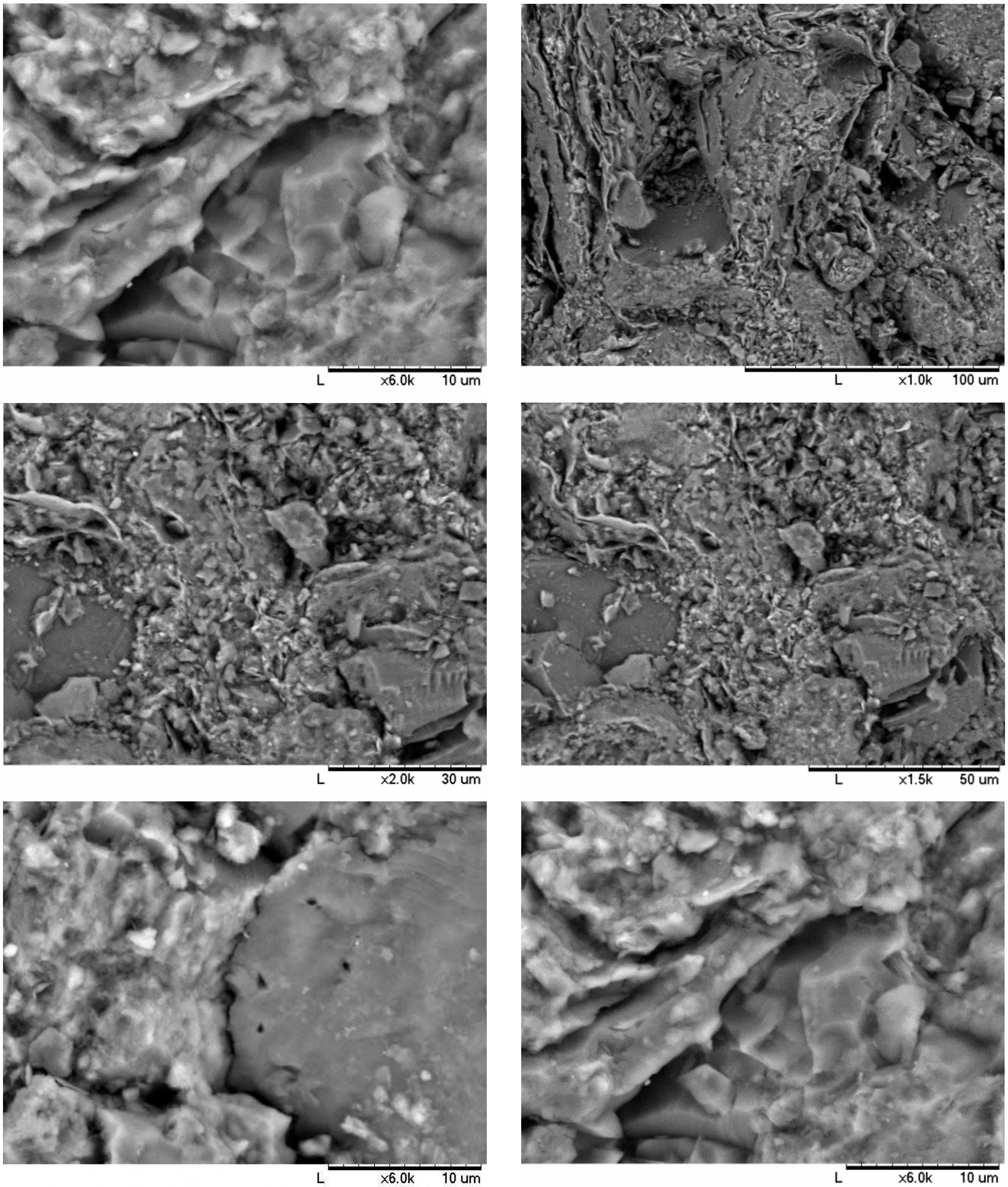

Figure 15. SEM micrographs of sample #1. The texture of this sample is mainly intergranular but some vuggs are visible. We describe the texture this sample as intercrystalline with some vuggs. Descriptive scores of 2 out of 5 for granular, 2 out of 5 to vuggy, and 4 out of 5 to intercrystalline were assigned to this sample.

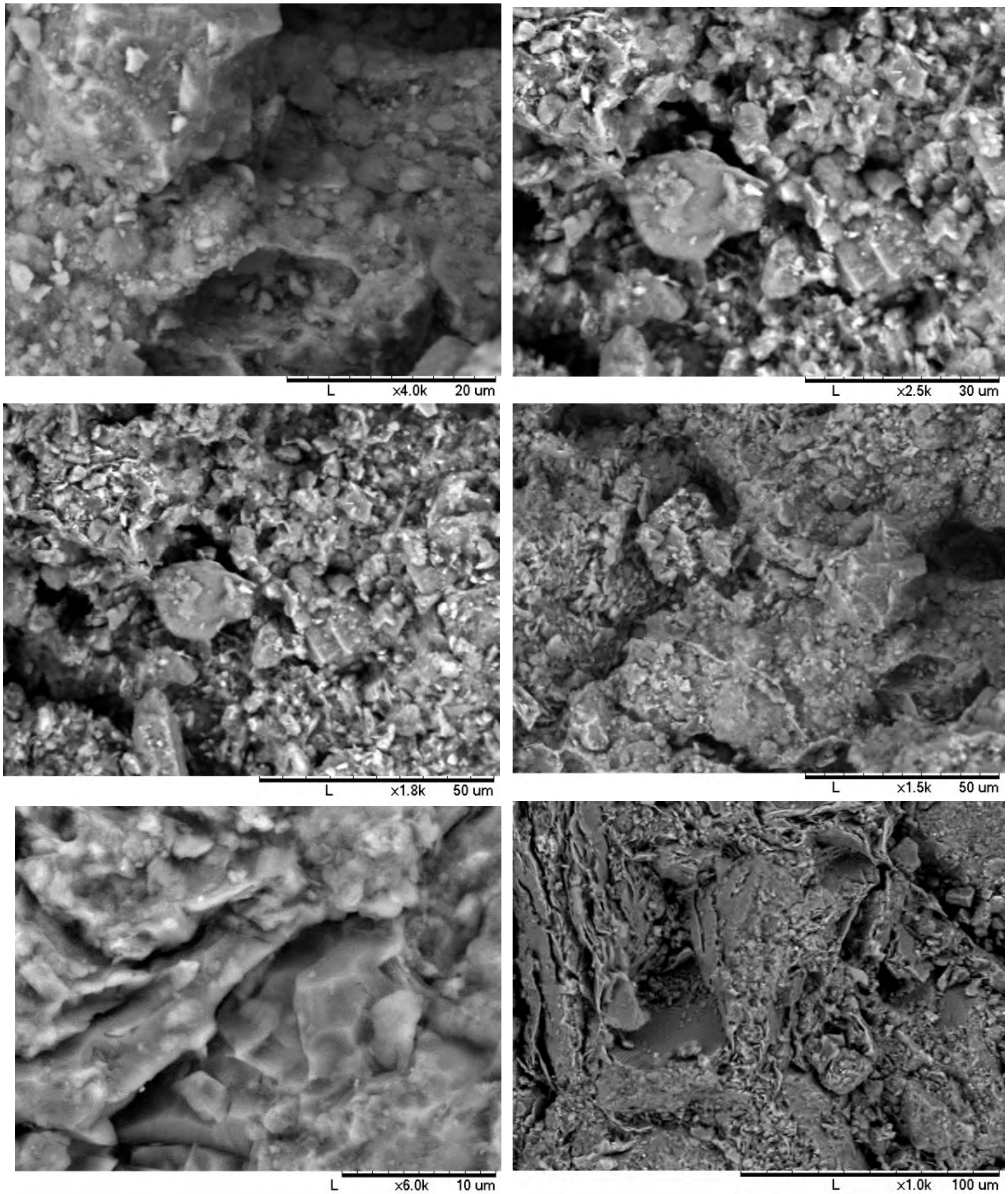

Figure 16. SEM micrographs of the sample #22. The texture of this sample is mainly intergranular with clear vuggs. We describe this sample as vuggy/ intercrystalline. Descriptive scores in this sample were assigned as following 3, 5, 1 out of 5 for granular, vuggy, intercrystalline, respectively.

2.7. EDS Analysis

Sealing capacity of the formation is highly affected by rock type. Parameters like porosity, permeability, and ductility controls directly by lithology. Thus, careful mineral identification in core samples is highly important. One of the common techniques used in determining composition of the rock is Energy Dispersive Spectra (EDS) which were obtained for 11 elements (Al, Si, Ca, Mg, S, K, Fe, Cl, Ti, Br, and Na) in all 30 samples. Theory of the EDS analysis is fully discussed by Goldstein et al. (2003). Figure 17 shows the typical EDS results for the sample #1. EDS graphs for all 30 samples are available in Appendix G.

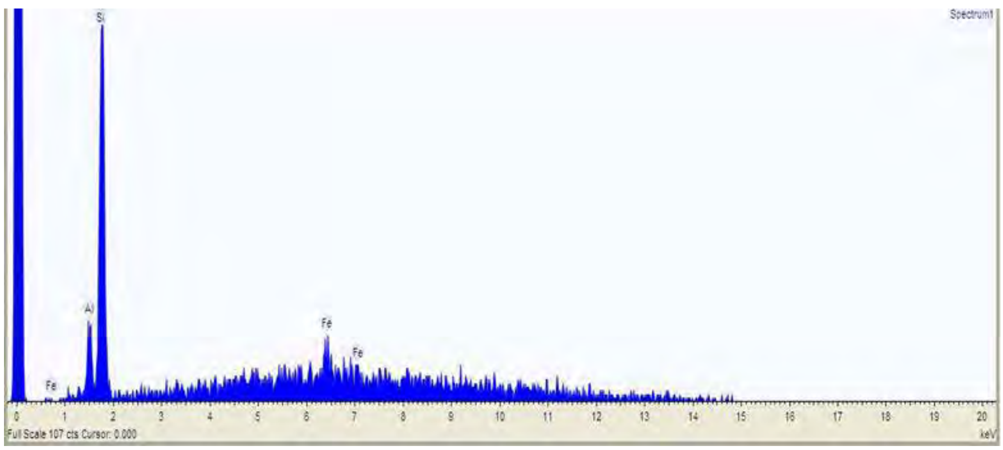

Figure 17. Energy Dispersive Spectra (EDS) for sample #1. In this sample silicon is the most dominant element. After silicon, the most abundant elements are iron and aluminum

3. Results and discussions

3.1. Maximum height of the CO2

As it was mentioned earlier, maximum threshold pressure (P_c) is the most important parameter controlling maximum height of the non-wetting fluid (CO_2 or hydrocarbon) that seal rock can hold without leakage. This parameter determines the maximum height of the supercritical CO_2 (or other fluids) that can be hold by caprock.

The general buoyancy formula for the pressure produced by the vertical column of immiscible fluids as result of their respective densities described as following:

$$P = \Delta \rho g h \tag{23}$$

where ρ is the density (kg/m^3), g is acceleration due to gravity (9.8 m/s^2), and h is the height of the fluid column. In case of $scCO_2$ capture and sequestration we can rewrite equation (23) as following:

$$Pc_{b/CO_2} = (\rho_b - \rho_{CO_2}) gh \tag{24}$$

where Pc_{b/CO_2} is the capillary pressure (Pa) of reservoir water and CO_2 system. ρ_b is the density of reservoir water (kg/m3), ρ_{CO_2} is the density of supercritical carbon dioxide.

In order to calculate the super critical carbon dioxide density at reservoir pressure and temperature, we used the equation introduced by Ouyang (2011). He expressed the relationship between CO_2 density, temperature and pressure as following correlation equation:

$$\rho = A_0 + A_1 p + A_2 p^2 + A_3 p^3 + A_4 p^4 \tag{25}$$

where density (ρ) is in kg/m3, pressure (p) in Psia, and the correlation coefficients A0, A1 – A4 are solely associated with temperature in degrees Celsius:

$$A_i = b_{i0} + b_{i1}T + b_{i2}T^2 + b_{i3}T^3 + b_{i4}T^4 \ (i = 0, 1, 2, 3, 4) \tag{26}$$

The values for the correlation coefficients – b_{io}, b_{i1}, b_{i2}, b_{i3}, and b_{i4} (i = 0, 1, 2, 3, 4) are listed in Table 6 for pressure less than 3000 Psia (20.68 MPa) and in Table 7 for pressure higher than 3000 Psia. Figure 18 is the three dimensional representation of the predicted densities (Equation 25).

Table 6. b_{ij} Coefficients in equation (26) for Pressure < 3000 Psia

	b_{i0}	b_{i1}	b_{i2}	b_{i3}	b_{i4}
i=0	-214832	11681.17	-230.224	1.967429	-0.00618
i=1	475.7146	-26.1925	0.521513	-0.00449	1.42E-05
i=2	-0.37139	0.020725	-0.00042	3.62E-06	-1.2E-08
i=3	0.000123	-6.9E-06	1.41E-07	-1.2E-09	3.95E-12
i=4	-1.5E-08	8.34E-10	-1.7E-11	1.5E-13	-4.8E-16

Table 7. Value of b_{ij} Coefficients in equation (26) for Pressure > 3000 Psia

	b_{i0}	b_{i1}	b_{i2}	b_{i3}	b_{i4}
i=0	689.7383	2.730479	-0.02254	-0.00465	3.44E-05
i=1	0.221369	-0.00655	5.98E-05	2.27E-06	-1.9E-08
i=2	-5.1E-05	2.02E-06	-2.3E-08	-4.1E-10	3.89E-12
i=3	5.52E-09	-2.4E-10	3.12E-12	3.17E-14	-3.6E-16
i=4	-2.2E-13	1.01E-14	-1.4E-16	-9E-19	1.22E-20

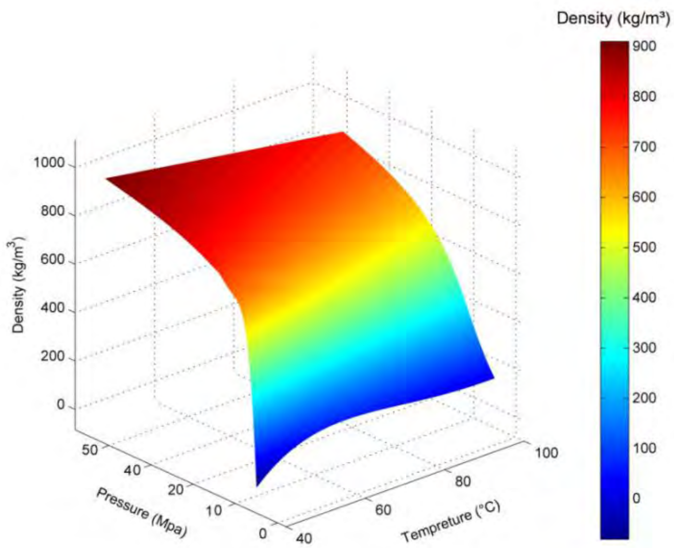

Figure 18. Three dimensional representation of Equation 25 used for determining density of the $scCO_2$ as a function of the temperature and pressure.

In order to calculate density of $scCO_2$ using equation 25 one needs to determine the hydrostatic pressure and temperature at sample depth. Based on salinity data collected in state of Oklahoma (Cranganu et al., 1998), we used 1073 kg/m^3 as the representative density of the formation water. Considering the lack of any reliable information regarding the geothermal gradient at all well locations, we used geothermal gradients measured by Cranganu (Cranganu et al., 1998; Cranganu, 2012) in vicinity of our 30 wells in Oklahoma Panhandle. The positions of the wells with known geothermal gradient are shown on the base map (Figure 5). According to Cranganu et al. (1998) and Cranganu (2012), geothermal gradient at wells Hough 132 and 103 are 29.2 °C/km and 22.7 °C/km, respectively. We used an average value (26 °C/km) as our reference for all 30 wells. Also annual surface temperature as reported by Oklahoma Climatological Survey[4] is approximately 13°C. Figure 19 shows the map of the normal annual temperature (in degrees Fahrenheit) for Oklahoma state using data from 1981 to 2000[4]. According to Figure 19, the three counties of Texas, Cimarron, and Beaver are located in a region with a low annual temperature (relative to the rest of the Oklahoma). Also, geothermal gradient of 26 °C/km is relatively low. Low formation temperature is highly in favor of the CS project since formations with relatively low temperatures could hold injected $scCO_2$ at higher density comparing formations with relatively higher temperature.

Hydrostatic pressure or normal pressure is referred to stress exerted by the weight of the static fluid column. It should be noted that hydrostatic pressure is a function of the height and density of the pore fluid and it is independent of the geometry of the fluid column. Density of the fluid is function of the fluid type, aggregation of the unsolved solids (e.g., salt and other minerals), existence of gases, temperature, and pressure. Simi-

[4] Source: http://climate.ok.gov/index.php/site/page/climate_of_oklahoma

lar to rock matrix, density of the fluids tends to increases with depth. Here depth referred as the vertical distance between the measured point and the reference datum. Hydrostatic pressure could be calculated using following equation:

$$P_{normal} = g\int_{0}^{h} \rho_{fluid}(z)dz \tag{27}$$

where P_{normal} is the hydrostatic pressure in Pascal, ρ_{fluid} is the density of the fluid at depth h in kg/m^3 , g is the gravitational acceleration in m/s^2 and h is the height of the fluid column in m.

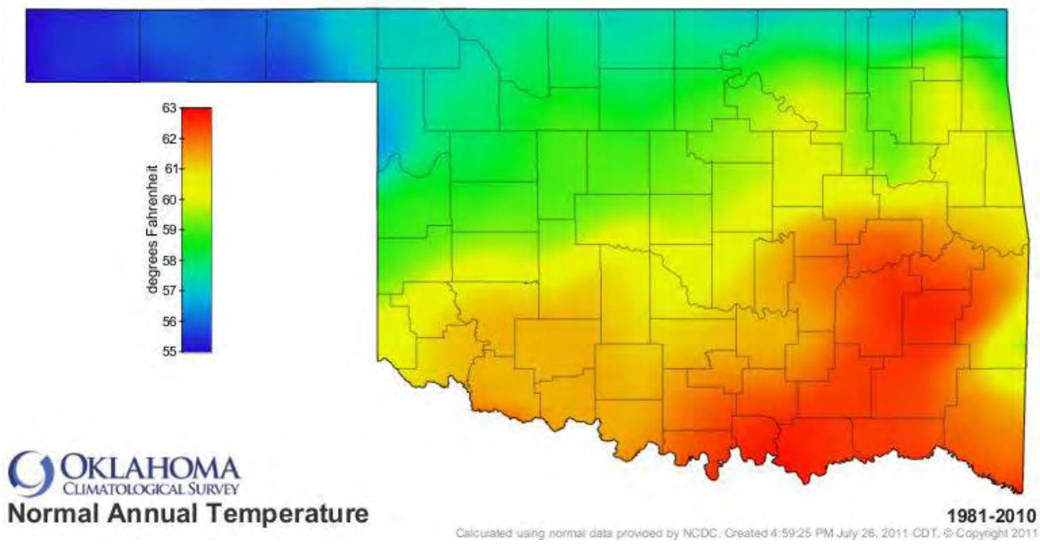

Figure 19. Map of the normal annual temperature (in degrees Fahrenheit) for Oklahoma State using data from 1981 to 2000. From http://climate.ok.gov/index.php/site/page/climate_of_oklahoma

Using calculated values for hydrostatic pressure and temperature at sample depths, we generated supercritical CO_2 densities at reservoir conditions using Equation 25. Calculated densities based on Equations 25 and 26 can be found in Table 8. According to calculated values on Table 8, injected CO_2 at sample location #2 will have gas state with density of 111 kg/m^3. As documented by Benson and Cole (2008), for formations to provide safe injections of the supercritical CO_2 they should have depth more than 800 m. Injection at such deep depth has two main advantages:

- At depths greater than 800 m, hydrostatic pressure is relatively high enough to keep the injected CO_2 in supercritical state. In other words, as the result of the hydrostatic pressure at such deep depths density of the supercritical CO_2 will increase. Considering Equation 24, increasing supercritical CO_2 density is highly in favor of the retention column height by reducing the difference between the supercritical CO_2 density and formation water.

- Increasing density of the supercritical CO_2 helps the injection process by increasing the efficiency of the supercritical CO_2 in filling rock pores. Also, kinematic viscosity of the scCO_2 increases with increasing depth of the injection. Increasing the viscosity will improve the filling property of the CO_2 and facilitate the safety and efficiency of the injection.

Figure 20 shows the schematic density and volume of the CO_2 as the function of depth. Clearly, at depths greater than 800 m, density of the CO_2 will approach its upper limit. Similarly, volume of supercritical CO_2 will reach its lower limit. Consequently, formations at depths over 800 m are considered as the most appropriate target zones for CS project.

General concerns regarding the contamination of the fresh water aquifers were always an important issued. Although the risk of such contaminations are relatively low but, supercritical CO_2 injection in deep formations will ensure the protection of ground water from any possible contamination after injection.

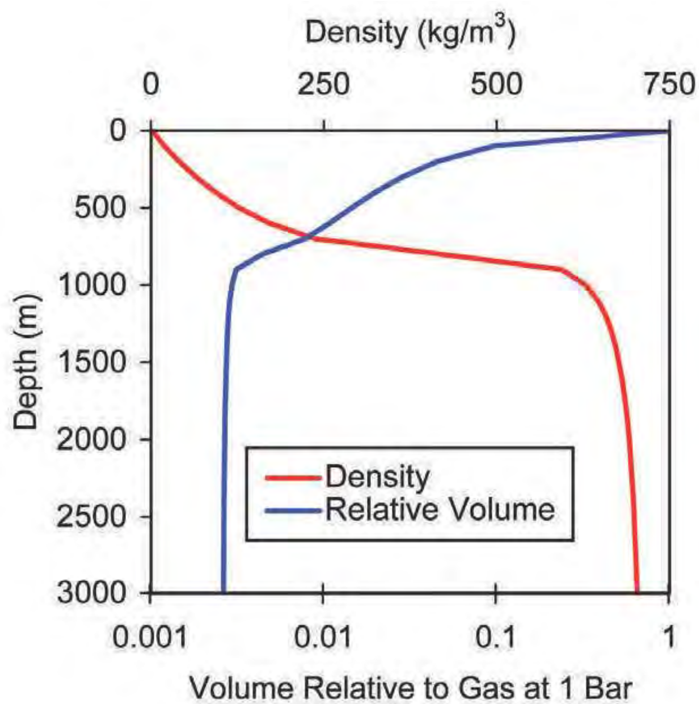

Figure 20. Schematic variation of density and volume of CO_2 as function of depth (from Benson and Cole, 2008)

Table 8. Super critical density and kinematic viscosity at sample depths.

Sample #	Depth (m)	Pressure (MPa) at sample depth	Tempreture (°C) at sample depth	CO_2 State	CO_2 density (kg/m^3)	Kinematic viscosity
1	1354	14.2	48.21	Overcritical Fluid	705.3	0.056
2	470	4.9	25.21	Gas	NA	NA
3	1173	12.3	43.5	Overcritical Fluid	682.49	0.054
4	1382	14.5	48.94	Overcritical Fluid	708.07	0.057
5	1390	14.6	49.15	Overcritical Fluid	708.73	0.057
6	1380	14.5	48.87	Overcritical Fluid	707.82	0.057
7	1072	11.3	40.88	Overcritical Fluid	676.56	0.053
8	1070	11.2	40.82	Overcritical Fluid	676.55	0.053
9	1536	16.1	52.95	Overcritical Fluid	711.57	0.058
10	1726	18.1	57.87	Overcritical Fluid	701.99	0.057
11	1083	11.4	41.15	Overcritical Fluid	676.81	0.053
12	852	9	35.15	Overcritical Fluid	625.88	0.047
13	2014	21.2	65.37	Overcritical Fluid	711.4	0.059
14	1995	21	64.86	Overcritical Fluid	711.55	0.059
15	1792	18.8	59.59	Overcritical Fluid	701.08	0.058
16	1911	20.1	62.63	Overcritical Fluid	706.56	0.058
17	1406	14.8	49.55	Overcritical Fluid	709.8	0.057
18	1396	14.7	49.29	Overcritical Fluid	709.13	0.057
19	1397	14.7	49.33	Overcritical Fluid	709.18	0.057
20	2040	21.4	66.04	Overcritical Fluid	711.31	0.059
21	1215	12.8	44.6	Overcritical Fluid	687.38	0.054
22	2067	21.7	66.75	Overcritical Fluid	711.19	0.059
23	1971	20.7	64.26	Overcritical Fluid	711.66	0.058
24	1828	19.2	60.54	Overcritical Fluid	701.85	0.058
25	1666	17.5	56.31	Overcritical Fluid	704.76	0.057
26	1386	14.6	49.04	Overcritical Fluid	708.38	0.057
27	1367	14.4	48.53	Overcritical Fluid	706.61	0.057
28	1381	14.5	48.9	Overcritical Fluid	707.89	0.057
29	1828	19.2	60.54	Overcritical Fluid	701.85	0.058
30	1783	18.7	59.37	Overcritical Fluid	701.05	0.058

3.2. Statistical analysis and interpretations

The ultimate goal of this project is to answer the following questions:

-Is there a relatively reliable seal rock in Oklahoma Panhandle which is tight enough to be considered for a potential carbon dioxide sequestration site?

-Which one of the characteristics of the caprock is more likely controlling the sealing capacity of the caprock, textural or compositional and how these two sets of property relate to each other?

In order to answer the first question we analyzed the calculated CO_2 retention column heights derived from MIP measurements. Table 9 summarizes the properties and final calculated CO_2 retention column height for all 30 samples.

Considering retention column heights, depths, and formations which the samples were taken, we conclude that the Morrowan and Cherokee shales have relatively higher sealing capacity than the other formations with respect to sequestration of $scCO_2$. Also, these formations are deep enough to satisfy the 800 m rule of thumb suggested earlier.

In order to find reliable answer to latter question we used correlation analysis and multivariate statistics trying to find possible correlations between different parameters (including textural and compositional) and possible relationship with maximum $scCO_2$ retention column. For the sake of consistency we used following terms to interpret the Pearson's correlation coefficient throughout this section.

If r = ±.70 or higher: Very strong positive relationship

±.40 to ±.69: Strong relationship (positive or negative)

±.30 to ±.39: Moderate relationship (positive or negative)

±.20 to ±.29: weak relationship (positive or negative)

±.01 to ±.19: No or negligible relationship (positive or negative)

Also, by normal distribution assumption, "normal" data will all fall within around 2 standard deviations from the mean (sometimes referred to as the 95% confidence interval). In this study we used this criterion to eliminate the outliers in the following statistical analysis. Accordingly, data points with less than a 5% chance of being a true data point (or is 95% likely to be an outlier) considered outlier and subsequently eliminated from the calculations.

3.3. Sealing capacity in Oklahoma Panhandle

Using only calculated $scCO_2$ retention column heights in different formations, we found that the variability of retention column height for a particular formations could be within one order of magnitude. For example, in Morrowan formation, there was a sample with $scCO_2$ retention column height as low as 43m, while in another sample from the same formation we recorded a height of 1,308m. Similar variability in sealing capacity was observed by Sutton et al. (2004) in Denver basin, Colorado. It should be noted that the derived values for the retention column heights are in acceptable range found in literature, although one might say that the relatively large values (e.g., over 200m) does not represent the actual height of sequestered $scCO_2$. Considering fine pore space in shales and some limestones, it is possible that these rocks have high sealing potential regardless of possible existence of fractures and joints which could reduce sealing potential significantly.

Based on this observation, we conclude that the number and the depths of the samples in a particular formation are highly important for an accurate reporting of the maximum CO_2 retention column height. We suggest that in order to study formation sealing capacity accurately, samples should collect from different members of the same formation. Even slight change in sample location could change the final retention column height significantly.

Based on the calculated retention column heights in different formations we conclude that both Cherokee and Morrowan formations are promising seal rocks both in terms of average depth in the three counties of Oklahoma Panhandle and average $scCO_2$ maximum retention column height. As it was mentioned earlier, formations with depth deeper than 800 m are considered a proper site for CS. Hydrostatic pressure at this depth will reduce the volume while maximizing the density and kinematic viscosity of the supercritical CO_2 which allows the proper filling of the pore spaces.

Considering Figure 4 and calculated $scCO_2$ retention column heights (average heights over formation), it is possible to conclude that early Pennsylvanian caprocks have the highest quality in terms of sealing capacity.

Scatter plot of the sample depths vs. CO_2 column height is presented in Figure 21. According to it, samples at depths around 1,400 m exhibit relatively high CO_2 retention column heights. Interpretation of this figure confirms our previous hypothesis regarding the suitability of the Cherokee and Morrow shales as potential caprocks in a sequestration site.

Table 9. MIP results along with the supercritical carbon dioxide column height for all 30 samples

ID#	Formation	Depth(m)	Pressure (Mpa) at sample depth	Temp at sample depth (°C)	Super critical CO_2 denity (kg/m^3)	Water density (kg/m^3)	Seal treshold pressure(Pc) (air-Hg) (Pa) contact angle (°0)	Seal treshold pressure(Pc) (brine-CO_2) (Pa) contact angle (°0)	Height of CO_2 (m) contact angle (°0)
1	Morrowan	1354	14.25	48.21	705.3	1073	2.7	0.03	44.11
2	Cimarron	470	4.94	25.21	NA	1073	1.3	1.3	NA
3	Marmaton	1173	12.35	43.5	682.49	1073	1.6	0.04	24.61
4	Purdy	1382	14.55	48.94	708.07	1073	26	0.01	428.01
5	Cherokee	1390	14.64	49.15	708.73	1073	45	12	742.13
6	Morrowan	1380	14.52	48.87	707.82	1073	0.76	0.76	12.5
7	Topeka	1072	11.29	40.88	676.56	1073	0.37	0.24	5.61
8	Topeka	1070	11.26	40.82	676.55	1073	0.02	0.03	0.36
9	Morrowan	1536	16.17	52.95	711.57	1073	5.8	0.91	96.4
10	Morrowan	1726	18.17	57.87	701.99	1073	8.8	0	142.49
11	Topeka	1083	11.4	41.15	676.81	1073	80	0.01	1213.05
12	Chase	852	8.97	35.15	625.88	1073	0.17	0.17	2.28
13	Chester	2014	21.2	65.37	711.4	1073	3.2	0.01	53.16
14	Keyes	1995	21	64.86	711.55	1073	0.03	0.03	0.45
15	Marmaton	1792	18.86	59.59	701.08	1073	6.8	6.8	109.84
16	Cherokee	1909	20.09	62.63	706.56	1073	12	0.01	196.73
17	Keyes	1406	14.8	49.55	709.8	1073	16	0.01	264.64
18	Morrowan	1396	14.69	49.29	709.13	1073	NA	NA	NA
19	Unknown	1397	14.71	49.33	709.18	1073	70	0.03	1155.86
20	Keyes	2040	21.47	66.04	711.31	1073	47	0.35	780.63
21	Cherokee	1215	12.79	44.6	687.38	1073	49	0.01	763.35
22	Chester	2067	21.76	66.75	711.19	1073	0.34	0.01	5.65
23	Atoka	1971	20.75	64.26	711.66	1073	20	0.02	332.51
24	Morrowan	1828	19.25	60.54	701.85	1073	62	0.01	1003.52
25	Mississippian	1666	17.54	56.31	704.76	1073	70	0.01	1141.97
26	Morrowan	1367	14.38	48.53	706.61	1073	44	0.07	721.43
27	Morrowan	1386	14.59	49.04	708.38	1073	66	0.01	1087.41
28	Morrowan	1381	14.53	48.9	707.89	1073	66	0.01	1085.95
29	Morrowan	1828	19.25	60.54	701.85	1073	11	0.01	178.04
30	Cherokee	1783	18.77	59.37	701.05	1073	5	6.1	80.76

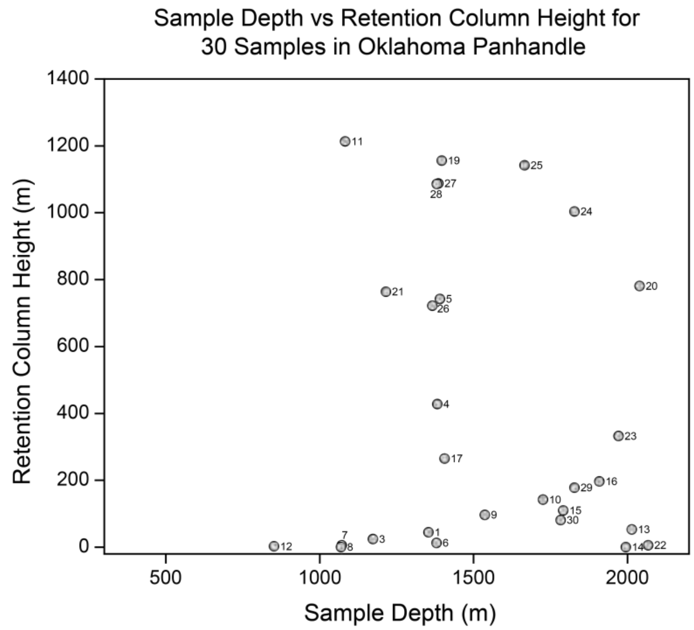

Figure 21. Scatter plot of the sample depth vs. CO_2 column height. Clustering of the samples with relatively high retention column height around 1,400 m depth suggests that the formations found around that depth are likely to have high sealing potential.

3.4. Textural and compositional parameters vs. $scCO_2$ retention column height

As discussed earlier, various parameters are affecting the caprock sealing capacity. These parameters could be classified into two main categories: textural and compositional. Textural parameters are the ones describing the fabric and texture of the rock. In this project we measured several textural properties of the samples: grain size, various pore structure parameters, and BET superficial surface area. On the other hand, compositional parameters are the ones describing the complex lithology of rocks. Among various compositional parameters, we focused on the key ones, namely mineral contents and total organic carbon as two major compositional parameters which might control the sealing capacity of the caprock.

Rock type is known as a major parameter determining the sealing capacity of the caprock. Figure 22 shows the box-and-whisker plot of the CO_2 retention column heights for different lithologies. As it is evident from this figure, shales have relatively higher threshold pressures in comparison to limestones and sandstones. This evidence confirms the general founding that shale formations act as seal rocks in many hydrocarbon reservoirs.

Figure 23 illustrates the effect of the average median pore radius on maximum scCO2 retention column height. As implied by Figure 23 and Table 10, there is a very strong negative correlation between the average median pore radius and sealing capacity in both shale and limestone samples. Generally, reducing average median pore radius results in increase in $scCO_2$ retention column height.

Figure 22. Box-and-whisker plot of the CO_2 retention column heights for different lithologies. Shales exhibit better sealing quality (higher CO_2 retention height) compared to limestone and sandstone samples

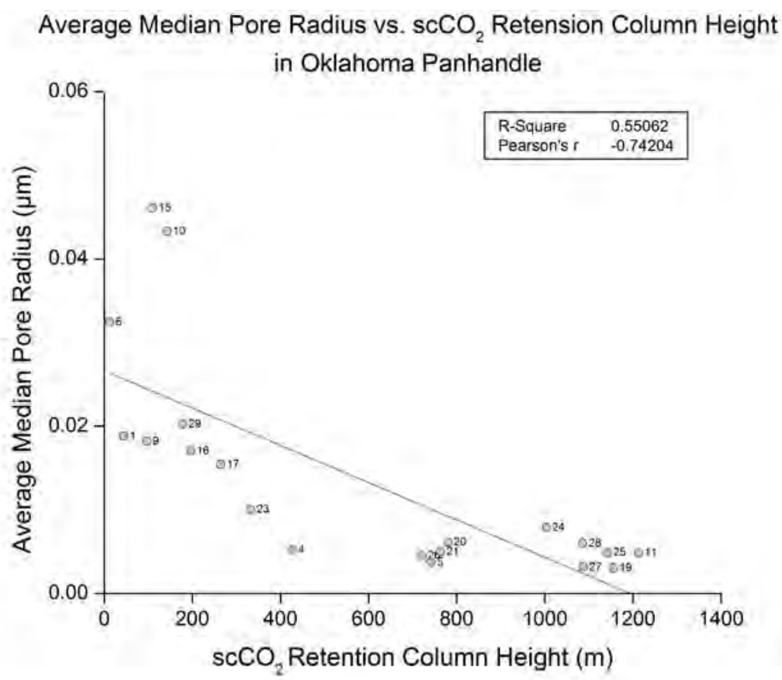

Figure 23. Average median pore radius and versus CO_2 column height in shales and limestone samples. It could be noticed that there is a very strong negative correlation between average median pore radius and CO_2 height.

As defined earlier, hard minerals have hardness > 5 on Mohs scale (quartz, orthoclase, plagioclase, hematite, pyrite), while soft minerals have hardness <5 (mica, illite, chlorite, calcite, dolomite, ankerite). We observed that there is a strong positive correlation between the grain type (hard/soft ratio) and maximum CO_2 retention column height in limestone samples (Pearson's correlation coefficient ~ 0.5). However, in shale samples we observed a positive correlation, but in this case the correlation was not statically significant. Calculating correlation coefficient of hard/soft minerals content and $scCO_2$ retention column in all 30 samples (excluding samples with unavailable data), we observed that strong positive correlation coefficient suggesting that increase in hard minerals content of the sample will increase the sealing capacity of the rock.

As it was explained in chapter 2.1, we expressed the quality of pore throat sorting by scores from 1 to 5 (scores are natural numbers). Here, 1 represents very poor sorting while 5 represents very good sorting. Any scores between 1-5 represent medium sorting of the pores. Pore sorting scores derived from MIP measurements did not show statistically significant correlation with CO_2 column height.

Considering all 30 samples, effective porosity and $scCO_2$ retention column height show moderate negative correlation. The correlation coefficient is more significant in limestones, while there is no significant correlation in shale samples. This observation suggests that porosity in shales does not control the sealing capacity while porosity is important factor affecting the sealing capacity in sandstone and limestone samples.

BET surface area shows significantly strong correlation with CO_2 retention column (r=0.93) in limestones (Figure 24). Conversely, BET surface area did not show any correlation in shales samples. We hypothesize that increasing BET surface area is direct effect of the pore sizes reduction while number of the pores on the limestone surface is increasing. Accordingly, reducing pore throat size will increase the sealing capacity of the limestones. The situation for the shales is different because shales already have high sealing capacity (due to other factors), and an increase in surface area will not lead to notable improvement of the sealing capacity. We also plot the retention column height vs. BET special surface area using all the samples (Figure 24). Statistically strong correlation coefficient implies that generally a positive correlation exists between these two properties. We hypothesize that increasing BET surface area is the result of decreasing median grain size. Accordingly reducing grain size will reduce the pore throat radius which leads to increase in sealing capacity. Decreasing median grain size will lead to increase in BET special surface area. Decreasing median grain size in limestones samples shows negative correlation with pore throat sorting. Overall, BET surface area in limestones is an effective parameter correlating with sealing quality and $scCO_2$ retention column height.

In general, limestones have lower sealing capacity in compare with shales. As shown in Figure 25, standard deviation in limestone samples is much higher comparing with shale samples. Accordingly, we conclude that special surface area in limestones is more disperse from average than shales. This disparity and its high correlation with sealing capacity suggest that textural parameters in limestones have significant impact on sealing capacity.

CO_2 retention column heights in limestone samples are also associated with SEM micrographs observations. Correlation analysis using SEM micrograph in limestones revealed that samples with intergranular porosity have higher sealing capacity while intercrystalline fabric is not in favor of sealing quality.

Table 10. Pearson's correlation coefficients between various parameters. In this table, underlined correlation coefficients have statistical significance of 95%.

	Shale Samples	Limestone Samples	All Samples
CO2 Column Height vs. Pore Throat Radius SD	0.22	0.48	0.43
CO_2 Column Height vs. Hard/Soft	0.41	0.51	0.46
CO_2 Column Height vs. Average M.P.R	-0.69	-0.72	-0.64
CO_2 Column Height vs. Porosity	-0.21	-0.73	-0.4
CO_2 Column Height vs. Bulk Density	0.34	0.45	0.36
CO_2 Column Height vs. BET	0.03	0.93	0.6
Displacement Pressure vs. Hard/ Soft	0.03	0.67	0.3

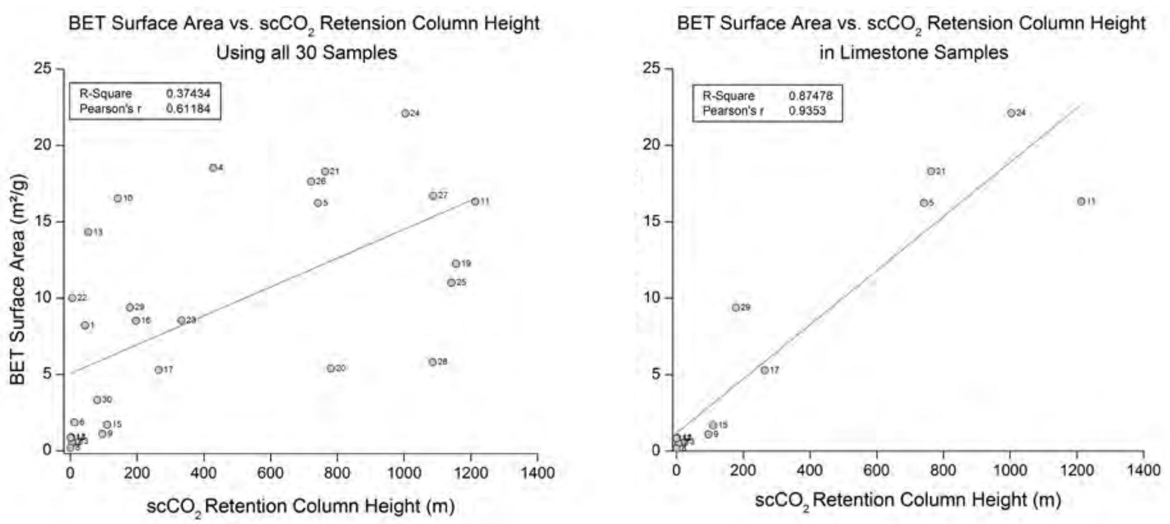

Figure 24. Scatter plot of the CO_2 column height versus BET surface area in limestone (right) and all 30 samples including limestones (left). Limestone samples show very strong linear correlation with BET special surface area while shale samples do not exhibit notable correlation.

Figure 25. Histogram of BET surface area in shale (right) and limestone samples (left). Standard deviation in shales is much less than standard deviation in limestones.

Pore radius standard deviation is another parameter derived directly from MIP measurements. Correlation analysis show strong positive relationship between pore radius standard deviation and maximum $scCO_2$ retention column height using all 30 samples (Figure 26).

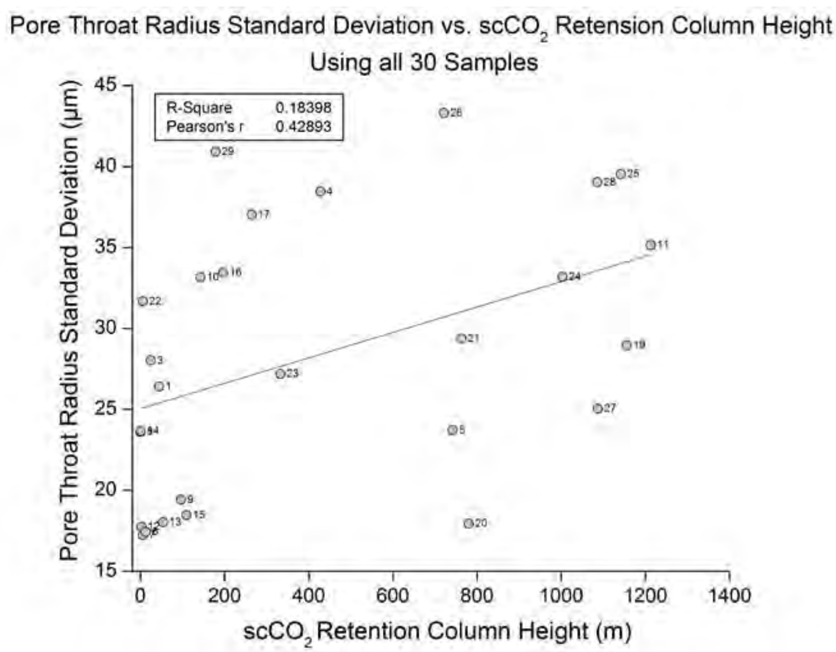

Figure 26. Scatter plot of the pore throat standard deviation vs. $scCO_2$ retention column height. Correlation suggests strong positive relationship between pore radius standard deviation and maximum $scCO_2$ retention column height for all 30 samples.

3.5. Textural and compositional parameters vs. displacement pressure

Displacement pressure is the force required to displace water from the cylindrical pore and forcing the oil (or any nonwetting phase) filament through the pore. This resistant force to migration is analogous to injection pressure as defined by Berg (1975). Also, Schowalter (1979, p. 733) stated that "*the displacement pressure for any hydrocarbon-water-rock system then could be of importance in subsurface petroleum exploration, as the magnitude of this value would determine the sealing capacity for a caprock seal, the trapping capacity for a lateral facies change or fault, or the minimum vertical hydrocarbon column needed to explain an oil show in a given rock*".

We analyzed the effects of different textural and compositional parameters on the measured displacement pressure of the samples. We conclude that there is no noticeable correlation (r= -.033) between displacement pressure at 10% mercury saturation (P_d) and maximum threshold pressure (P_c) (Figure 27). Accordingly, we believe that these two parameters act independently. In other words, one cannot draw any conclusion regarding the maximum retention column height based on the observed displacement pressure.

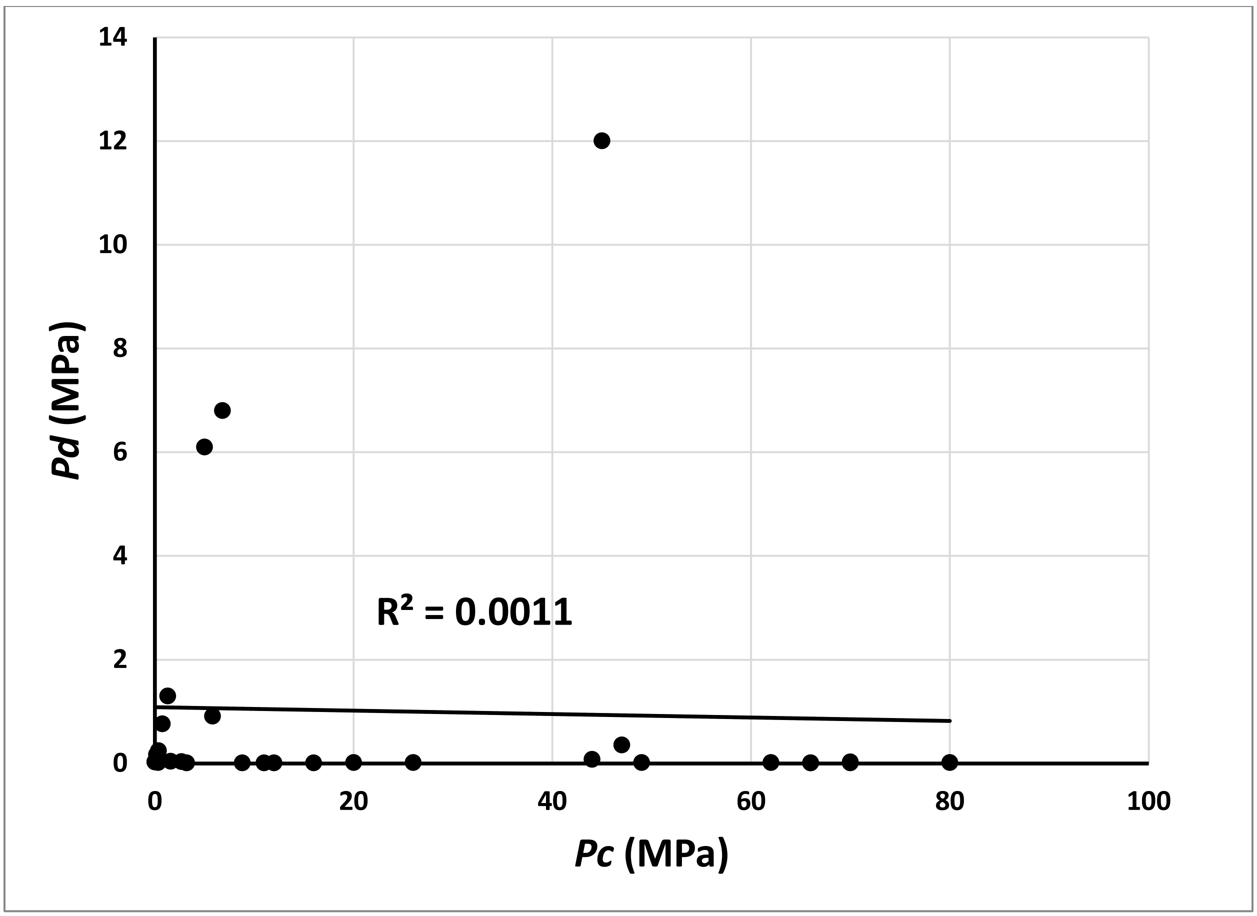

Figure 27. ***Pc*** **vs.** ***Pd*** **scatterplot. The correlation coefficient is** ***r*** **= -.033**

Grain type (hard/soft ratio) shows strong positive correlation (r=0.67) with displacement pressure in limestone samples, while shale samples exhibit relatively low correlation (r= 0.03) with P_d (Table. 10). The observed correlation could be explained by considering the fact that shales generally have relatively fixed composition, while grain type and composition could change the 10% displacement pressure more noticeably in limestone samples.

3.6. Multivariable analysis

By analyzing various textural and compositional parameters we tried to find factors with notable correlation (negative or positive) with the maximum retention column height. Principal Component Analysis (PCA) is an alternative approach to analyze datasets with more than one variable. PCA is a robust mathematical tool which can be used to visualize large dataset in one image. Visualizing the dataset as a single image will help us to identify and interpret the patterns within variables in whole new way.

In simple scatter plot (2D or 3D) data points that are close together are relatively more similar to each other. In PCA biplot also, data points close to each other are more alike. Also, by projecting original variable into new coordinate system created by selected principal component (here we used principal component one and two) we can evaluate the importance and correlation between different variables. As a rule of thumb, if the variables positioned close to origin of the new coordinate system, we can conclude that those variables are not influencing the model. In other words, those variables do not have significant projection on selected principal components. In contrast if variables positioned next to each other and far from the origin we can conclude that those variables have relatively notable correlation with each other and they contain almost the same information. Also, two variables projected on the opposite sides of the origin indicate that those variables have more or less negative correlation with each other. If particular sample was close to a variable this could be interpreted as the samples has high value of the particular variable. In contrast, if the sample was positioned on the other side of the origin in respect to the variable, one can infer that the sample has low value of that specific variable. Considering latter property, PCA is a robust tool in clustering the samples based on measured variables. Also, it is possible to find outliers in large datasets. Since with traditional biplot it is only possible to look at maximum 3 variables at the same time (we cannot visualize more than 3 dimensions) this property makes PCA a robust tool in finding and eliminating outliers in datasets with numerous variables.

Scree plot and biplot of the samples and measured properties are showed in Figure 28. Based on that figure and Table 11, it is possible to project our dataset using first 2 principal components as new coordinate system by losing only 32% of the original data. In other words, by doing this coordinate projection we reduced the initial 5 dimension into 2 dimensions with minimum data lost possible (32%).

Figure 28 shows biplot of the selected textural and compositional parameters in all 30 samples. According to Table 12 we can reduce the dimensions of the initial dataset to two using two principal components. By selecting the first two components it is possible to project the dataset in new coordinate system by minimizing the data lost and retrieving 67% of initial information which is a relatively an acceptable percentage considering the number of observations and variables. Also, based on Table 10, $scCO_2$ retention column height, bulk density, BET special surface area, and pore throat radius standard deviation have positive contribution, while average median pore radius and porosity have negative coefficients on first principal component. Hard/soft mineral content, average median pore radius and bulk density have negative coefficients on principal component two while $scCO_2$ retention column height and hard/soft index have positive coefficients on second principal component. It should be noted that we excluded the outliers in data before using them in generating Figure 28 and Tables 11 and 12. Figure 28 (left side) show the scores and loading plot using the first and the second principal component. On this plot $scCO_2$ retention column height and BET surface area and hard/ soft index exhibit relatively strong positive correlation, while porosity and average pore radius show relatively strong negative correlation with bulk density, $scCO_2$ retention column height, and BET special surface area. Based on this figure it could be observed that hard/soft mineral index has negative correlation with average median pore radius.

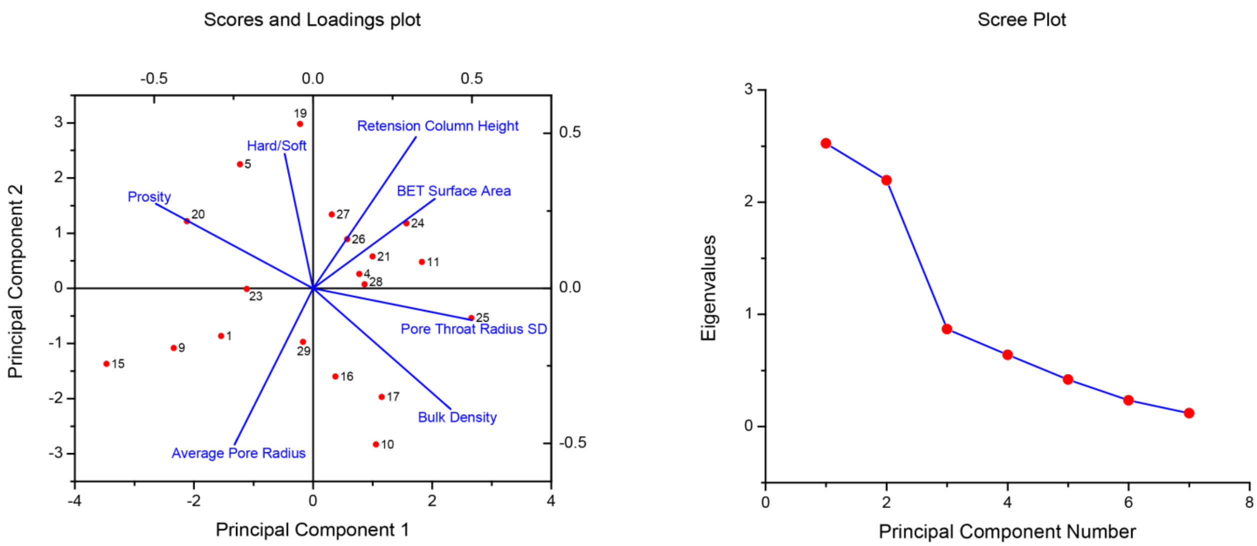

Figure 28. PCA Analysis. Biplot (left) and scree plot (right) of the data set after excluding outliers. Details about the interpretation of this analyses are given in text.

Table 11. Eigenvalues of the Correlation Matrix

	Eigenvalue	Percentage of Variance	Cumulative
1	2.52471	0.3607	0.3607
2	2.19488	0.3136	0.6742
3	0.8694	0.1242	0.7984
4	0.63899	0.0913	0.8897
5	0.41997	0.06	0.9497
6	0.2332	0.0333	0.983
7	0.11884	0.017	1

Table 12. Extracted Eigenvectors

	Coefficients of PC1	Coefficients of PC2	Coefficients of PC3	Coefficients of PC4	Coefficients of PC5
Pore Throat Radius SD	0.4985	-0.10239	-0.32043	0.16933	0.73139
Average PORE radius	-0.24676	-0.50374	0.3488	0.38636	-0.04444
Prosity	-0.49415	0.27316	-0.38361	0.04375	-0.00435
Bulk Density	0.43256	-0.38905	0.2637	-0.28413	-0.25357
Retension height	0.32371	0.48818	0.09861	-0.38196	-0.21859
BET	0.38293	0.28866	-0.06294	0.7592	-0.41759
Hard/Soft	-0.08889	0.43376	0.73843	0.13089	0.42025

3.7. Indirect relationships and their possible effects on sealing capacity

In previous section we tried to identify the major parameters which have direct effect on maximum retention column height. Here, we tried to identify the secondary parameters that could be effective indirectly by controlling the median grain size and average mean pore radius. As discussed earlier in this chapter and chapter 2.1, average mean pore radius is the most important parameters controlling $scCO_2$ retention column height and displacement pressure at 10% mercury saturation. Based on our observations, median grain size has negative correlations with BET special surface area, and vuggy porosity. Also, we observed that the BET special surface area presents very strong negative correlation with average mean pore radius in shales and limestone samples (Figure 28).

We also found that average mean pore radius has strong positive correlation with intercrystalline porosity and negative correlation with intergranular texture in shale samples. Base on this observation, we conclude that shales with intercrystalline texture have high average mean pore radius which lead to poor sealing capacity.

Median grain size shows strong negative correlation with BET special surface area in shales and vuggy fabric in limestones. According to our analysis, median grain size shows a good positive correlation with vuggy texture in limestones. It could be concluded that increasing grain size in limestones will increase the detectable vugs (on SEM micrographs) in the texture of the limestone samples. Also, BET surface area shows strong negative correlation with median grain size in shale samples.

4. Conclusion

The main objective of this research was twofold: evaluating the sealing capacity of the caprocks in terms of maximum hydrocarbon column height that caprockscan hold without leakage and investigating the effects of textural and compositional parameters on sealing capacity of the caprock.

Based on MIP measurements of the core samples acquired from depleted gas fields in Oklahoma Panhandle we conclude that Morrowan and Cherokee shales could be considered as reliable seal candidates for CS project with average maximum $scCO_2$ retention column height of 400 m. This retention column height provides enough safety margins for successful sequestration project. It is suggested that, in order to study the formation sealing capacity, samples should be collected from different members of the formation. Even slight change in sample location could change the final retention column height by an order of magnitude.

Generally, rock type is the most important parameter affecting sealing capacity of the rocks. By performing correlation and principal component analysis we conclude that the ratio of hard minerals (Moh's hardness more than 4) over soft minerals (Moh's hardness less than 4) is an important parameter exhibiting strong positive correlation with sealing capacity in both shale and limestone samples. On the other hand, average mean pore radius and porosity show strong negative correlation with sealing capacity in both shale and limestone samples. Clearly, pore radius and porosity are correlated with each other. We observed that bulk density show positive correlation with sealing capacity and this correlation is more pronounced in shale samples. We also conclude that BET surface area presents very strong positive correlation with sealing capacity in limestone samples, while shale samples do not show notable correlation.

Type of the porosity (based on SEM) is more important in limestones than shales. Intergranular fabric shows positive correlation with sealing capacity, while intercrystalline fabric is not in favor of retention column height.

5. Suggested Future Research

Parameters affecting sealing capacity could be divided into two categories: parameters operating on microscopic scale, namely textural and compositional parameters which we tried to address in this research, and parameters acting on microscopic and/or prospect scale, namely faults, joints, and fracture systems.

Identification, modeling and characterization of the seal rock fractures are the key component determining the sealing potential of the caprock to ensure the proper sequestration of the supercritical carbon dioxide. Proper mapping and modeling of the seal rock fractures are important in both initial site selection and long term status of the sequestered $scCO_2$. Spatial distributions of the fractures in seal rock are highly affecting the flow of the reservoir fluids including injected $scCO_2$. Characterization of the naturally fractured reservoirs plays an important role in modeling and simulation of the reservoir's fluids flow thus, a complete study on the sealing should include the natural occurring fractures in the reservoir and seal formation.

GRAPHICAL MATERIALS LIST

Figure 14. Particle dimension analysis histogram for sample #1. Considering this graph mean value for particle diameter is 85.757, median 71.446 and mode is 125.835. Particle dimension analysis for all 30 samples is available in Appendix E.

Figure 15. SEM micrographs of sample #1. The texture of this sample is mainly intergranular but some vuggs are visible. We describe the texture this sample as intercrystalline with some vuggs. Descriptive scores of 2 out of 5 for granular, 2 out of 5 to vuggy, and 4 out of 5 to intercrystalline were assigned to this sample.

Figure 16. SEM micrographs of the sample #22. The texture of this sample is mainly intergranular with clear vuggs. We describe this sample as vuggy/ intercrystalline. Descriptive scores in this sample were assigned as following 3, 5, 1 out of 5 for granular, vuggy, intercrystalline, respectively.

Figure 17. Energy Dispersive Spectra (EDS) for sample #1. In this sample silicon is the most dominant element. After silicon, the most abundant elements are iron and aluminum

Figure 18. Three dimensional representation of equation 25. Equation 25 is the empirical formula for determining density of the scCO_2 as a function of the temperature and pressure.

Figure 19. Map of the normal annual temperature (in degrees Fahrenheit) for Oklahoma State using data from 1981 to 2000. From http://climate.ok.gov/index.php/site/page/climate_of_oklahoma

Figure 20. Schematic variation of density and volume of CO_2 as function of depth (from Benson and Cole, 2008)

Figure 21. Scatter plot of the sample depth vs. CO_2 column height. Clustering of the samples with relatively high retention column height around 1,400 m depth suggests that the formations found around that depth are likely to have high sealing potential

Figure 22. Box-and-whisker plot of the CO_2 retention column heights for different lithologies. Shales exhibit better sealing quality (higher CO_2 retention height) compared to limestone and sandstone samples

Figure 23. Average median pore radius and versus CO_2 column height in shales and limestone samples. It could be noticed that there is a very strong negative correlation between average median pore radius and CO_2 height.

Figure 24. Scatter plot of the CO_2 column height versus BET surface area in limestone (right) and all 30 samples including limestones (left). Limestone samples show very strong linear correlation with BET special surface area while shale samples do not exhibit notable correlation.

Figure 25. Histogram of BET surface area in shale (right) and limestone samples (left). Standard deviation in shales is much less than standard deviation in limestones.

Figure 26. Scatter plot of the pore throat standard deviation vs. scCO_2 retention column height. Correlation suggests strong positive relationship between pore radius standard deviation and maximum scCO_2 retention column height for all 30 samples.

Figure 27. *Pc* vs. *Pd* scatterplot. The correlation coefficient is r = -.033

Figure 28. PCA Analysis. Biplot (left) and scree plot (right) of the data set after excluding outliers. Details about the interpretation of this analyses are given in text.

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APPENDICES

APPENDIX A: MERCURY INTRUSION POROSIMETRY (MIP) MEASUREMENTS, SAMPLE PICTURES, AND SAMPLE SUMMARIES

Sample#1 – 120

120
FERGUSON-1
Gray Medium Grained Sandstone

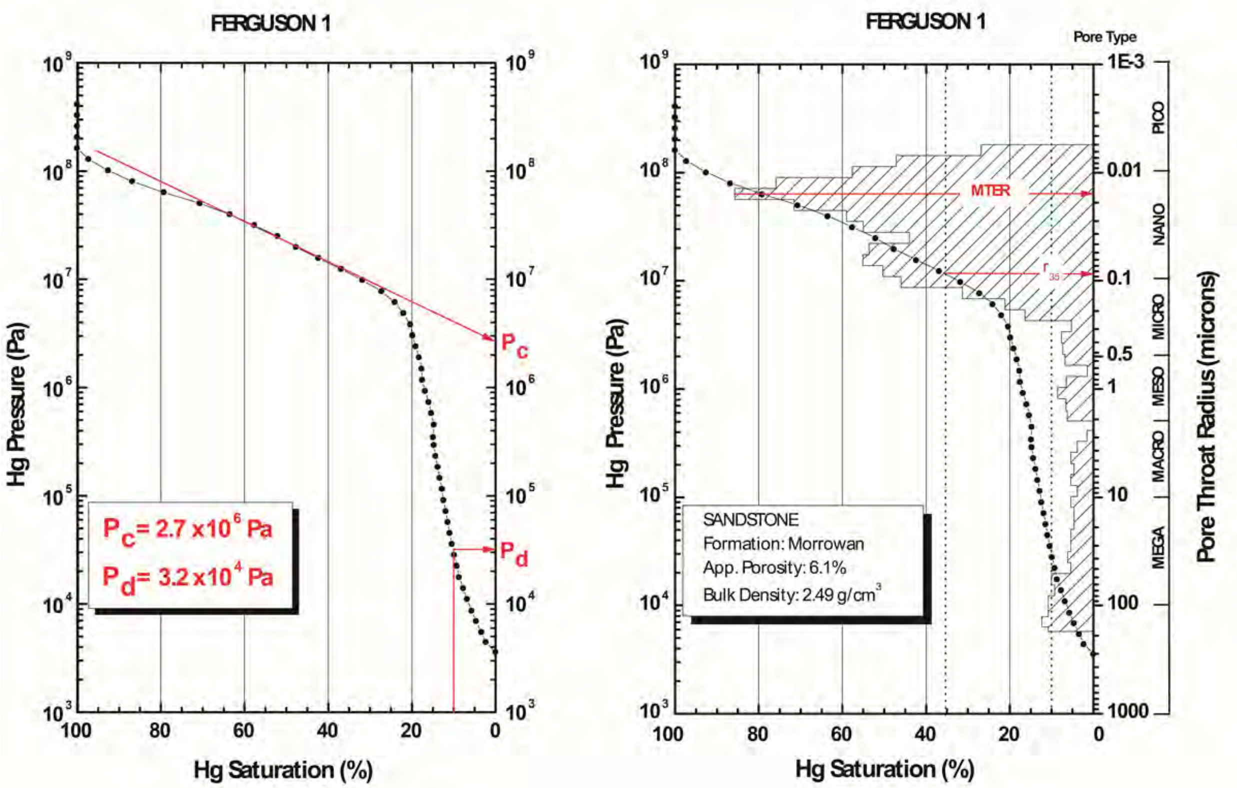
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
120	Texas	Morrowan	1354	36.84	-101.95

Intrusion Data Summary		
Median Pore Radius (Volume)	0.028	µm
Median Pore Radius (Area)	0.00985	µm
Average Pore Radius	0.018825	µm
Bulk Density	2.49	g/cm³
Apparent (skeletal) Density	2.65	g/cm³
Porosity	6.1	%

Organic Content		
TOC	1.29	wt% HC

Pore Structure Summary		
Pc	2.70	MPa
Pd (@ 10% Hg saturation)	0.03	MPa
BET Surface Area	8.1997	m²/g
Median Grain Size	71.446	µm
R35	0.085	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.015	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
7.50	43.6	33.7	9.30	0.4	3.1	0	7.50	43.6	33.7	9.30


FERGUSON 1
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
Pc= 2.7 x10^6 Pa
Pd= 3.2 x10^4 Pa
FERGUSON 1
Pore Type
MTER
r35
PICO
NANO
MICRO
MESO
MACRO
MEGA
Pore Throat Radius (microns)
SANDSTONE
Formation: Morrowan
App. Porosity: 6.1%
Bulk Density: 2.49 g/cm^3

Sample#2 – 277

277
MOCANE PLANT SWD1
Red Fine Grained Siltstone

File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
277	Beaver	Cimarron	470	36.6	-100.6

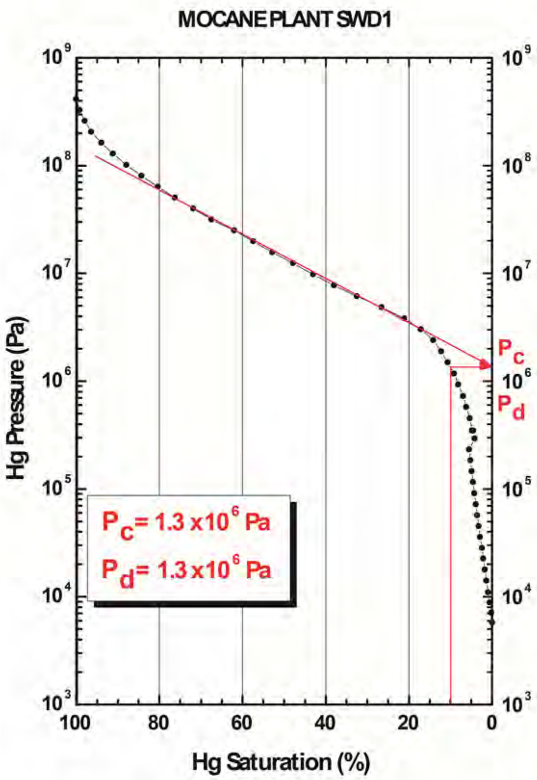
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0456	µm
Median Pore Radius (Area)	0.0054	µm
Average Pore Radius	0.0255	µm
Bulk Density	2.2	g/cm³
Apparent (skeletal) Density	2.5	g/cm³
Porosity	13.6	%

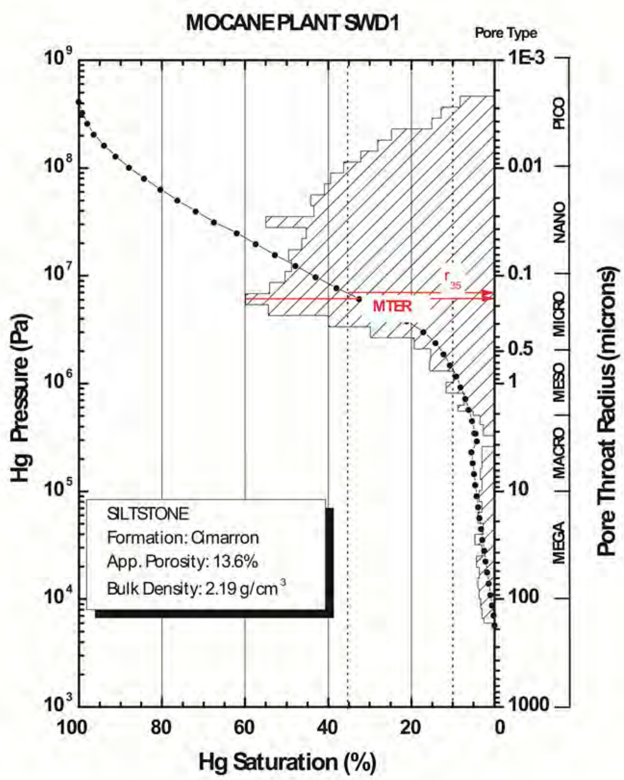
Organic Content		
TOC	1.21	wt% HC

Pore Structure Summary		
Pc	1.30	MPa
Pd (@ 10% Hg saturation)	1.30	MPa
BET Surface Area	9.3872	m²/g
Median Grain Size	27.866	µm
R35	0.14	µm
Pore Throat Type	Micro	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.16	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
60.5	7	12.8	4.3	1.7	3	0	0	0	7.6	0

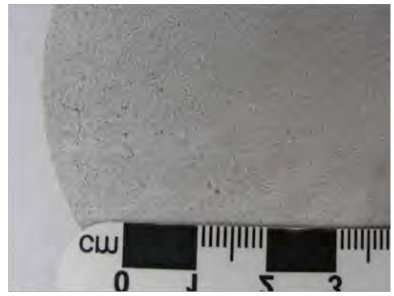
1


MOCANE PLANT SWD1
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
P_c= 1.3 x10^6 Pa
P_d= 1.3 x10^6 Pa


MOCANE PLANT SWD1
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
r_{35}
MTER
SILTSTONE
Formation: Cimarron
App. Porosity: 13.6%
Bulk Density: 2.19 g/cm^3

Sample#3 – 601

601
SHRAUNER 2
Gray Medium Grained Limestone



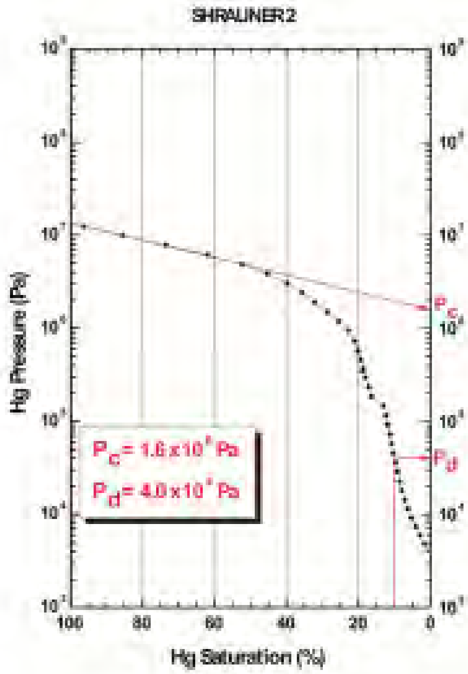
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
601	Texas	Marmaton	1173	36.6	-100.5

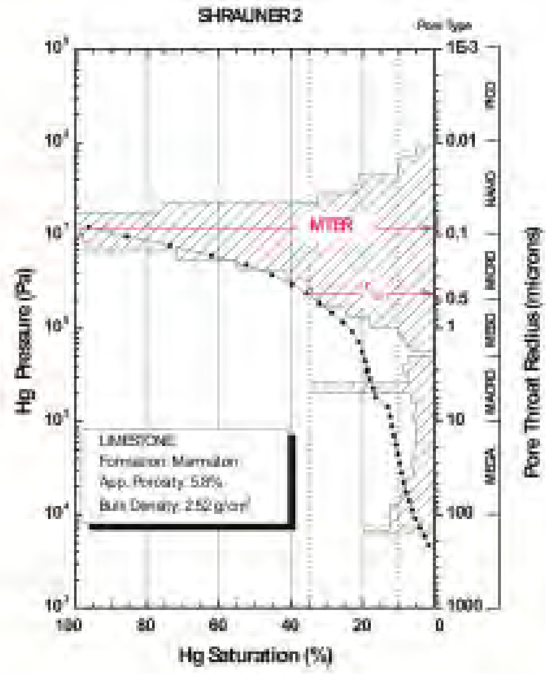
Intrusion Data Summary		
Median Pore Radius (Volume)	NA	µm
Median Pore Radius (Area)	NA	µm
Average Pore Radius	NA	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	5.8	%

Organic Content		
TOC	1.23	wt% HC

Pore Structure Summary		
Pc	1.6	MPa
Pd (@ 10% Hg saturation)	0.04	MPa
BET Surface Area	0.6087	m²/g
Median Grain Size	93.794	µm
R35	0.42	µm
Pore Throat Type	Micro	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.084	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
0.8	0	0.6	1	0.3	0.6	96.7	0	0	0	0


SHRAUNER 2
Hg Pressure (Pa)
Hg Saturation (%)
$P_c = 1.6 \times 10^6$ Pa
$P_d = 4.0 \times 10^4$ Pa


SHRAUNER 2
Pore Type
MTER
LIMESTONE
Formation: Marmaton
App. Porosity: 5.8%
Bulk Density: 2.52 g/cm3
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)

Sample#4 – 868

868
QUIGLEY 1 A
Black Fine Grained Fissile Shale

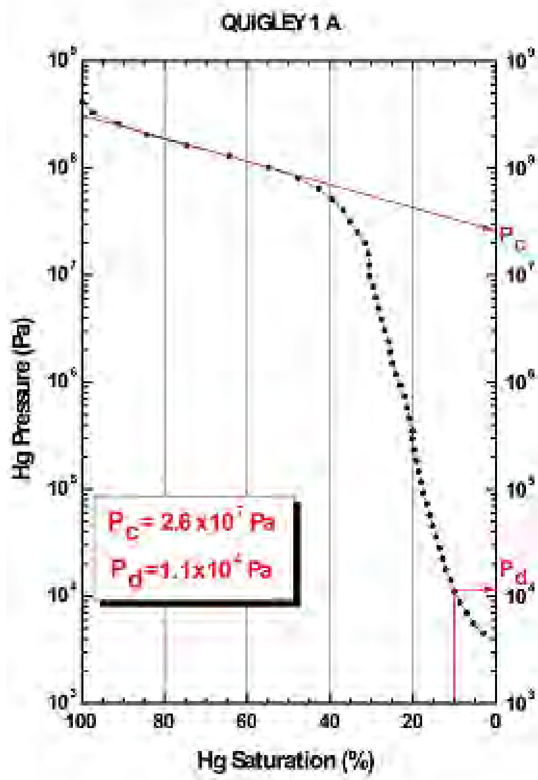
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
868	Texas	Purdy	1382	36.9	-101.9

Intrusion Data Summary		
Median Pore Radius (Volume)	0.0072	µm
Median Pore Radius (Area)	0.0034	µm
Average Pore Radius	0.0053	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	4.9	%

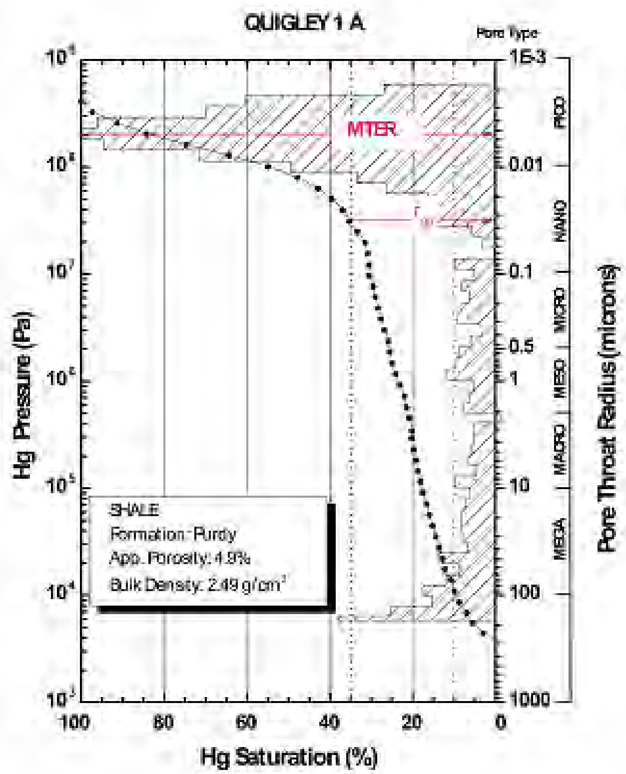
Organic Content		
TOC	1.85	wt% HC

Pore Structure Summary		
Pc	26.00	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	18.5175	m²/g
Median Grain Size	24.322	µm
R35	0.032	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.005	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
21.5	19.8	10.1	5.6	1	1.9	0	0	0	0	0



QUIGLEY 1 A
Hg Pressure (Pa)
Hg Saturation (%)
P_c = 2.6 x 10^7 Pa
P_d = 1.1 x 10^4 Pa



QUIGLEY 1 A
Pore Type
MTER
SHALE
Formation: Purdy
App. Porosity: 4.9%
Bulk Density: 2.49 g/cm³
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
PICO
NANO
MICRO
MESO
MACRO
MEGA

Sample#5 – 878

878
HARTLY 1
Black Fine Grained Limestone

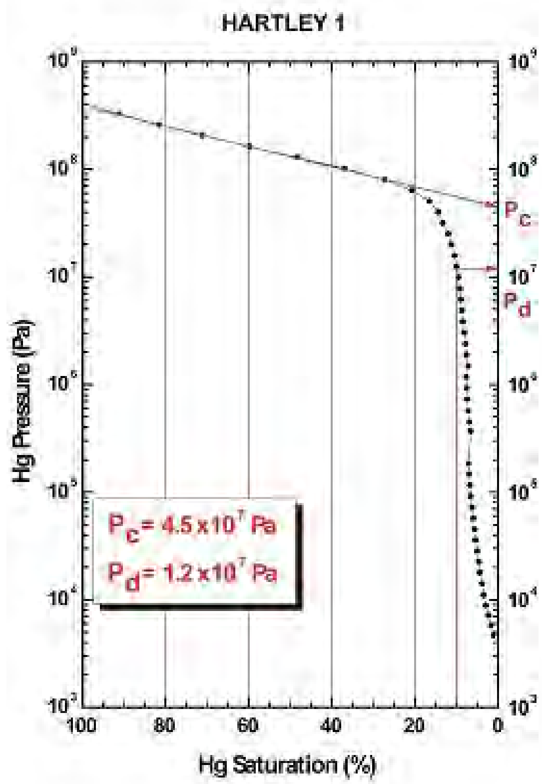
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
878	Texas	Cherokee	1390	36.7	-102.0

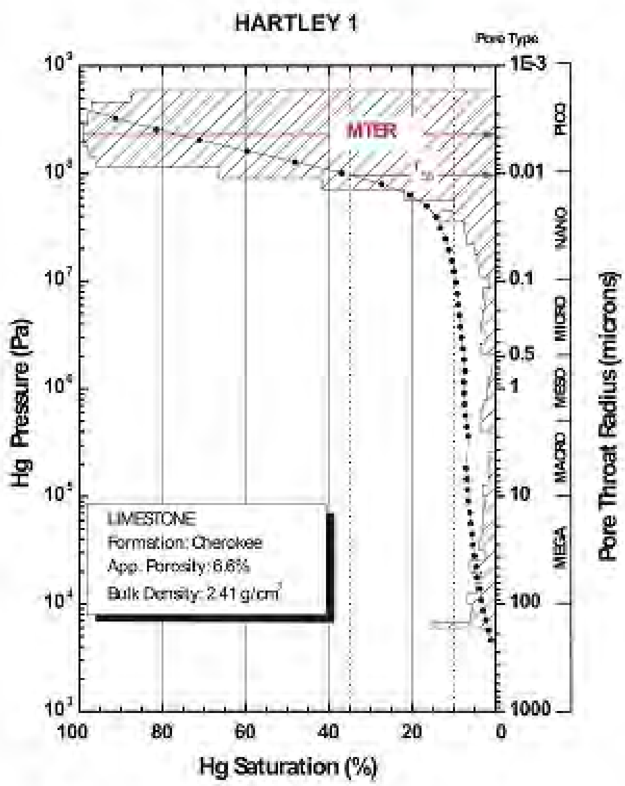
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0047	µm
Median Pore Radius (Area)	0.0028	µm
Average Pore Radius	0.0038	µm
Bulk Density	2.4	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	6.6	%

Organic Content		
TOC	2.10	wt% HC

Pore Structure Summary		
Pc	45.00	MPa
Pd (@ 10% Hg saturation)	12.00	MPa
BET Surface Area	18.2197	m²/g
Median Grain Size	59.789	µm
R35	0.01	µm
Pore Throat Type	Pico	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.0045	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
10.1	10.2	18.1	37.4	1.9	4.5	7.5	0	0	0	2.2


HARTLEY 1
Hg Pressure (Pa)
Hg Saturation (%)
P_c
P_d
P_c= 4.5 x10^7 Pa
P_d= 1.2 x10^7 Pa


HARTLEY 1
Pore Type
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
MTER
PICO
NANO
MICRO
MESO
MACRO
MEGA
LIMESTONE
Formation: Cherokee
App. Porosity: 6.6%
Bulk Density: 2.41 g/cm^3

Sample#6 – 900

900

CONOVER 5

Light Brown Fine Grained Quartz Sandstone

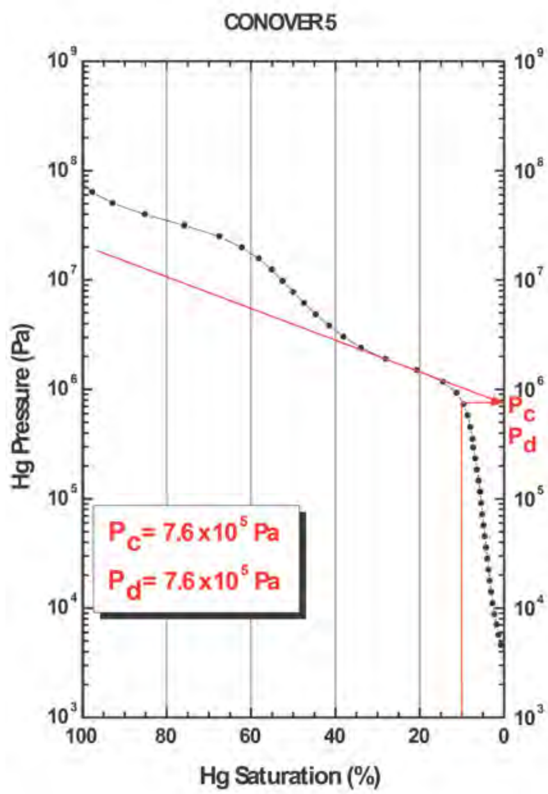
[illegible]	County	Formation	Depth (m)	[illegible]	[illegible]
900	Cimarron	Morrowan	1380	36.9	102.2

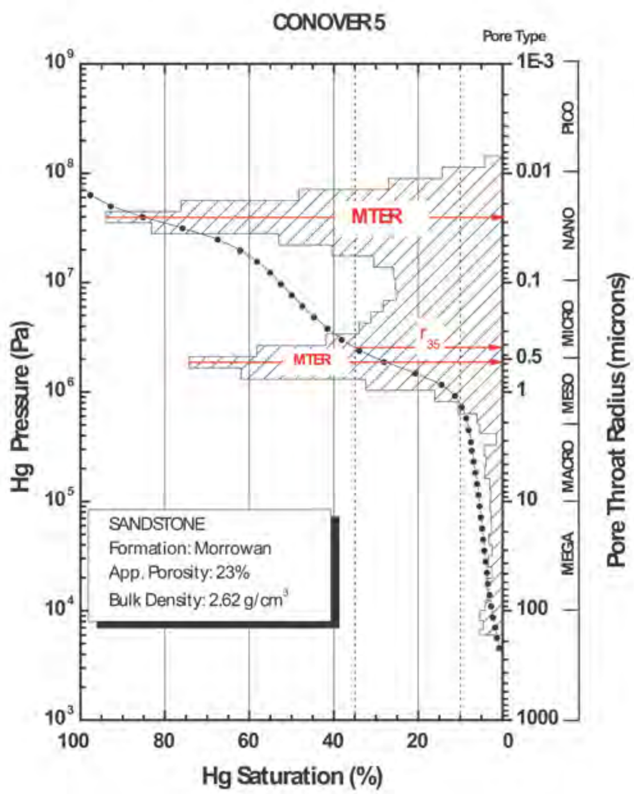
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0047	µm
Median Pore Radius (Area)	0.0028	µm
Average Pore Radius	0.0038	µm
Bulk Density	2.6195	g/cm³
Apparent (skeletal) Density	NA	g/cm³
Porosity	25	%
TOC	1.74	wt% HC

Pore Structure Summary		
Pc	0.76	MPa
Pd (@ 10% Hg saturation)	0.76	MPa
BET Surface Area	1.8399	m²/g
Median Grain Size	101.595	µm
RSS	0.396	µm
Pore Throat Type	Micro	
Pore Throat Distribution	Bimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.025/0.53	µm
TOC	1.74	wt% HC

XRD Analysis (wt%)

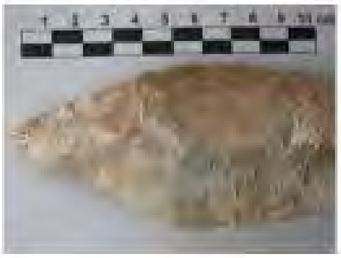
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
5.2	49.1	25.5	11.4	0	10.7	0	0	0	0	0


CONOVER 5
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
Pc= 7.6 x 10^5 Pa
Pd= 7.6 x 10^5 Pa


CONOVER 5
Pore Type
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
MTER
r35
SANDSTONE
Formation: Morrowan
App. Porosity: 23%
Bulk Density: 2.62 g/cm³

Sample#7 – 1081

1081
STEELE A 3
Pink Fine Grained Limestone



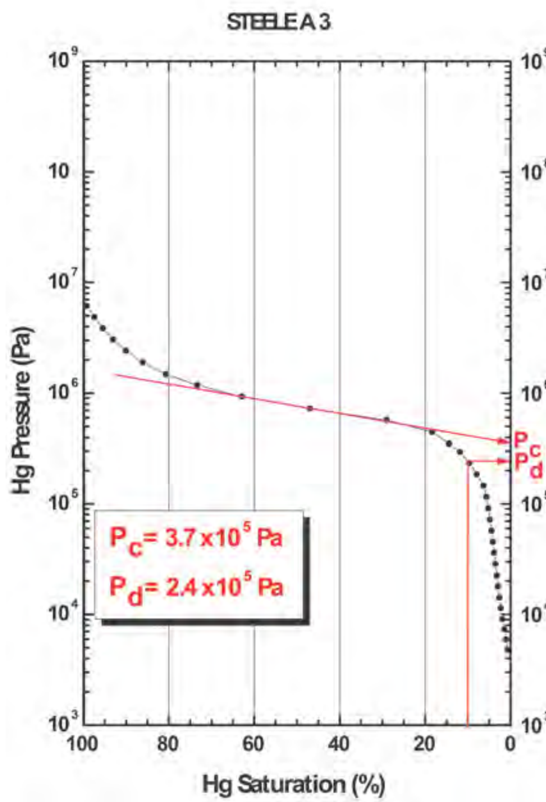
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
1081	Cimarron	Topeka	3072	36.6	-102.0

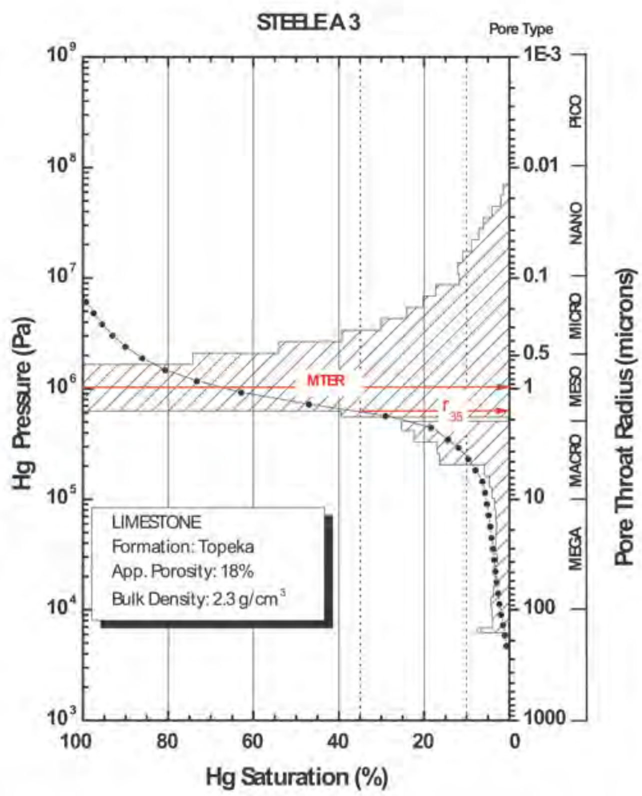
Intrusion Data Summary		
Median Pore Radius (Volume)	NA	um
Median Pore Radius (Area)	NA	um
Average Pore Radius	NA	um
Bulk Density	2.3	g/cm^3
Apparent (skeletal) Density	2.8	g/cm^3
Porosity	NA	%

Organic Content		
TOC	1.76	wt% HC

Pore Structure Summary		
Pc	0.57	MPa
Pd (@ 10% Hg saturation)	0.24	MPa
BET Surface Area	0.5047	m^2/g
Median Grain Size	41.648	μm
R35	1.6	μm
Pore Throat Type	Meso	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Well Sorted	
MTER	0.97	μm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
8.5	0	4.6	11.6	0.5	1.2	7.5	64.9	0	0	0


STEELE A 3
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
P_c= 3.7 x 10^5 Pa
P_d= 2.4 x 10^5 Pa


STEELE A 3
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
r_{35}
LIMESTONE
Formation: Topeka
App. Porosity: 18%
Bulk Density: 2.3 g/cm^3
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)

Sample#8 – 1461

1461
SPENCE 2
White Fine Grained Limestone

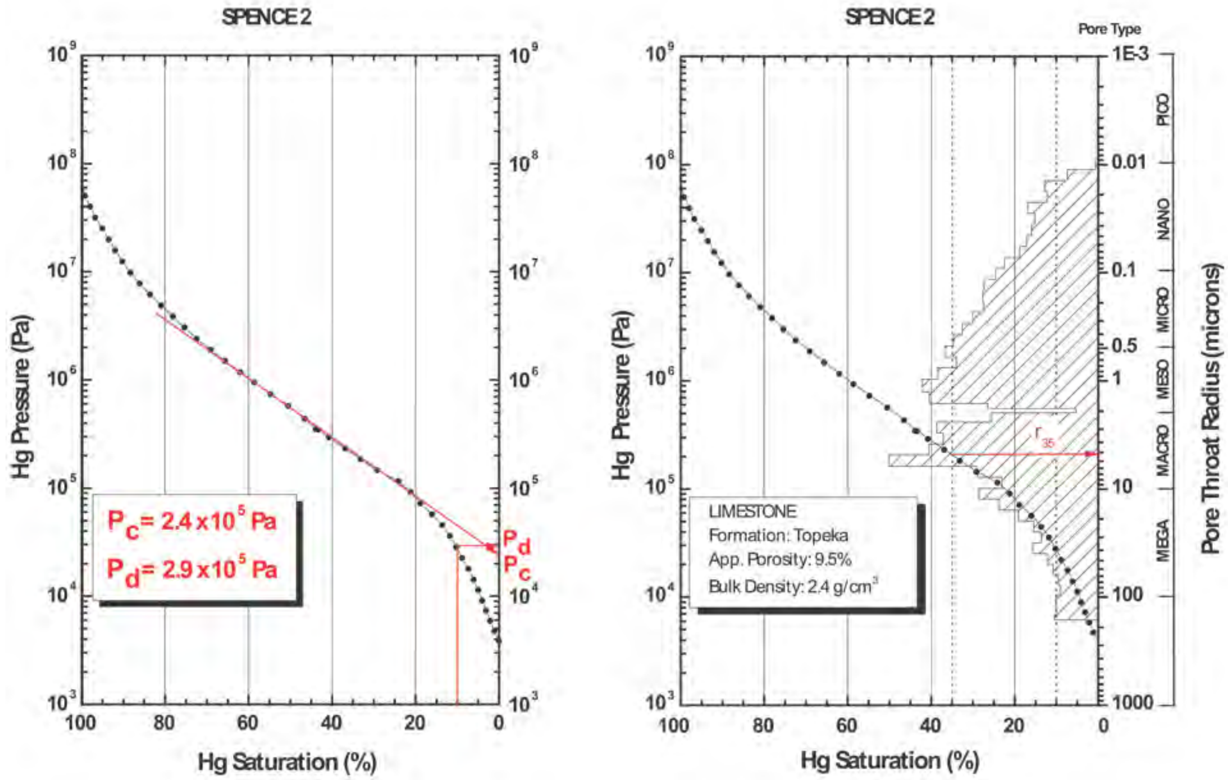

File #	County	Formation	Depth (ft)	Lat (N°)	Long (W°)
1461	Cimarron	Topeka	1070	36.5	-102.0

[illegible] Data Summary		
Median Pore Radius (Volume)	NA	µm
Median Pore Radius (Area)	NA	µm
Average Pore Radius	NA	µm
Bulk Density	2.4	g/cm³
Apparent (Skeletal) Density	2.7	g/cm³
Porosity	9.5	%

Organic Content		
TOC	1.38	wt% rc

Pore Structure Summary		
Pc	0.03	MPa
Pd (@ 10% Hg saturation)	0.05	MPa
BET Surface Area	0.1797	m²/g
Median Grain Size	46.41	µm
R35	4.75	µm
Pore Throat Type	Meso	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Poorly Sorted	
MTER	1.9	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
0.6	0.4	0	1.4	0	0	96.4	1.2	0	0	0


SPENCE 2
Hg Pressure (Pa)
Hg Saturation (%)
Pc= 2.4 x10^5 Pa
Pd= 2.9 x10^5 Pa
Pd
Pc
SPENCE 2
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
Pore Throat Radius (microns)
r35
LIMESTONE
Formation: Topeka
App. Porosity: 9.5%
Bulk Density: 2.4 g/cm3

Sample#9 – 1712

1712

TREECE 1

Brown Coarse Grain Limestone with Visible Feldspar and Quartz Grains

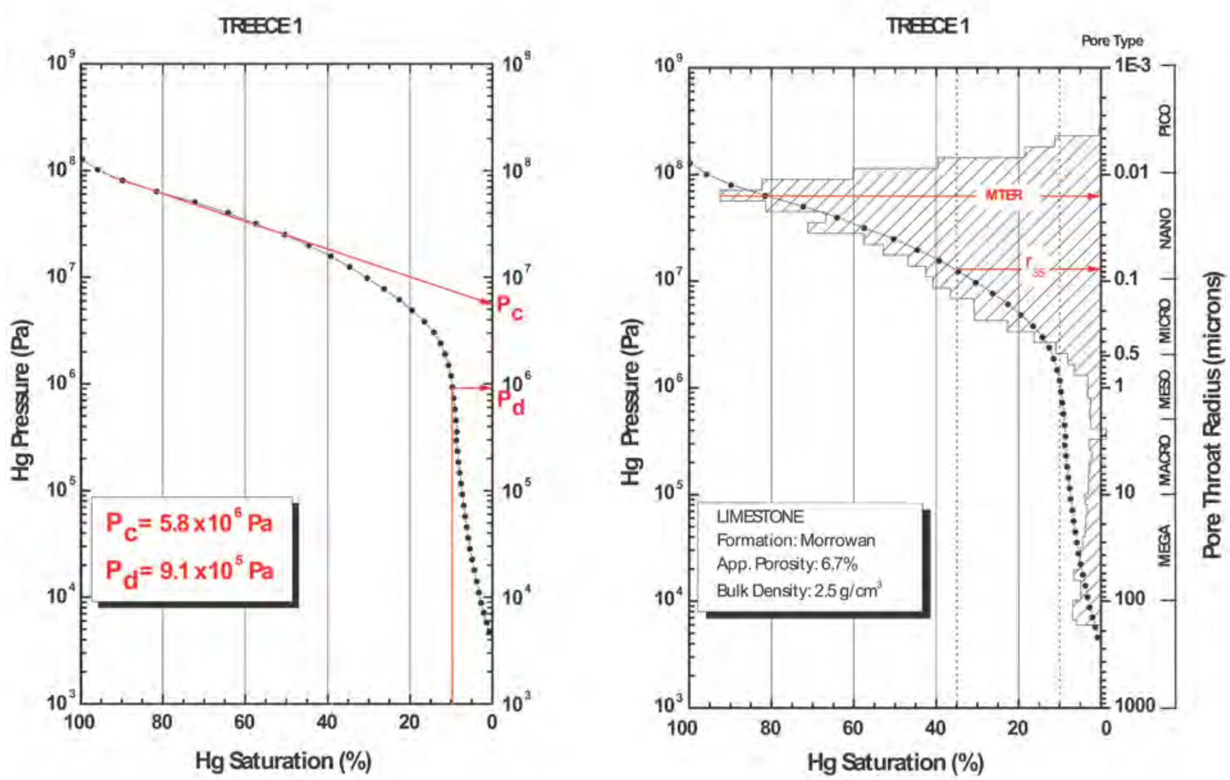
File #	County	Formation	Depth (m)	[illegible]	[illegible]
1712	Texas	Morrowan	1536	36.6	-102.0

Intrusion Data Summary		
Median Pore Radius (Volume)	0.0253	μm
Median Pore Radius (Area)	0.0112	μm
Average Pore Radius	0.0182	μm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	6.8	%

Organic Content		
TOC	1.20	wt% HC

Pore Structure Summary		
Pc	5.8	MPa
Pd (@ 10% Hg saturation)	0.91	MPa
BET Surface Area	1.0966	m²/g
Median Grain Size	144.292	[illegible]
RSS	0.08	μm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.016	μm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
2.4	6.6	59.1	8.7	2.6	5.2	14.5	0.9	0	0	0


TREECE 1
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
$P_c = 5.8 \times 10^6$ Pa
$P_d = 9.1 \times 10^5$ Pa
TREECE 1
Pore Type
MTER
r_{35}
PICO
NANO
MICRO
MESO
MACRO
MEGA
Pore Throat Radius (microns)
LIMESTONE
Formation: Morrowan
App. Porosity: 6.7%
Bulk Density: 2.5 g/cm³

Sample#10 – 2177

2177
BREWER 2
Black Fine Grained Calcareous Shale

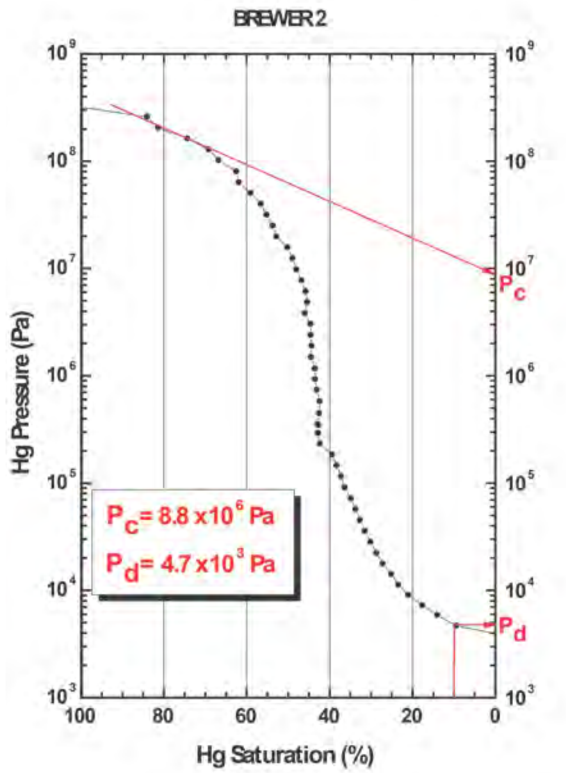
[illegible]	County	Formation	Depth (m)	Lat (N°)	Long (W°)
2177	TEXAS	Morrowan	1726	36.8	-101.9

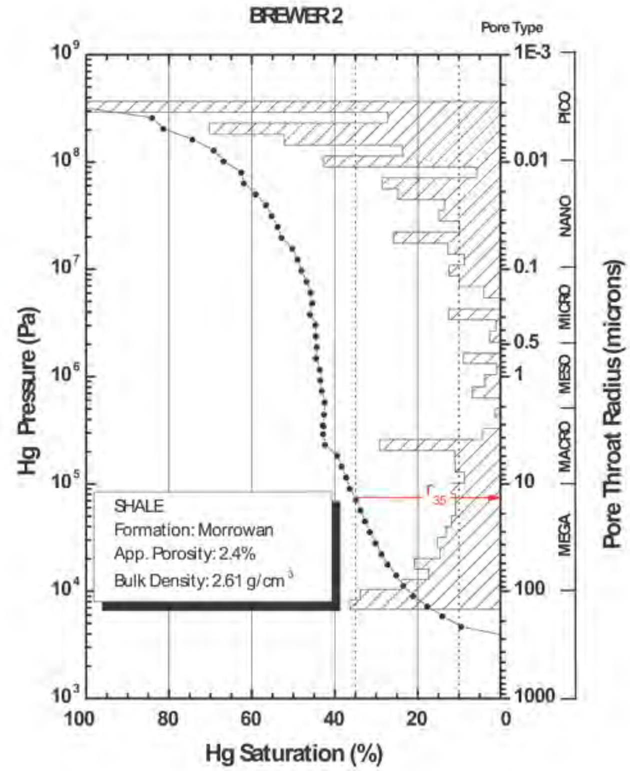
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0409	µm
Median Pore Radius (Area)	0.0024	µm
Average Pore Radius	0.0217	µm
Bulk Density	2.6	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	2.4	%

Organic Content		
TOC	1.45	wt% HC

Pore Structure Summary		
Ps	8.88	MPa
Pd (@ 10% Hg saturation)	0.00	MPa
BET Surface Area	16.5205	m²/g
Median Grain Size	44.367	µm
R35	13.46	µm
Pore Throat Type	Macro	
Pore Throat Distribution	Non-modal	
Pore Throat Sorting	Medium Sorted	
MTER	NA	µm

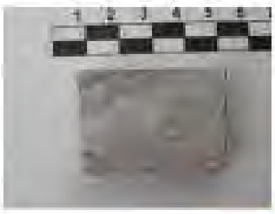
XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
8.1	9.9	10	14	0	0	32.5	0	0	0	0

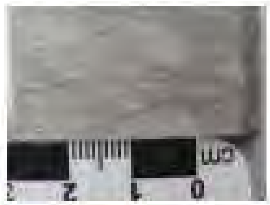

BREWER 2
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
P_c = 8.8 x 10⁶ Pa
P_d = 4.7 x 10³ Pa


BREWER 2
Pore Type
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
PICO
NANO
MICRO
MESO
MACRO
MEGA
r_{35}
SHALE
Formation: Morrowan
App. Porosity: 2.4%
Bulk Density: 2.61 g/cm³

Sample#11 – 2472

2472
PROTHRO 41 34
Light gray Fine Grained Limestone





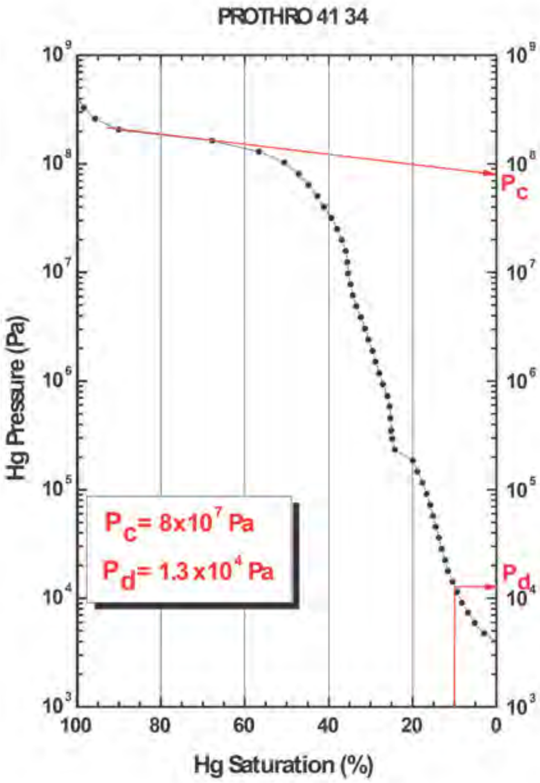
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2472	Cimarron	Topeka	1083	36.6	-102.5

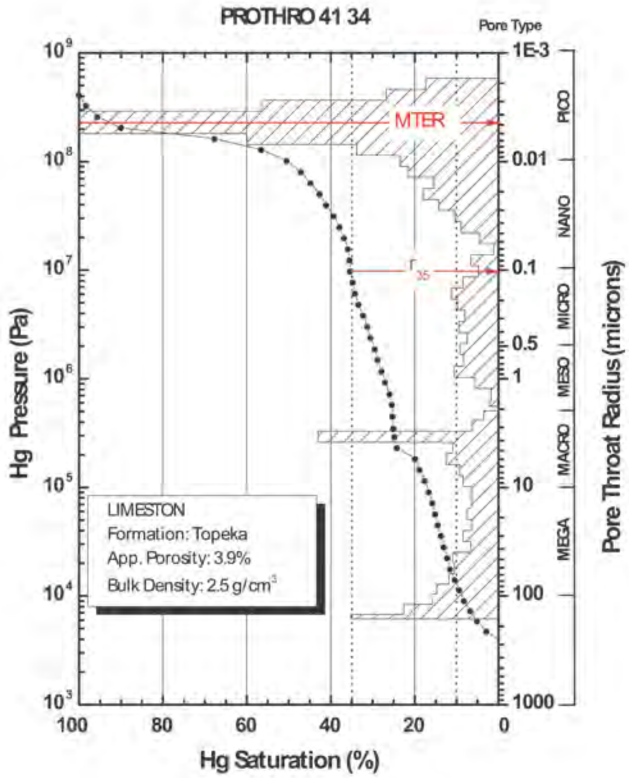
[illegible]		
Median Pore Radius (Volume)	0.0063	μm
Median Pore Radius (Area)	0.0034	μm
Average Pore Radius	0.0049	μm
Bulk Density	2.6	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	3.9	%

[illegible]		
TOC	1.50	wt% RC

[illegible]		
Pc	80	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	16.3173	m²/g
Median Grain Size	15.705	μm
R35	0.10	μm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Poorly Sorted	
MTER	0.0044	μm

Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
19.1	5.4	7.6	5.6	1.8	3	43.8	8.4	0	0	0


PROTHRO 41 34
Hg Pressure (Pa)
Hg Saturation (%)
P_c
P_d
$P_c = 8\times10^7$ Pa
$P_d = 1.3\times10^4$ Pa


PROTHRO 41 34
Pore Type
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
MTER
r_{35}
PICO
NANO
MICRO
MESO
MACRO
MEGA
LIMESTON
Formation: Topeka
App. Porosity: 3.9%
Bulk Density: 2.5 g/cm^3

Sample#12 – 2609

2609
KNOP 1 A
Pink Fine Grained Limestone

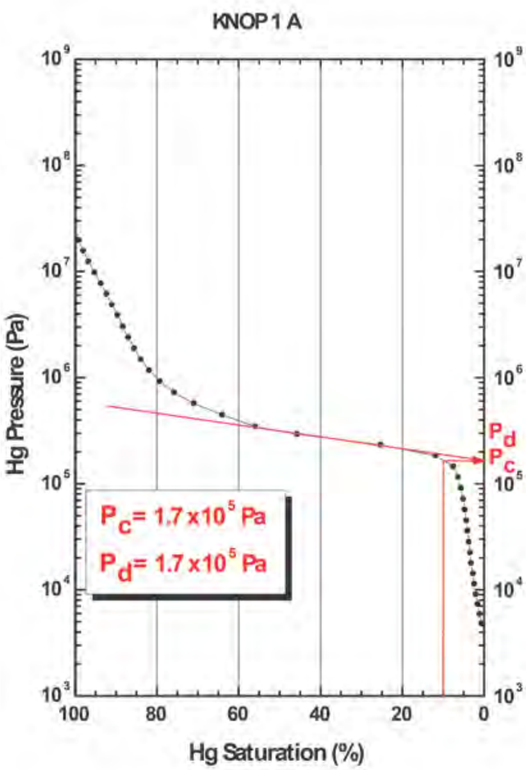
Site #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
2609	Texas	Chase	852	37.0	-101.1

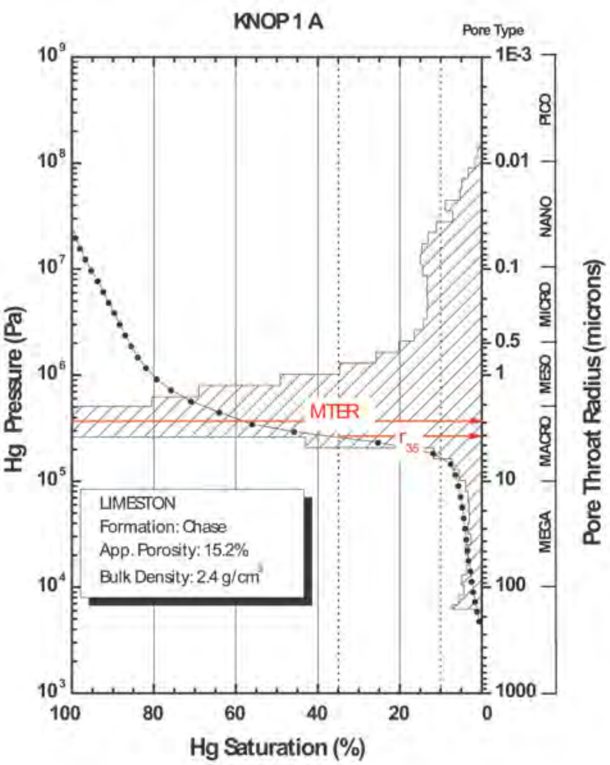
Intrusion Data Summary		
Median Pore Radius (Volume)	NA	µm
Median Pore Radius (Area)	NA	µm
Average Pore Radius	NA	µm
Bulk Density	2.4	g/cm³
Apparent (skeletal) Density	2.8	g/cm³
Porosity	15.2	%

Organic Content		
TOC	1.70	wt% HC

Pore Structure Summary		
Pc	0.17	MPa
Pd (@ 10% Hg saturation)	0.17	MPa
BET Surface Area	0.8763	m²/g
Median Grain Size	41.433	µm
R35	3.9	µm
Pore Throat Type	Macro	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Well Sorted	
MTBR	2.7	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
10	0.5	3.6	5.9	0.8	1.2	1.4	72.0	0	0	0


KNOP 1 A
Hg Pressure (Pa)
Hg Saturation (%)
Pd
Pc
P_c= 1.7 x 10^5 Pa
P_d= 1.7 x 10^5 Pa


KNOP 1 A
Pore Type
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
r_{35}
LIMESTON
Formation: Chase
App. Porosity: 15.2%
Bulk Density: 2.4 g/cm^3

Sample#13 – 3088

3088
DAILEY 1 B
Black Fine Grained Fissile Shale

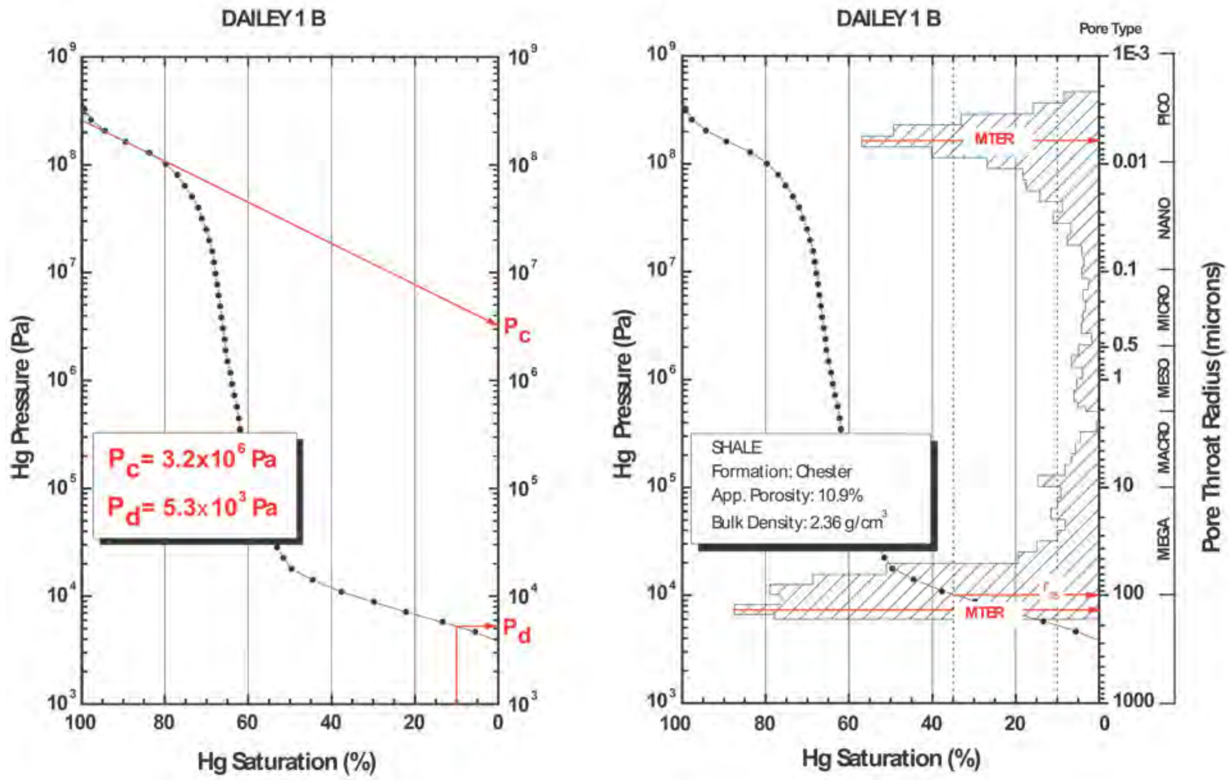
Well #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3088	Texas	Chester	2014	36.9	-101.7

Intrusion Data Summary		
Median Pore Radius (Volume)	NA	µm
Median Pore Radius (Area)	0.0036	µm
Average Pore Radius	0.0036	µm
Bulk Density	2.4	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	10.9	%

Organic Content		
TOC	1.35	wt% HC

Pore Structure Summary		
Pc	3.1	MPa
Pd (@ 10% Hg saturation)	0.1	MPa
BET Surface Area	14.5111	m^2/g
Median Grain Size	77.62	µm
R35	100	µm
Pore Throat Type	Mega	
Pore Throat Distribution	Bimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.006/138.2	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
10	0.5	5.6	3.9	0.8	1.2	1.4	72.9	0	0	0


DAILEY 1 B
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
Pc= 3.2x10^6 Pa
Pd= 5.3x10^3 Pa
DAILEY 1 B
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
Pore Throat Radius (microns)
MTER
SHALE
Formation: Chester
App. Porosity: 10.9%
Bulk Density: 2.36 g/cm^3

Sample#14 – 3115

3115
MYERS 1 D
Dark Gray Medium Coarse Grained Limestone

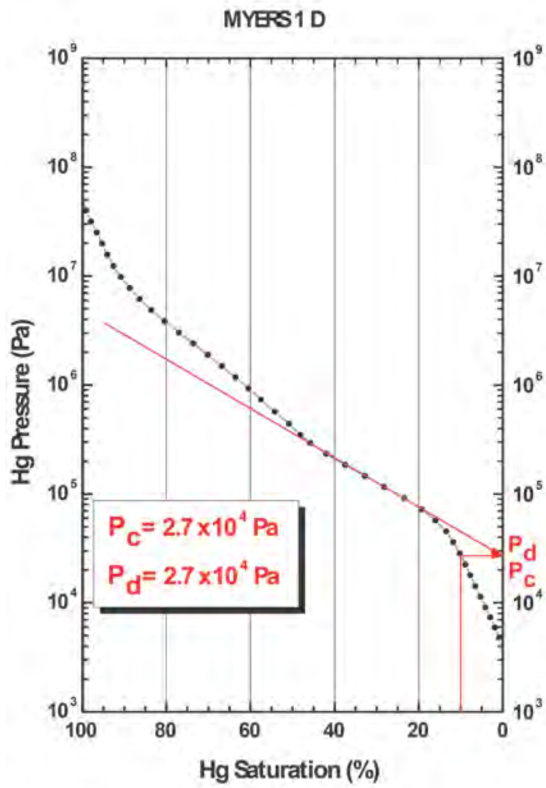
Core #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3115	Texas	Keyes	1995	36.9	-101.4

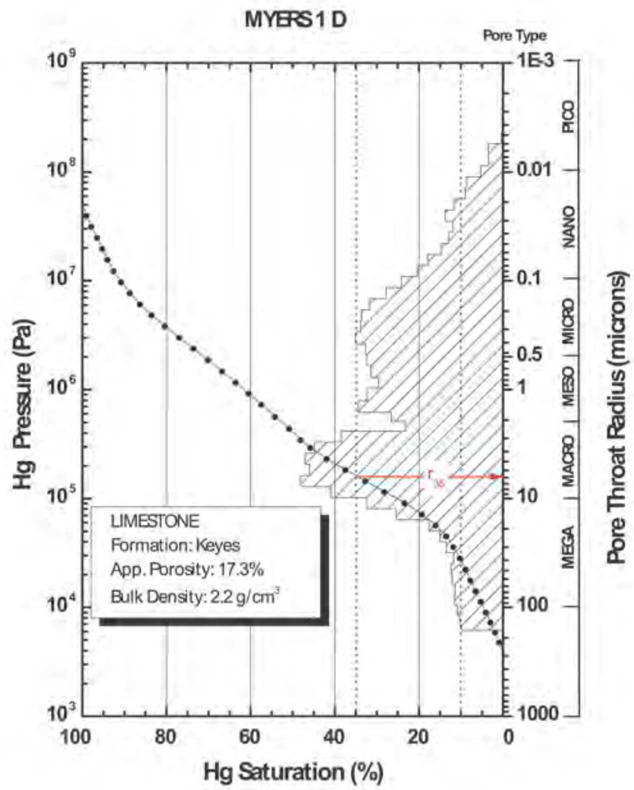
Intrusion Data Summary		
Median Pore Radius (Volume)	NA	μm
Median Pore Radius (Area)	NA	μm
Average Pore Radius	NA	μm
Bulk Density	2.2	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	NA	%

Organic Content		
TOC	1.30	wt% HC

Pore Structure Summary		
Pc	0.05	MPa
Pd (@ 10% Hg saturation)	0.03	MPa
BET Surface Area	0.8360	m²/g
Median Grain Size	142.815	μm
RSS	8.35	μm
Pore Throat Type	Macro	
Pore Throat Distribution	None-model	
Pore Throat Sorting	Poorly Sorted	
MTER	NA	μm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
4.1	17.3	35.4	15.4	0.4	0.9	6.9	0.9	9.7	0	0


MYERS 1 D
Hg Pressure (Pa)
Hg Saturation (%)
P_c= 2.7 x 10^4 Pa
P_d= 2.7 x 10^4 Pa
P_d
P_c


MYERS 1 D
Pore Type
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
PICO
NANO
MICRO
MESO
MACRO
MEGA
LIMESTONE
Formation: Keyes
App. Porosity: 17.3%
Bulk Density: 2.2 g/cm³

Sample#15 – 3138

3138
STONEBRAKER 1 AP
Light gray Medium Grained Limestone

File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3138	Texas	Marmaton	1792	36.7	-101.8

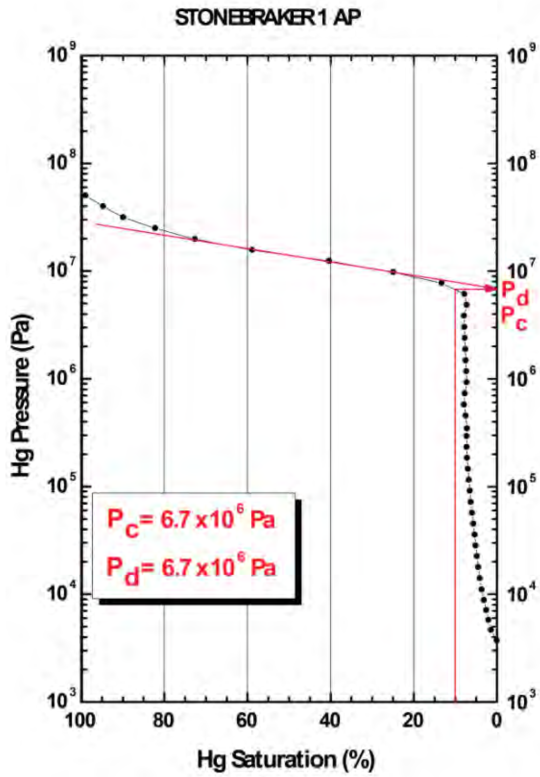
Mercury Data Summary		
Median Pore Radius (Volume)	0.0445	µm
Median Pore Radius (Area)	0.0478	µm
Average Pore Radius	0.0461	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	6.9	%

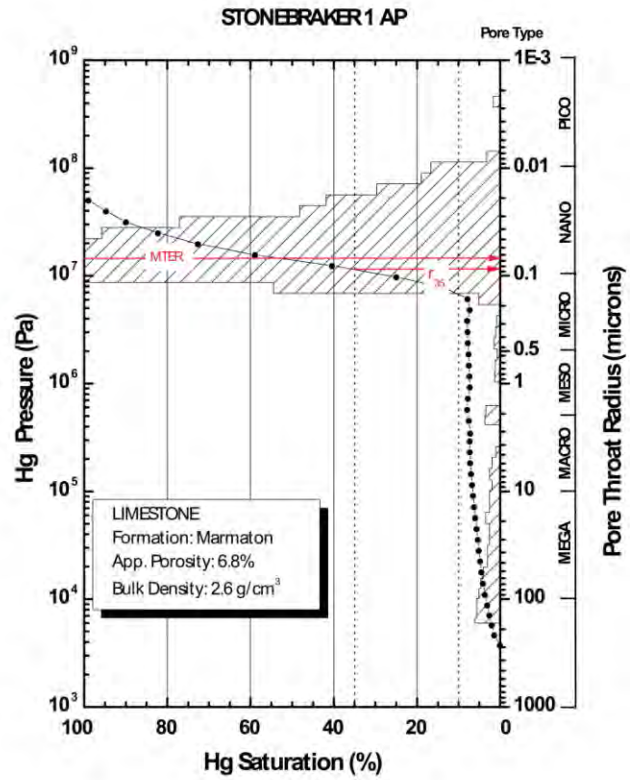
Organic Content		
TOC	1.36	wt% HC

Pore Structure Summary		
Pc	6.80	MPa
Pd (@ 10% Hg saturation)	6.80	MPa
BET Surface Area	1.6925	m²/g
Median Grain Size	90.471	µm
R35	0.09	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Well Sorted	
MTER	0.071	µm

XRD Analysis (wt%)

Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
3.7	3.8	3.4	30.3	1.4	4.7	32	3.2	17.5	0	0


STONEBRAKER 1 AP
Hg Pressure (Pa)
Hg Saturation (%)
P_d
P_c
P_c= 6.7 x10^6 Pa
P_d= 6.7 x10^6 Pa


STONEBRAKER 1 AP
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
r_{35}
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
LIMESTONE
Formation: Marmaton
App. Porosity: 6.8%
Bulk Density: 2.6 g/cm^3

Sample#16 – 3141

3141
STONEBRAKER AN 4
Black Fine Grained Fissile Shale

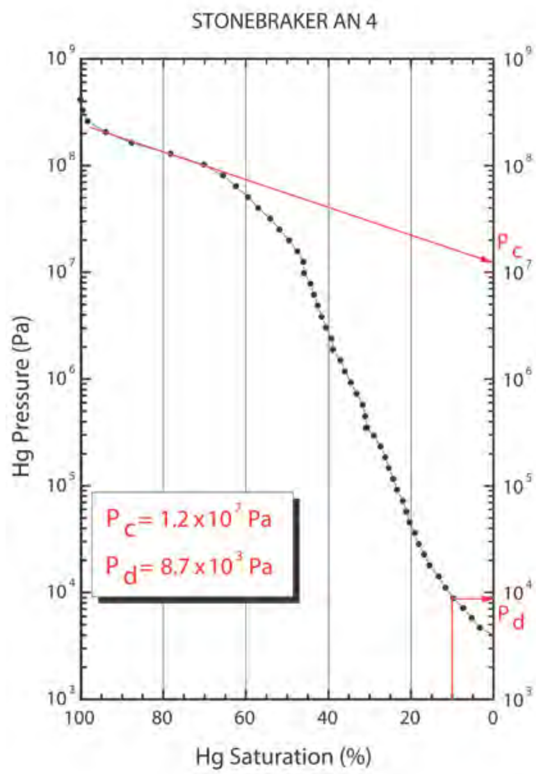
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3141	Texas	Cherokee	1909	36.7	101.6

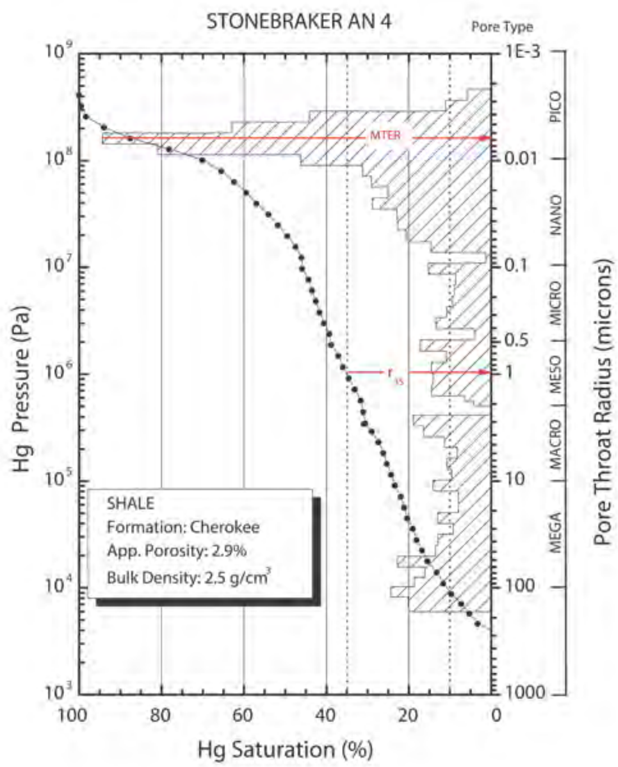
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0500	μm
Median Pore Radius (Area)	0.0041	μm
Average Pore Radius	0.0171	μm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	2.9	%

Organic Content		
TOC	1.47	wt% HC

Pore Structure Summary		
Pc	12.00	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	8.5142	m²/g
Median Grain Size	38.02	μm
R35	0.98	μm
Pore Throat Type	Meso	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Poorly Sorted	
MTSA	0.0063	μm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
15.9	55.3	7.2	3.1	0	0.9	0	0	0	0	0


STONEBRAKER AN 4
Hg Pressure (Pa)
Hg Saturation (%)
$P_c = 1.2 \times 10^7$ Pa
$P_d = 8.7 \times 10^3$ Pa
Pc
Pd

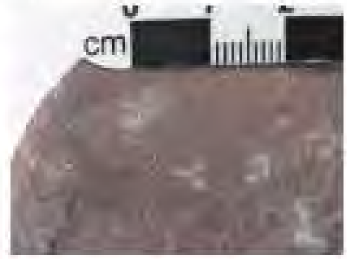

STONEBRAKER AN 4
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
r_{35}
SHALE
Formation: Cherokee
App. Porosity: 2.9%
Bulk Density: 2.5 g/cm³
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)

Sample#17 – 3146

3146

PURDY 1 A

Red Fine Grained Limestone

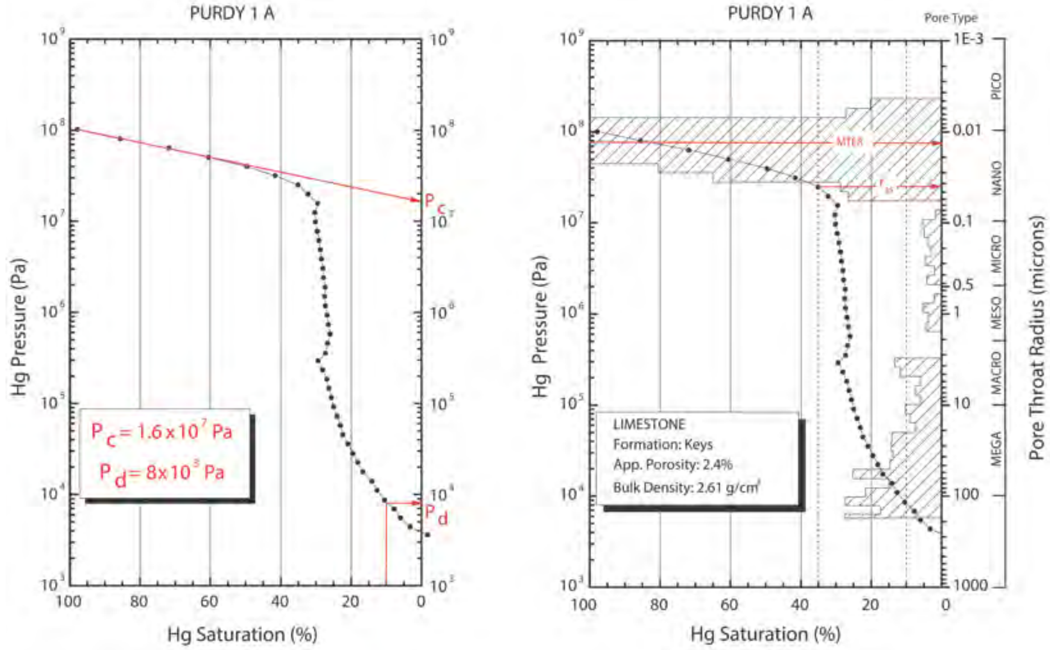
Filer #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3146	Cimarron	Keyes	1406	37.0	-102.1

Intrusion Data Summary		
Median Pore Radius (Volume)	0.0155	µm
Median Pore Radius (Area)	0.0154	µm
Average Pore Radius	0.0154	µm
Bulk Density	2.6	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	2.4	%

Organic Content		
TOC	1.28	wt% HC

Pore Structure Summary		
Pc	26.00	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	5.2811	m²/g
Median Grain Size	43.292	µm
R35	0.04	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.012	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
12.4	4.1	2	10.4	1.5	3.3	59.7	5.8	0	8.9	0


PURDY 1 A
Hg Pressure (Pa)
Hg Saturation (%)
$P_c = 1.6 \times 10^7$ Pa
$P_d = 8 \times 10^3$ Pa
P_c
P_d
PURDY 1 A
Pore Type
MTER
LIMESTONE
Formation: Keys
App. Porosity: 2.4%
Bulk Density: 2.61 g/cm^3
PICO
NANO
MICRO
MESO
MACRO
MEGA
Pore Throat Radius (microns)

Sample#18 – 3149

3149
PURDY 1 C
Dark Gray Fine Grained Shale

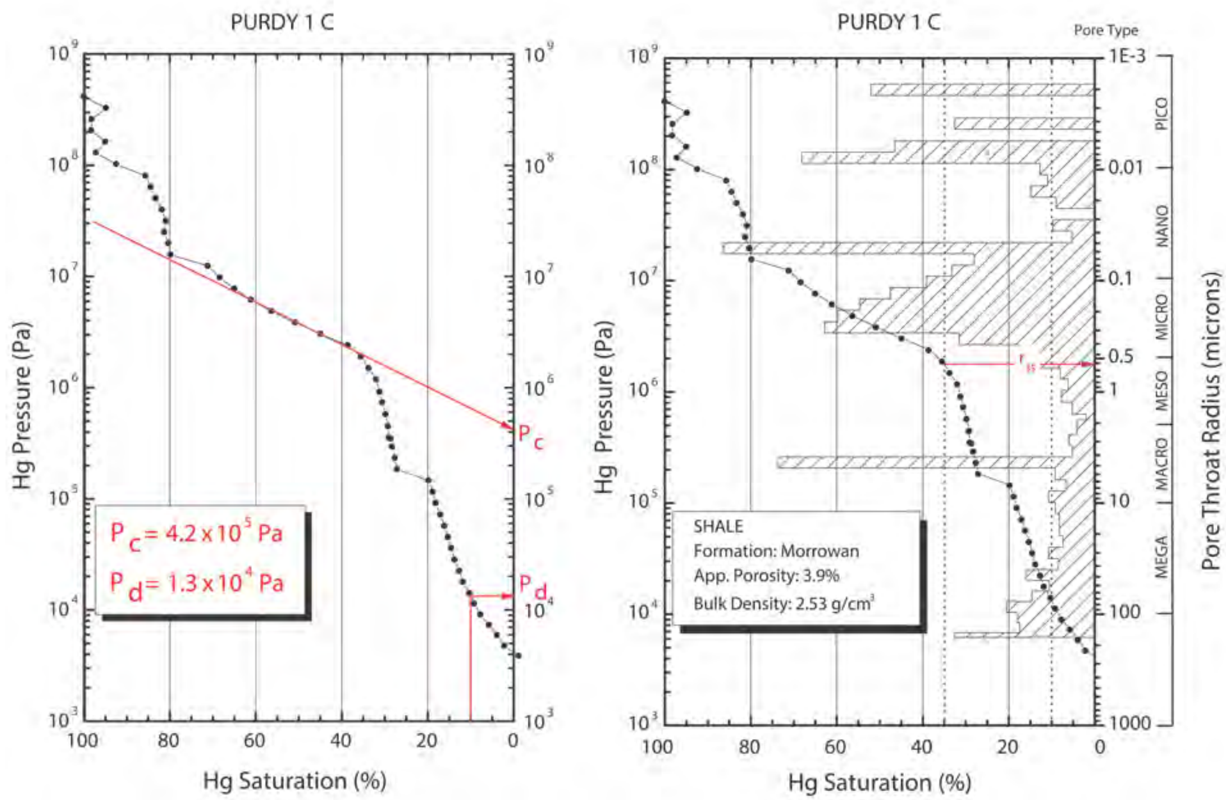
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3149	Cimarron	Morrowan	1396	36.97	-102.08

Intrusion Data Summary		
Median Pore Radius (Volume)	0.168	µm
Median Pore Radius (Area)	0.0214	µm
Average Pore Radius	0.087	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	5.9	%

Organic Content		
TOC	1.89	wt% HC

Pore Structure Summary		
Pc	0.42	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	9.7036	m²/g
Median Grain Size	75.214	µm
RSS	0.56	µm
Pore Throat Type	Meso	
Pore Throat Distribution	Non-modal	
Pore Throat Sorting	Poorly Sorted	
MTER	NA	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
11.5	46.8	6.6	12.9	0	0	0	0	0	0	0



PURDY 1 C
Hg Pressure (Pa)
Hg Saturation (%)
P_c
P_d
$P_c = 4.2 \times 10^5$ Pa
$P_d = 1.3 \times 10^4$ Pa
PURDY 1 C
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
Pore Throat Radius (microns)
SHALE
Formation: Morrowan
App. Porosity: 3.9%
Bulk Density: 2.53 g/cm^3

Sample#19 – 3150

1397
PURDY 1 E
Black Fine Grained Shale

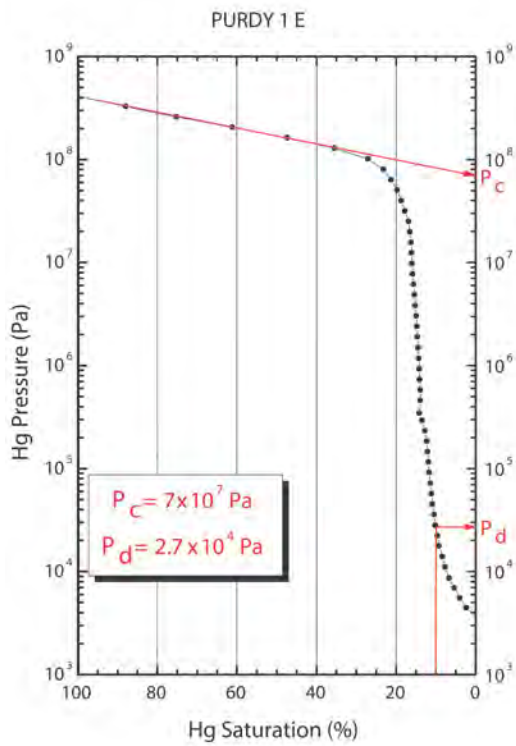
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3150	Cimarron	Unknown	1397	37.0	-102.1

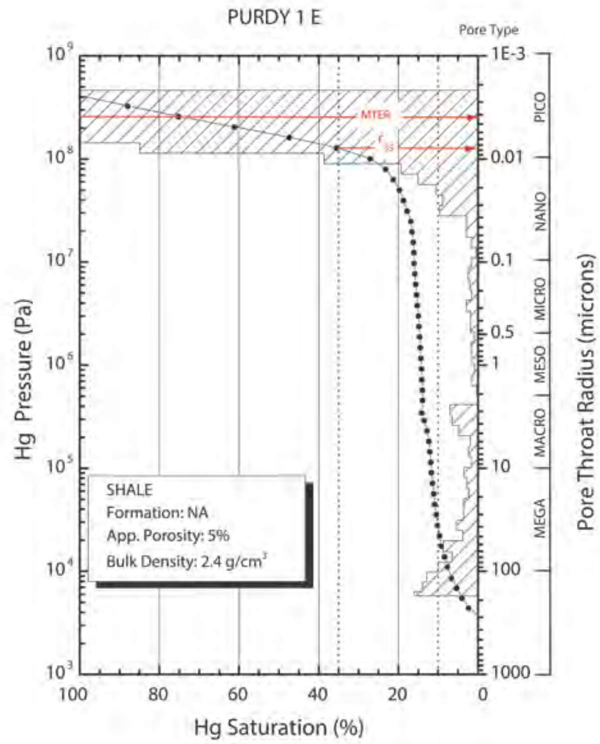
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0037	µm
Median Pore Radius (Area)	0.0025	µm
Average Pore Radius	0.0031	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	5.0	%

Organic Content		
TOC	1.79	wt% HC

Pore Structure Summary		
Pc	70.00	MPa
Pd (@ 10% Hg saturation)	0.03	MPa
BET Surface Area	13.3588	m²/g
Median Grain Size	93.375	µm
R35	0.0077	µm
Pore Throat Type	Pico	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTDR	0.004	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
7.7	7.7	0.6	58.9	0	0	7.9	2.8	0	0	0


PURDY 1 E
Hg Pressure (Pa)
Hg Saturation (%)
P_c
P_d
$P_c = 7 \times 10^7$ Pa
$P_d = 2.7 \times 10^4$ Pa


PURDY 1 E
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
SHALE
Formation: NA
App. Porosity: 5%
Bulk Density: 2.4 g/cm^3

Sample#20 – 3355

3355

SCHLUCKEBIER UNIT 3

Black Fine Grained layered Shale

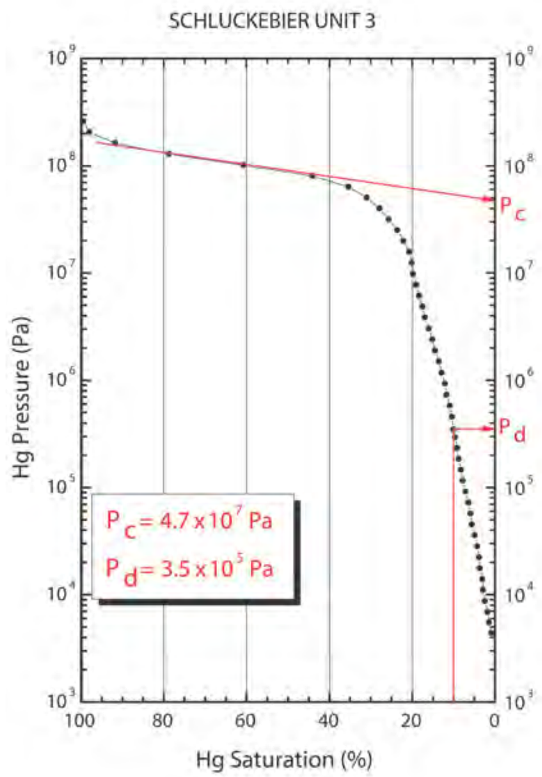
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3355	Cimarron	Keyes	2040	37.0	-102.0

Intrusion Data Summary		
Median Pore Radius (Volume)	0.0071	µm
Median Pore Radius (Area)	0.0052	µm
Average Pore Radius	0.0062	µm
Bulk Density	2.4	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	7.2	%

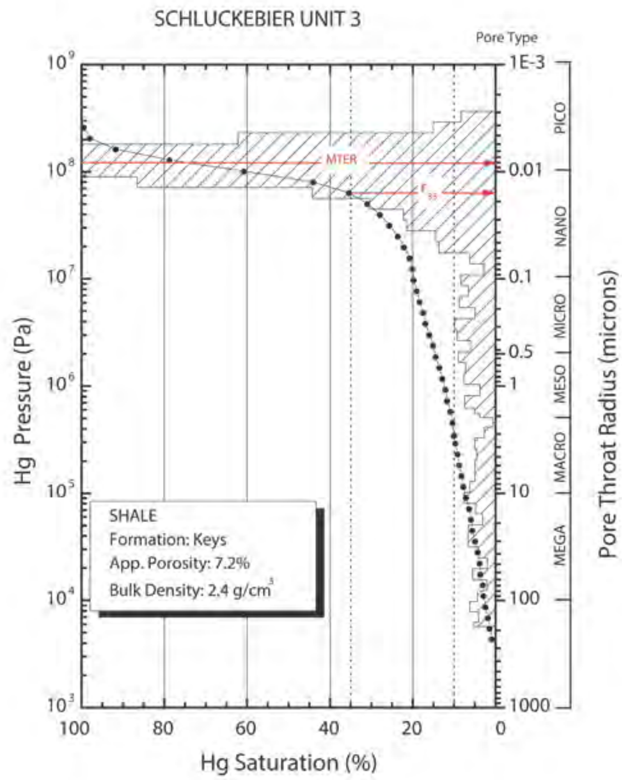
Organic Content		
TOC	1.94	wt% HC

Pore Structure Summary		
Pc	47.00	MPa
Pd (@ 10% Hg saturation)	0.35	MPa
BET Surface Area	5.3783	m²/g
Median Grain Size	82.255	µm
R35	0.02	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Poorly Sorted	
MTSR	0.0077	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
10.4	19.6	9.6	15.6	0	0	6.1	0	0	0	0



SCHLUCKEBIER UNIT 3
Hg Pressure (Pa)
Hg Saturation (%)
P_c
P_d
$P_c = 4.7 \times 10^7$ Pa
$P_d = 3.5 \times 10^5$ Pa



SCHLUCKEBIER UNIT 3
Pore Type
Hg Pressure (Pa)
Pore Throat Radius (microns)
Hg Saturation (%)
MTER
PICO
NANO
MICRO
MESO
MACRO
MEGA
SHALE
Formation: Keys
App. Porosity: 7.2%
Bulk Density: 2.4 g/cm^3

Sample#21 – 3780

3780
DURHAM 1
Dark Fine Grained Gray Limestone



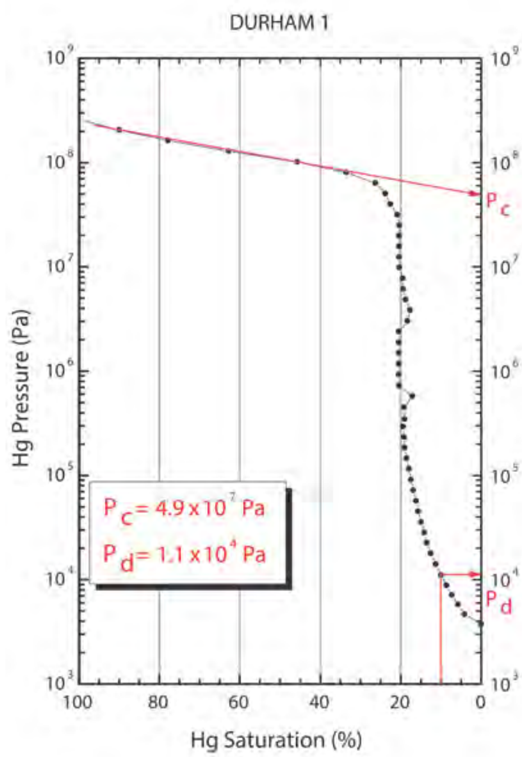
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3780	Cimarron	Cherokee	1235	36.97	-102.31

Intrusion Data Summary		
Median Pore Radius (Volume)	0.0058	µm
Median Pore Radius (Area)	0.0043	µm
Average Pore Radius	0.0050	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	3.5	%

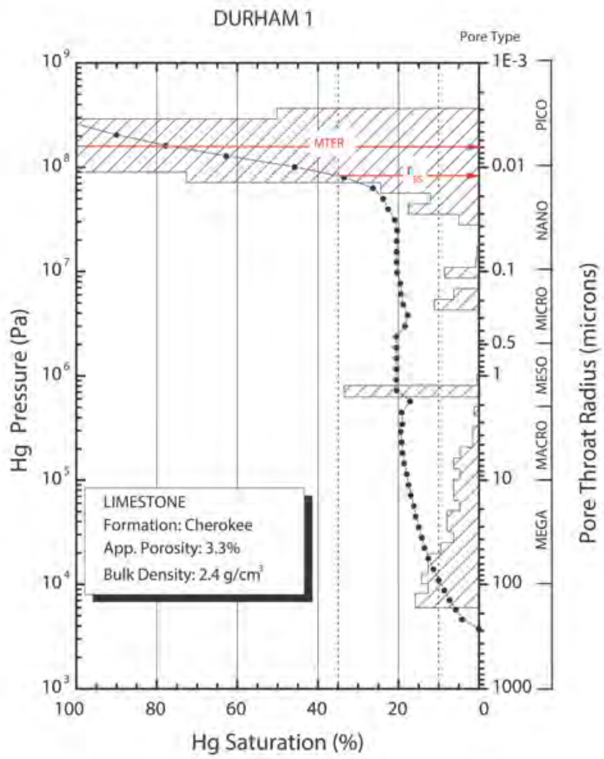
Organic Content		
TOC	1.71	wt% HC

Pore Structure Summary		
Pc	49.00	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	18.2856	m²/g
Median Grain Size	53.516	µm
RSS	0.0119	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Well Sorted	
MTER	0.0059	µm
TOC	1.71	wt% HC

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
12.5	12.9	26.5	11.3	2.7	7.2	10.1	1.9	0	0	2.7



DURHAM 1
Hg Pressure (Pa)
Hg Saturation (%)
P_c
P_d
$P_c = 4.9 \times 10^7$ Pa
$P_d = 1.1 \times 10^4$ Pa



DURHAM 1
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
LIMESTONE
Formation: Cherokee
App. Porosity: 3.3%
Bulk Density: 2.4 g/cm^3

Sample#22 – 3952

3952
GABLER 2 7
Black Fine Grained very Fissile Calcareous Clayey Mudstone



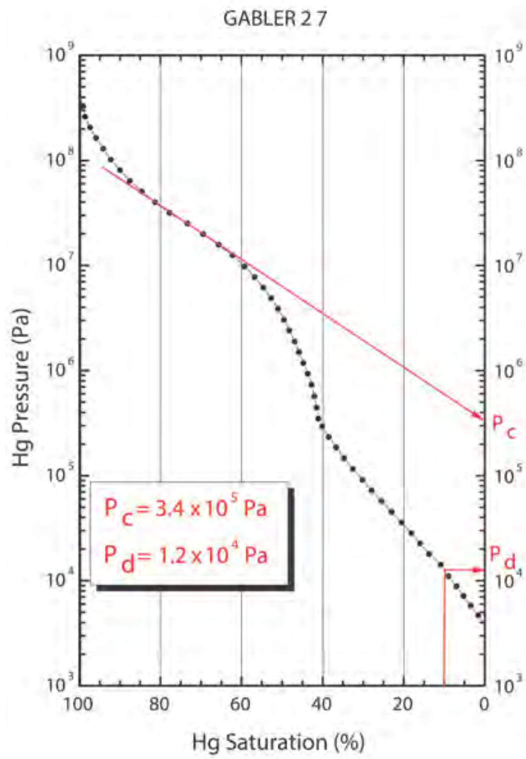
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3952	Beaver	Chester	2067	36.73	-100.83

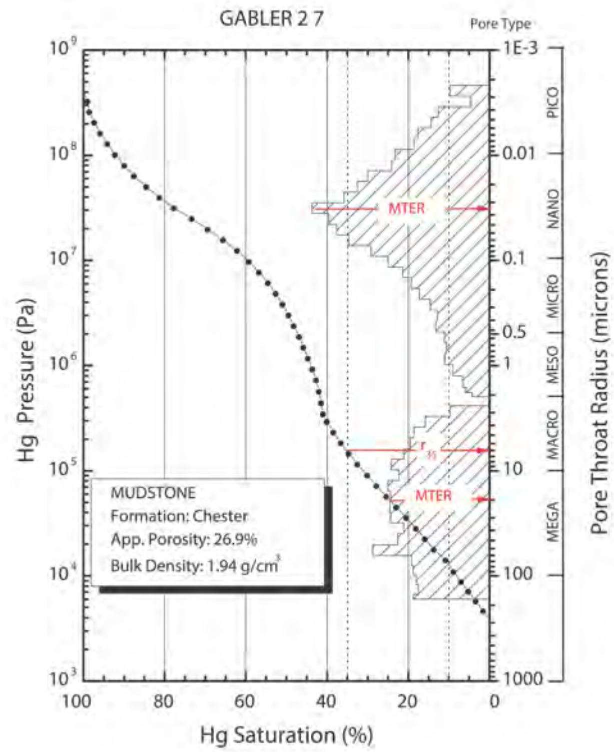
Intrusion Data Summary		
Median Pore Radius (Volume)	0.1873	μm
Median Pore Radius (Area)	0.0053	μm
Average Pore Radius	0.0963	μm
Bulk Density	1.9	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	26.9	%

Organic Content		
TOC	2.66	wt% HC

Pore Structure Summary		
Pc	0.34	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	10.0028	m²/g
Median Grain Size	12.316	μm
R35	6.48	μm
Pore Throat Type	Macro	
Pore Throat Distribution	Bimodal	
Pore Throat Sorting	Poorly Sorted	
MTER	0.052/53	μm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
3.8	25.3	19.4	5.7	0	0	0.5	0	0	0	0


GABLER 2 7
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
Pc = 3.4 x 10^5 Pa
Pd = 1.2 x 10^4 Pa

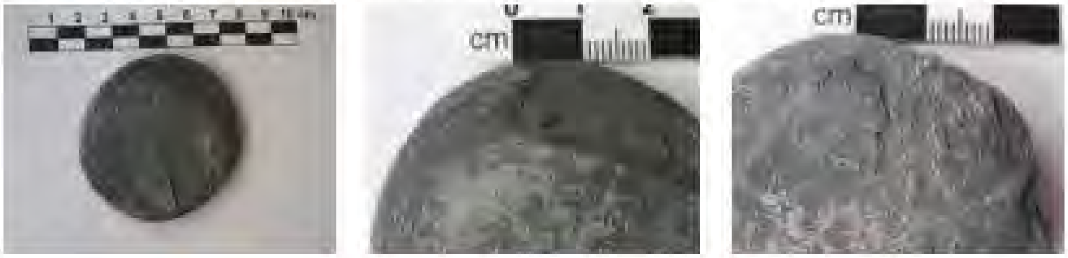

GABLER 2 7
Pore Type
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
MTER
MUDSTONE
Formation: Chester
App. Porosity: 26.9%
Bulk Density: 1.94 g/cm3

Sample#23 – 3979

3979

HARRISON&GOODWIN GU 1

Black Fine Grained Calcareous Shale



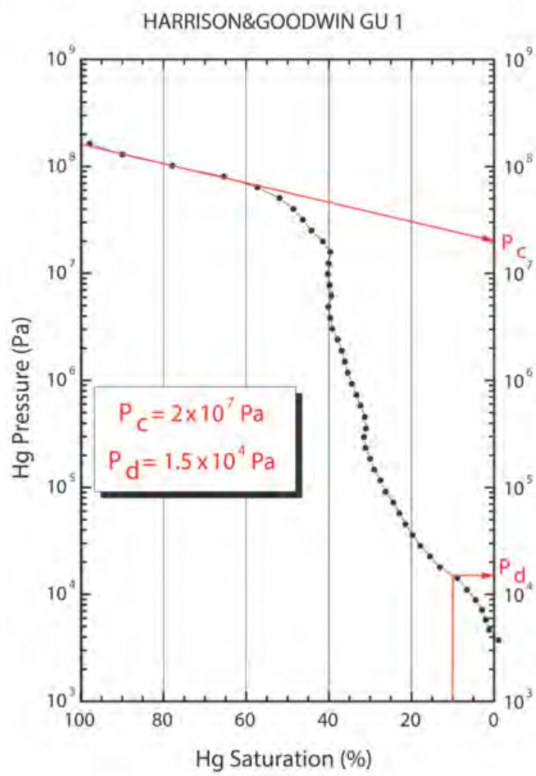
Me. ID	County	Formation	Depth (m)	Lat (N°)	Long (W°)
3979	Texas	Atoka	1971	36.92	-101.05

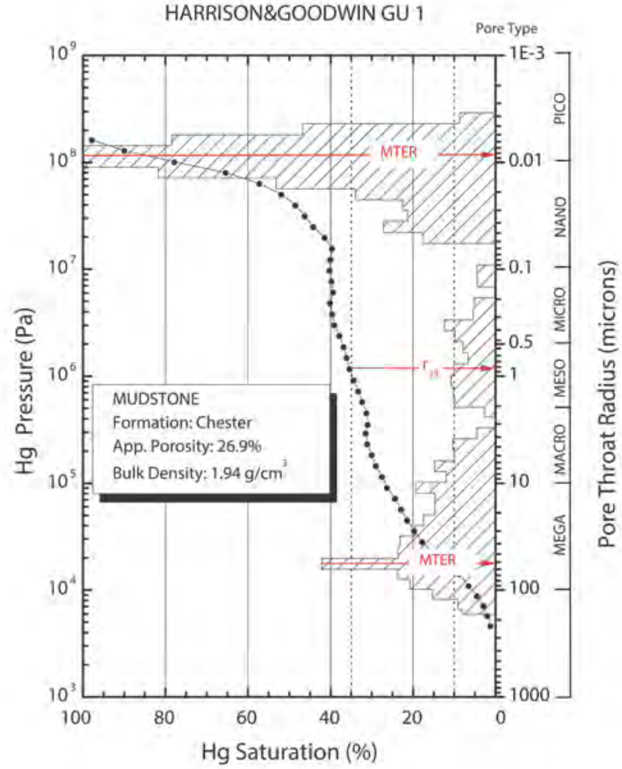
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0140	µm
Median Pore Radius (Area)	0.0062	µm
Average Pore Radius	0.0101	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	5.8	%

Organic Content		
TOC	1.91	wt% HC

Pore Structure Summary		
Pc	20.00	MPa
Pd (@ 10% Hg saturation)	0.02	MPa
BET Surface Area	8.5302	m^2/g
Median Grain Size	45.724	µm
RBS	0.85	µm
Pore Throat Type	Meso	
Pore Throat Distribution	Bimodal	
Pore Throat Sorting	Medium Sorted	
MTEK	0.0085/56	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
25.6	1.6	10.7	18.5	0	0	19.6	0	0	0	0


HARRISON&GOODWIN GU 1
Hg Pressure (Pa)
Hg Saturation (%)
P c
P d
P c = 2 x 10^7 Pa
P d = 1.5 x 10^4 Pa


HARRISON&GOODWIN GU 1
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
MTER
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
MUDSTONE
Formation: Chester
App. Porosity: 26.9%
Bulk Density: 1.94 g/cm3

Sample#24 – 4157

4157
STATE 1
Fine Grained Layered Purple Limestone

File #	County	Formation	Depth (ft)	Lat (N°)	Long (W°)
4157	Cimarron	Morrowan	1828	36.73106	-101.43583

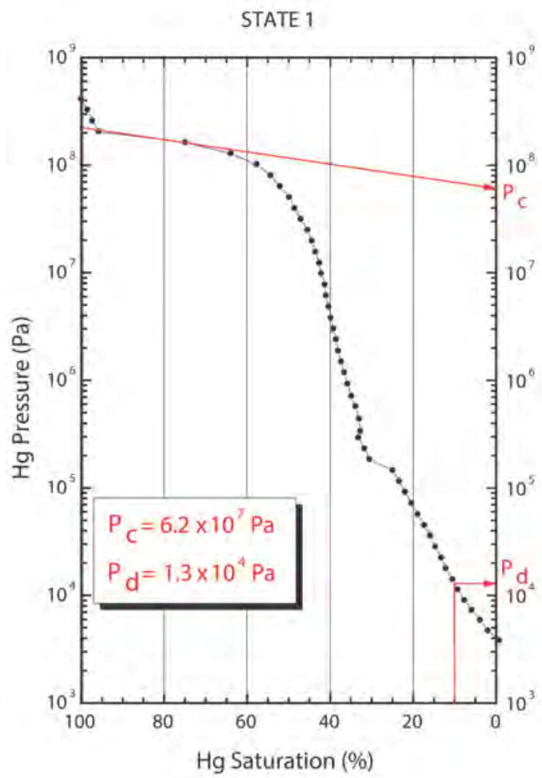
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0244	µm
Median Pore Radius (Area)	0.0072	µm
Average Pore Radius	0.0158	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	4.1	%

Organic Content		
TOC	1.24	wt% HC

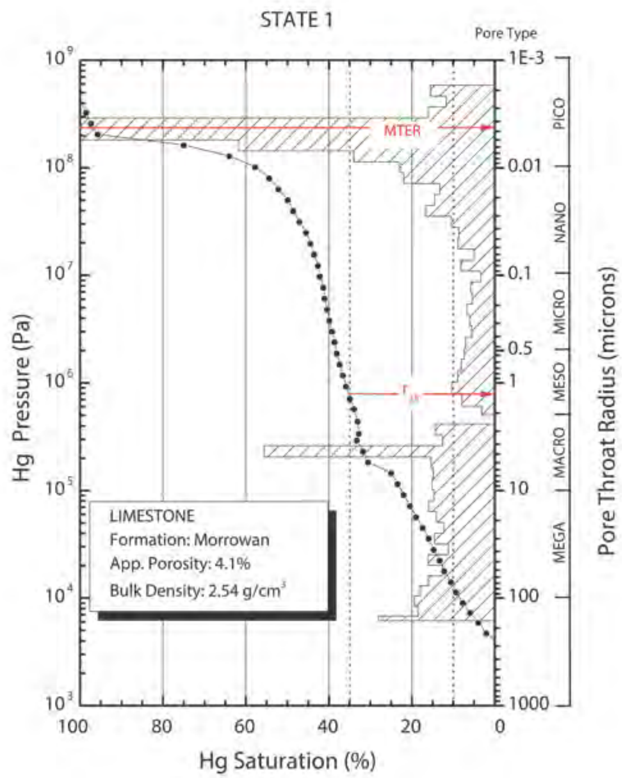
Pore Structure Summary		
Pc	62.00	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	22.0987	m²/g
Median Grain Size	69.283	µm
R35	1.28	µm
Pore Throat Type	Meso	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTCR	0.0042	µm

XRD Analysis

Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
27.6	3.6	7.8	19.6	1.4	3.3	2.6	0	0	13.3	0



STATE 1
Hg Pressure (Pa)
Hg Saturation (%)
P_c
P_d
$P_c = 6.2 \times 10^7$ Pa
$P_d = 1.3 \times 10^4$ Pa



STATE 1
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
r_{35}
Hg Pressure (Pa)
Pore Throat Radius (microns)
Hg Saturation (%)
LIMESTONE
Formation: Morrowan
App. Porosity: 4.1%
Bulk Density: 2.54 g/cm^3

Sample#25 – 4164

4164
STATE 1
Gray Fine Grained Shale

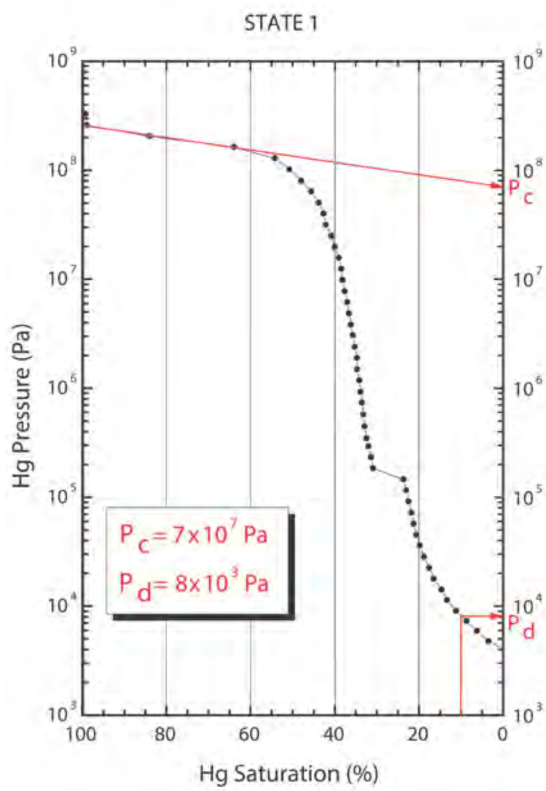
Well #	County	Formation	Depth (m)	Lat (N)	Long (W)
4164	Cimarron	Mississippian	1666	36.7985	-102.81585

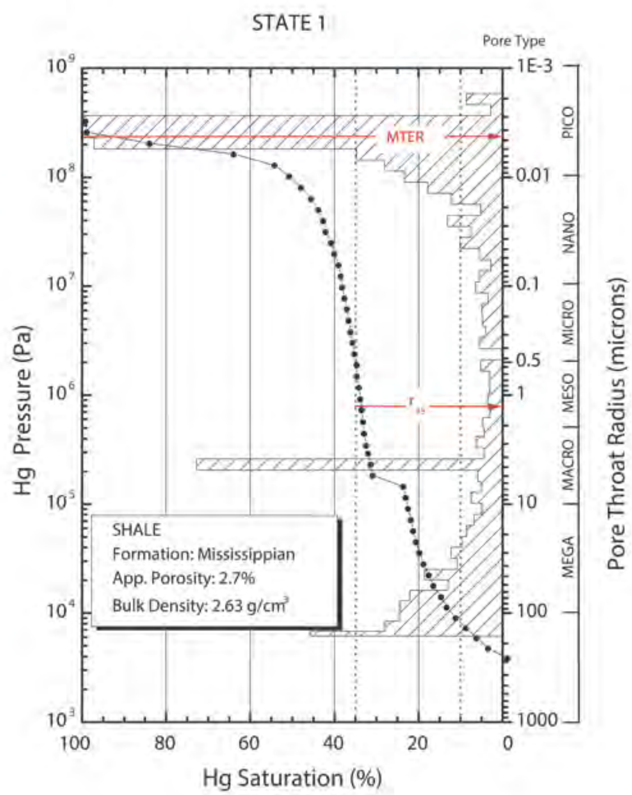
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0130	µm
Median Pore Radius (Area)	0.0056	µm
Average Pore Radius	0.0098	µm
Bulk Density	2.6	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	2.7	%

Organic Content		
TOC	1.07	wt% HC

Pore Grain Size Summary		
Pc	70.00	MPa
Pd (@ 10% Hg saturation)	0.03	MPa
BET Surface Area	11.0070	m²/g
Median Grain Size	62.61	µm
R35	0.484	µm
Pore Throat Type	Micro	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.0058	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
45.9	14.7	13.4	13	3.2	2.4	0	0	0	0	1.8


STATE 1
Hg Pressure (Pa)
Hg Saturation (%)
$P_c = 7 \times 10^7$ Pa
$P_d = 8 \times 10^3$ Pa
P_c
P_d


STATE 1
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
r_{35}
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
SHALE
Formation: Mississippian
App. Porosity: 2.7%
Bulk Density: 2.63 g/cm³

Sample#26 – 4224

4224
DURHAM 1
Black Fine Grained Shale

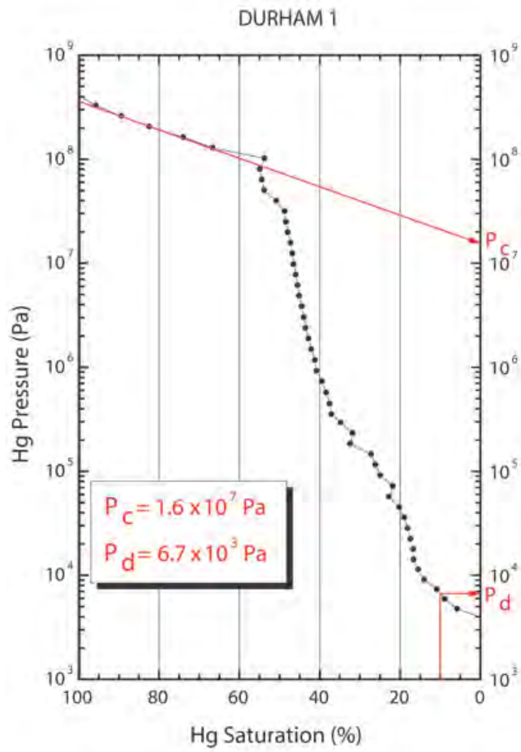
Site #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
4224	Cimarron	Morrowan	1386	36.657	-102.07205

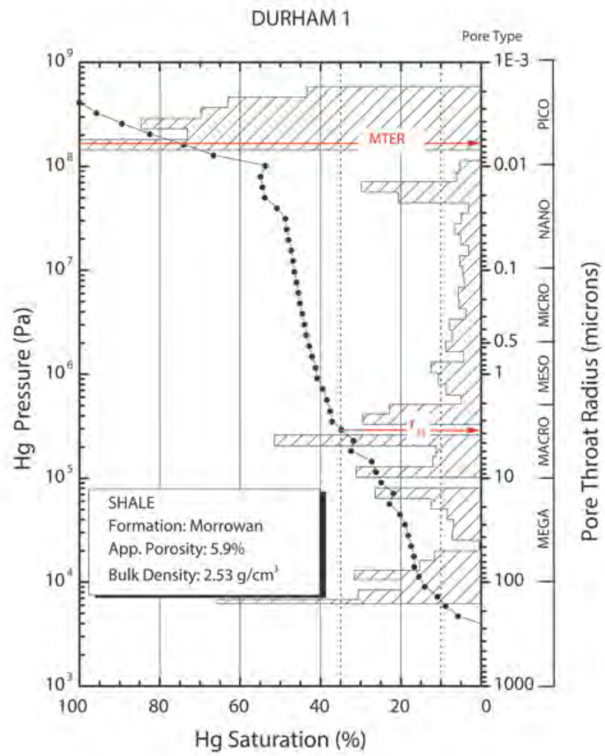
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0169	µm
Median Pore Radius (Area)	0.0029	µm
Average Pore Radius	0.0099	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	5.9	%

Organic Geochemistry		
TOC	1.84	wt% HC

Pore Structure Summary		
Pc	16	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	16.7083	m²/g
Median Grain Size	27.859	µm
RSS	3.33	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Non-modal	
Pore Throat Sorting	Poorly Sorted	
MTCR	NA	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
14.4	20	10.8	25.8	0	0	4	0	0	0	0


DURHAM 1
Hg Pressure (Pa)
Hg Saturation (%)
$P_c = 1.6 \times 10^7$ Pa
$P_d = 6.7 \times 10^3$ Pa
P_c
P_d


DURHAM 1
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
r_{H}
SHALE
Formation: Morrowan
App. Porosity: 5.9%
Bulk Density: 2.53 g/cm³
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)

Sample#27 – 4211

4211
ROWAN TRUST 1
Black Fine Grained Calcareous Shale

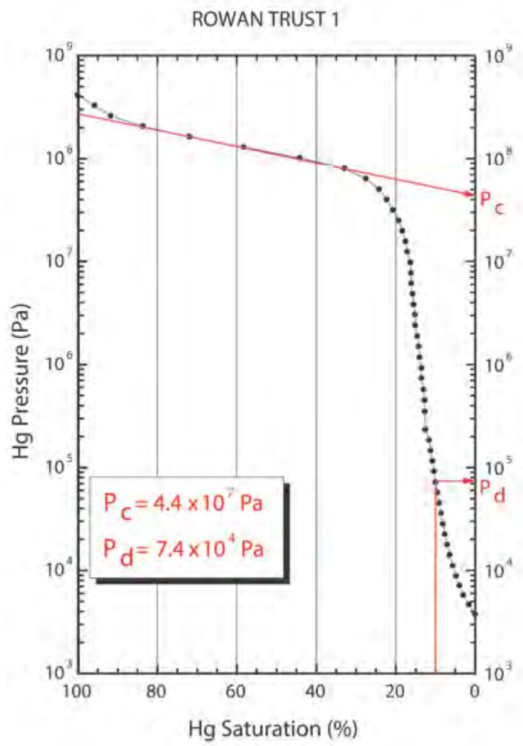
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
4211	Cimarron	Morrowan	1367	36.65902	-102.06851

Intrusion Data Summary		
Median Pore Radius (Volume)	0.0056	µm
Median Pore Radius (Area)	0.0056	µm
Average Pore Radius	0.0046	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.7	g/cm³
Porosity	6.9	%

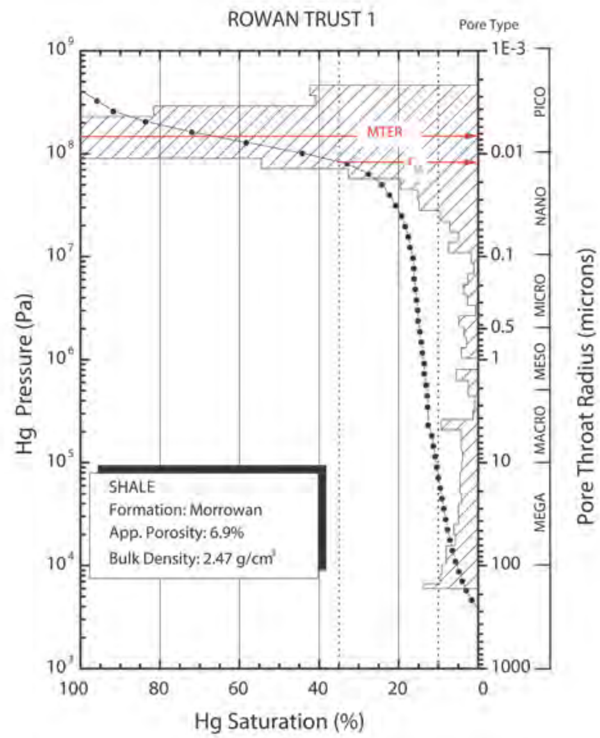
Organic Contents		
TOC	1.72	wt% HC

Pore Structure Summary		
Pc	44.00	MPa
Pd (@ 10% Hg saturation)	0.07	MPa
BET Surface Area	17.6279	m²/g
Median Grain Size	17.606	µm
R35	0.012	µm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.0067	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
29.5	20.1	15.7	5.5	0.5	0.8	0	0	0	0	0.9



ROWAN TRUST 1
Hg Pressure (Pa)
Hg Saturation (%)
P_c
P_d
$P_c = 4.4 \times 10^7$ Pa
$P_d = 7.4 \times 10^4$ Pa



ROWAN TRUST 1
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
SHALE
Formation: Morrowan
App. Porosity: 6.9%
Bulk Density: 2.47 g/cm³

Sample#28 – 4226

4226
SPARKMAN 1
Black Fine Grained Shale

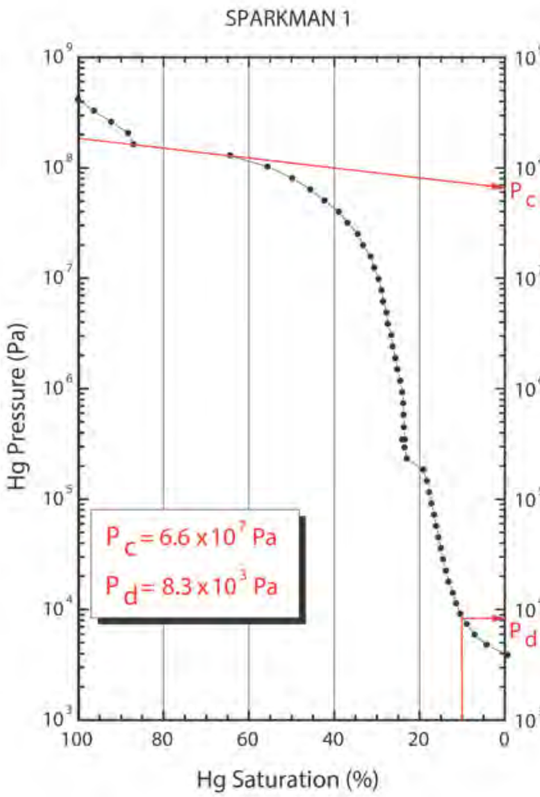
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
4226	Cimarron	Morrowan	1381	36.65712	-102.1259

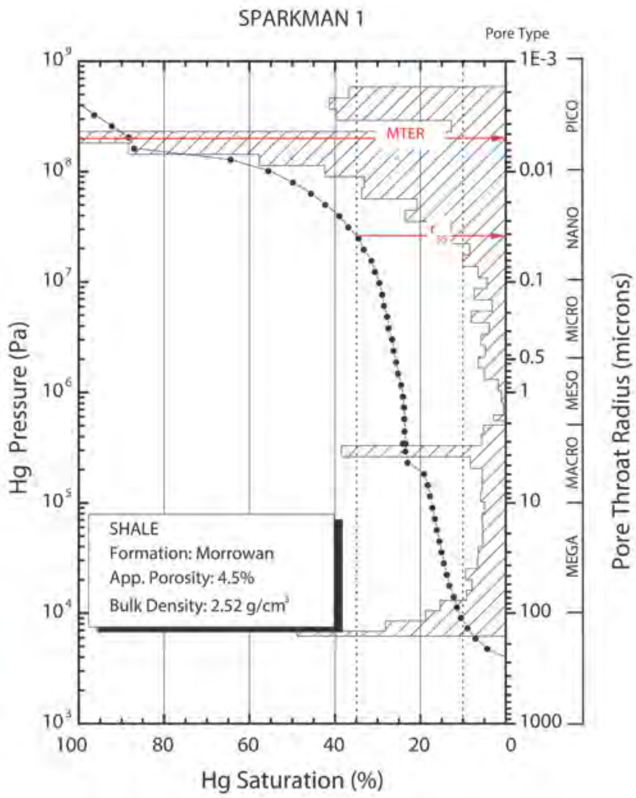
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0077	µm
Median Pore Radius (Area)	0.0043	µm
Average Pore Radius	0.0060	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	4.5	%

Organic Content		
TOC	1.69	wt% HC

Pore Structure Summary		
Pc	66.00	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	3.8016	m²/g
Median Grain Size	47.335	µm
R35	0.04	µm
Pore Throat Type	Nano	
Pore Throat Distribution	None-modal	
Pore Throat Sorting	Medium Sorted	
MTEP	NA	µm

XRD Analysis										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
31	29.7	11	8.6	0.1	0.4	0	0	0	0	0


SPARKMAN 1
Hg Pressure (Pa)
Hg Saturation (%)
Pc
Pd
$P_c = 6.6 \times 10^7$ Pa
$P_d = 8.3 \times 10^3$ Pa

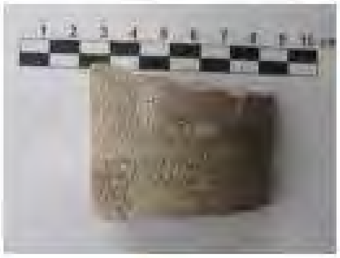

SPARKMAN 1
Pore Type
MTER
PICO
NANO
MICRO
MESO
MACRO
MEGA
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
SHALE
Formation: Morrowan
App. Porosity: 4.5%
Bulk Density: 2.52 g/cm³

Sample#29 – 4458

4458

NASH A1

Pinkish white Lime Mudstone



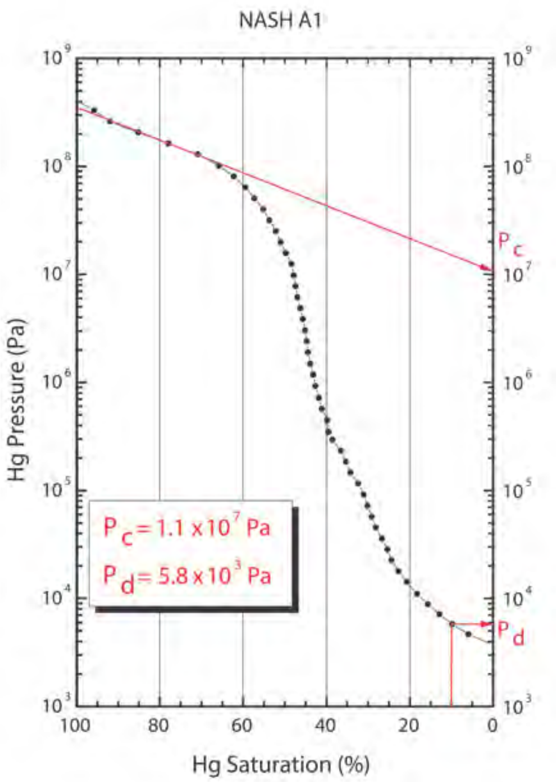
File #	County	Formation	Depth (m)	Lat (N°)	Long (W°)
4458	Texas	Morrowan	1828	36.7	-101.4

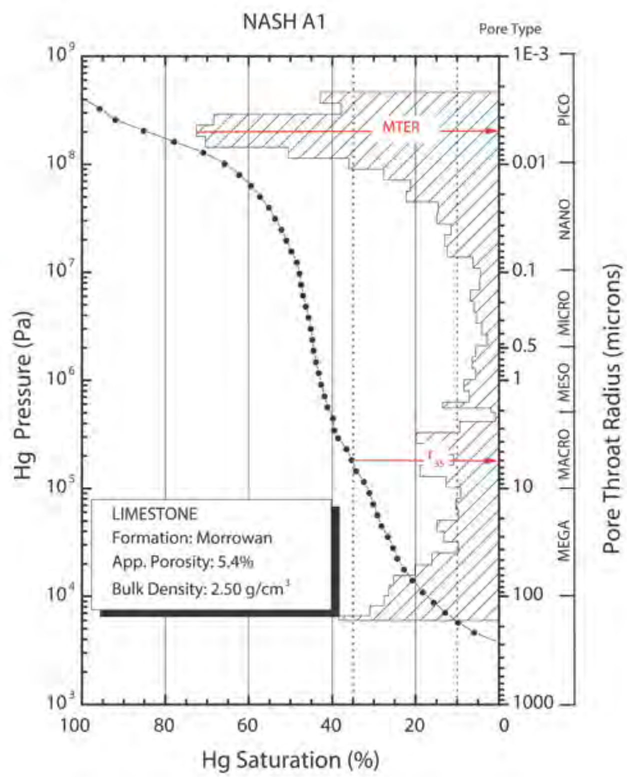
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0376	µm
Median Pore Radius (Area)	0.0080	µm
Average Pore Radius	0.0209	µm
Bulk Density	2.5	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	5.4	%

Organic Content		
TOC	2.35	wt% HC

Pore Structure Summary		
Pc	11.00	MPa
Pd (@ 10% Hg saturation)	0.01	MPa
BET Surface Area	9.3830	m²/g
Grain Size	84.271	µm
R35	5.55	µm
Pore Throat Type	Macro	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Medium Sorted	
MTER	0.0049	µm

XRD Analysis (wt%)										
Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
13.4	9.8	7.1	15.8	0.5	0.6	30.8	0	3.1	0	3.8


NASH A1
Hg Pressure (Pa)
Hg Saturation (%)
$P_c = 1.1 \times 10^7$ Pa
$P_d = 5.8 \times 10^3$ Pa
Pc
Pd


NASH A1
Pore Type
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTER
LIMESTONE
Formation: Morrowan
App. Porosity: 5.4%
Bulk Density: 2.50 g/cm³

Sample#30 – 4515

4515

ARA 2 36

Black Fine Grained Shale

[illegible]	County	Formation	Depth (m)	Lat (N°)	Long (W°)
4515	Texas	Cherokee	1783	36.7	-101.4

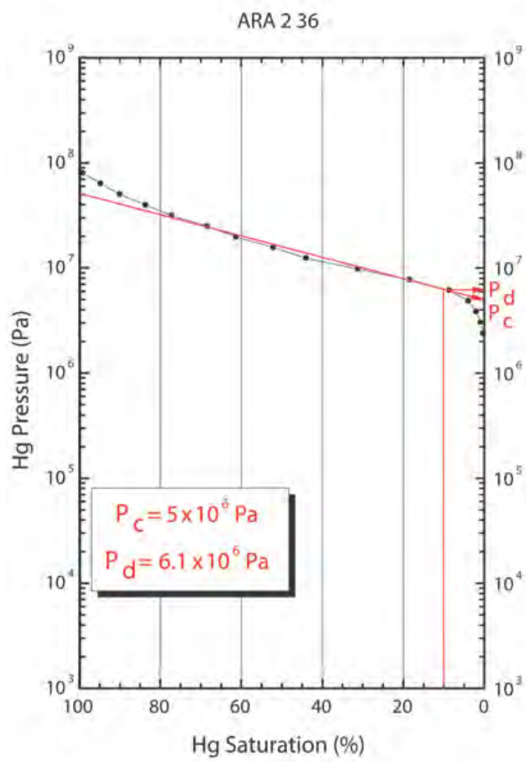
Intrusion Data Summary		
Median Pore Radius (Volume)	0.0424	μm
Median Pore Radius (Area)	0.0475	μm
Average Pore Radius ?	0.0450	μm
Bulk Density	2.4	g/cm³
Apparent (skeletal) Density	2.6	g/cm³
Porosity	6.0	%

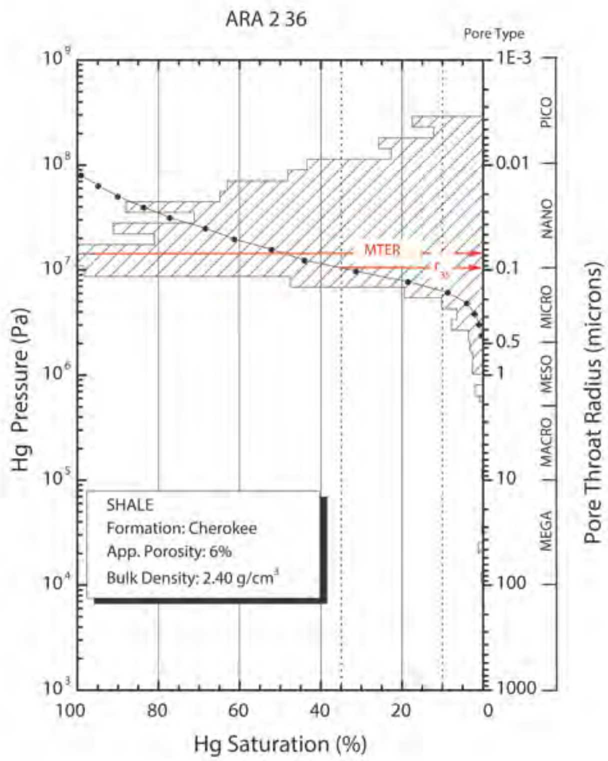
Organic Content		
TOC	3.20	wt% HC

Pore Structure Summary		
Pc	5.00	MPa
Pd (@ 10% Hg saturation)	6.300	MPa
BET Surface Area	3.8217	m²/g
Grain Size	79.57	μm
R35	0.096	μm
Pore Throat Type	Nano	
Pore Throat Distribution	Unimodal	
Pore Throat Sorting	Well Sorted	
MTES	0.069	μm

XRD Analysis (wt%)

Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite
12.1	23.2	15.1	33.5	1.1	6.6	0	1	0	0	5.7


ARA 2 36
Hg Pressure (Pa)
Hg Saturation (%)
P_d
P_c
$P_c = 5 \times 10^6$ Pa
$P_d = 6.1 \times 10^6$ Pa


ARA 2 36
Pore Type
PICO
NANO
MICRO
MESO
MACRO
MEGA
MTFR
r_{35}
Hg Pressure (Pa)
Hg Saturation (%)
Pore Throat Radius (microns)
SHALE
Formation: Cherokee
App. Porosity: 6%
Bulk Density: 2.40 g/cm^3

APPENDIX B: SOURCE-ROCK ANALYSIS (SRA) AND TOTAL ORGANIC CARBON (TOC) MEASUREMENTS

Source Rock Analysis

TOC, Kerogen Quality and Thermal Maturity Testing

City University of New York

Multiple Wells

6316 Windfern Houston, TX 77040

7/11/2011

110558G

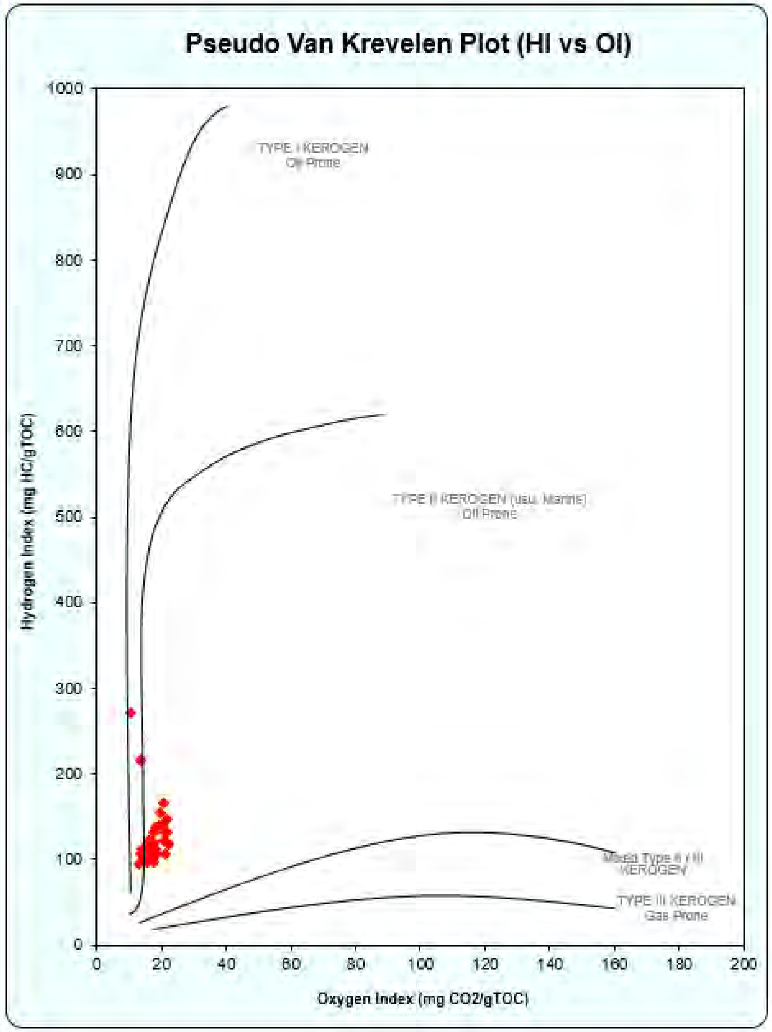
Informal database

#	DATAFILE	ID	TYPE	WEIGHT	cTemp(Tmax)	tTemp	S3	TOC	HI	OI	PI	S1/TOC
73	1b.RAW	120	TPH	98.1	324.4	363.4	0.25	1.29	138	19	0.19	0.32
74	2b.RAW	277	TPH	100.3	327.9	366.9	0.22	1.21	136	18	0.19	0.31
75	3b.RAW	601	TPH	100.2	444	483	0.22	1.23	130	18	0.17	0.27
76	4b.RAW	868	TPH	98	441.7	480.7	0.25	1.85	106	14	0.17	0.22
77	5b.RAW	878	TPH	103.3	440.8	479.8	0.32	2.1	108	15	0.17	0.22
78	6b.RAW	900	TPH	100.9	419.3	458.3	0.24	1.74	215	14	0.24	0.67
79	7b.RAW	1081	TPH	102.8	434.3	473.3	0.3	1.76	121	17	0.27	0.46
80	8b.RAW	1461	TPH	102.6	432.7	471.7	0.27	1.38	154	20	0.27	0.56
81	9b.RAW	1712	TPH	102.1	481.2	520.2	0.26	1.2	131	21	0.17	0.27
82	10b.RAW	2177	TPH	100.9	436.7	475.7	0.26	1.45	113	18	0.17	0.23
83	11b.RAW	2472	TPH	102.3	327.2	366.2	0.32	1.5	107	21	0.17	0.22
84	12b.RAW	2609	TPH	101.9	432	471	0.27	1.7	96	16	0.18	0.21
85	13b.RAW	3088	TPH	105.2	450.4	489.4	0.28	1.35	122	21	0.16	0.24
86	14b.RAW	3115	TPH	103.7	320.6	359.6	0.21	1.3	123	17	0.2	0.3
87	15b.RAW	3138	TPH	103.4	431.1	470.1	0.3	1.35	118	22	0.18	0.25
89	16b.RAW	3141	TPH	104.3	458.1	497.1	0.26	1.47	120	18	0.17	0.25
90	17b.RAW	3146	TPH	100	326.2	365.2	0.26	1.28	139	20	0.2	0.34
91	18b.RAW	3149	TPH	104.7	319.4	358.4	0.25	1.89	96	13	0.18	0.21
92	19b.RAW	3150	TPH	98.8	437.4	476.4	0.28	1.79	109	16	0.18	0.24
93	20b.RAW	3355	TPH	103.4	448.4	487.4	0.27	1.94	112	14	0.16	0.21
94	21b.RAW	3780	TPH	103.2	443.1	482.1	0.26	1.71	113	15	0.17	0.23
95	22b.RAW	3952	TPH	95.5	442.9	481.9	0.55	2.66	167	21	0.12	0.23
96	23b.RAW	3979	TPH	99.8	448.4	487.4	0.36	1.91	106	19	0.16	0.2
97	24b.RAW	4157	TPH	100.5	342.8	381.8	0.26	1.24	132	21	0.18	0.29
98	25b.RAW	4164	TPH	104	339.8	378.8	0.23	1.07	146	21	0.17	0.3
99	26b.RAW	4211	TPH	105.2	438.5	477.5	0.27	1.84	102	15	0.16	0.19
9	27b.RAW	4224	TPH	105	436.3	475.3	0.3	1.72	105	18	0.18	0.22
10	28b.RAW	4226	TPH	103	323.7	362.7	0.27	1.69	103	16	0.17	0.21
11	29b.RAW	4458	TPH	99	445	484	0.42	2.35	96	18	0.16	0.18
12	30b.RAW	4515	TPH	98.7	443.6	482.6	0.34	3.2	271	11	0.12	0.36

Source Rock Analysis Data Page

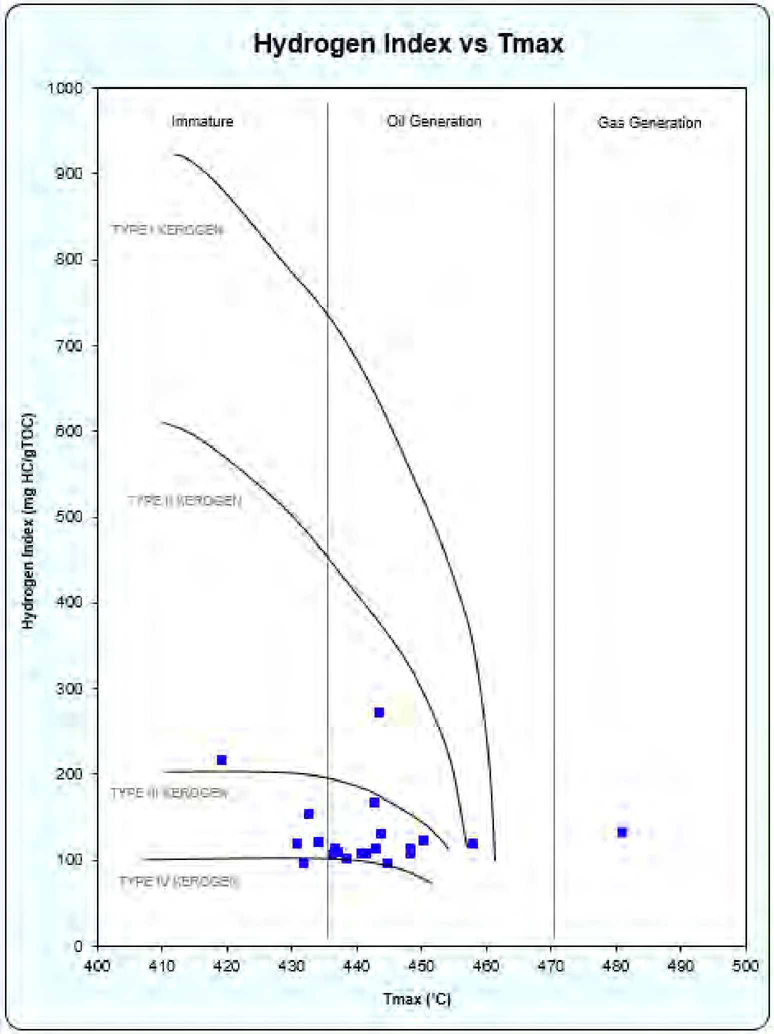
Well Name	Formation	Sample ID	Depth ft.	Sample Wt. mg	TOC wt% HC	S1 mg HC/g	S2 mg HC/g	S3 mg CO2/g	Tmax °C	HI S2x100/TOC	OI S3x100/TOC	PI (S1/(S1+S2))	(S1/TOC)100	Remarks Comments
Ferguson 1	Morrowan	1	120	98.1	1.29	0.41	1.79	0.25	324.4	138.76	19.38	0.19	31.78	
Mocane Plant SWD1	Cimarron	2	277	100.3	1.21	0.38	1.65	0.22	327.9	136.36	18.18	0.19	31.40	
Shrauner 2	Marmaton	3	601	100.2	1.23	0.33	1.61	0.22	444	130.89	17.89	0.17	26.83	
Quigley 1-A	Purdy	4	868	98	1.85	0.41	1.97	0.25	441.7	106.49	13.51	0.17	22.16	
Hendrix 3	Morrowan	5	878	103.3	2.1	0.46	2.25	0.32	440.8	107.14	15.24	0.17	21.90	
Conover 5	Morrowan	6	900	100.9	1.74	1.17	3.75	0.24	419.3	215.52	13.79	0.24	67.24	
Steele A 3	Topeka	7	1081	102.8	1.76	0.8	2.12	0.3	434.3	120.45	17.05	0.27	45.45	
Spence 2	Topeka	8	1461	102.6	1.38	0.77	2.12	0.27	432.7	153.62	19.57	0.27	55.80	
Treece 1	Morrowan	9	1712	102.1	1.2	0.33	1.58	0.26	481.2	131.67	21.67	0.17	27.50	
Brewer 2	Morrowan	10	2177	100.9	1.45	0.33	1.63	0.26	436.7	112.41	17.93	0.17	22.76	
Prothro 41-34	Topeka	11	2472	102.3	1.5	0.33	1.61	0.32	327.2	107.33	21.33	0.17	22.00	
Knop 1-A	Chase	12	2609	101.9	1.7	0.35	1.63	0.27	432	95.88	15.88	0.18	20.59	
Dailey 1-B	Chester	13	3088	105.2	1.35	0.32	1.64	0.28	450.4	121.48	20.74	0.16	23.70	
Myers 1-D	Keyes	14	3115	103.7	1.3	0.39	1.59	0.21	320.6	122.31	16.15	0.20	30.00	
Stonebraker 1-AP	Marmaton	15	3138	103.4	1.35	0.34	1.59	0.3	431.1	117.78	22.22	0.18	25.19	
Stonebraker AN-4	Cherokee	16	3141	104.3	1.47	0.36	1.75	0.26	458.1	119.05	17.69	0.17	24.49	
Purdy 1-A	Keyes	17	3146	100	1.28	0.44	1.79	0.26	326.2	139.84	20.31	0.20	34.38	
Purdy 1-C	Morrowan	18	3149	104.7	1.89	0.4	1.81	0.25	319.4	95.77	13.23	0.18	21.16	
Purdy 1-E	Unkown	19	3150	98.8	1.79	0.43	1.96	0.28	437.4	109.50	15.64	0.18	24.02	
Schuluckebrer 3	Keyes	20	8355	103.4	1.94	0.4	2.18	0.27	448.4	112.37	13.92	0.16	20.62	
Dacoma 1-21	Cherokee	21	3780	103.2	1.71	0.4	1.93	0.26	443.1	112.87	15.20	0.17	23.39	
Gabler 2-7	Chester	22	3952	95.5	2.66	0.6	4.43	0.55	442.9	166.54	20.68	0.12	22.56	
Harrison 1	Atoka	23	3979	99.8	1.91	0.39	2.03	0.36	448.4	106.28	18.85	0.16	20.42	
State 1	Des Moinesian	24	4157	100.5	1.24	0.36	1.64	0.26	342.8	132.26	20.97	0.18	29.03	
State 1	Mississippian	25	4164	104	1.07	0.32	1.56	0.23	339.8	145.79	21.50	0.17	29.91	
Rowan Trust 1	Morrowan	26	4211	105.2	1.84	0.35	1.88	0.27	438.5	102.17	14.67	0.16	19.02	
Durham 1	Morrowan	27	4224	105	1.72	0.38	1.8	0.3	436.3	104.65	17.44	0.17	22.09	
Sparkman 1	Morrowan	28	4226	103	1.69	0.35	1.75	0.27	323.7	103.55	15.98	0.17	20.71	
Nash A-1	Morrowan	29	4458	99	2.35	0.42	2.27	0.42	445	96.60	17.87	0.16	17.87	
Ara 2-36	Cherokee	30	4515	98.7	3.2	1.15	8.67	0.34	443.6	270.94	10.63	0.12	35.94	

Job Number: 110558G

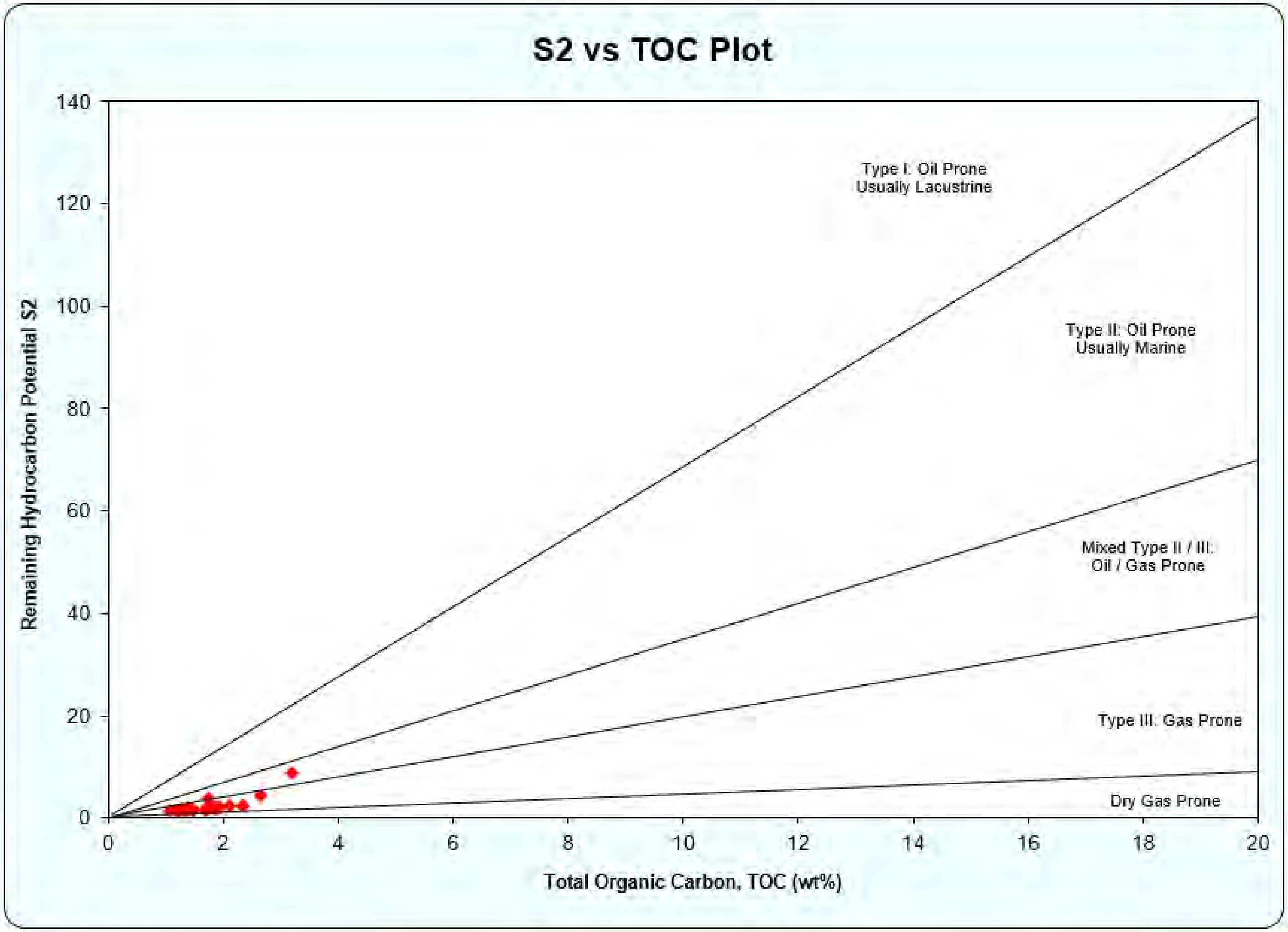


Job Number: 110558G

Core Lab



Job Number: 110558G



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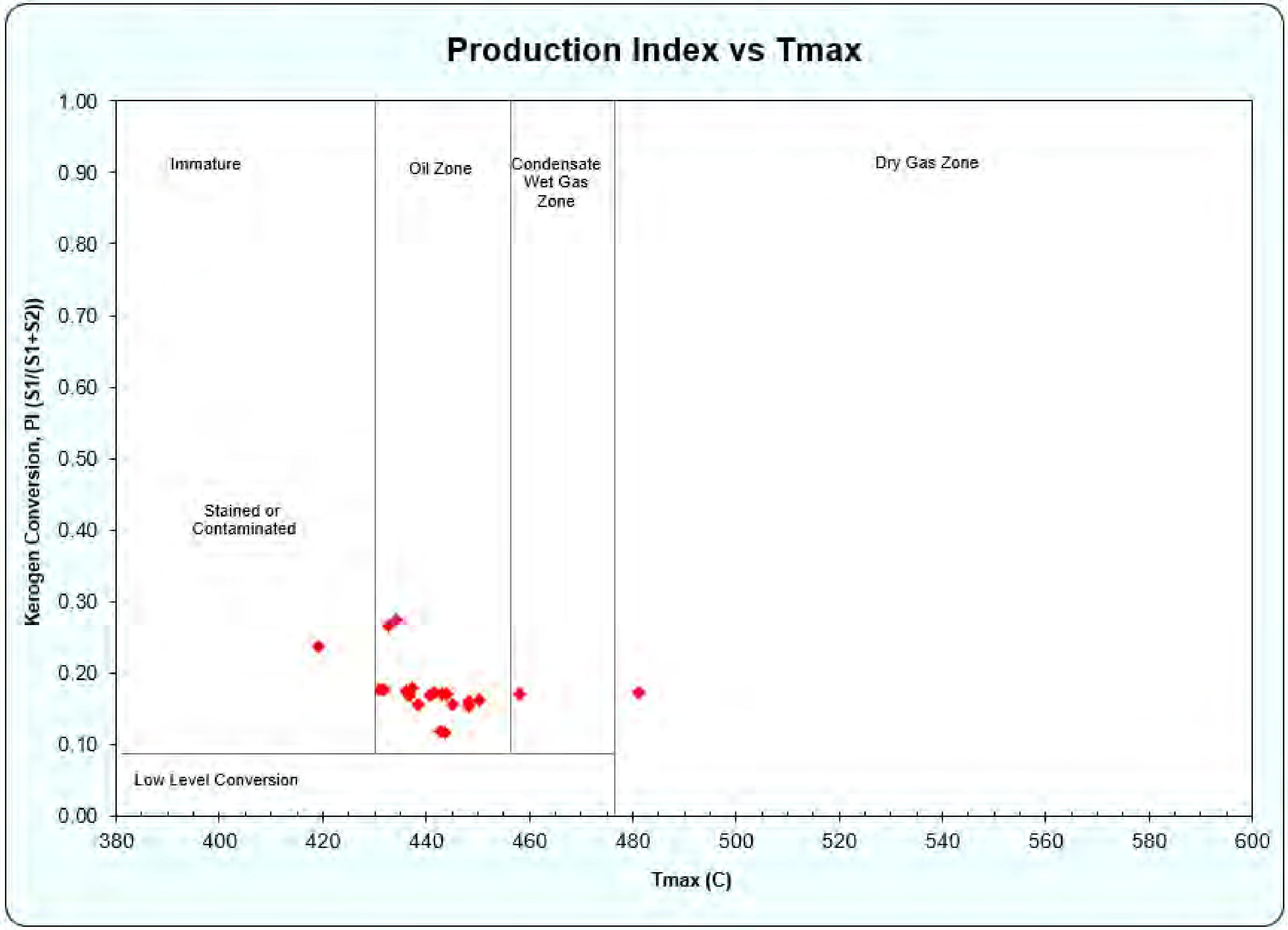


APPENDIX C: X-RAY DIFFRACTION (XRD) MEASUREMENTS

XRD #	FILE NO	Lease Name	WELL No #	<4 Wt%	>4 Wt%	R0 M-L I/S 90S	R0 M-L I/S 60S	R0 M-L C/S 60S	R1 M-L C/S 40S	R1 M-L I/S 40S	R1 M-L I/S 30S	R1 M-L I/S 20S	R3 M-L I/S 10S	Illite & Mica	Kaolinite	Chlorite	Quartz	K-Feldspar	Plagioclase	Calcite	Dolomite	Ankerite	Hematite	Pyrite	TOTAL	EG File Name	AD File Name
CC101	120	FERGUSON	1	24.9	75.1	0	0	0	0	0	0	2.4	0	7.5	43.6	33.7	9.3	0.4	3.1	0	0	0	0	0	100	CCEG101	CCAD101
CC102	277	MOCANE PLANT	SWD1	34.5	65.5	0	0	3.1	0	0	0	0	0	60.5	7.0	12.8	4.3	1.7	3.0	0	0	0	7.6	0	100	CCEG102	CCAD102
CC103	601	SHRAUNER	2	4.0	96.0	0	0	0	0	0	0	0	0	0.8		0.6	1.0	0.3	0.6	96.7	0	0	0	0	100	CCEG103	CCAD103
CC104	868	QUIGLEY	1-A	29.2	70.8	0	0	0	0	0	40.1	0	0	21.5	19.8	10.1	5.6	1.0	1.9	0	0	0	0	0	100	CCEG104	CCAD104
CC105	878	HENDRIX	3	20.2	79.8	0	0	0	0	0	8.2	0	0	10.2	10.2	18.1	37.4	1.9	4.5	7.3	0	0	0	2.2	100	CCEG105	CCAD105
CC106	900	CONOVER	5	5.5	94.5	0	0	0	0	0	0	2.3	0	3.2	49.1	23.3	11.4	0	10.7	0	0	0	0	0	100	CCEG106	CCAD106
CC107	1081	STEELE A	3	3.4	96.6	0	0	0	1.4	0	0	0	0	8.5	0	4.6	11.6	0.5	1.2	7.3	64.9	0	0	0	100	CCEG107	CCAD107
CC108	1461	SPENCE	2	4.0	96.0	0	0	0	0	0	0	0	0	0.6	0.4	0.0	1.4	0	0	96.4	1.2	0	0	0	100	CCEG108	CCAD108
CC109	1712	TREECE	1	6.1	93.9	0	0	0	0	0	0	0	0	2.4	6.6	59.1	8.7	2.6	5.2	14.5	0.9	0	0	0	100	CCEG109	CCAD109
CC110	2177	BREWER	2	22.3	77.7	0	0	0	0	0	25.5	0	0	8.1	9.9	10.0	14.0	0	0	32.5	0	0	0	0	100	CCEG110	CCAD110
CC111	2472	PROTHRO	41-34	30.3	69.7	0	0	0	0	0	10.3	0	0	19.1	5.4	7.6	5.6	1.8	3.0	43.8	3.4	0	0	0	100	CCEG111	CCAD111
CC112	2609	KNOP	1-A	8.5	91.5	0	0	0	0	0	0	0	3.7	10.0	0.5	3.6	5.9	0.8	1.2	1.4	72.9	0	0	0	100	CCEG112	CCAD112
CC113	3088	DAILEY	1-B	29.2	70.8	0	0	0	0	28.1	0	0	0	24.5	21.9	14.8	10.7	0	0	0	0	0	0	0	100	CCEG113	CCAD113
CC114	3115	MYERS	1-D	10.0	90.0	0	0	0	0	0	0	11.0	0	4.1	17.3	33.4	15.4	0.4	0.9	6.9	0.9	9.7	0	0	100	CCEG114	CCAD114
CC115	3138	STONEBRAKER	1-AP	5.8	94.2	0	0	0	0	0	0	0	0	3.7	3.8	3.4	30.3	1.4	4.7	32.0	3.2	17.5	0	0	100	CCEG115	CCAD115
CC116	3141	STONEBRAKER	AN-4	19.5	80.5	0	0	0	0	0	17.9	0	0	15.6	55.3	7.2	3.1	0	0.9	0	0	0	0	0	100	CCEG116	CCAD116
CC117	3146	PURDY	1-A	11.1	88.9	0	0	0	0	0	0	11.9	0	12.4	4.1	2.0	10.4	1.5	3.3	39.7	5.8	0	8.9	0	100	CCEG117	CCAD117
CC118	3149	PURDY	1-C	15.5	84.5	0	0	0	0	0	22.2	0	0	11.5	46.8	6.6	12.9	0	0	0	0	0	0	0	100	CCEG118	CCAD118
CC119	3150	PURDY	1-E	23.1	76.9	0	0	0	0	0	14.4	0	0	7.7	7.7	0.6	58.9	0	0	7.9	2.8	0	0	0	100	CCEG119	CCAD119
CC120	3355	SCHLUCKEBIER	3	29.5	70.5	0	30.7	0	0	0	0	0	0	10.4	19.6	9.6	23.6	0	0	6.1	0	0	0	0	100	CCEG120	CCAD120
CC121	3780	DACOMA	1-21	20.5	79.5	0	0	0	0	0	12.4	0	0	12.5	12.9	26.3	11.3	2.7	7.2	10.1	1.9	0	0	2.7	100	CCEG121	CCAD121
CC122	3952	GABLER	2-7	36.6	63.4	47.3	0	0	0	0	0	0	0	3.8	23.3	19.4	5.7	0	0	0.5	0	0	0	0	53	CCEG122	CCAD122
CC123	3979	HARRISON	1	26.1	73.9	0	28.0	0	0	0	0	0	0	23.6	1.6	10.7	16.5	0	0	19.6	0	0	0	0	100	CCEG123	CCAD123
CC124	4157	STATE	1	25.0	75.0	0	0	0	0	0	20.8	0	0	27.6	3.6	7.8	19.6	1.4	3.3	2.6	0	0	13.3	0	100	CCEG124	CCAD124
CC125	4164	STATE	1	16.6	83.4	0	0	0	0	0	0	0	7.6	45.9	14.7	13.4	13.0	1.2	2.4	0	0	0	0	1.8	100	CCEG125	CCAD125
CC126	4211	ROWAN	TRUST 1	24.4	75.6	0	27.0	0	0	0	0	0	0	14.4	20.0	10.8	23.8	0	0	4.0	0	0	0	0	100	CCEG126	CCAD126
CC127	4224	DURHAM	1	26.0	74.0	0	0	0	0	0	27.2	0	0	29.5	20.1	15.7	5.3	0.5	0.8	0	0	0	0	0.9	100	CCEG127	CCAD127
CC128	4226	SPARKMAN	1	32.1	67.9	0	0	0	0	0	19.2	0	0	31.0	29.7	11.0	8.6	0.1	0.4	0	0	0	0	0	100	CCEG128	CCAD128
CC129	4458	NASH	A 1	24.5	75.5	0	0	0	0	0	17.1	0	0	11.4	9.8	7.1	15.8	0.5	0.6	30.8	0	3.1	0	3.8	100	CCEG129	CCAD129
CC130	4515	ARA	2-36	10.6	89.4	0	0	0	0	0	23.7	0	0	12.1	23.2	15.1	13.5	1.1	6.6	0	1.0	0	0	3.7	100	CCEG130	CCAD130

Mixed-Layer Clays

R0 M-L I/S 90S, 60S - Randomly Ordered Mixed-Layer Illite/Smectite with 90% and 60% Smectite layers

R0 M-L C/S 60S - Randomly Ordered Mixed-Layer Chlorite/Smectite with 60% Smectite layers

R1 M-L C/S 40S - R1 Ordered Mixed-Layer Chlorite/Smectite with 40% Smectite layers

R1 M-L I/S 40S, 30S, 20S - R1 Ordered Mixed-Layer Illite/Smectite with 40%, 30% and 20% Smectite layers

R3 M-L I/S 10S - R3 Ordered Mixed-Layer Illite/Smectite with 10% Smectite layers

APPENDIX D: SURFACE AREA MEASUREMENTS

Sample #1-120

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 1

Sample: 120 F1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103989.SMP

Started: 6/23/2011 10:09:32AM	Analysis Adsorptive: N2
Completed: 6/23/2011 12:45:41PM	Analysis Bath Temp.: 77.350 K
Report Time: 6/23/2011 1:14:15PM	Sample Mass: 4.0912 g
Warm Free Space: 6.6142 cm^3 Measured	Cold Free Space: 15.9867 cm^3 Measured
Equilibration Interval: 10 s	Low Pressure Dose: None
Sample Density: 1.000 g/cm^3	Automatic Degas: No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.300889098: 7.9796 m^2/g

BET Surface Area: 8.1997 m^2/g

MICROMERITICS ANALYTICAL SERVICES *The Particle Testing Authority*

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 2

Sample: 120 F1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103989.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:14:15PM
Warm Free Space: 6.6142 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0912 g
Cold Free Space: 15.9867 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	741.843933
0.049731815	36.895397	1.6503	01:47	741.887207
0.072145716	53.516987	1.7571	01:54	741.790222
0.107997752	80.119461	1.8984	02:01	741.862305
0.124145216	92.092010	1.9585	02:05	741.808777
0.148193654	109.923439	2.0493	02:10	741.755371
0.173151412	128.421722	2.1410	02:15	741.672974
0.198389808	147.121506	2.2315	02:19	741.577942
0.224427441	166.438782	2.3274	02:23	741.615112
0.250445346	185.709030	2.4259	02:27	741.515198
0.275653031	204.392029	2.5226	02:31	741.482971
0.300889098	223.092316	2.6220	02:34	741.443665

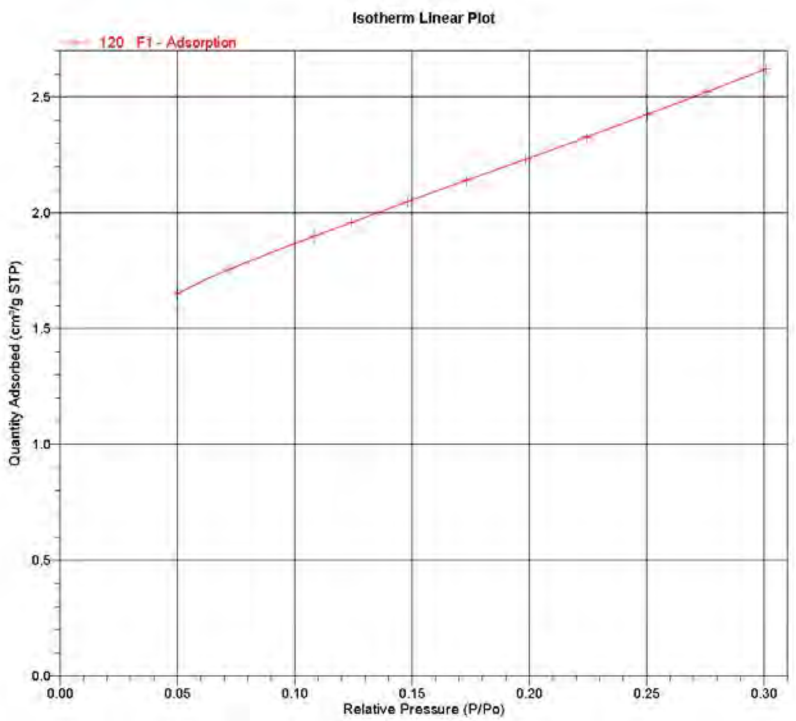
TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 3

Sample: 120 F1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103989.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:14:15PM
Warm Free Space: 6.6142 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0912 g
Cold Free Space: 15.9867 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES *The Particle Testing Authority*

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 4

Sample: 120 F1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103989.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:14:15PM
Warm Free Space: 6.6142 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0912 g
Cold Free Space: 15.9867 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 8.1997 ± 0.0312 m²/g
Slope: 0.524203 ± 0.001986 g/cm³ STP
Y-Intercept: 0.006693 ± 0.000381 g/cm³ STP
C: 79.325934
Qm: 1.8836 cm³/g STP
Correlation Coefficient: 0.9999354
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.049731815	1.6503	0.031713
0.072145716	1.7571	0.044252
0.107997752	1.8984	0.063778
0.124145216	1.9585	0.072372
0.148193654	2.0493	0.084895
0.173151412	2.1410	0.097810
0.198389808	2.2315	0.110908
0.224427441	2.3274	0.124331
0.250445346	2.4259	0.137734
0.275653031	2.5226	0.150857
0.300889098	2.6220	0.164147

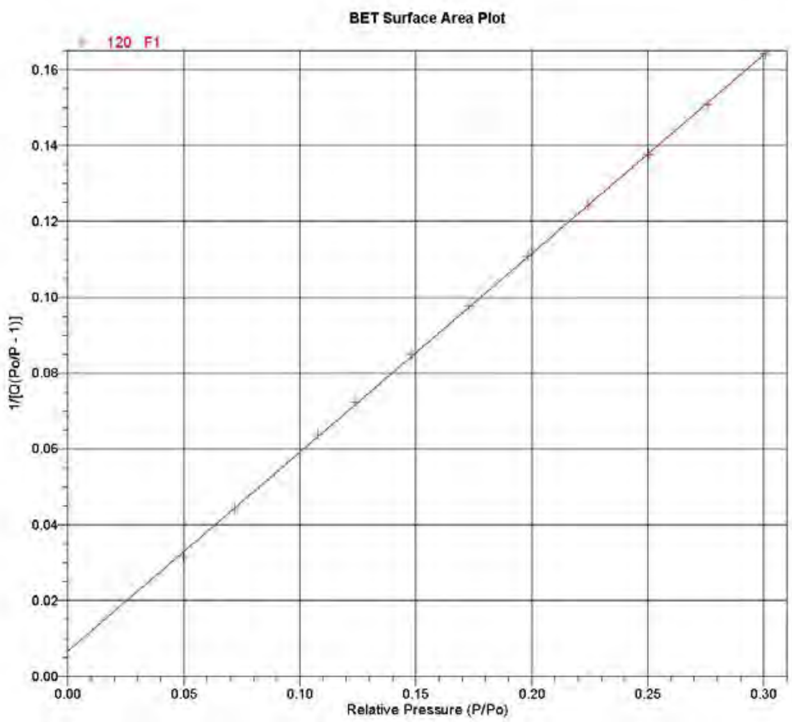
TriStar II 3020 V1.03 (V1.03)   Unit 2 Port 1   Serial #: 571   Page 5

Sample: 120 F1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103989.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:14:15PM
Warm Free Space: 6.6142 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0912 g
Cold Free Space: 15.9867 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



Sample #2-277

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 1

Sample: 277 F2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103990.SMP

Started:	6/23/2011 10:09:32AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 12:45:41PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/23/2011 1:14:57PM	Sample Mass:	3.7590 g
Warm Free Space:	6.5038 cm^3 Measured	Cold Free Space:	15.6597 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.299916365: 9.0396 m^2/g

BET Surface Area: 9.3872 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 277 F2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103990.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:14:57PM
Warm Free Space: 6.5038 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.7590 g
Cold Free Space: 15.6597 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

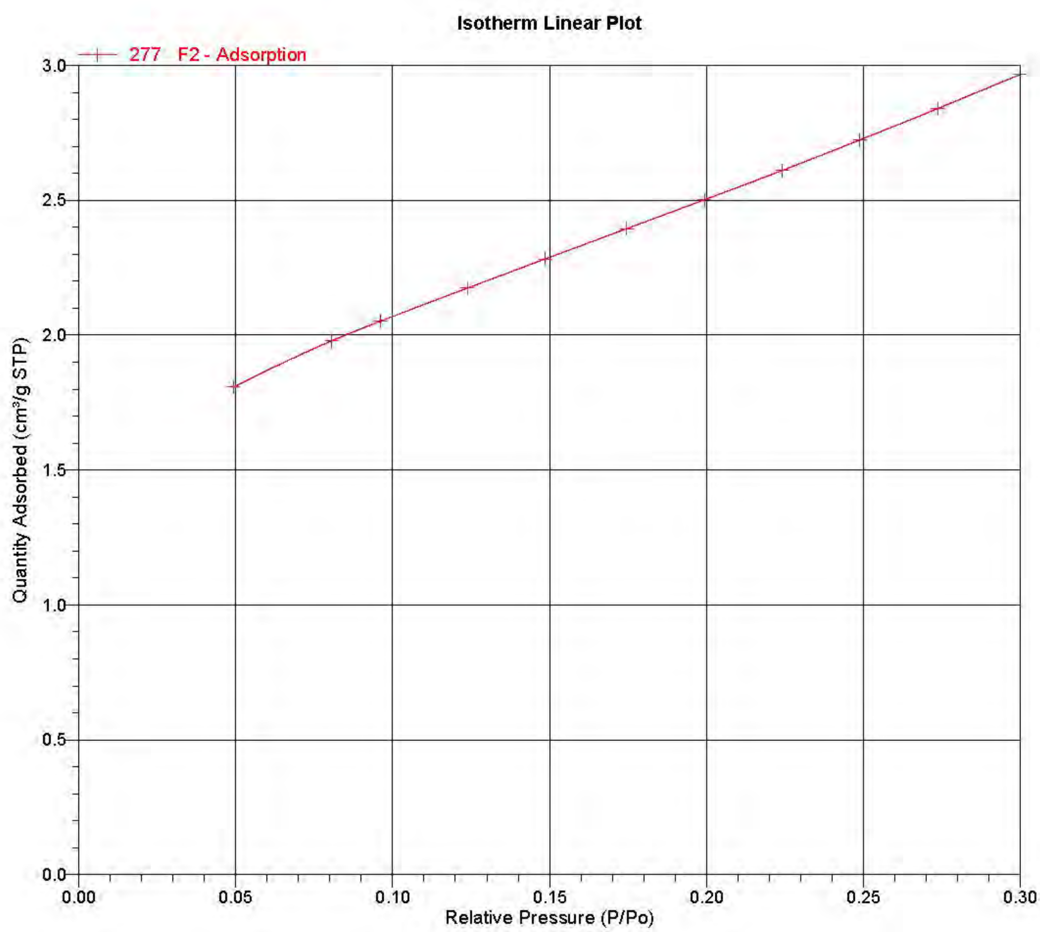
Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	741.843933
0.049250856	36.531780	1.8079	01:34	741.749146
0.080580276	59.778412	1.9790	01:43	741.849182
0.096070653	71.275307	2.0522	01:46	741.905090
0.123885923	91.902115	2.1751	01:51	741.828552
0.148632034	110.264458	2.2827	01:54	741.862000
0.174498237	129.453781	2.3946	01:59	741.862976
0.199411697	147.929291	2.5019	02:03	741.828552
0.224198846	166.308990	2.6110	02:06	741.792358
0.248873652	184.617950	2.7235	02:10	741.813965
0.273700462	203.000763	2.8400	02:14	741.689514
0.299916365	222.407242	2.9661	02:18	741.564209

Sample: 277 F2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103990.SMP

Started:	6/23/2011 10:09:32AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 12:45:41PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/23/2011 1:14:57PM	Sample Mass:	3.7590 g
Warm Free Space:	6.5038 cm³ Measured	Cold Free Space:	15.6597 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 4

Sample: 277 F2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103990.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:14:57PM
Warm Free Space: 6.5038 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.7590 g
Cold Free Space: 15.6597 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 9.3872 ± 0.0421 m²/g
Slope: 0.455403 ± 0.002038 g/cm³ STP
Y-Intercept: 0.008336 ± 0.000408 g/cm³ STP
C: 55.631397
Qm: 2.1564 cm³/g STP
Correlation Coefficient: 0.9999199
Molecular Cross-Sectional Area: 0.1620 nm²

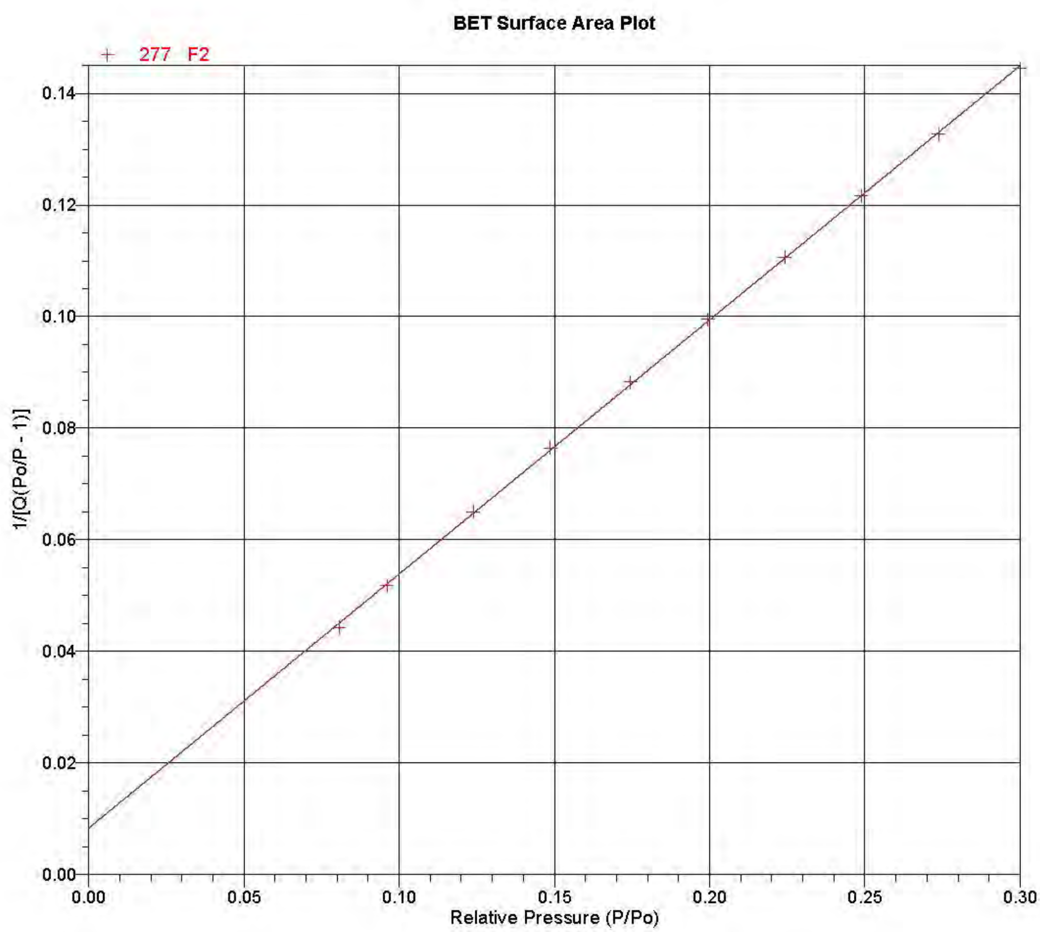
Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.080580276	1.9790	0.044286
0.096070653	2.0522	0.051789
0.123885923	2.1751	0.065010
0.148632034	2.2827	0.076479
0.174498237	2.3946	0.088276
0.199411697	2.5019	0.099556
0.224198846	2.6110	0.110681
0.248873652	2.7235	0.121657
0.273700462	2.8400	0.132692
0.299916365	2.9661	0.144431

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 5

Sample: 277 F2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103990.SMP

Started:	6/23/2011 10:09:32AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 12:45:41PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/23/2011 1:14:57PM	Sample Mass:	3.7590 g
Warm Free Space:	6.5038 cm³ Measured	Cold Free Space:	15.6597 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample #3-601

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 1

Sample: 601 F3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103991.SMP

Started:	6/23/2011 10:09:32AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 12:45:41PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/23/2011 1:15:17PM	Sample Mass:	4.0348 g
Warm Free Space:	6.6564 cm^3 Measured	Cold Free Space:	16.1008 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.300959242: 0.5840 m^2/g

BET Surface Area: 0.6087 m^2/g

TriStar II 3020 V1.03 (V1.03)   Unit 2 Port 3   Serial #: 571   Page 2

Sample: 601 F3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103991.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:15:17PM
Warm Free Space: 6.6564 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0348 g
Cold Free Space: 16.1008 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	741.843933
0.056464083	41.889915	0.1156	01:28	741.886047
0.074542361	55.296432	0.1228	01:30	741.812195
0.101155735	75.036285	0.1321	01:32	741.789734
0.126778886	94.037132	0.1403	01:34	741.741272
0.151274205	112.209663	0.1476	01:37	741.763367
0.177385386	131.585831	0.1553	01:39	741.807617
0.202481474	150.202164	0.1625	01:41	741.806946
0.226344525	167.901413	0.1695	01:43	741.795776
0.251151279	186.324112	0.1768	01:45	741.880005
0.277507236	205.898834	0.1849	01:47	741.958435
0.300959242	223.271896	0.1919	01:50	741.867554

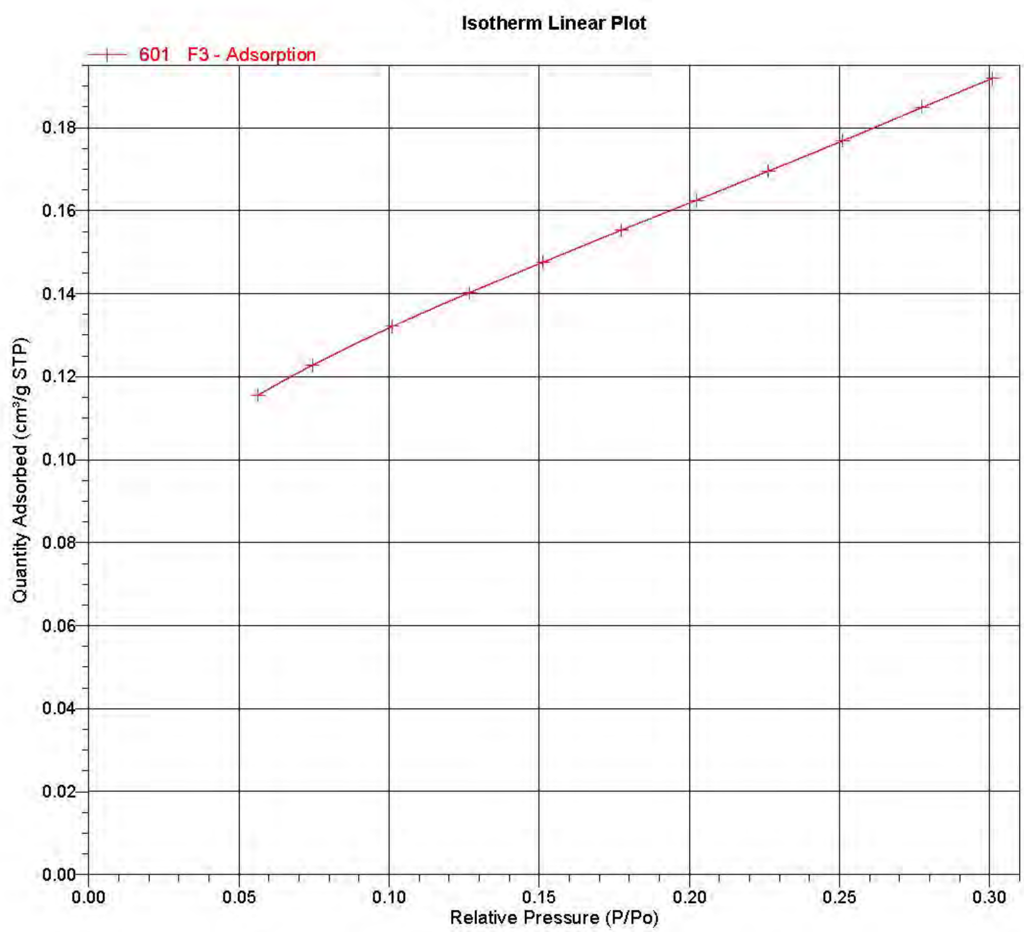
TriStar II 3020 V1.03 (V1.03)   Unit 2 Port 3   Serial #: 571   Page 3

Sample: 601 F3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103991.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:15:17PM
Warm Free Space: 6.6564 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0348 g
Cold Free Space: 16.1008 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 4

Sample: 601 F3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103991.SMP

Started: 6/23/2011 10:09:32AM
Completed: 6/23/2011 12:45:41PM
Report Time: 6/23/2011 1:15:17PM
Warm Free Space: 6.6564 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0348 g
Cold Free Space: 16.1008 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 0.6087 ± 0.0027 m²/g
Slope: 7.014268 ± 0.030731 g/cm³ STP
Y-Intercept: 0.137444 ± 0.005950 g/cm³ STP
C: 52.033536
Qm: 0.1398 cm³/g STP
Correlation Coefficient: 0.9999136
Molecular Cross-Sectional Area: 0.1620 nm²

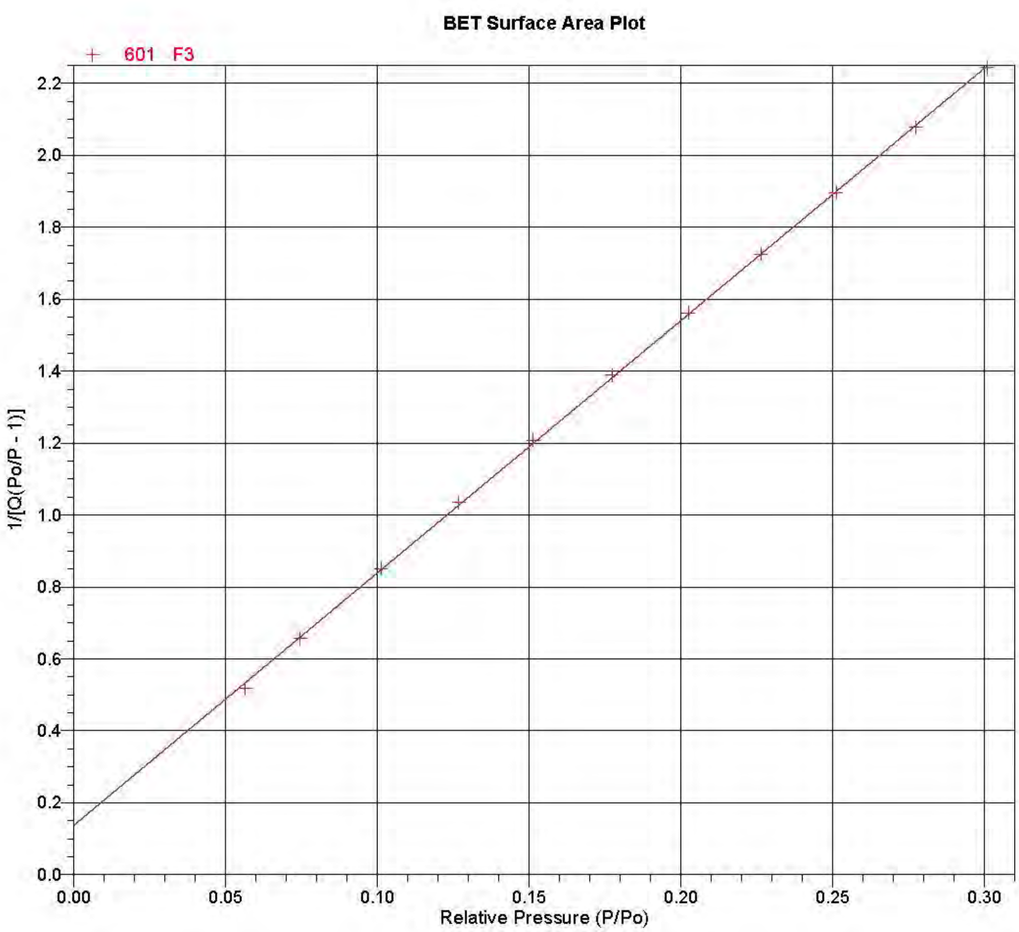
Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.056464083	0.1156	0.517745
0.074542361	0.1228	0.656088
0.101155735	0.1321	0.851797
0.126778886	0.1403	1.035179
0.151274205	0.1476	1.207550
0.177385386	0.1553	1.388407
0.202481474	0.1625	1.561986
0.226344525	0.1695	1.725642
0.251151279	0.1768	1.896457
0.277507236	0.1849	2.077636
0.300959242	0.1919	2.243477

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 5

Sample: 601 F3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103991.SMP

Started:	6/23/2011 10:09:32AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 12:45:41PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/23/2011 1:15:17PM	Sample Mass:	4.0348 g
Warm Free Space:	6.6564 cm³ Measured	Cold Free Space:	16.1008 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample#4-868

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 1

Sample: 868 J1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103992.SMP

Started:	6/23/2011 10:26:50AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 5:00:59PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 7:54:24AM	Sample Mass:	4.5000 g
Warm Free Space:	6.4762 cm^3 Measured	Cold Free Space:	15.8123 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.274373192: 18.0327 m^2/g

BET Surface Area: 18.5175 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 868 J1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103992.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:54:24AM
Warm Free Space: 6.4762 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5000 g
Cold Free Space: 15.8123 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	741.708130
0.049384890	36.543079	3.8804	03:24	739.964783
0.073234829	54.191132	4.1426	03:52	739.963928
0.097020301	71.740822	4.3696	04:23	739.441345
0.120641801	89.220009	4.5675	04:45	739.544739
0.144950075	107.195251	4.7659	05:04	739.532227
0.169975759	125.613663	4.9629	05:22	739.009277
0.195934657	144.905243	5.1535	05:38	739.559021
0.222165257	164.246582	5.3404	05:53	739.299133
0.248177743	183.376541	5.5252	06:07	738.891968
0.274373192	202.701569	5.7087	06:21	738.780518
0.301255210	222.580658	5.8917	06:32	738.844177

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 3

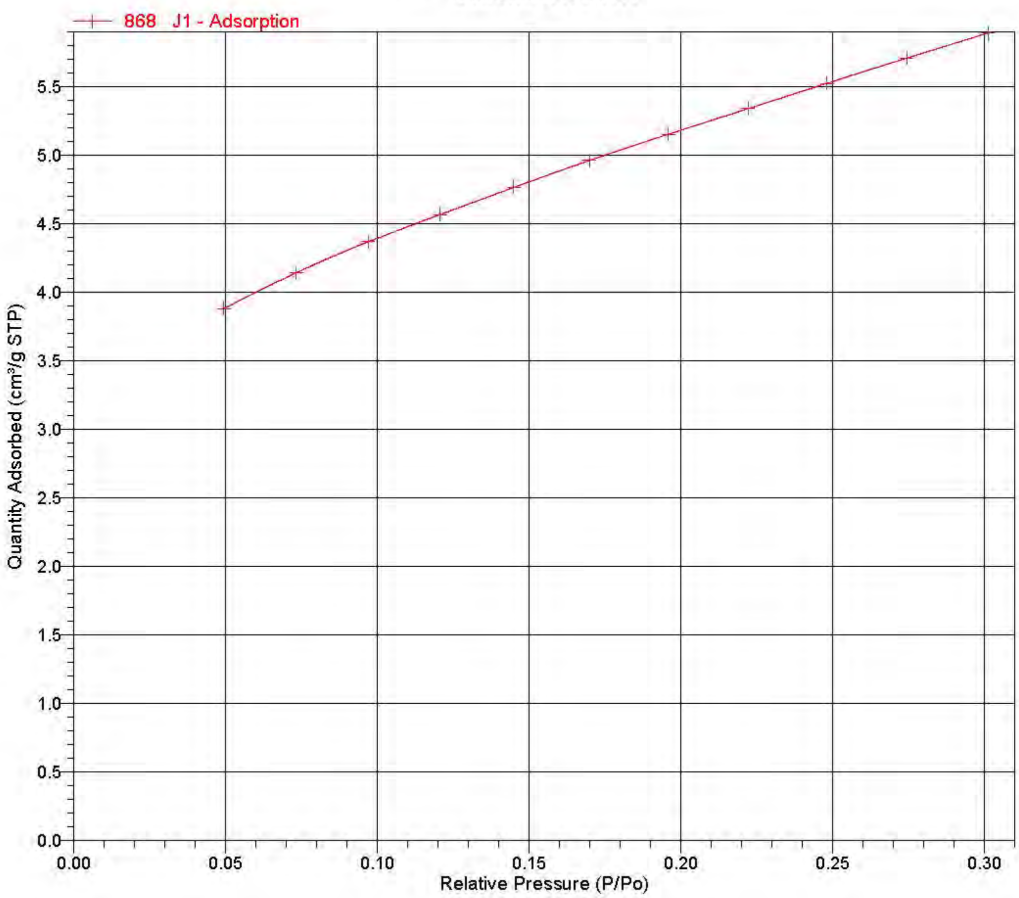
Sample: 868 J1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103992.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:54:24AM
Warm Free Space: 6.4762 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5000 g
Cold Free Space: 15.8123 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Linear Plot



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 868 J1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103992.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:54:24AM
Warm Free Space: 6.4762 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5000 g
Cold Free Space: 15.8123 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 18.5175 ± 0.0741 m^2/g
Slope: 0.233241 ± 0.000926 g/cm^3 STP
Y-Intercept: 0.001845 ± 0.000162 g/cm^3 STP
C: 127.416384
Qm: 4.2538 cm^3/g STP
Correlation Coefficient: 0.9999369
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.049384890	3.8804	0.013388
0.073234829	4.1426	0.019075
0.097020301	4.3696	0.024589
0.120641801	4.5675	0.030037
0.144950075	4.7659	0.035570
0.169975759	4.9629	0.041263
0.195934657	5.1535	0.047284
0.222165257	5.3404	0.053483
0.248177743	5.5252	0.059745
0.274373192	5.7087	0.066235

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 5

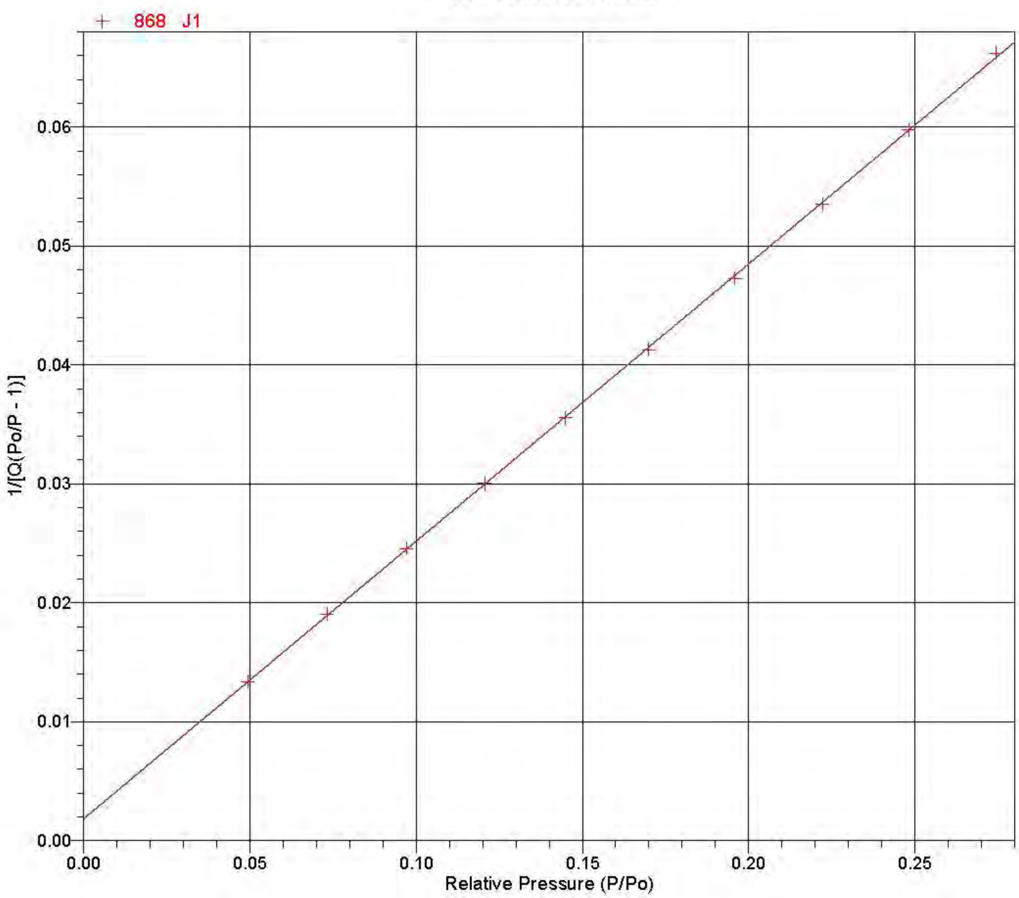
Sample: 868 J1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103992.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:54:24AM
Warm Free Space: 6.4762 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5000 g
Cold Free Space: 15.8123 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#5-878

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 1

Sample: 878 J2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103993.SMP

Started:	6/23/2011 10:26:50AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 5:00:59PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 7:49:59AM	Sample Mass:	4.2208 g
Warm Free Space:	6.5218 cm³ Measured	Cold Free Space:	15.9121 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.300209127: 15.7917 m²/g

BET Surface Area: 16.2197 m²/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 878 J2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103993.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:49:59AM
Warm Free Space: 6.5218 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.2208 g
Cold Free Space: 15.9121 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

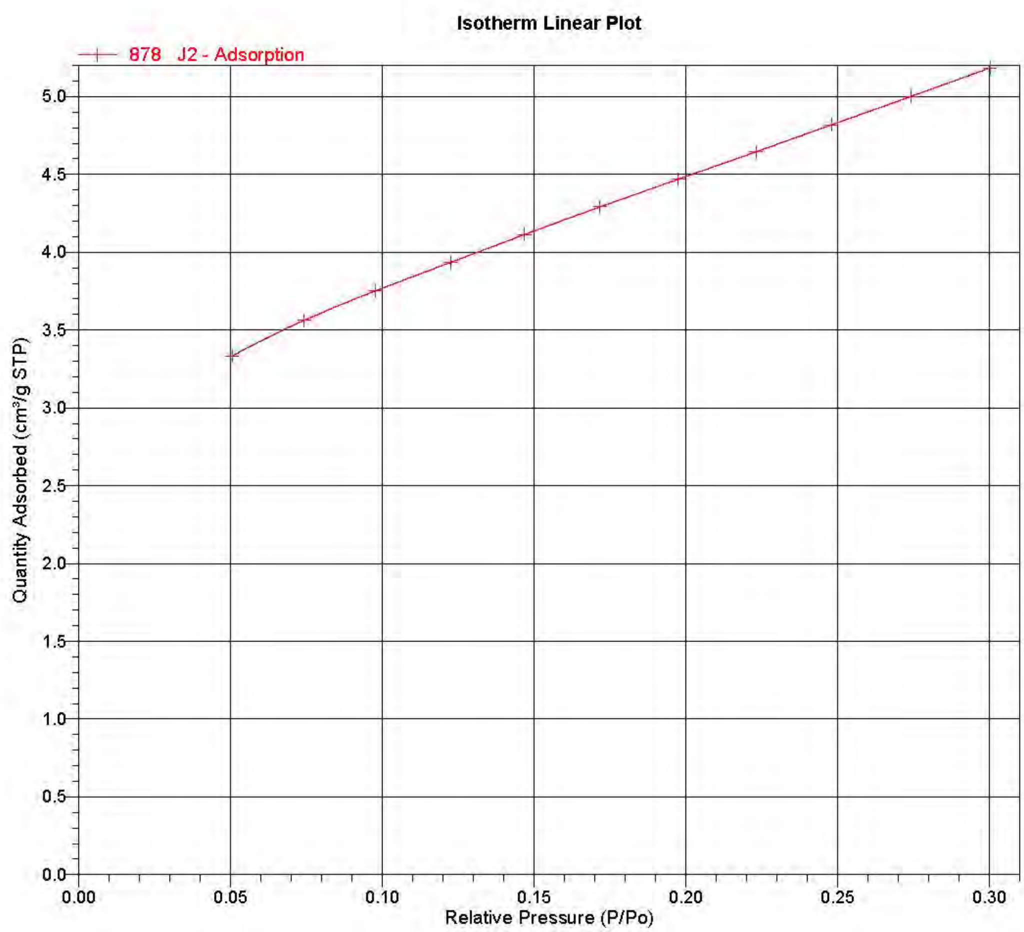
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	741.708130
0.050508215	37.450756	3.3337	01:40	741.478516
0.074175891	54.990929	3.5617	01:46	741.358521
0.097716387	72.459671	3.7518	01:51	741.530396
0.122409807	90.759445	3.9344	01:57	741.439331
0.146909018	108.888580	4.1138	02:01	741.197388
0.171717770	127.284760	4.2910	02:06	741.243958
0.197499549	146.431595	4.4690	02:11	741.427490
0.223132717	165.366470	4.6449	02:15	741.112610
0.248026692	183.814407	4.8185	02:20	741.107361
0.274275745	203.263672	5.0011	02:25	741.092407
0.300209127	222.545609	5.1839	02:29	741.301941

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 3

Sample: 878 J2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103993.SMP

Started:	6/23/2011 10:26:50AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 5:00:59PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 7:49:59AM	Sample Mass:	4.2208 g
Warm Free Space:	6.5218 cm³ Measured	Cold Free Space:	15.9121 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 878 J2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103993.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:49:59AM
Warm Free Space: 6.5218 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.2208 g
Cold Free Space: 15.9121 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 16.2197 ± 0.0408 m²/g
Slope: 0.265648 ± 0.000664 g/cm³ STP
Y-Intercept: 0.002741 ± 0.000126 g/cm³ STP
C: 97.920146
Qm: 3.7259 cm³/g STP
Correlation Coefficient: 0.9999719
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.050508215	3.3337	0.015957
0.074175891	3.5617	0.022495
0.097716387	3.7518	0.028866
0.122409807	3.9344	0.035453
0.146909018	4.1138	0.041861
0.171717770	4.2910	0.048315
0.197499549	4.4690	0.055069
0.223132717	4.6449	0.061835
0.248026692	4.8185	0.068452
0.274275745	5.0011	0.075570
0.300209127	5.1839	0.082757

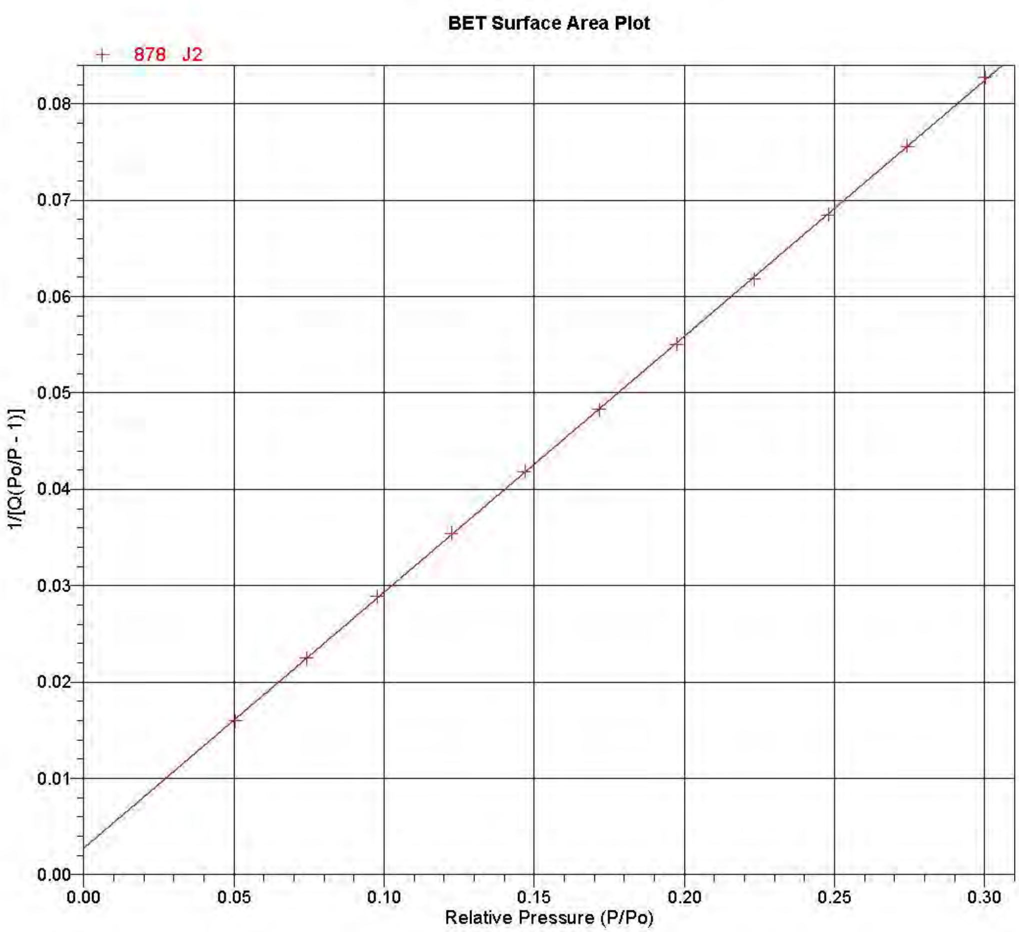
TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 5

Sample: 878 J2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103993.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:49:59AM
Warm Free Space: 6.5218 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.2208 g
Cold Free Space: 15.9121 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



Sample#6-900

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03)   Unit 3 Port 3   Serial #: 238   Page 1

Sample: 900 J3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103994.SMP

Started:	6/23/2011 10:26:50AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 5:00:59PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 7:53:48AM	Sample Mass:	4.3427 g
Warm Free Space:	6.5300 cm^3 Measured	Cold Free Space:	15.8951 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.276369020: 1.7037 m^2/g

BET Surface Area: 1.8399 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 900 J3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103994.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:53:48AM
Warm Free Space: 6.5300 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.3427 g
Cold Free Space: 15.8951 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	741.708130
0.047846744	35.488468	0.2812	01:27	741.711243
0.077813462	57.726086	0.3427	01:31	741.852173
0.097199938	72.066849	0.3717	01:34	741.428955
0.124709496	92.465515	0.4054	01:37	741.447266
0.150151741	111.327545	0.4321	01:40	741.433594
0.174983602	129.754303	0.4557	01:42	741.522644
0.200144791	148.375626	0.4778	01:44	741.341431
0.226096987	167.618073	0.4998	01:46	741.354736
0.250710688	185.859818	0.5201	01:49	741.331848
0.276369020	204.878525	0.5408	01:51	741.322327
0.300343331	222.620071	0.5605	01:53	741.218628

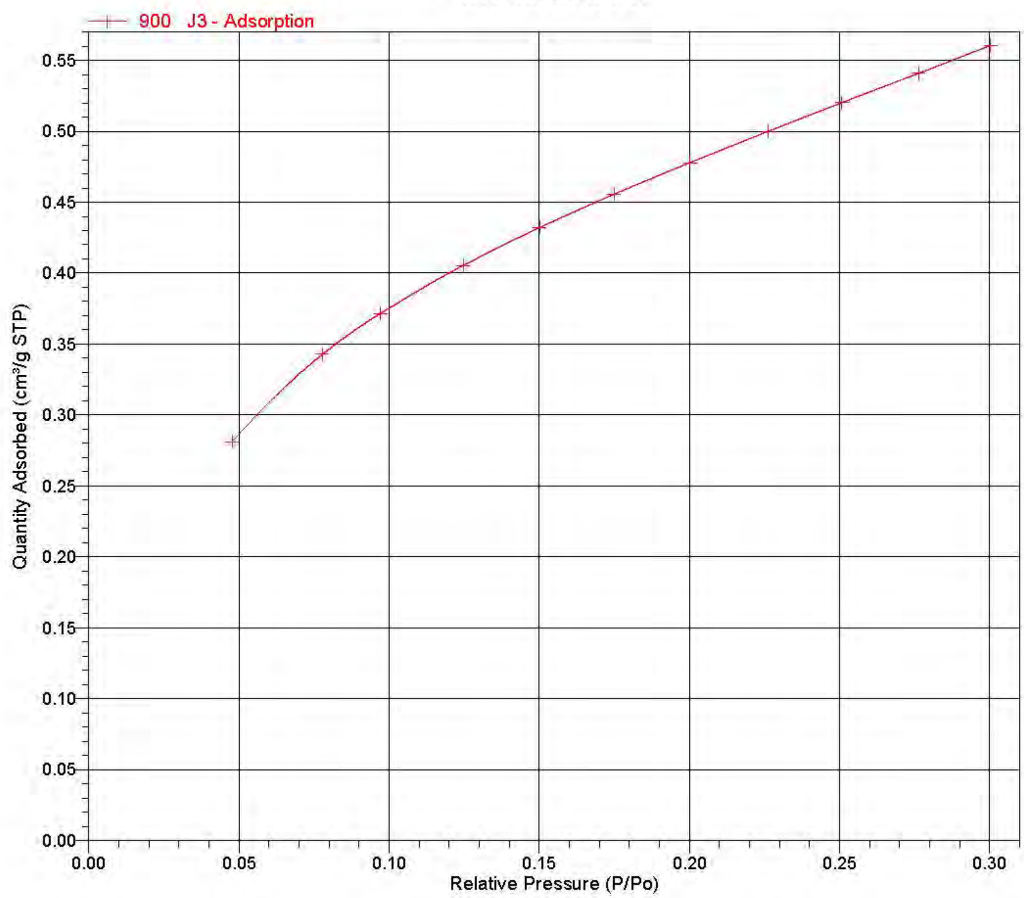
TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 3

Sample: 900 J3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103994.SMP

Started:	6/23/2011 10:26:50AM	Analysis Adsorptive:	N2
Completed:	6/23/2011 5:00:59PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 7:53:48AM	Sample Mass:	4.3427 g
Warm Free Space:	6.5300 cm^3 Measured	Cold Free Space:	15.8951 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Isotherm Linear Plot



TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 4

Sample: 900 J3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103994.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:53:48AM
Warm Free Space: 6.5300 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.3427 g
Cold Free Space: 15.8951 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 1.8399 ± 0.0091 m²/g
Slope: 2.300247 ± 0.011480 g/cm³ STP
Y-Intercept: 0.065788 ± 0.002044 g/cm³ STP
C: 35.964607
Qm: 0.4226 cm³/g STP
Correlation Coefficient: 0.9999004
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.047846744	0.2812	0.178731
0.077813462	0.3427	0.246192
0.097199938	0.3717	0.289673
0.124709496	0.4054	0.351425
0.150151741	0.4321	0.408871
0.174983602	0.4557	0.465477
0.200144791	0.4778	0.523695
0.226096987	0.4998	0.584569
0.250710688	0.5201	0.643346
0.276369020	0.5408	0.706161

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 5

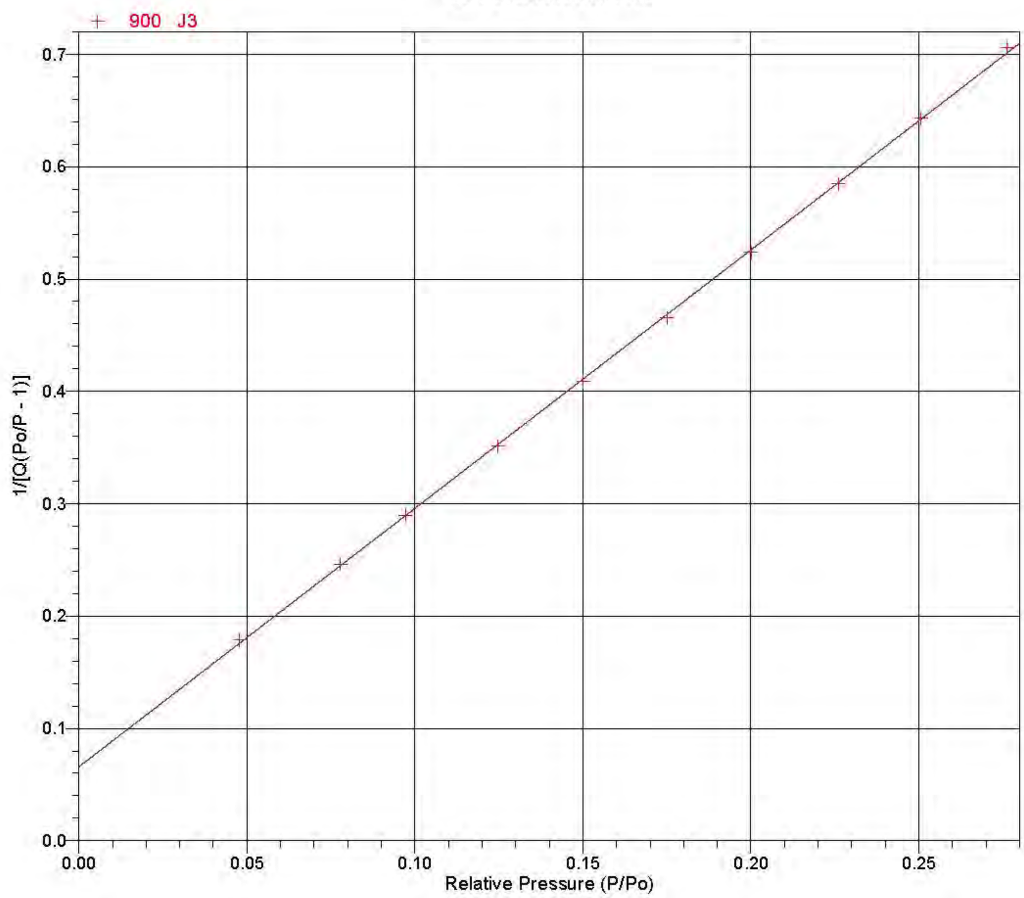
Sample: 900 J3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103994.SMP

Started: 6/23/2011 10:26:50AM
Completed: 6/23/2011 5:00:59PM
Report Time: 6/24/2011 7:53:48AM
Warm Free Space: 6.5300 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.3427 g
Cold Free Space: 15.8951 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample #7-1081

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 1081 J4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103995.SMP

Started: 6/24/2011 10:04:23AM	Analysis Adsorptive: N2
Completed: 6/24/2011 11:54:46AM	Analysis Bath Temp.: 77.350 K
Report Time: 6/24/2011 1:13:20PM	Sample Mass: 6.2893 g
Warm Free Space: 7.0391 cm^3 Measured	Cold Free Space: 17.8098 cm^3 Measured
Equilibration Interval: 10 s	Low Pressure Dose: None
Sample Density: 1.000 g/cm^3	Automatic Degas: No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.302155307: 0.4771 m^2/g

BET Surface Area: 0.5047 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 1081 J4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103995.SMP

Started: 6/24/2011 10:04:23AM
Completed: 6/24/2011 11:54:46AM
Report Time: 6/24/2011 1:13:20PM
Warm Free Space: 7.0391 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.2893 g
Cold Free Space: 17.8098 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	740.285828
0.055391277	41.007862	0.0880	01:27	740.330688
0.074512835	55.164211	0.0970	01:29	740.331665
0.101287389	74.983856	0.1069	01:32	740.307922
0.126510957	93.679031	0.1147	01:34	740.481567
0.151811898	112.391479	0.1216	01:36	740.333801
0.176901077	130.972336	0.1279	01:38	740.370483
0.201993028	149.542007	0.1339	01:40	740.332520
0.227017011	168.083206	0.1397	01:42	740.399170
0.252083983	186.650742	0.1454	01:44	740.430786
0.277126163	205.202316	0.1512	01:46	740.465332
0.302155307	223.748642	0.1570	01:48	740.508728

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 3

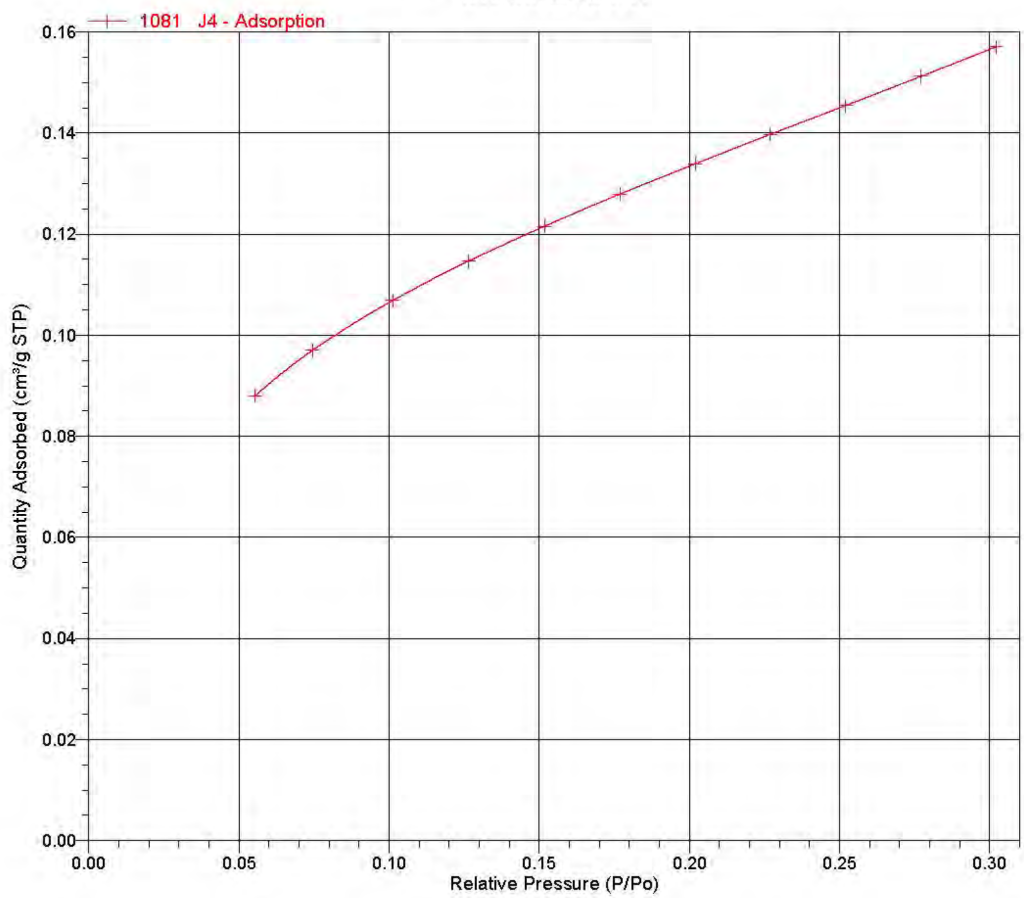
Sample: 1081 J4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103995.SMP

Started: 6/24/2011 10:04:23AM
Completed: 6/24/2011 11:54:46AM
Report Time: 6/24/2011 1:13:20PM
Warm Free Space: 7.0391 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.2893 g
Cold Free Space: 17.8098 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Linear Plot



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 1081 J4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103995.SMP

Started: 6/24/2011 10:04:23AM
Completed: 6/24/2011 11:54:46AM
Report Time: 6/24/2011 1:13:20PM
Warm Free Space: 7.0391 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.2893 g
Cold Free Space: 17.8098 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 0.5047 ± 0.0017 m^2/g
Slope: 8.428675 ± 0.028185 g/cm^3 STP
Y-Intercept: 0.196269 ± 0.005463 g/cm^3 STP
C: 43.944414
Qm: 0.1159 cm^3/g STP
Correlation Coefficient: 0.9999497
Molecular Cross-Sectional Area: 0.1620 nm^2

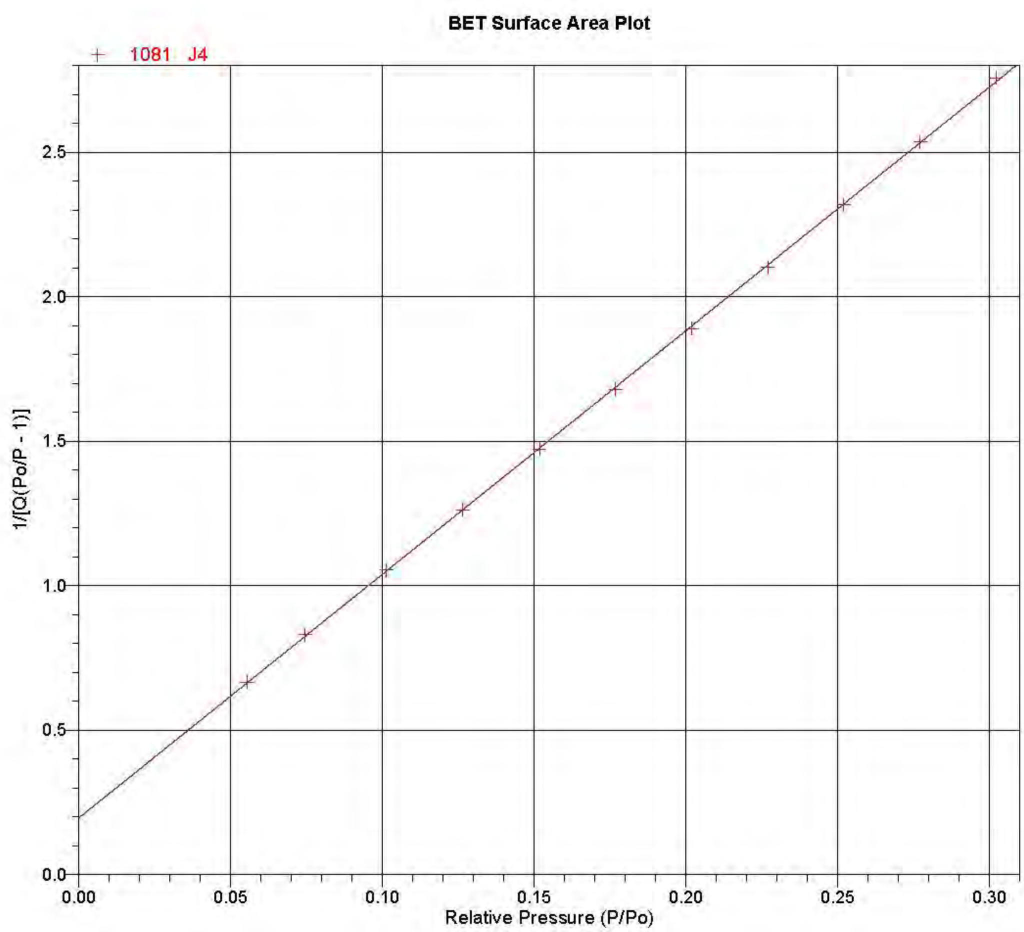
Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.055391277	0.0880	0.666192
0.074512835	0.0970	0.829980
0.101287389	0.1069	1.054459
0.126510957	0.1147	1.262945
0.151811898	0.1216	1.472333
0.176901077	0.1279	1.680069
0.201993028	0.1339	1.890202
0.227017011	0.1397	2.101562
0.252083983	0.1454	2.317479
0.277126163	0.1512	2.535413
0.302155307	0.1570	2.757198

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 5

Sample: 1081 J4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103995.SMP

Started:	6/24/2011 10:04:23AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 11:54:46AM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 1:13:20PM	Sample Mass:	6.2893 g
Warm Free Space:	7.0391 cm³ Measured	Cold Free Space:	17.8098 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample#8-1461

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 1

Sample: 1461 J5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103996.SMP

Started:	6/24/2011 10:04:23AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 11:54:46AM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 1:19:11PM	Sample Mass:	4.7765 g
Warm Free Space:	6.4193 cm^3 Measured	Cold Free Space:	15.3583 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.277826308: 0.1644 m^2/g

BET Surface Area: 0.1797 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 2

Sample: 1461 J5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103996.SMP

Started: 6/24/2011 10:04:23AM
Completed: 6/24/2011 11:54:46AM
Report Time: 6/24/2011 1:19:11PM
Warm Free Space: 6.4193 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.7765 g
Cold Free Space: 15.3583 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

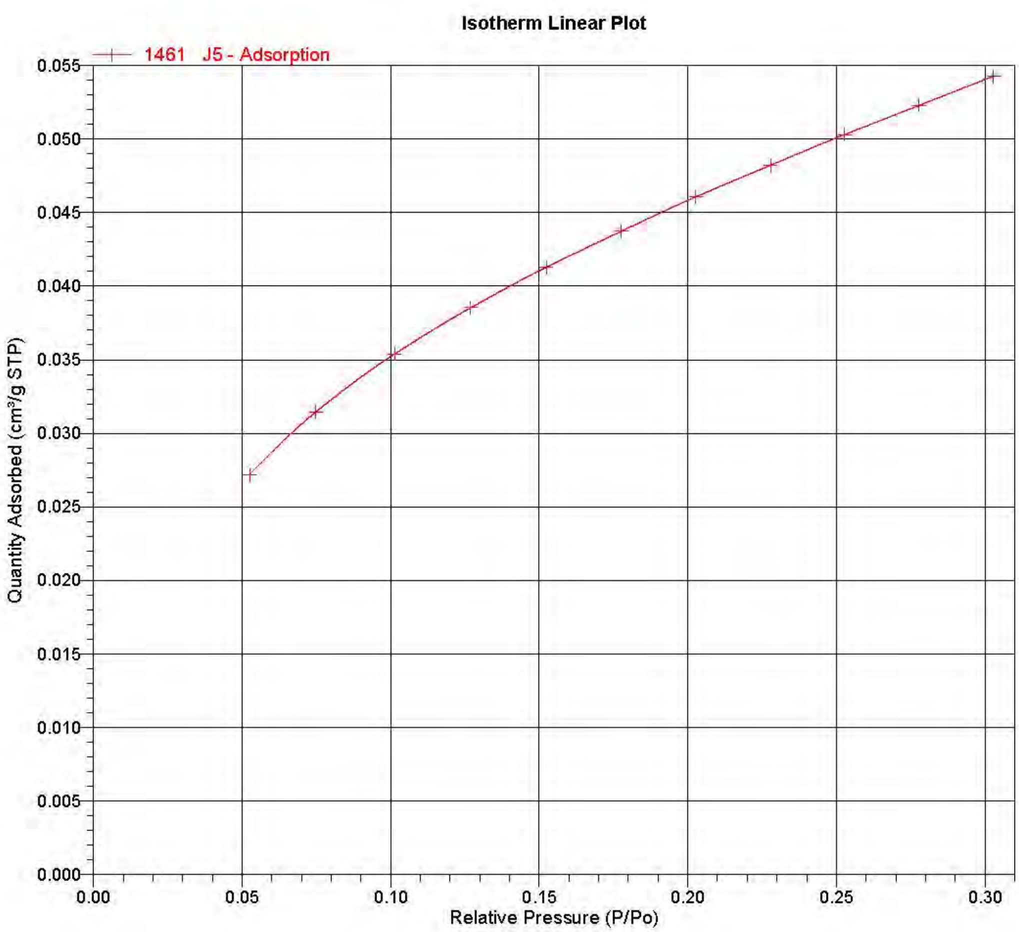
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	740.285828
0.052659257	38.985714	0.0272	01:27	740.339233
0.074828208	55.401615	0.0315	01:29	740.384094
0.101298348	74.998375	0.0354	01:31	740.371155
0.126901357	93.966141	0.0385	01:33	740.466003
0.152355580	112.799454	0.0413	01:35	740.369690
0.177570225	131.470810	0.0437	01:37	740.387695
0.202712906	150.085510	0.0461	01:39	740.384583
0.227806334	168.657623	0.0482	01:42	740.355286
0.252836522	187.199951	0.0503	01:44	740.399170
0.277826308	205.709015	0.0523	01:46	740.423096
0.302850204	224.236435	0.0543	01:48	740.420288

TriStar II 3020 V1.03 (V1.03)	Unit 2 Port 2	Serial #: 571	Page 3

Sample: 1461 J5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103996.SMP

Started:	6/24/2011 10:04:23AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 11:54:46AM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 1:19:11PM	Sample Mass:	4.7765 g
Warm Free Space:	6.4193 cm³ Measured	Cold Free Space:	15.3583 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample: 1461 J5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103996.SMP

Started: 6/24/2011 10:04:23AM
Completed: 6/24/2011 11:54:46AM
Report Time: 6/24/2011 1:19:11PM
Warm Free Space: 6.4193 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.7765 g
Cold Free Space: 15.3583 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 0.1797 ± 0.0008 m^2/g
Slope: 23.422166 ± 0.109722 g/cm^3 STP
Y-Intercept: 0.801767 ± 0.019737 g/cm^3 STP
C: 30.213200
Qm: 0.0413 cm^3/g STP
Correlation Coefficient: 0.9999122
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.052659257	0.0272	2.045756
0.074828208	0.0315	2.571479
0.101298348	0.0354	3.185633
0.126901357	0.0385	3.772197
0.152355580	0.0413	4.353949
0.177570225	0.0437	4.937506
0.202712906	0.0461	5.519019
0.227806334	0.0482	6.118817
0.252836522	0.0503	6.726772
0.277826308	0.0523	7.358046

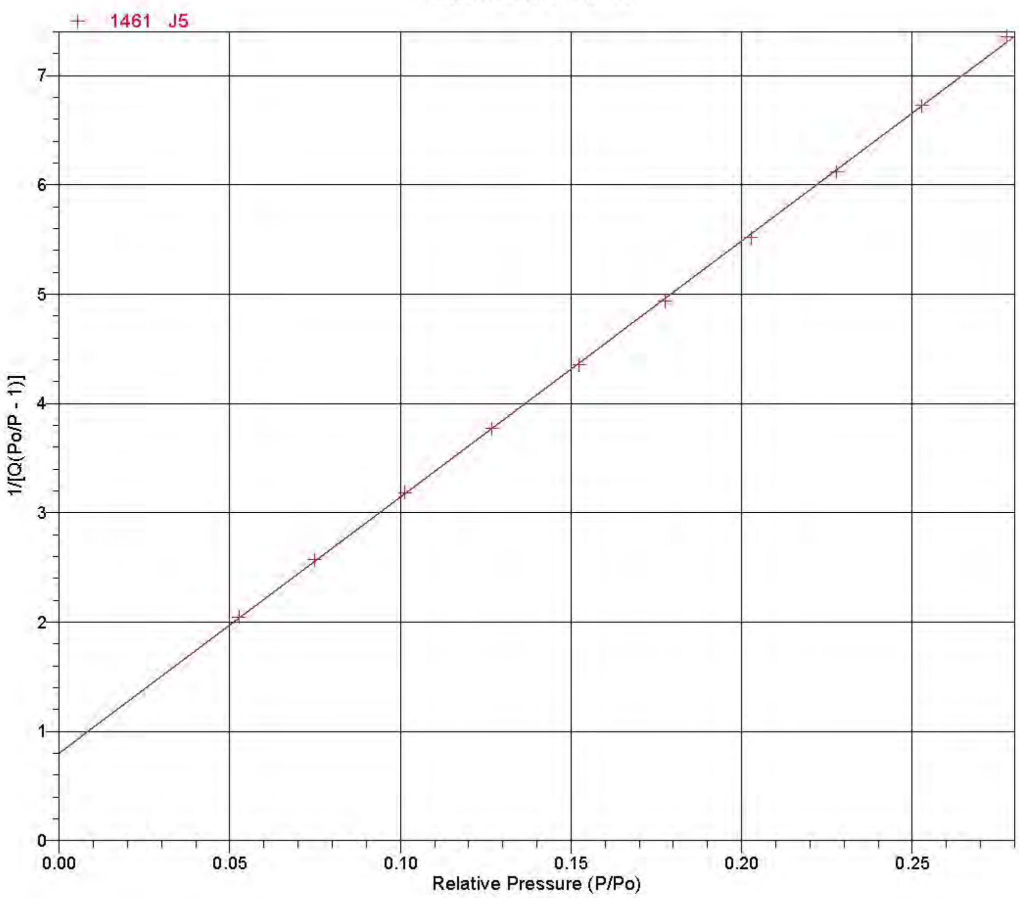
TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 5

Sample: 1461 J5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103996.SMP

Started:	6/24/2011 10:04:23AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 11:54:46AM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 1:19:11PM	Sample Mass:	4.7765 g
Warm Free Space:	6.4193 cm³ Measured	Cold Free Space:	15.3583 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#9-1712

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 1

Sample: 1712 J6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103997.SMP

Started:	6/24/2011 10:04:23AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 11:54:46AM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 1:21:03PM	Sample Mass:	3.1956 g
Warm Free Space:	6.8741 cm³ Measured	Cold Free Space:	16.7665 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.301832390: 1.0401 m²/g

BET Surface Area: 1.0966 m²/g

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 2

Sample: 1712 J6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103997.SMP

Started: 6/24/2011 10:04:23AM
Completed: 6/24/2011 11:54:46AM
Report Time: 6/24/2011 1:21:03PM
Warm Free Space: 6.8741 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.1956 g
Cold Free Space: 16.7665 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

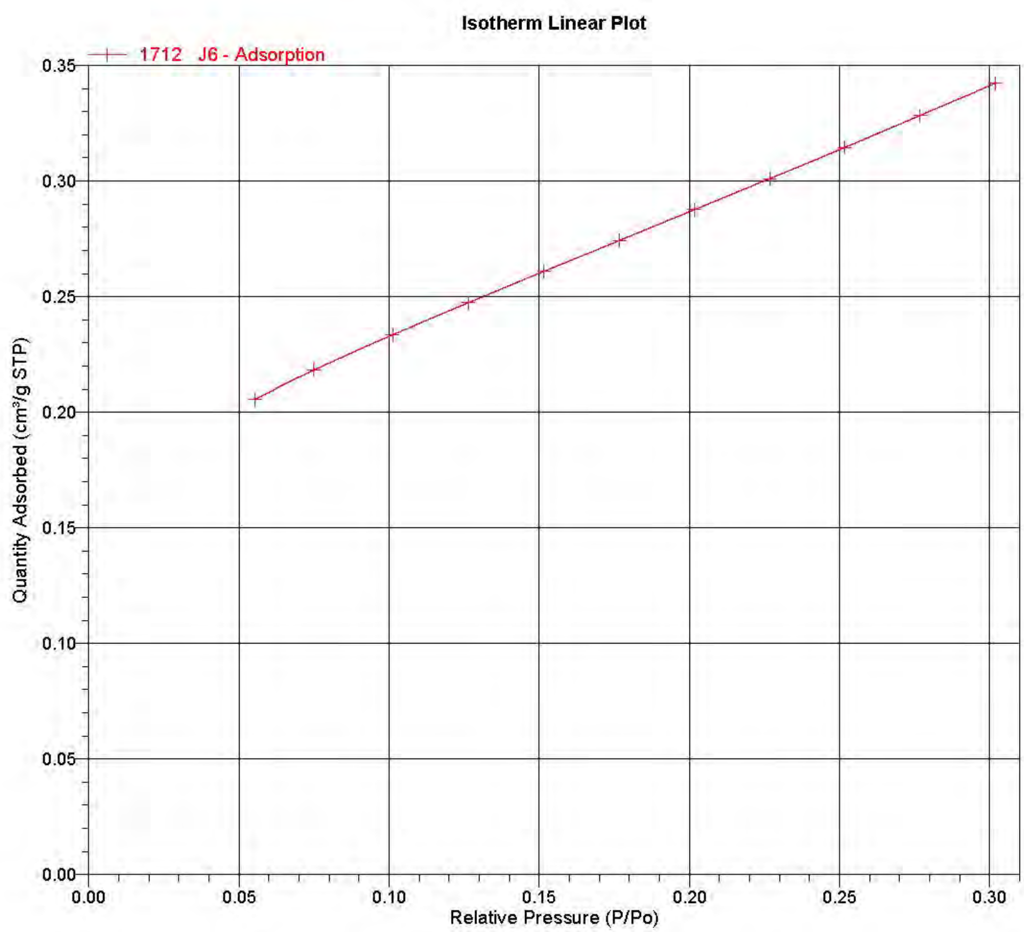
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	740.285828
0.055411857	41.023605	0.2055	01:28	740.339844
0.075027395	55.551018	0.2183	01:30	740.409790
0.101221344	74.942741	0.2335	01:32	740.384766
0.126440970	93.609543	0.2474	01:34	740.341858
0.151629072	112.255211	0.2610	01:36	740.327759
0.176724792	130.840256	0.2743	01:38	740.361633
0.201756833	149.378769	0.2877	01:40	740.390137
0.226791552	167.909439	0.3010	01:42	740.369019
0.251782740	186.409958	0.3145	01:44	740.360352
0.276770940	204.930130	0.3283	01:47	740.432251
0.301832390	223.484207	0.3422	01:49	740.424866

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 1712 J6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103997.SMP

Started:	6/24/2011 10:04:23AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 11:54:46AM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 1:21:03PM	Sample Mass:	3.1956 g
Warm Free Space:	6.8741 cm³ Measured	Cold Free Space:	16.7665 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03)   Unit 2 Port 3   Serial #: 571   Page 4

Sample: 1712 J6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103997.SMP

Started: 6/24/2011 10:04:23AM
Completed: 6/24/2011 11:54:46AM
Report Time: 6/24/2011 1:21:03PM
Warm Free Space: 6.8741 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.1956 g
Cold Free Space: 16.7665 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 1.0966 ± 0.0038 m^2/g
Slope: 3.875058 ± 0.013426 g/cm^3 STP
Y-Intercept: 0.094828 ± 0.002843 g/cm^3 STP
C: 41.864228
Qm: 0.2519 cm^3/g STP
Correlation Coefficient: 0.9999580
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.101221344	0.2335	0.482276
0.126440970	0.2474	0.585013
0.151629072	0.2610	0.684881
0.176724792	0.2743	0.782624
0.201756833	0.2877	0.878655
0.226791552	0.3010	0.974349
0.251782740	0.3145	1.069902
0.276770940	0.3283	1.165517
0.301832390	0.3422	1.263272

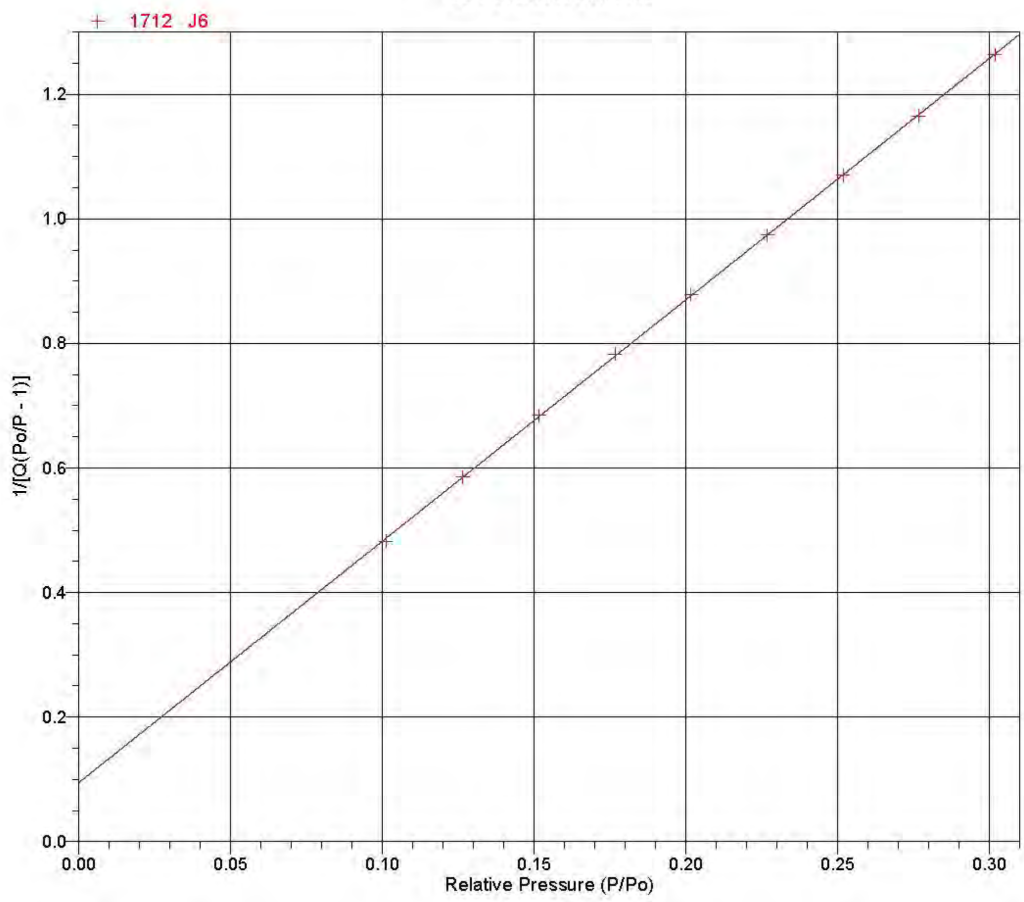
TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 5

Sample: 1712 J6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103997.SMP

Started:	6/24/2011 10:04:23AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 11:54:46AM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 1:21:03PM	Sample Mass:	3.1956 g
Warm Free Space:	6.8741 cm³ Measured	Cold Free Space:	16.7665 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#10-2177

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 1

Sample: 2177 E7
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103998.SMP

Started:	6/24/2011 10:04:45AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 3:25:29PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 3:43:29PM	Sample Mass:	4.6601 g
Warm Free Space:	6.5325 cm^3 Measured	Cold Free Space:	15.9492 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.199437318: 16.1308 m^2/g

BET Surface Area: 16.5203 m^2/g

Sample: 2177 E7
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103998.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:43:29PM
Warm Free Space: 6.5325 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.6601 g
Cold Free Space: 15.9492 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	740.129272
0.049853820	36.894653	3.6266	02:51	740.056702
0.075916077	56.167953	3.8632	03:15	739.869019
0.100664441	74.460991	4.0461	03:36	739.695068
0.121664950	89.946220	4.1845	03:53	739.294434
0.146300222	108.123276	4.3387	04:08	739.050659
0.172563450	127.479111	4.4894	04:22	738.737610
0.199437318	147.252579	4.6286	04:36	738.340149
0.225999717	166.861313	4.7601	04:48	738.325317
0.252830164	186.642532	4.8870	04:58	738.213074
0.279603902	206.334778	5.0101	05:09	737.953857
0.305517777	225.382034	5.1239	05:19	737.705139

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

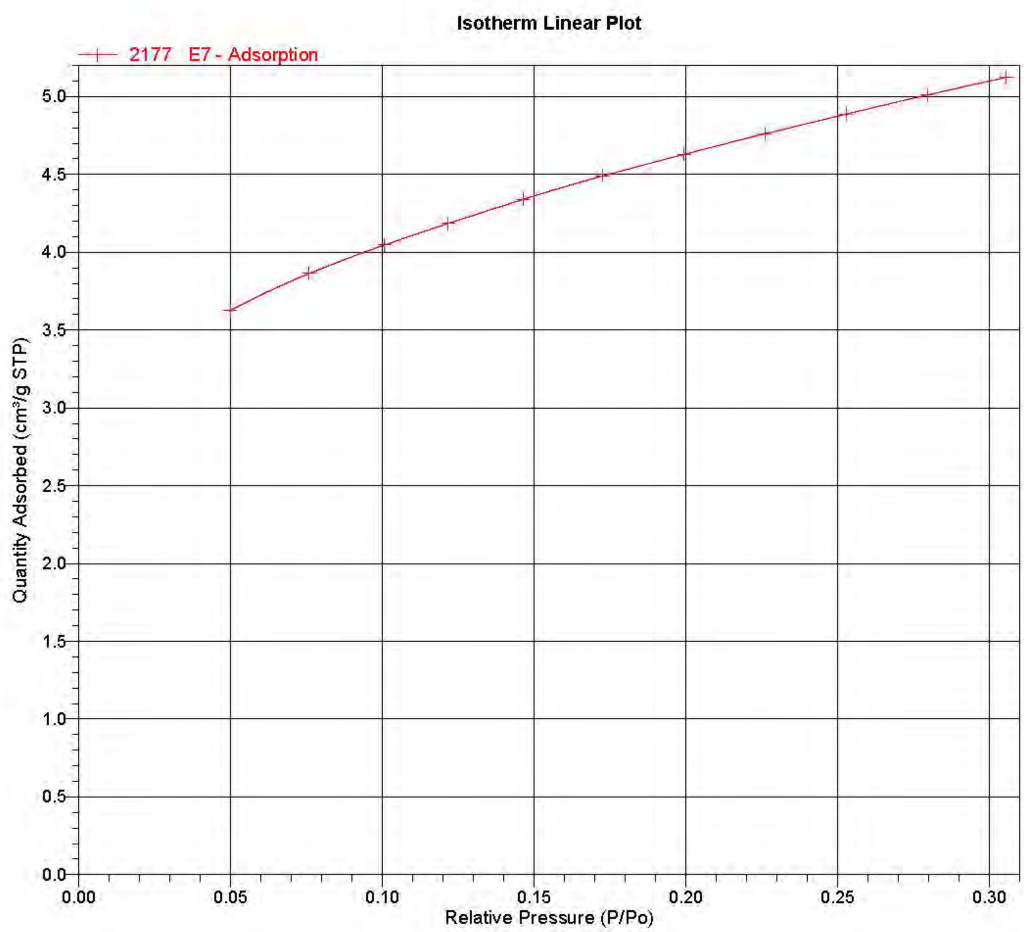
TriStar II 3020 V1.03 (V1.03) | Unit 3 Port 1 | Serial #: 238 | Page 3

Sample: 2177 E7
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103998.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:43:29PM
Warm Free Space: 6.5325 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.6601 g
Cold Free Space: 15.9492 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 4

Sample: 2177 E7
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103998.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:43:29PM
Warm Free Space: 6.5325 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.6601 g
Cold Free Space: 15.9492 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 16.5203 ± 0.0724 m^2/g
Slope: 0.262207 ± 0.001144 g/cm^3 STP
Y-Intercept: 0.001300 ± 0.000152 g/cm^3 STP
C: 202.728690
Qm: 3.7950 cm^3/g STP
Correlation Coefficient: 0.9999524
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.049853820	3.6266	0.014468
0.075916077	3.8632	0.021266
0.100664441	4.0461	0.027664
0.121664950	4.1845	0.033102
0.146300222	4.3387	0.039498
0.172563450	4.4894	0.046454
0.199437318	4.6286	0.053822

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

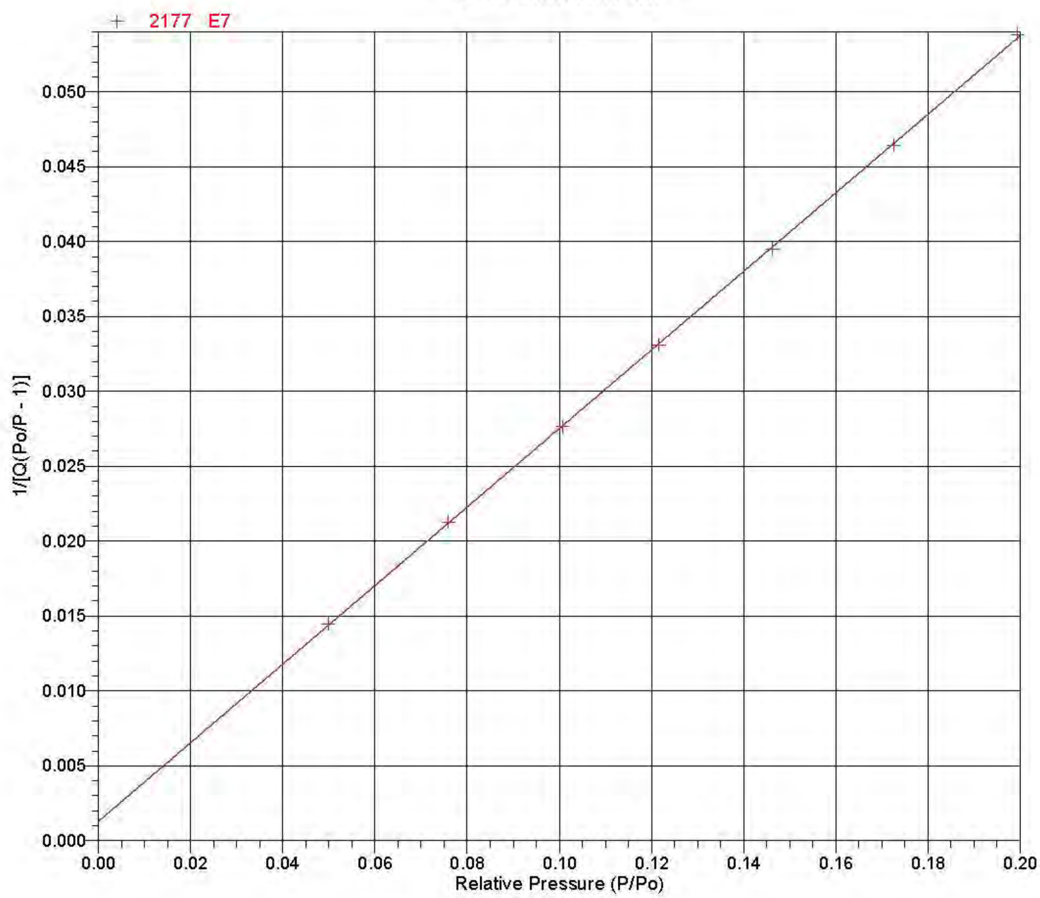
TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 5

Sample: 2177 E7
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103998.SMP

Started:	6/24/2011 10:04:45AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 3:25:29PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 3:43:29PM	Sample Mass:	4.6601 g
Warm Free Space:	6.5325 cm³ Measured	Cold Free Space:	15.9492 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#11-2472

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 1

Sample: 2472 E8
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103999.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:42:07PM
Warm Free Space: 7.0476 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.0376 g
Cold Free Space: 17.8899 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.277312303: 15.9862 m^2/g

BET Surface Area: 16.3173 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 2

Sample: 2472 E8
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103999.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:42:07PM
Warm Free Space: 7.0476 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.0376 g
Cold Free Space: 17.8899 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

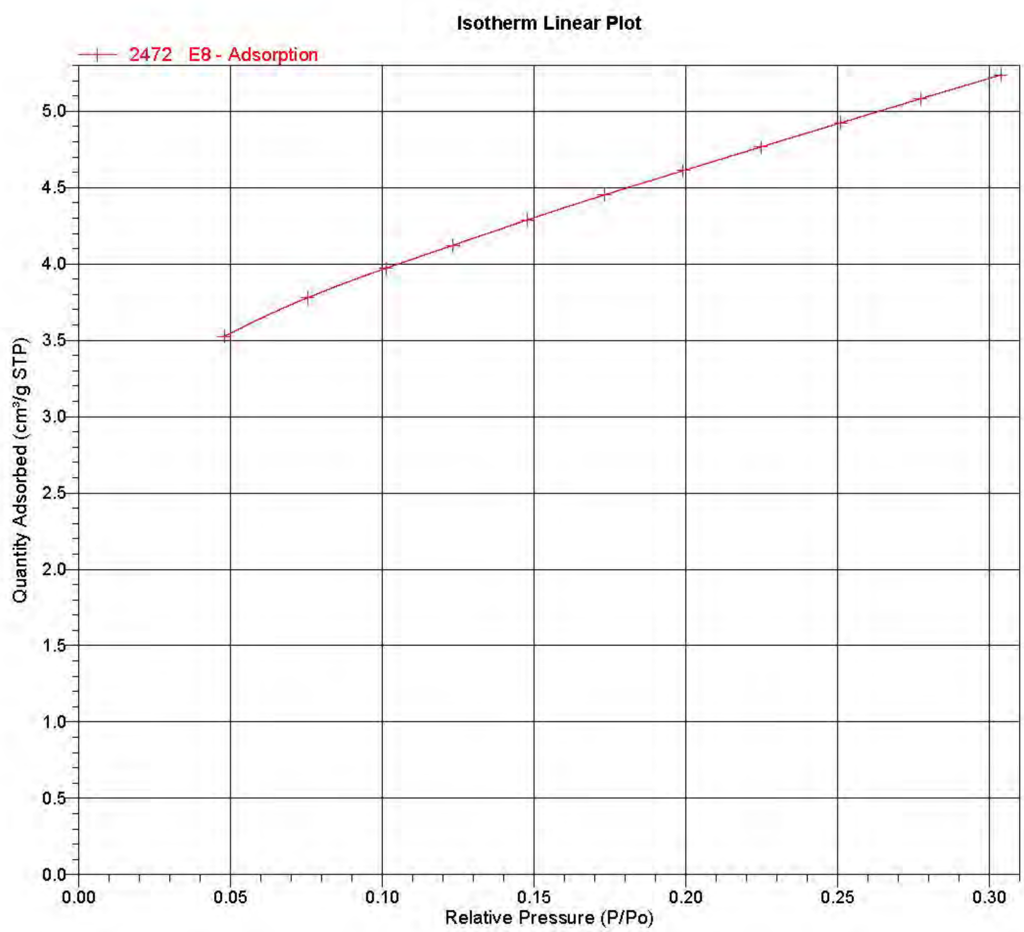
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	740.129272
0.047936688	35.484615	3.5264	02:05	740.239197
0.075364315	55.787735	3.7791	02:20	740.240723
0.101116408	74.838516	3.9718	02:31	740.122375
0.123201441	91.178932	4.1222	02:39	740.080078
0.147746630	109.331055	4.2880	02:47	739.990173
0.173136253	128.134628	4.4520	02:54	740.079712
0.199158462	147.368790	4.6110	03:00	739.957458
0.224676864	166.254379	4.7656	03:07	739.971069
0.251086475	185.763840	4.9245	03:13	739.840088
0.277312303	205.166809	5.0814	03:19	739.840271
0.303797274	224.729843	5.2380	03:25	739.736206

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 3

Sample: 2472 E8
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103999.SMP

Started:	6/24/2011 10:04:45AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 3:25:29PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 3:42:07PM	Sample Mass:	6.0376 g
Warm Free Space:	7.0476 cm³ Measured	Cold Free Space:	17.8899 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 4

Sample: 2472 E8
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103999.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:42:07PM
Warm Free Space: 7.0476 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.0376 g
Cold Free Space: 17.8899 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 16.3173 ± 0.0751 m^2/g
Slope: 0.265392 ± 0.001209 g/cm^3 STP
Y-Intercept: 0.001392 ± 0.000215 g/cm^3 STP
C: 191.586601
Qm: 3.7483 cm^3/g STP
Correlation Coefficient: 0.9999170
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.047936688	3.5264	0.014278
0.075364315	3.7791	0.021568
0.101116408	3.9718	0.028322
0.123201441	4.1222	0.034087
0.147746630	4.2880	0.040429
0.173136253	4.4520	0.047033
0.199158462	4.6110	0.053933
0.224676864	4.7656	0.060807
0.251086475	4.9245	0.068082
0.277312303	5.0814	0.075515

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 5

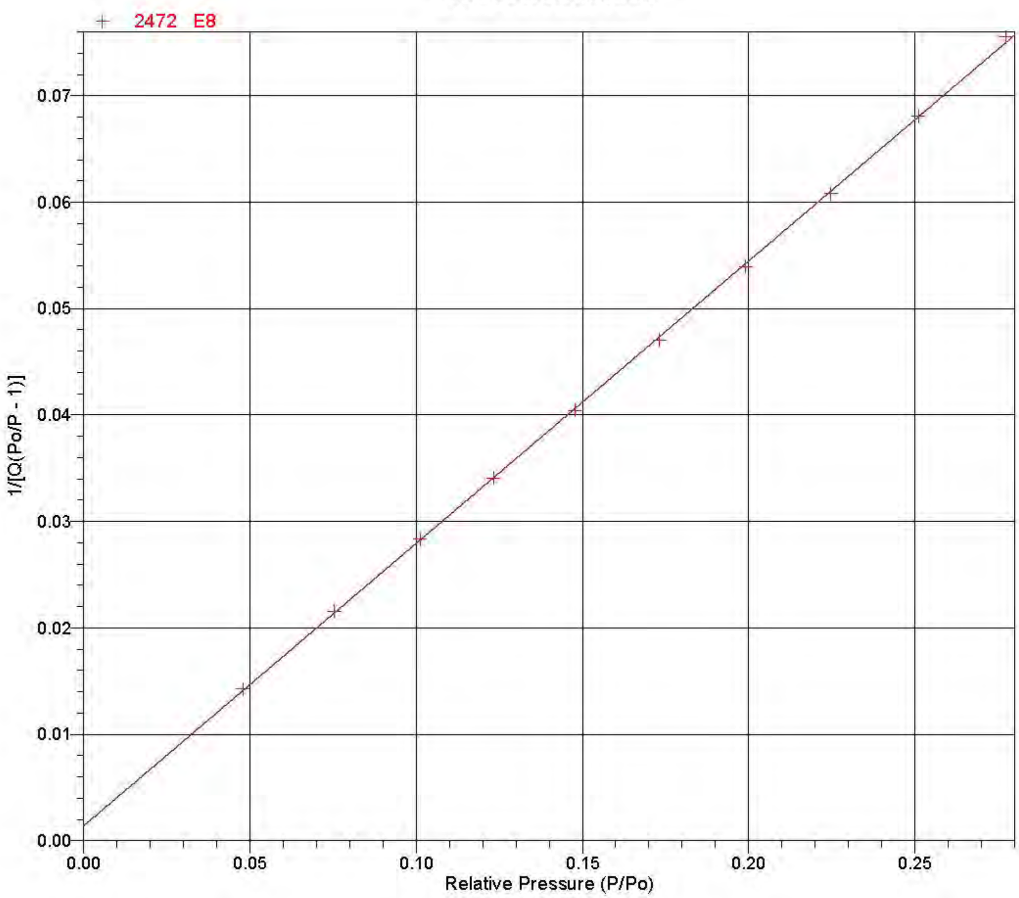
Sample: 2472 E8
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1103999.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:42:07PM
Warm Free Space: 7.0476 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.0376 g
Cold Free Space: 17.8899 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#12-2609

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 1

Sample: 2609 E9
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104000.SMP

Started:	6/24/2011 10:04:45AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 3:25:29PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 3:40:53PM	Sample Mass:	3.4809 g
Warm Free Space:	6.8836 cm^3 Measured	Cold Free Space:	16.9239 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.299603226: 0.8488 m^2/g

BET Surface Area: 0.8763 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 2

Sample: 2609 E9
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104000.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:40:53PM
Warm Free Space: 6.8836 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.4809 g
Cold Free Space: 16.9239 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	740.129272
0.055603672	41.166618	0.1750	01:26	740.357910
0.074412313	55.085949	0.1849	01:29	740.280029
0.099915596	73.965935	0.1962	01:31	740.284180
0.124688222	92.304718	0.2067	01:33	740.284180
0.149923174	110.985352	0.2170	01:35	740.281494
0.175149552	129.679001	0.2271	01:37	740.390137
0.200316805	148.308075	0.2370	01:39	740.367615
0.225751391	167.127762	0.2474	01:41	740.317749
0.249660570	184.813965	0.2571	01:43	740.260925
0.275691723	204.129562	0.2681	01:45	740.426880
0.299603226	221.800598	0.2784	01:47	740.314453

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

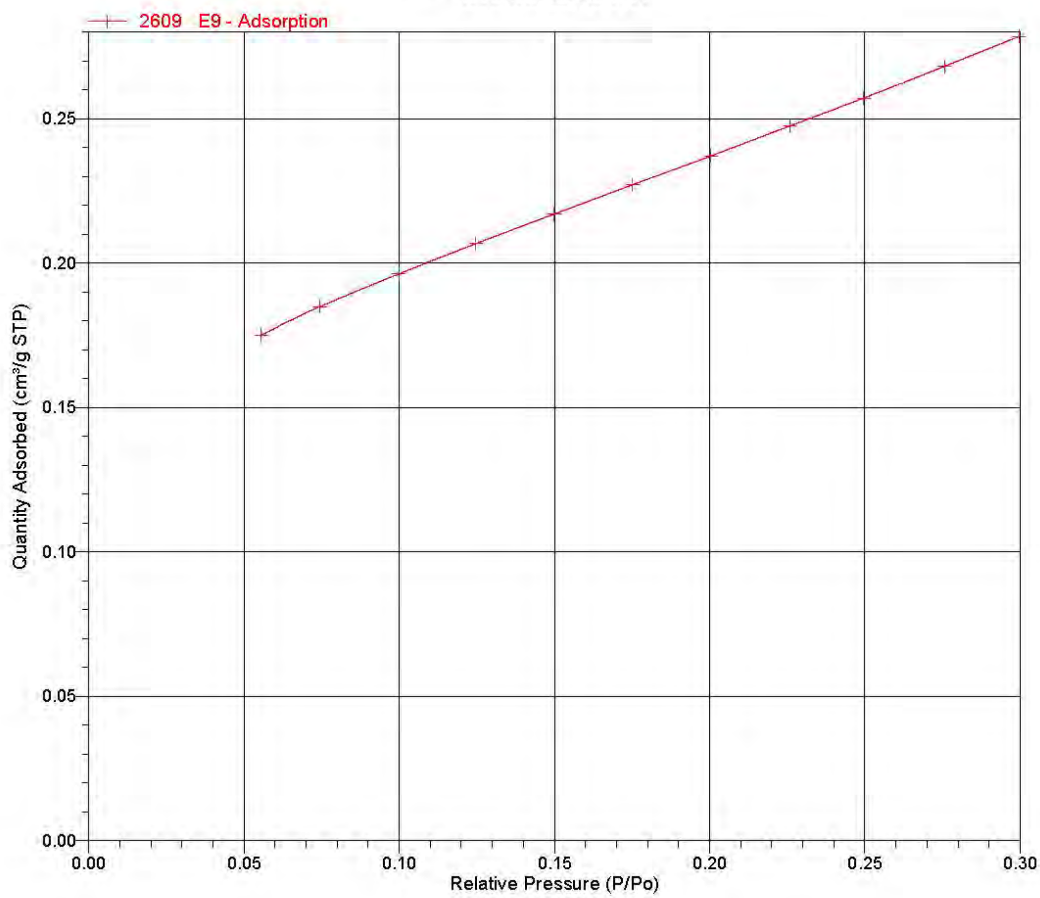
TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 3

Sample: 2609 E9
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104000.SMP

Started:	6/24/2011 10:04:45AM	Analysis Adsorptive:	N2
Completed:	6/24/2011 3:25:29PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/24/2011 3:40:53PM	Sample Mass:	3.4809 g
Warm Free Space:	6.8836 cm³ Measured	Cold Free Space:	16.9239 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Isotherm Linear Plot



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 2609 E9
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104000.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:40:53PM
Warm Free Space: 6.8836 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.4809 g
Cold Free Space: 16.9239 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 0.8763 ± 0.0034 m^2/g
Slope: 4.894034 ± 0.018797 g/cm^3 STP
Y-Intercept: 0.073670 ± 0.003613 g/cm^3 STP
C: 67.431532
Qm: 0.2013 cm^3/g STP
Correlation Coefficient: 0.9999336
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.055603672	0.1750	0.336354
0.074412313	0.1849	0.434864
0.099915596	0.1962	0.565657
0.124688222	0.2067	0.689149
0.149923174	0.2170	0.812881
0.175149552	0.2271	0.935072
0.200316805	0.2370	1.056797
0.225751391	0.2474	1.178478
0.249660570	0.2571	1.293981
0.275691723	0.2681	1.419490
0.299603226	0.2784	1.536642

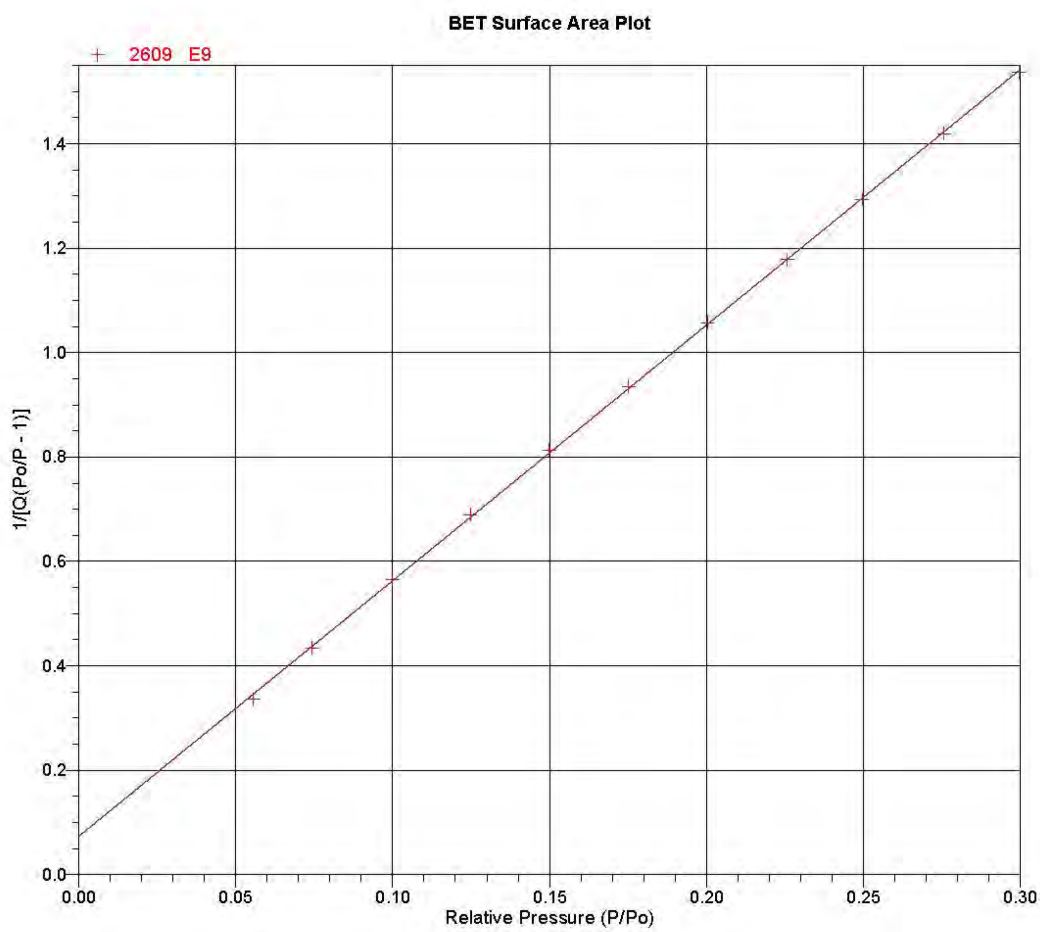
TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 5

Sample: 2609 E9
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104000.SMP

Started: 6/24/2011 10:04:45AM
Completed: 6/24/2011 3:25:29PM
Report Time: 6/24/2011 3:40:53PM
Warm Free Space: 6.8836 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.4809 g
Cold Free Space: 16.9239 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



Sample#13-3088

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 1 Serial #: 611 Page 1

Sample: 3088 D1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104001.SMP

Started:	6/29/2011 11:10:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 10:58:30PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:04:01AM	Sample Mass:	4.1425 g
Warm Free Space:	6.5484 cm^3 Measured	Cold Free Space:	16.2476 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.172569820: 14.0275 m^2/g

BET Surface Area: 14.3211 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 1 Serial #: 611 Page 2

Sample: 3088 D1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104001.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:04:01AM
Warm Free Space: 6.5484 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.1425 g
Cold Free Space: 16.2476 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

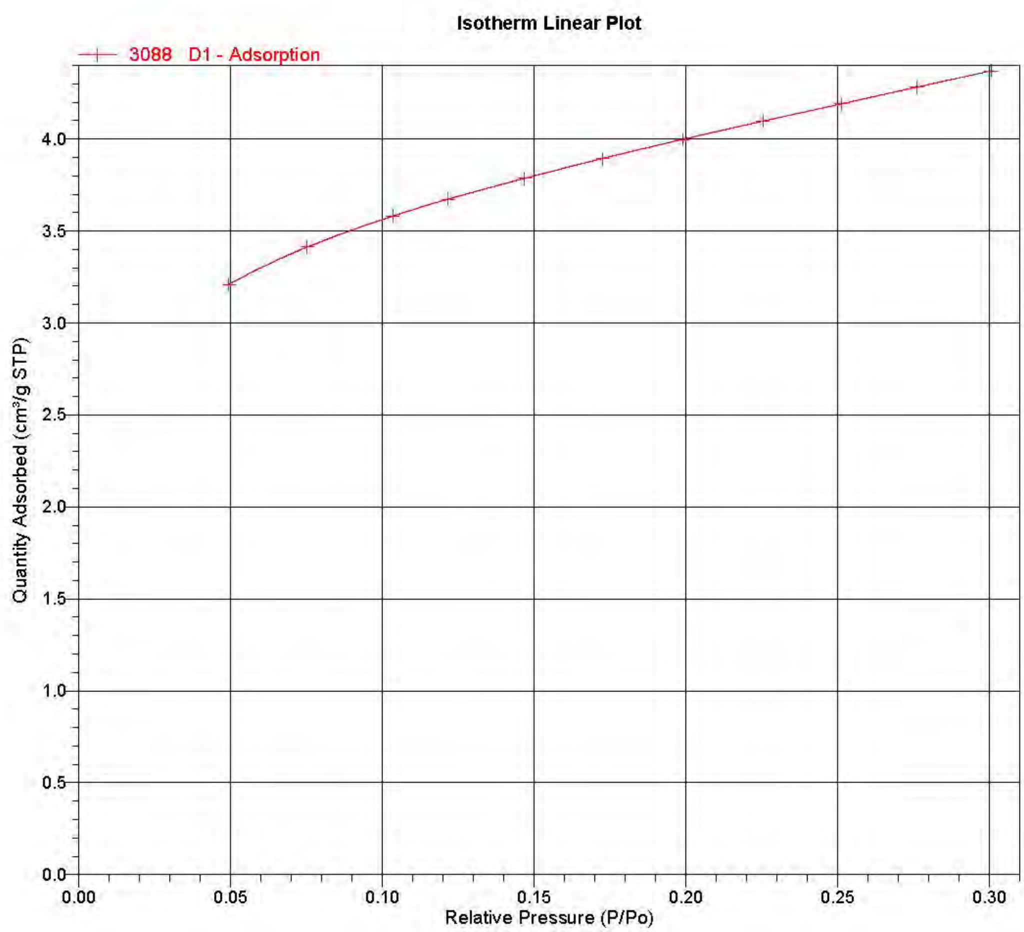
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	740.263062
0.049358929	36.447159	3.2098	05:36	738.410645
0.075243420	55.489822	3.4128	07:03	737.470764
0.103451251	76.301498	3.5811	08:17	737.559937
0.121601317	89.686241	3.6733	08:54	737.543335
0.146769208	108.225700	3.7857	09:27	737.386963
0.172569820	127.245079	3.8944	09:56	737.354187
0.198895678	146.647141	3.9978	10:24	737.306824
0.225353499	166.175964	4.0970	10:48	737.401306
0.251203910	185.306351	4.1908	11:08	737.673035
0.276072361	203.593964	4.2820	11:28	737.465942
0.300603111	221.715637	4.3706	11:47	737.569336

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 1 Serial #: 611 Page 3

Sample: 3088 D1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104001.SMP

Started:	6/29/2011 11:10:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 10:58:30PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:04:01AM	Sample Mass:	4.1425 g
Warm Free Space:	6.5484 cm³ Measured	Cold Free Space:	16.2476 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 1 Serial #: 611 Page 4

Sample: 3088 D1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104001.SMP

Started:	6/29/2011 11:10:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 10:58:30PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:04:01AM	Sample Mass:	4.1425 g
Warm Free Space:	6.5484 cm^3 Measured	Cold Free Space:	16.2476 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 14.3211 ± 0.0919 m^2/g
Slope: 0.302926 ± 0.001937 g/cm^3 STP
Y-Intercept: 0.001044 ± 0.000230 g/cm^3 STP
C: 291.233472
Qm: 3.2898 cm^3/g STP
Correlation Coefficient: 0.9999183
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.049358929	3.2098	0.016176
0.075243420	3.4128	0.023841
0.103451251	3.5811	0.032221
0.121601317	3.6733	0.037687
0.146769208	3.7857	0.045438
0.172569820	3.8944	0.053554

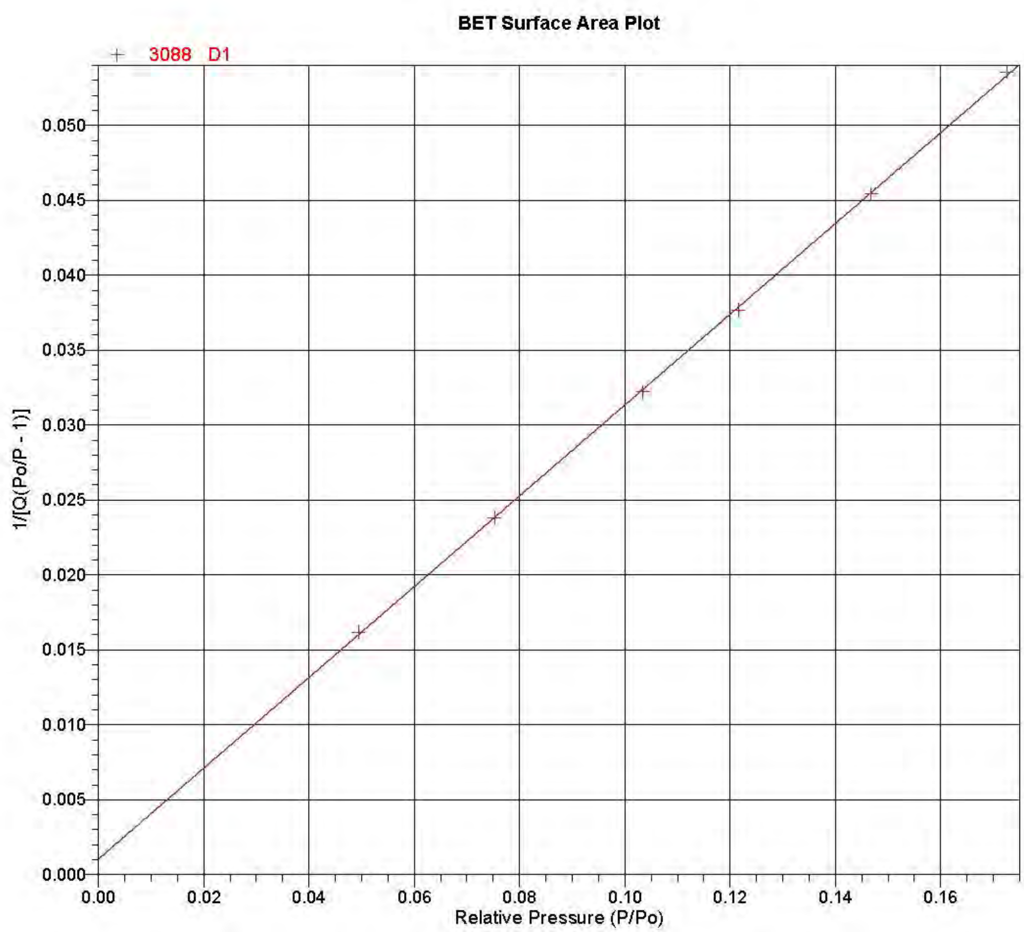
TriStar II 3020 V1.03 (V1.03) Unit 1 Port 1 Serial #: 611 Page 5

Sample: 3088 D1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104001.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:04:01AM
Warm Free Space: 6.5484 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.1425 g
Cold Free Space: 16.2476 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



Sample#14-3155

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 2 Serial #: 611 Page 1

Sample: 3115 D2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104002.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:05:35AM
Warm Free Space: 6.4778 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.8311 g
Cold Free Space: 15.5441 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.150569975: 0.7929 m^2/g

BET Surface Area: 0.8360 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 2 Serial #: 611 Page 2

Sample: 3115 D2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104002.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:05:35AM
Warm Free Space: 6.4778 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.8311 g
Cold Free Space: 15.5441 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

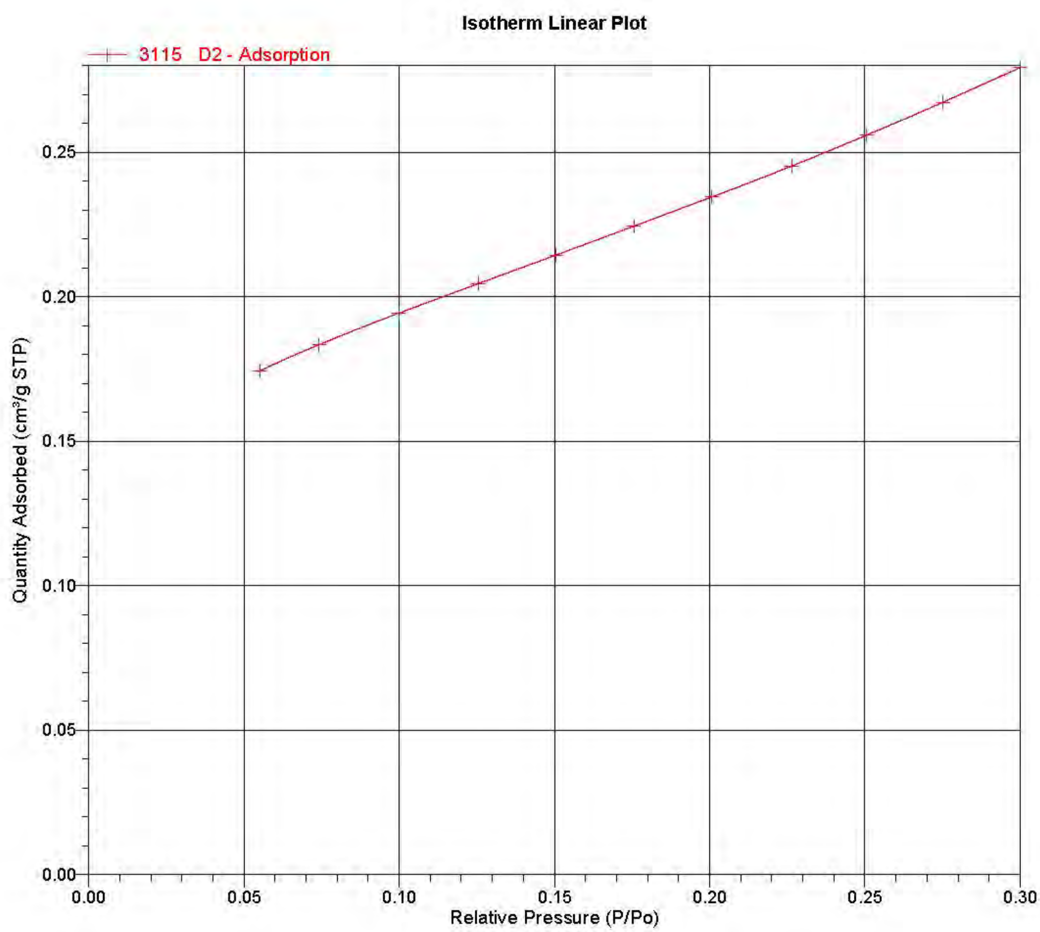
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	740.263062
0.055060474	40.757141	0.1743	01:25	740.225037
0.074213958	54.934368	0.1834	01:28	740.216125
0.099823166	73.894531	0.1943	01:30	740.254333
0.125412562	92.829178	0.2045	01:32	740.190430
0.150569975	111.456879	0.2144	01:34	740.233093
0.175675772	130.041428	0.2244	01:36	740.235413
0.200741804	148.605896	0.2345	01:38	740.283752
0.226453510	167.625839	0.2452	01:40	740.221863
0.250494884	185.395294	0.2559	01:43	740.116089
0.275227501	203.710129	0.2673	01:45	740.151794
0.299997955	222.043732	0.2793	01:47	740.150818

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 2 Serial #: 611 Page 3

Sample: 3115 D2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104002.SMP

Started:	6/29/2011 11:10:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 10:58:30PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:05:35AM	Sample Mass:	4.8311 g
Warm Free Space:	6.4778 cm³ Measured	Cold Free Space:	15.5441 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3115 D2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104002.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:05:35AM
Warm Free Space: 6.4778 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.8311 g
Cold Free Space: 15.5441 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 0.8360 ± 0.0065 m^2/g
Slope: 5.153888 ± 0.040152 g/cm^3 STP
Y-Intercept: 0.053352 ± 0.004283 g/cm^3 STP
C: 97.601278
Qm: 0.1920 cm^3/g STP
Correlation Coefficient: 0.9999090
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.055060474	0.1743	0.334209
0.074213958	0.1834	0.437020
0.099823166	0.1943	0.570820
0.125412562	0.2045	0.701190
0.150569975	0.2144	0.826648

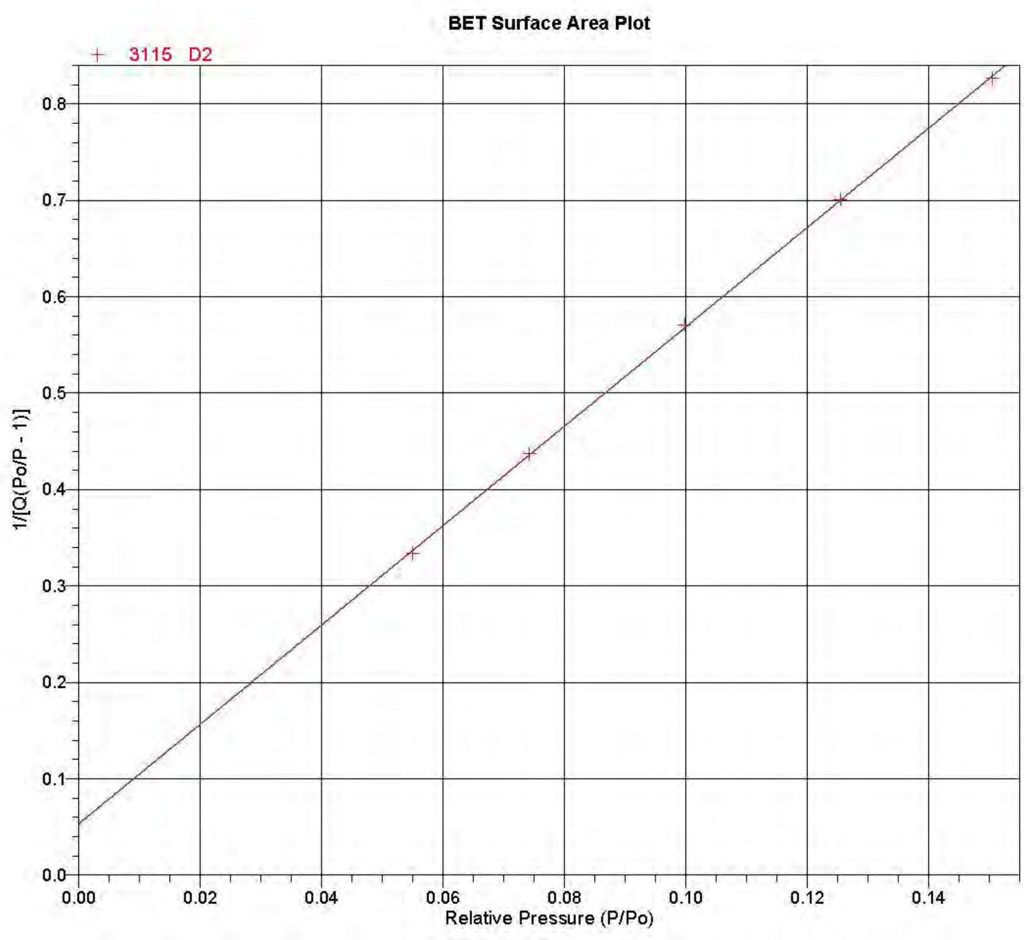
TriStar II 3020 V1.03 (V1.03) Unit 1 Port 2 Serial #: 611 Page 5

Sample: 3115 D2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104002.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:05:35AM
Warm Free Space: 6.4778 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.8311 g
Cold Free Space: 15.5441 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



Sample#15-3138

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 3 Serial #: 611 Page 1

Sample: 3138 D3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104003.SMP

Started:	6/29/2011 11:10:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 10:58:30PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:01:55AM	Sample Mass:	4.2565 g
Warm Free Space:	6.5387 cm^3 Measured	Cold Free Space:	16.0216 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.300305127: 1.6383 m^2/g

BET Surface Area: 1.6925 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 3 Serial #: 611 Page 2

Sample: 3138 D3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104003.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:01:55AM
Warm Free Space: 6.5387 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.2565 g
Cold Free Space: 16.0216 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	740.263062
0.049920433	36.949387	0.3292	01:28	740.165588
0.081717025	60.488464	0.3616	01:31	740.218628
0.098740152	73.096207	0.3767	01:33	740.288574
0.125275125	92.737473	0.3986	01:35	740.270447
0.150534182	111.429024	0.4186	01:37	740.224060
0.175592976	129.984619	0.4381	01:39	740.260925
0.200716409	148.572800	0.4575	01:42	740.212524
0.224656529	166.288956	0.4762	01:44	740.191956
0.249955828	185.037292	0.4964	01:46	740.279968
0.275060220	203.573456	0.5168	01:48	740.105042
0.300305127	222.254974	0.5379	01:50	740.097168

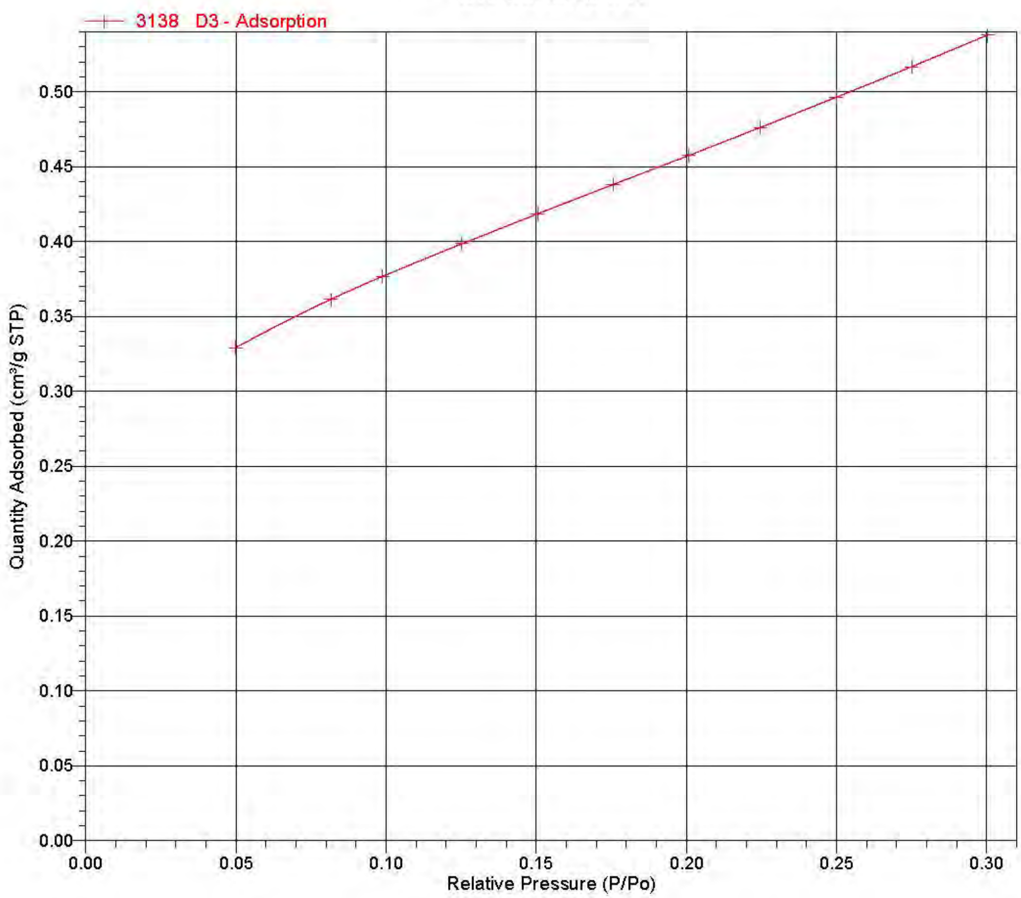
Sample: 3138 D3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104003.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:01:55AM
Warm Free Space: 6.5387 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.2565 g
Cold Free Space: 16.0216 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Linear Plot



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3138 D3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104003.SMP

Started: 6/29/2011 11:10:09AM
Completed: 6/29/2011 10:58:30PM
Report Time: 6/30/2011 8:01:55AM
Warm Free Space: 6.5387 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.2565 g
Cold Free Space: 16.0216 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 1.6925 ± 0.0071 m^2/g
Slope: 2.532762 ± 0.010667 g/cm^3 STP
Y-Intercept: 0.039247 ± 0.002052 g/cm^3 STP
C: 65.534009
Qm: 0.3888 cm^3/g STP
Correlation Coefficient: 0.9999202
Molecular Cross-Sectional Area: 0.1620 nm^2

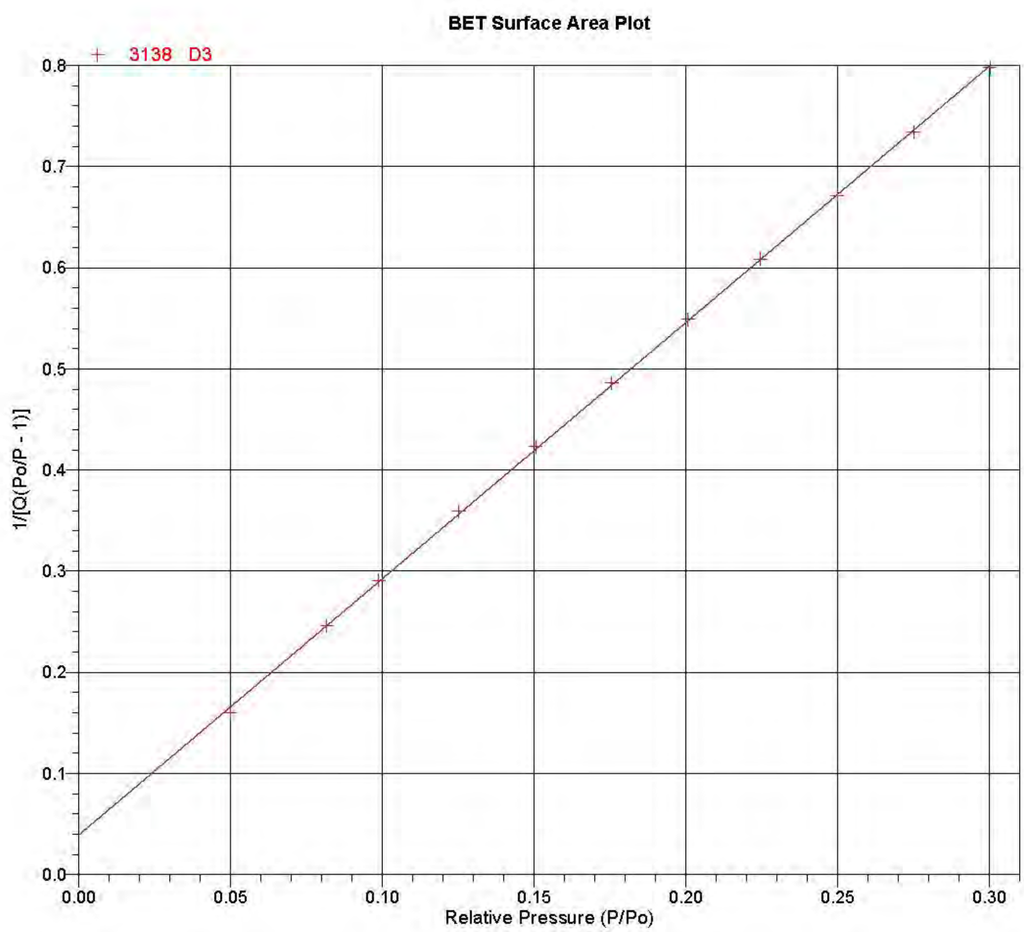
Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.049920433	0.3292	0.159614
0.081717025	0.3616	0.246119
0.098740152	0.3767	0.290826
0.125275125	0.3986	0.359330
0.150534182	0.4186	0.423368
0.175592976	0.4381	0.486156
0.200716409	0.4575	0.548953
0.224656529	0.4762	0.608420
0.249955828	0.4964	0.671363
0.275060220	0.5168	0.734129
0.300305127	0.5379	0.797935

TriStar II 3020 V1.03 (V1.03) Unit 1 Port 3 Serial #: 611 Page 5

Sample: 3138 D3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104003.SMP

Started:	6/29/2011 11:10:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 10:58:30PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:01:55AM	Sample Mass:	4.2565 g
Warm Free Space:	6.5387 cm³ Measured	Cold Free Space:	16.0216 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample#16-3141

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 1

Sample: 3141 D4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104004.SMP

Started:	6/29/2011 11:14:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 4:30:51PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:08:08AM	Sample Mass:	4.5497 g
Warm Free Space:	6.6629 cm^3 Measured	Cold Free Space:	16.2515 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.275185534: 8.3188 m^2/g

BET Surface Area: 8.5142 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 2

Sample: 3141 D4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104004.SMP

Started: 6/29/2011 11:14:09AM
Completed: 6/29/2011 4:30:51PM
Report Time: 6/30/2011 8:08:08AM
Warm Free Space: 6.6629 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5497 g
Cold Free Space: 16.2515 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	742.560242
0.050574352	37.527206	1.8226	02:47	742.020508
0.075013926	55.637871	1.9486	03:19	741.700562
0.097197835	72.050797	2.0402	03:36	741.279846
0.122363704	90.674492	2.1330	03:49	741.024414
0.147163971	109.041344	2.2227	04:00	740.951355
0.172607623	127.918083	2.3100	04:10	741.091736
0.197963038	146.675049	2.3918	04:19	740.921387
0.223577599	165.618027	2.4730	04:27	740.763062
0.249736105	185.049652	2.5570	04:35	740.980774
0.275185534	203.909424	2.6365	04:42	740.988892
0.301238250	223.150269	2.7179	04:48	740.776672

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 3

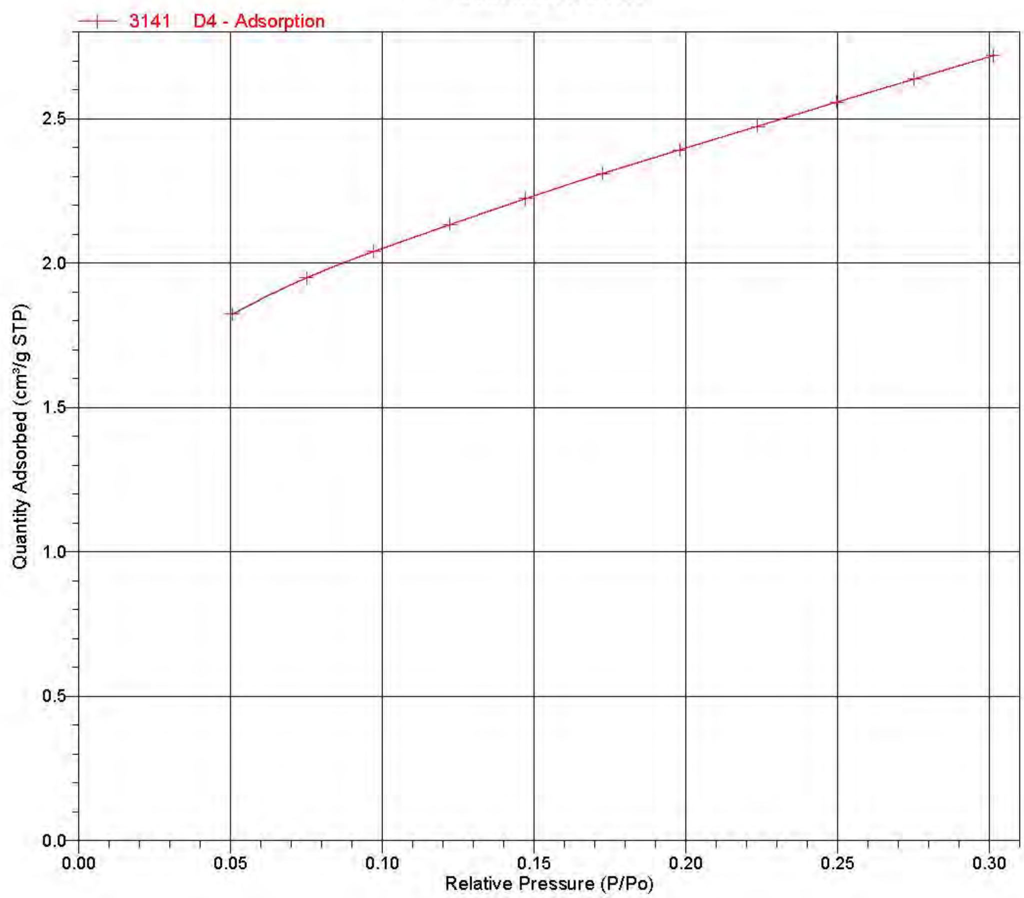
Sample: 3141 D4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104004.SMP

Started: 6/29/2011 11:14:09AM
Completed: 6/29/2011 4:30:51PM
Report Time: 6/30/2011 8:08:08AM
Warm Free Space: 6.6629 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5497 g
Cold Free Space: 16.2515 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Linear Plot



TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 4

Sample: 3141 D4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104004.SMP

Started: 6/29/2011 11:14:09AM
Completed: 6/29/2011 4:30:51PM
Report Time: 6/30/2011 8:08:08AM
Warm Free Space: 6.6629 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5497 g
Cold Free Space: 16.2515 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 8.5142 ± 0.0385 m^2/g
Slope: 0.508087 ± 0.002278 g/cm^3 STP
Y-Intercept: 0.003202 ± 0.000402 g/cm^3 STP
C: 159.678415
Qm: 1.9558 cm^3/g STP
Correlation Coefficient: 0.9999196
Molecular Cross-Sectional Area: 0.1620 nm^2

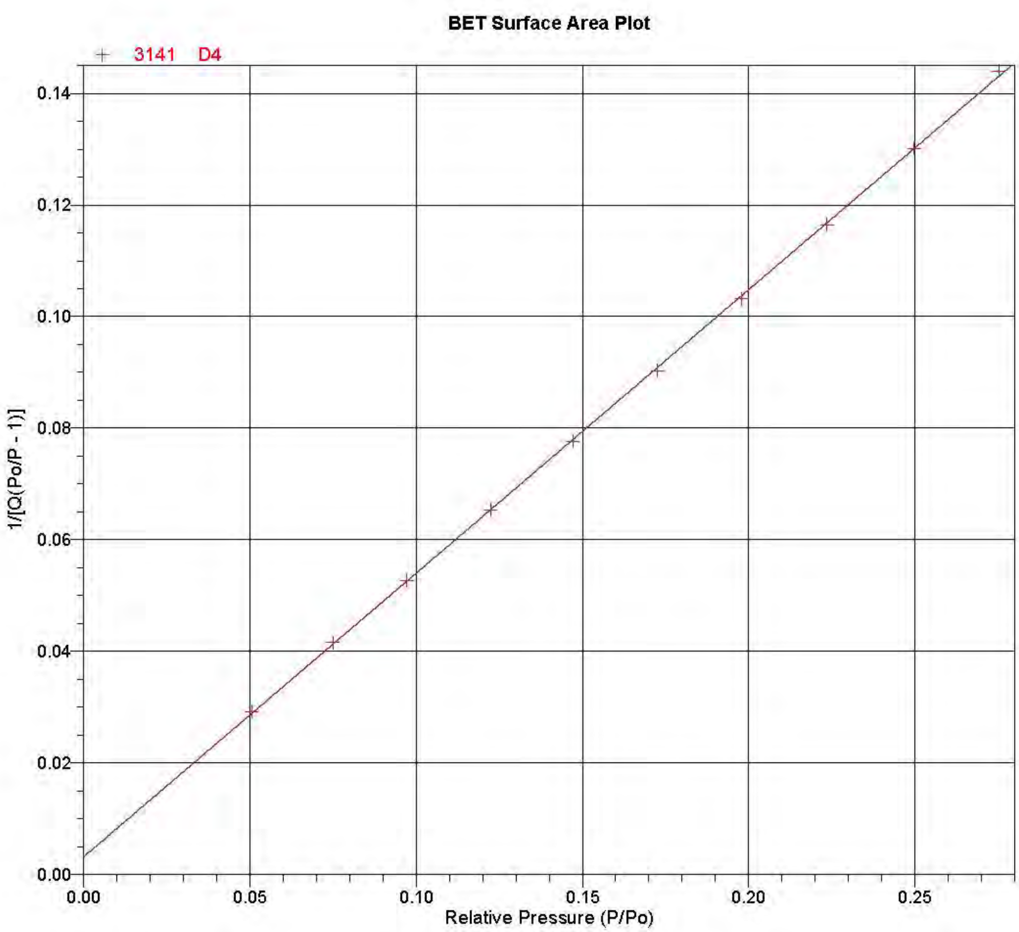
Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.050574352	1.8226	0.029227
0.075013926	1.9486	0.041618
0.097197835	2.0402	0.052770
0.122363704	2.1330	0.065364
0.147163971	2.2227	0.077636
0.172607623	2.3100	0.090310
0.197963038	2.3918	0.103197
0.223577599	2.4730	0.116439
0.249736105	2.5570	0.130177
0.275185534	2.6365	0.144003

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 5

Sample: 3141 D4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104004.SMP

Started:	6/29/2011 11:14:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 4:30:51PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:08:08AM	Sample Mass:	4.5497 g
Warm Free Space:	6.6629 cm³ Measured	Cold Free Space:	16.2515 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample#17-3146

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 1

Sample: 3146 D5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104005.SMP

Started:	6/29/2011 11:14:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 4:30:51PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:09:57AM	Sample Mass:	4.7452 g
Warm Free Space:	6.3537 cm^3 Measured	Cold Free Space:	15.3380 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.298758126: 5.0601 m^2/g

BET Surface Area: 5.2811 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3146 D5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104005.SMP

Started: 6/29/2011 11:14:09AM
Completed: 6/29/2011 4:30:51PM
Report Time: 6/30/2011 8:09:57AM
Warm Free Space: 6.3537 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.7452 g
Cold Free Space: 15.3380 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	742.560242
0.048633172	36.105824	1.0131	01:40	742.411438
0.073914172	54.869728	1.0902	01:46	742.343811
0.095469984	70.866051	1.1462	01:51	742.286194
0.123783825	91.896042	1.2150	01:56	742.391357
0.148779945	110.425812	1.2769	02:00	742.208984
0.173679972	128.935913	1.3380	02:04	742.376404
0.198263360	147.144073	1.3972	02:08	742.164734
0.222976021	165.490479	1.4586	02:12	742.189575
0.248565009	184.497787	1.5245	02:16	742.251648
0.273679811	203.130905	1.5903	02:20	742.221008
0.298758126	221.797913	1.6576	02:24	742.399597

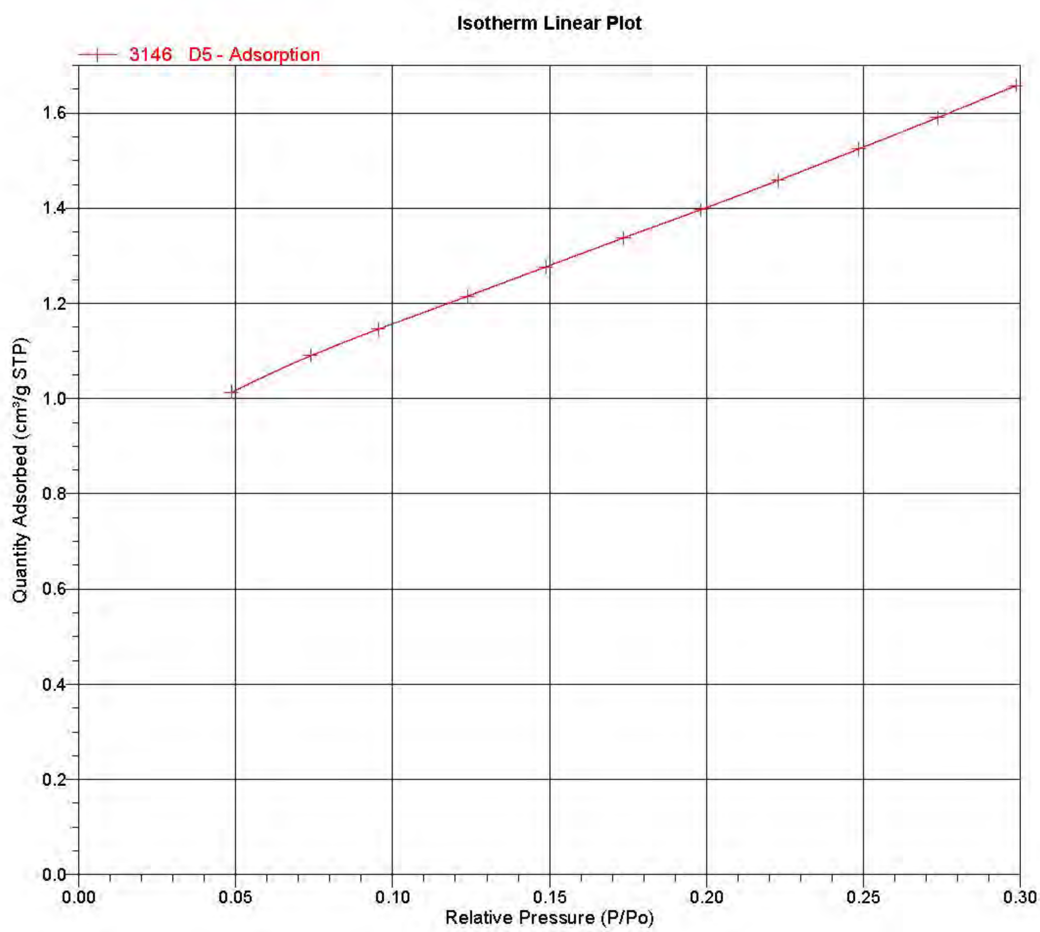
TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 3

Sample: 3146 D5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104005.SMP

Started: 6/29/2011 11:14:09AM
Completed: 6/29/2011 4:30:51PM
Report Time: 6/30/2011 8:09:57AM
Warm Free Space: 6.3537 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.7452 g
Cold Free Space: 15.3380 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3146 D5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104005.SMP

Started:	6/29/2011 11:14:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 4:30:51PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:09:57AM	Sample Mass:	4.7452 g
Warm Free Space:	6.3537 cm³ Measured	Cold Free Space:	15.3380 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 5.2811 ± 0.0223 m²/g
Slope: 0.808160 ± 0.003404 g/cm³ STP
Y-Intercept: 0.016142 ± 0.000710 g/cm³ STP
C: 51.066716
Qm: 1.2131 cm³/g STP
Correlation Coefficient: 0.9999379
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.095469984	1.1462	0.092085
0.123783825	1.2150	0.116273
0.148779945	1.2769	0.136885
0.173679972	1.3380	0.157090
0.198263360	1.3972	0.176995
0.222976021	1.4586	0.196735
0.248565009	1.5245	0.216975
0.273679811	1.5903	0.236936
0.298758126	1.6576	0.257023

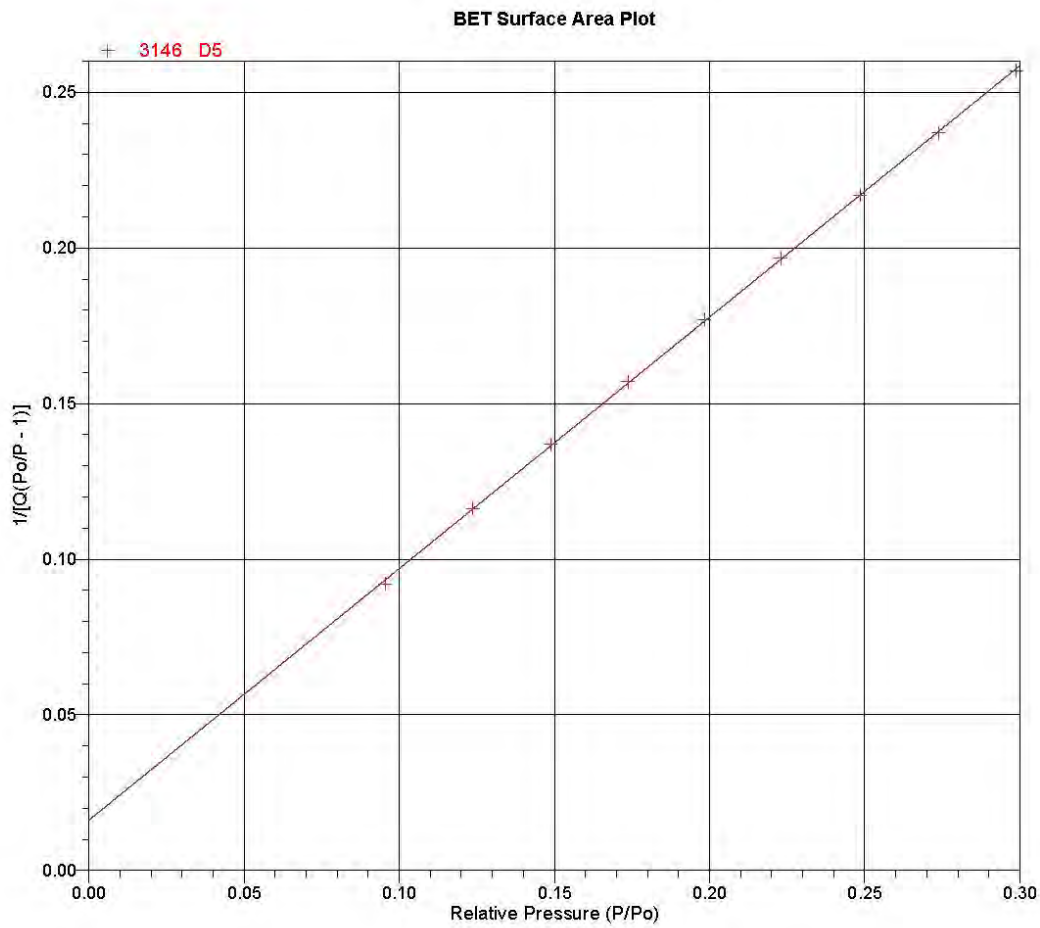
TriStar II 3020 V1.03 (V1.03)   Unit 3 Port 2   Serial #: 238   Page 5

Sample: 3146 D5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104005.SMP

Started: 6/29/2011 11:14:09AM
Completed: 6/29/2011 4:30:51PM
Report Time: 6/30/2011 8:09:57AM
Warm Free Space: 6.3537 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.7452 g
Cold Free Space: 15.3380 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



Sample#18-3149

MICROMERITICS ANALYTICAL SERVICES *The Particle Testing Authority*

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 1

Sample: 3149 D6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104006.SMP

Started:	6/29/2011 11:14:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 4:30:51PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:12:58AM	Sample Mass:	4.5678 g
Warm Free Space:	6.1167 cm^3 Measured	Cold Free Space:	14.6261 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.225746917: 9.4471 m^2/g

BET Surface Area: 9.7036 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 2

Sample: 3149 D6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104006.SMP

Started: 6/29/2011 11:14:09AM
Completed: 6/29/2011 4:30:51PM
Report Time: 6/30/2011 8:12:58AM
Warm Free Space: 6.1167 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5678 g
Cold Free Space: 14.6261 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

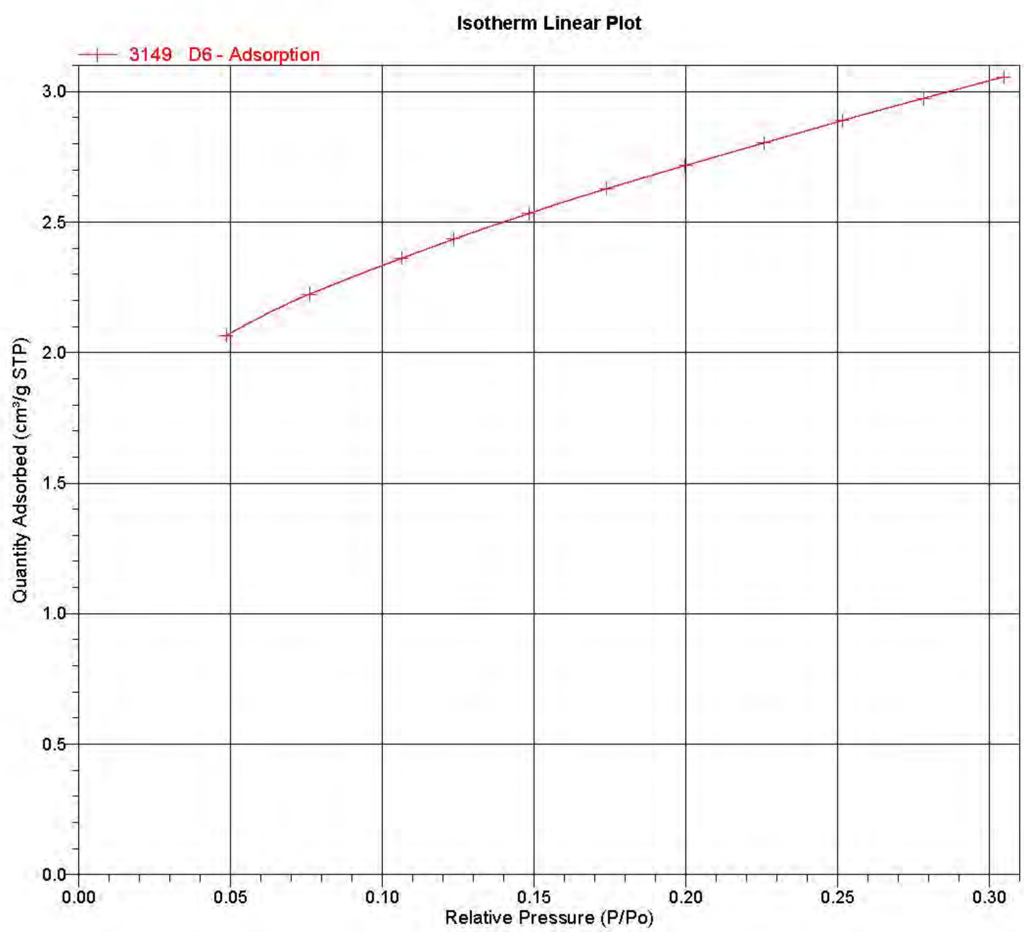
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	742.560242
0.048554771	36.014435	2.0660	03:08	741.728027
0.075950093	56.296787	2.2239	03:38	741.233948
0.106351617	78.797012	2.3615	04:02	740.910339
0.123504217	91.521080	2.4344	04:17	741.036072
0.148231036	109.841568	2.5332	04:29	741.015991
0.173943423	128.844620	2.6281	04:40	740.727173
0.199828384	148.058075	2.7167	04:48	740.926147
0.225746917	167.240051	2.8029	04:56	740.829834
0.251476974	186.294830	2.8887	05:03	740.802734
0.278421121	206.223129	2.9742	05:10	740.687805
0.304805768	225.760651	3.0565	05:15	740.670532

TriStar II 3020 V1.03 (V1.03)	Unit 3 Port 3	Serial #: 238	Page 3

Sample: 3149 D6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104006.SMP

Started:	6/29/2011 11:14:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 4:30:51PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:12:58AM	Sample Mass:	4.5678 g
Warm Free Space:	6.1167 cm³ Measured	Cold Free Space:	14.6261 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample: 3149 D6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104006.SMP

Started: 6/29/2011 11:14:09AM
Completed: 6/29/2011 4:30:51PM
Report Time: 6/30/2011 8:12:58AM
Warm Free Space: 6.1167 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5678 g
Cold Free Space: 14.6261 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 9.7036 ± 0.0389 m^2/g
Slope: 0.445678 ± 0.001779 g/cm^3 STP
Y-Intercept: 0.002941 ± 0.000265 g/cm^3 STP
C: 152.563786
Qm: 2.2291 cm^3/g STP
Correlation Coefficient: 0.9999522
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.048554771	2.0660	0.024701
0.075950093	2.2239	0.036959
0.106351617	2.3615	0.050396
0.123504217	2.4344	0.057882
0.148231036	2.5332	0.068699
0.173943423	2.6281	0.080124
0.199828384	2.7167	0.091926
0.225746917	2.8029	0.104024

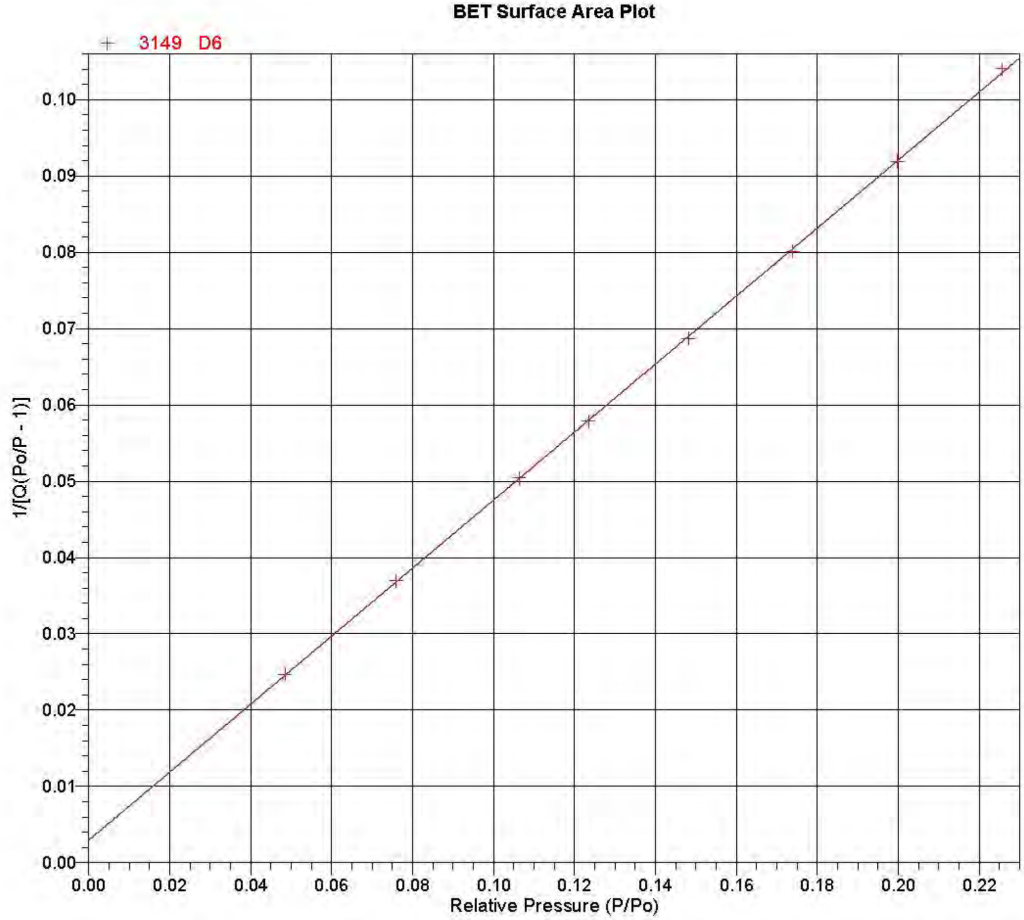
TriStar II 3020 V1.03 (V1.03)	Unit 3 Port 3	Serial #: 238	Page 5

Sample: 3149 D6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104006.SMP

Started:	6/29/2011 11:14:09AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 4:30:51PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:12:58AM	Sample Mass:	4.5678 g
Warm Free Space:	6.1167 cm³ Measured	Cold Free Space:	14.6261 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#19-3150

TriStar II 3020 V1.03 (V1.03) Unit 4 Port 1 Serial #: 240 Page 1

Sample: 3150 A1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104007.SMP

Started:	6/29/2011 11:16:17AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 5:31:24PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:13:47AM	Sample Mass:	5.1387 g
Warm Free Space:	6.3502 cm^3 Measured	Cold Free Space:	15.3187 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.301969327: 11.9610 m^2/g

BET Surface Area: 12.2388 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 4 Port 1 Serial #: 240 Page 2

Sample: 3150 A1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104007.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:13:47AM
Warm Free Space: 6.3502 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 5.1387 g
Cold Free Space: 15.3187 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

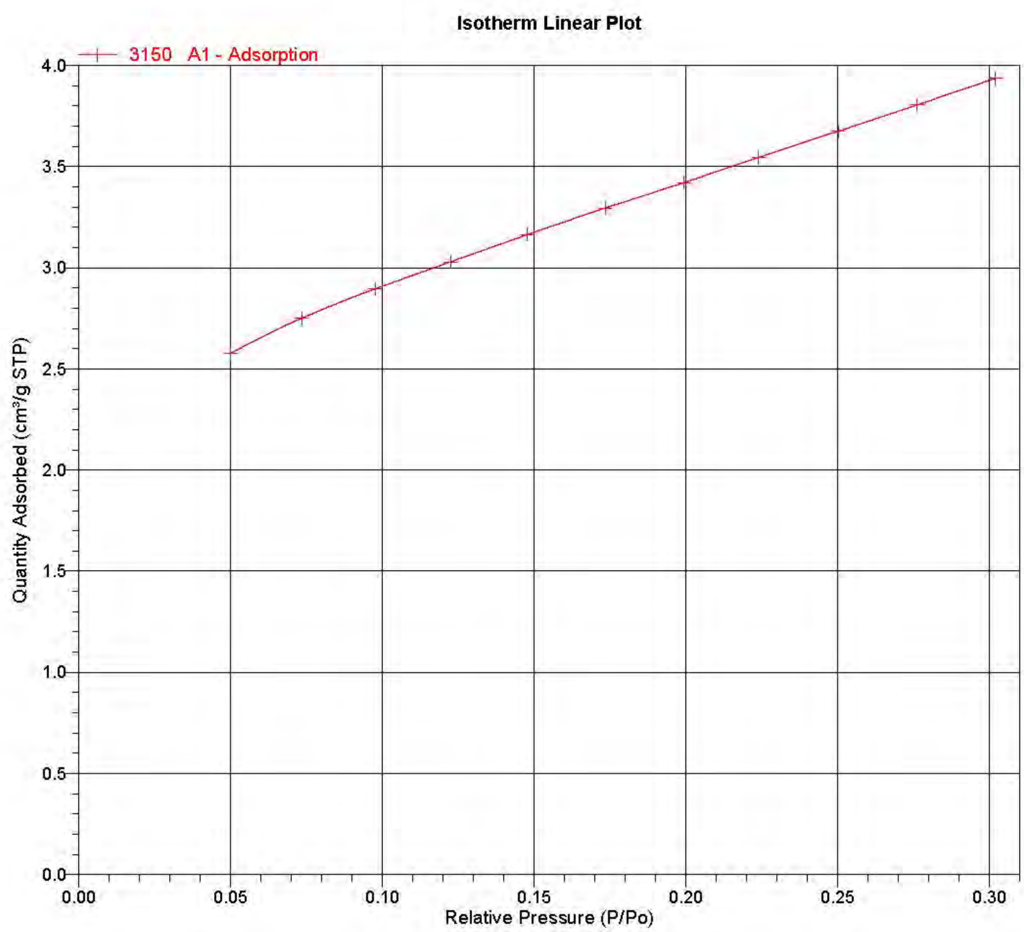
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	739.981445
0.050056856	37.037567	2.5769	02:35	739.909973
0.073356245	54.257393	2.7504	03:04	739.642456
0.097548383	72.138702	2.8955	03:20	739.517151
0.122487368	90.553467	3.0294	03:32	739.288208
0.147620660	109.132690	3.1630	03:41	739.277893
0.173468675	128.197723	3.2952	03:50	739.025208
0.199386446	147.357025	3.4208	03:57	739.052368
0.223886698	165.454880	3.5442	04:07	739.011658
0.250172256	184.865677	3.6751	04:13	738.953552
0.276179475	204.082001	3.8043	04:19	738.947021
0.301969327	223.118195	3.9363	04:25	738.877014

TriStar II 3020 V1.03 (V1.03)	Unit 4 Port 1	Serial #: 240	Page 3

Sample: 3150 A1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104007.SMP

Started:	6/29/2011 11:16:17AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 5:31:24PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:13:47AM	Sample Mass:	5.1387 g
Warm Free Space:	6.3502 cm³ Measured	Cold Free Space:	15.3187 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3150 A1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104007.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:13:47AM
Warm Free Space: 6.3502 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 5.1387 g
Cold Free Space: 15.3187 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 12.2388 ± 0.0389 m^2/g
Slope: 0.352967 ± 0.001111 g/cm^3 STP
Y-Intercept: 0.002721 ± 0.000213 g/cm^3 STP
C: 130.728346
Qm: 2.8115 cm^3/g STP
Correlation Coefficient: 0.9999554
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.050056856	2.5769	0.020449
0.073356245	2.7504	0.028782
0.097548383	2.8955	0.037331
0.122487368	3.0294	0.046077
0.147620660	3.1630	0.054753
0.173468675	3.2952	0.063692
0.199386446	3.4208	0.072802
0.223886698	3.5442	0.081393
0.250172256	3.6751	0.090784
0.276179475	3.8043	0.100296
0.301969327	3.9363	0.109901

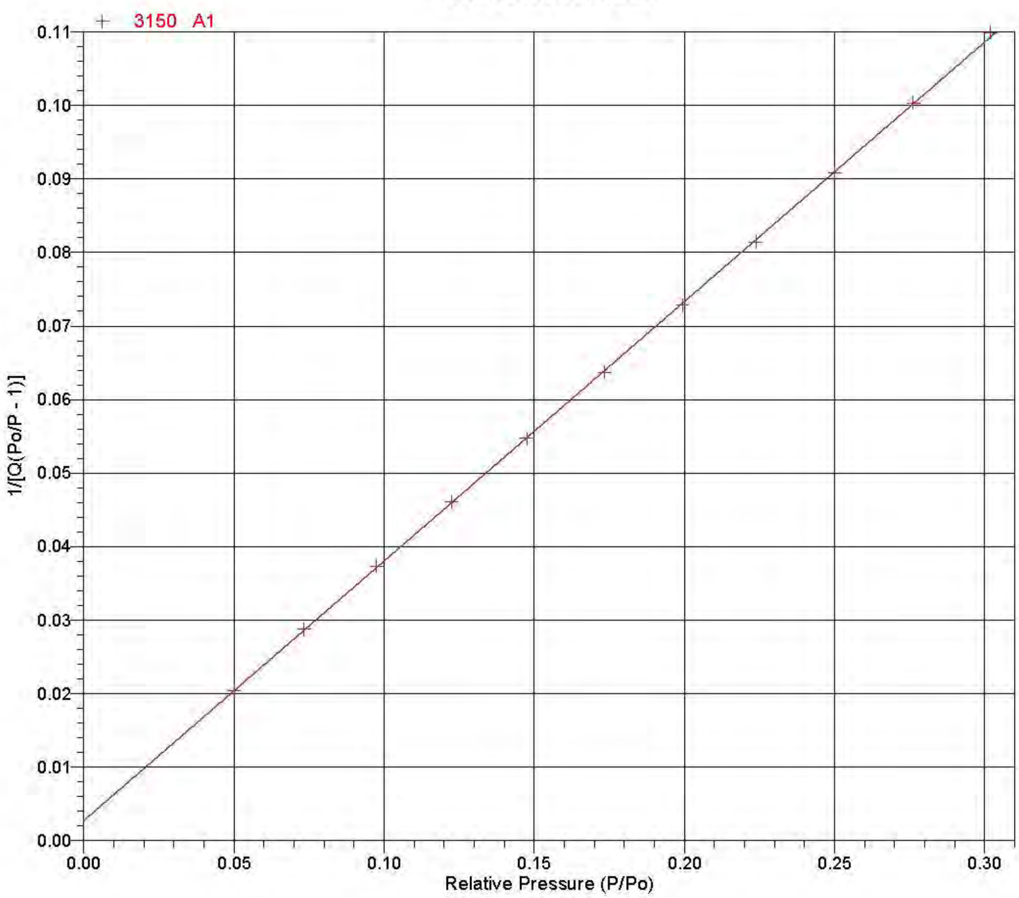
TriStar II 3020 V1.03 (V1.03) Unit 4 Port 1 Serial #: 240 Page 5

Sample: 3150 A1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104007.SMP

Started: 6/29/2011 11:16:17AM	Analysis Adsorptive: N2
Completed: 6/29/2011 5:31:24PM	Analysis Bath Temp.: 77.350 K
Report Time: 6/30/2011 8:13:47AM	Sample Mass: 5.1387 g
Warm Free Space: 6.3502 cm³ Measured	Cold Free Space: 15.3187 cm³ Measured
Equilibration Interval: 10 s	Low Pressure Dose: None
Sample Density: 1.000 g/cm³	Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#20-3355

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) | Unit 4 Port 2 | Serial #: 240 | Page 1

Sample: 3355 A2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104008.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:22:46AM
Warm Free Space: 6.6045 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0748 g
Cold Free Space: 16.0627 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.302062393: 5.3143 m^2/g

BET Surface Area: 5.3783 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3355 A2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104008.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:22:46AM
Warm Free Space: 6.6045 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0748 g
Cold Free Space: 16.0627 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

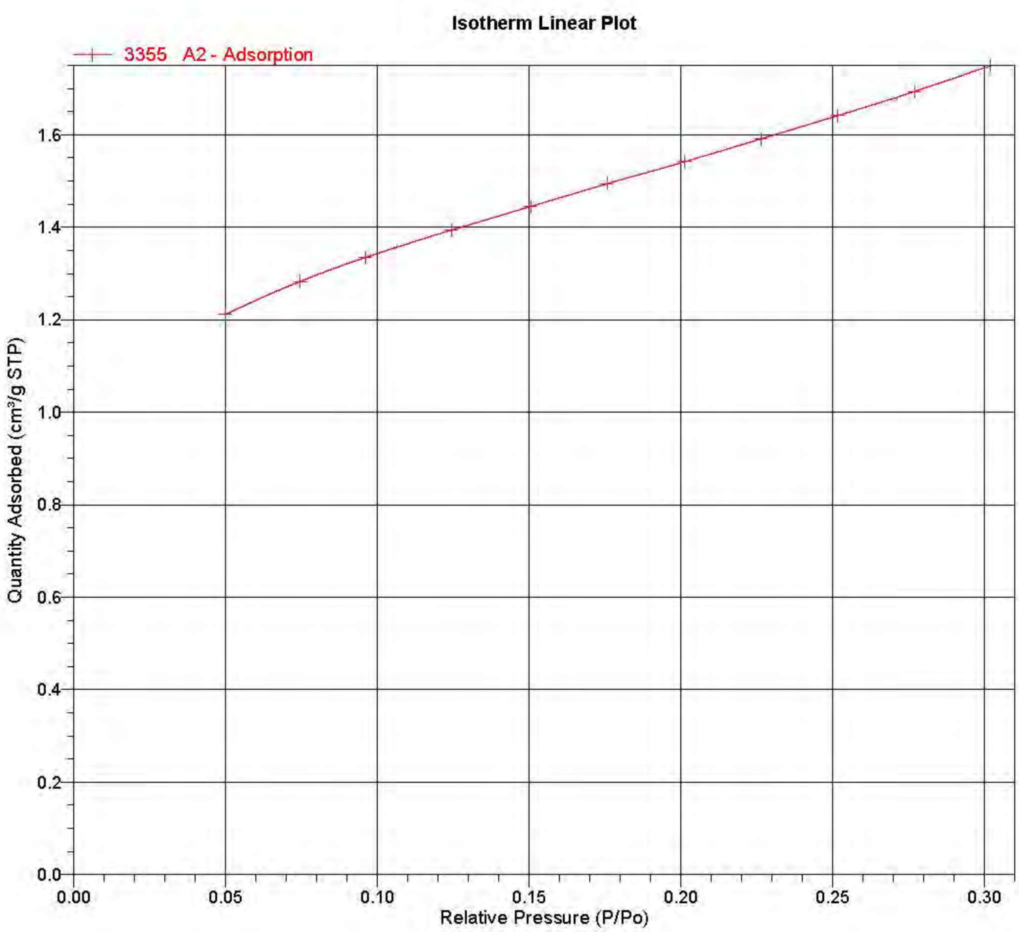
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	739.981445
0.049909743	36.885822	1.2113	03:55	739.050537
0.074625597	55.127533	1.2830	04:31	738.721497
0.096070640	70.955292	1.3348	04:55	738.574158
0.124382965	91.829247	1.3939	05:13	738.278320
0.150510461	111.104408	1.4451	05:26	738.183960
0.175766827	129.703323	1.4943	05:37	737.928345
0.201313339	148.544510	1.5418	05:44	737.877136
0.226322574	166.978928	1.5909	05:53	737.791748
0.251629251	185.618378	1.6413	06:00	737.666138
0.277043793	204.338516	1.6938	06:07	737.567566
0.302062393	222.760635	1.7491	06:13	737.465637

TriStar II 3020 V1.03 (V1.03) Unit 4 Port 2 Serial #: 240 Page 3

Sample: 3355 A2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104008.SMP

Started:	6/29/2011 11:16:17AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 5:31:24PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:22:46AM	Sample Mass:	4.0748 g
Warm Free Space:	6.6045 cm³ Measured	Cold Free Space:	16.0627 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



TriStar II 3020 V1.03 (V1.03) Unit 4 Port 2 Serial #: 240 Page 4

Sample: 3355 A2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104008.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:22:46AM
Warm Free Space: 6.6045 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.0748 g
Cold Free Space: 16.0627 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 5.3783 ± 0.0249 m^2/g
Slope: 0.807507 ± 0.003677 g/cm^3 STP
Y-Intercept: 0.001889 ± 0.000709 g/cm^3 STP
C: 428.446834
Qm: 1.2355 cm^3/g STP
Correlation Coefficient: 0.9999067
Molecular Cross-Sectional Area: 0.1620 nm^2

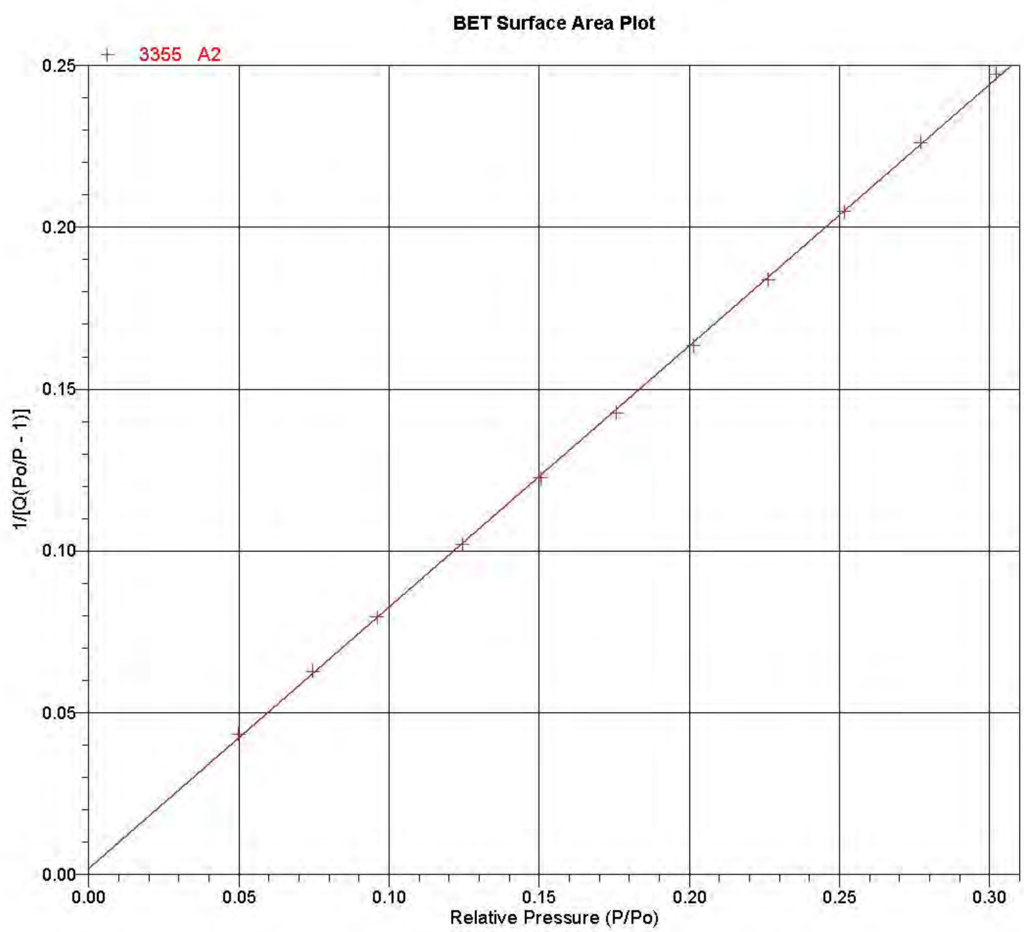
Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.049909743	1.2113	0.043369
0.074625597	1.2830	0.062855
0.096070640	1.3348	0.079623
0.124382965	1.3939	0.101913
0.150510461	1.4451	0.122609
0.175766827	1.4943	0.142712
0.201313339	1.5418	0.163482
0.226322574	1.5909	0.183881
0.251629251	1.6413	0.204854
0.277043793	1.6938	0.226245
0.302062393	1.7491	0.247435

TriStar II 3020 V1.03 (V1.03) Unit 4 Port 2 Serial #: 240 Page 5

Sample: 3355 A2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104008.SMP

Started:	6/29/2011 11:16:17AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 5:31:24PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:22:46AM	Sample Mass:	4.0748 g
Warm Free Space:	6.6045 cm³ Measured	Cold Free Space:	16.0627 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample#21-3780

TriStar II 3020 V1.03 (V1.03) Unit 4 Port 3 Serial #: 240 Page 1

Sample: 3780 A3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104009.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:23:42AM
Warm Free Space: 7.2639 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.1602 g
Cold Free Space: 18.0443 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.303337331: 17.8562 m^2/g

BET Surface Area: 18.2856 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 4 Port 3 Serial #: 240 Page 2

Sample: 3780 A3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104009.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:23:42AM
Warm Free Space: 7.2639 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.1602 g
Cold Free Space: 18.0443 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

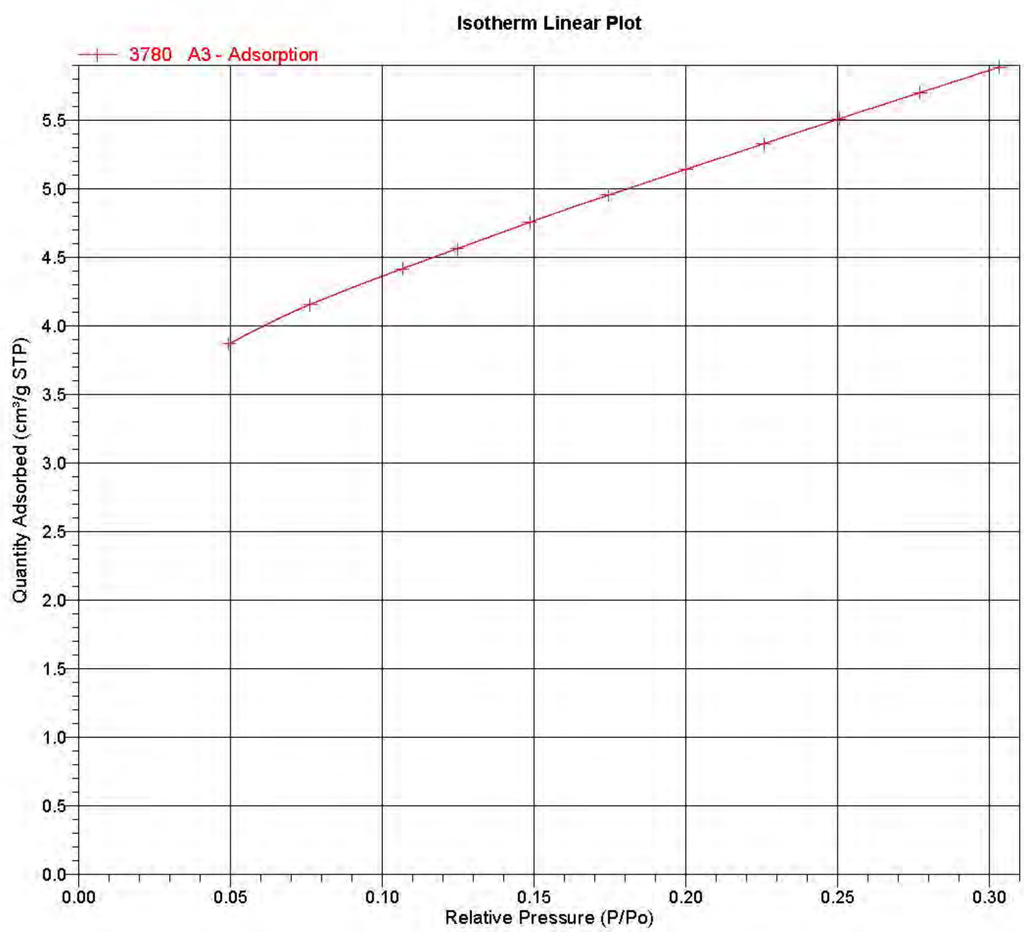
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:20	739.981445
0.049397551	36.558403	3.8694	02:11	740.085327
0.076236153	56.413715	4.1578	02:24	739.986389
0.106653663	78.906174	4.4187	02:36	739.835571
0.124705098	92.257576	4.5644	02:43	739.805969
0.148547859	109.887680	4.7560	02:49	739.745972
0.174388093	128.994843	4.9548	02:55	739.699829
0.200135724	148.034302	5.1432	03:01	739.669556
0.225652915	166.896637	5.3290	03:06	739.616577
0.250523888	185.294281	5.5106	03:11	739.627197
0.277118263	204.942047	5.7015	03:17	739.547241
0.303337331	224.297165	5.8879	03:22	739.431458

TriStar II 3020 V1.03 (V1.03) Unit 4 Port 3 Serial #: 240 Page 3

Sample: 3780 A3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104009.SMP

Started:	6/29/2011 11:16:17AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 5:31:24PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:23:42AM	Sample Mass:	3.1602 g
Warm Free Space:	7.2639 cm³ Measured	Cold Free Space:	18.0443 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 4 Port 3 Serial #: 240 Page 4

Sample: 3780 A3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104009.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:23:42AM
Warm Free Space: 7.2639 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.1602 g
Cold Free Space: 18.0443 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 18.2856 ± 0.0851 m²/g
Slope: 0.236418 ± 0.001088 g/cm³ STP
Y-Intercept: 0.001649 ± 0.000210 g/cm³ STP
C: 144.410317
Qm: 4.2005 cm³/g STP
Correlation Coefficient: 0.9999047
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.049397551	3.8694	0.013430
0.076236153	4.1578	0.019849
0.106653663	4.4187	0.027018
0.124705098	4.5644	0.031214
0.148547859	4.7560	0.036683
0.174388093	4.9548	0.042630
0.200135724	5.1432	0.048649
0.225652915	5.3290	0.054684
0.250523888	5.5106	0.060659
0.277118263	5.7015	0.067238
0.303337331	5.8879	0.073951

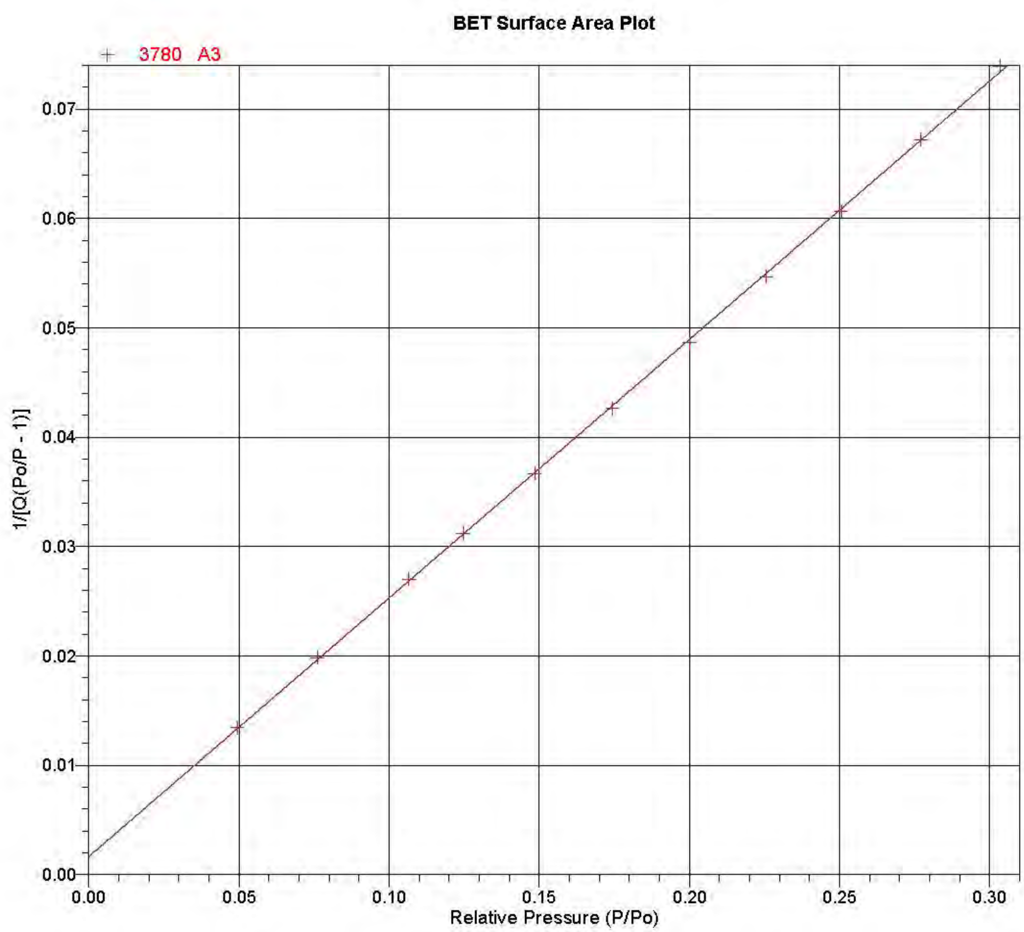
TriStar II 3020 V1.03 (V1.03) Unit 4 Port 3 Serial #: 240 Page 5

Sample: 3780 A3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104009.SMP

Started: 6/29/2011 11:16:17AM
Completed: 6/29/2011 5:31:24PM
Report Time: 6/30/2011 8:23:42AM
Warm Free Space: 7.2639 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 3.1602 g
Cold Free Space: 18.0443 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



Sample#22-3952

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 1

Sample: 3952 A4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104010.SMP

Started:	6/29/2011 11:43:38AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 7:37:58PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:26:29AM	Sample Mass:	5.5921 g
Warm Free Space:	7.5987 cm^3 Measured	Cold Free Space:	19.9221 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.301107910: 9.8051 m^2/g

BET Surface Area: 10.0028 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3952 A4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104010.SMP

Started: 6/29/2011 11:43:38AM
Completed: 6/29/2011 7:37:58PM
Report Time: 6/30/2011 8:26:29AM
Warm Free Space: 7.5987 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 5.5921 g
Cold Free Space: 19.9221 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

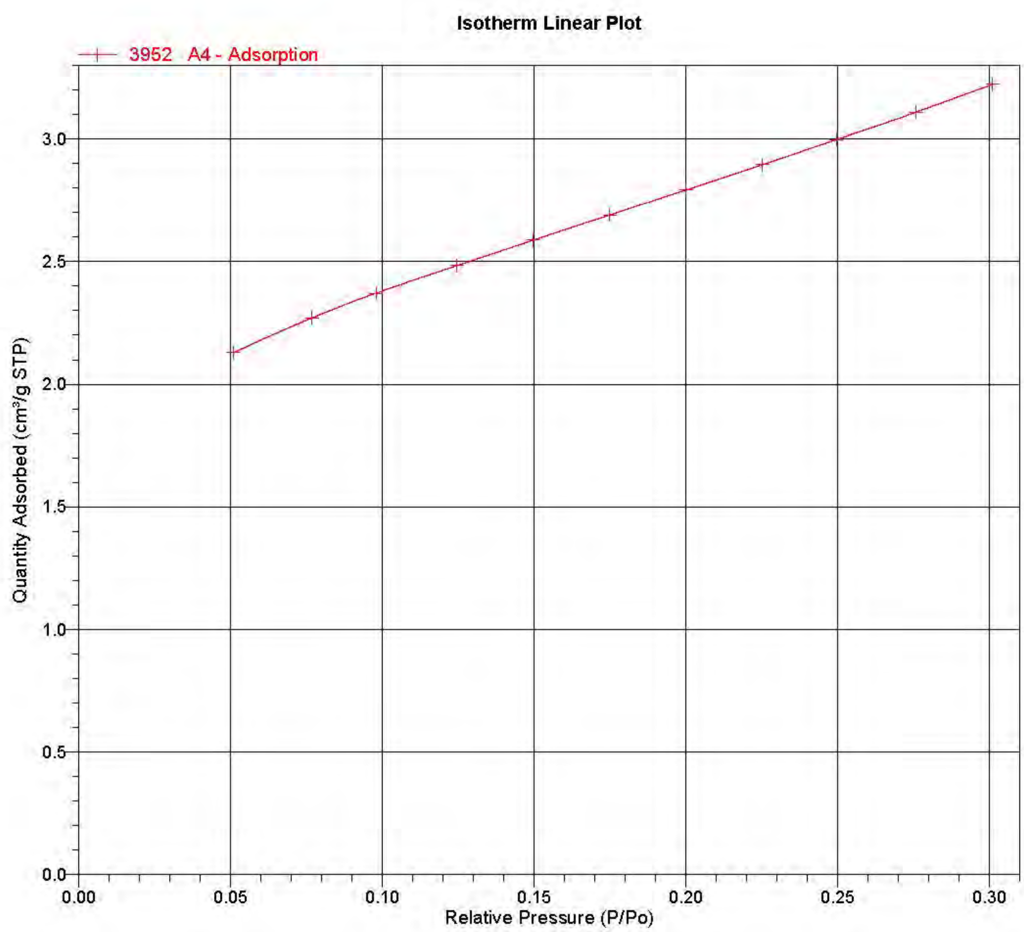
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:23	742.977234
0.050884911	37.751575	2.1283	03:40	741.901184
0.076772645	56.945824	2.2702	04:08	741.746277
0.097944764	72.621254	2.3716	04:31	741.451111
0.124514282	92.315887	2.4842	04:46	741.408020
0.149767100	111.024223	2.5881	04:57	741.312500
0.174830223	129.559845	2.6903	05:07	741.060913
0.200034804	148.231491	2.7919	05:16	741.028503
0.225226130	166.839981	2.8951	05:24	740.766541
0.249589523	184.874893	2.9972	05:31	740.715759
0.275833106	204.271469	3.1095	05:37	740.561829
0.301107910	223.012695	3.2228	05:44	740.640442

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 3

Sample: 3952 A4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104010.SMP

Started:	6/29/2011 11:43:38AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 7:37:58PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:26:29AM	Sample Mass:	5.5921 g
Warm Free Space:	7.5987 cm³ Measured	Cold Free Space:	19.9221 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 4

Sample: 3952 A4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104010.SMP

Started: 6/29/2011 11:43:38AM
Completed: 6/29/2011 7:37:58PM
Report Time: 6/30/2011 8:26:29AM
Warm Free Space: 7.5987 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 5.5921 g
Cold Free Space: 19.9221 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 10.0028 ± 0.0154 m^2/g
Slope: 0.431851 ± 0.000657 g/cm^3 STP
Y-Intercept: 0.003348 ± 0.000126 g/cm^3 STP
C: 129.987414
Qm: 2.2978 cm^3/g STP
Correlation Coefficient: 0.9999896
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.050884911	2.1283	0.025191
0.076772645	2.2702	0.036629
0.097944764	2.3716	0.045783
0.124514282	2.4842	0.057252
0.149767100	2.5881	0.068062
0.174830223	2.6903	0.078753
0.200034804	2.7919	0.089564
0.225226130	2.8951	0.100410
0.249589523	2.9972	0.110971
0.275833106	3.1095	0.122494
0.301107910	3.2228	0.133684

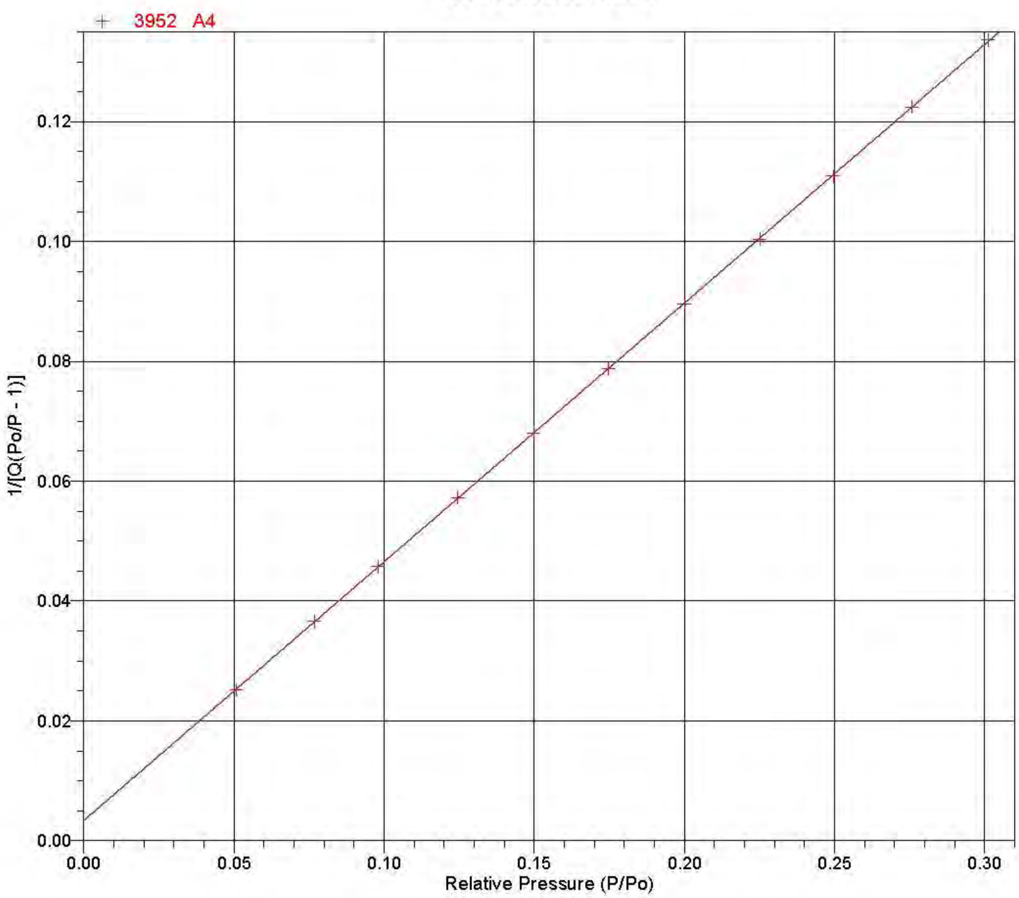
TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 5

Sample: 3952 A4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104010.SMP

Started:	6/29/2011 11:43:38AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 7:37:58PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:26:29AM	Sample Mass:	5.5921 g
Warm Free Space:	7.5987 cm^3 Measured	Cold Free Space:	19.9221 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#23-3979

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 1

Sample: 3979 A5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104011.SMP

Started:	6/29/2011 11:43:38AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 7:37:58PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:29:45AM	Sample Mass:	5.1085 g
Warm Free Space:	6.4430 cm^3 Measured	Cold Free Space:	15.8173 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.201713198: 8.3879 m^2/g

BET Surface Area: 8.5302 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3979 A5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104011.SMP

Started: 6/29/2011 11:43:38AM
Completed: 6/29/2011 7:37:58PM
Report Time: 6/30/2011 8:29:45AM
Warm Free Space: 6.4430 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 5.1085 g
Cold Free Space: 15.8173 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:23	742.977234
0.050022791	37.088642	1.9233	04:29	741.434875
0.075797421	56.157284	2.0387	05:18	740.886475
0.096642989	71.557869	2.1166	05:56	740.435181
0.122435357	90.631264	2.1968	06:23	740.237671
0.149154837	110.388672	2.2739	06:44	740.094482
0.175958276	130.206665	2.3461	06:59	739.986023
0.201713198	149.289398	2.4137	07:14	740.107239
0.227915324	168.682602	2.4798	07:25	740.110840
0.253521941	187.637756	2.5467	07:36	740.124329
0.279522478	206.886368	2.6140	07:45	740.142151
0.304778164	225.582458	2.6805	07:53	740.152954

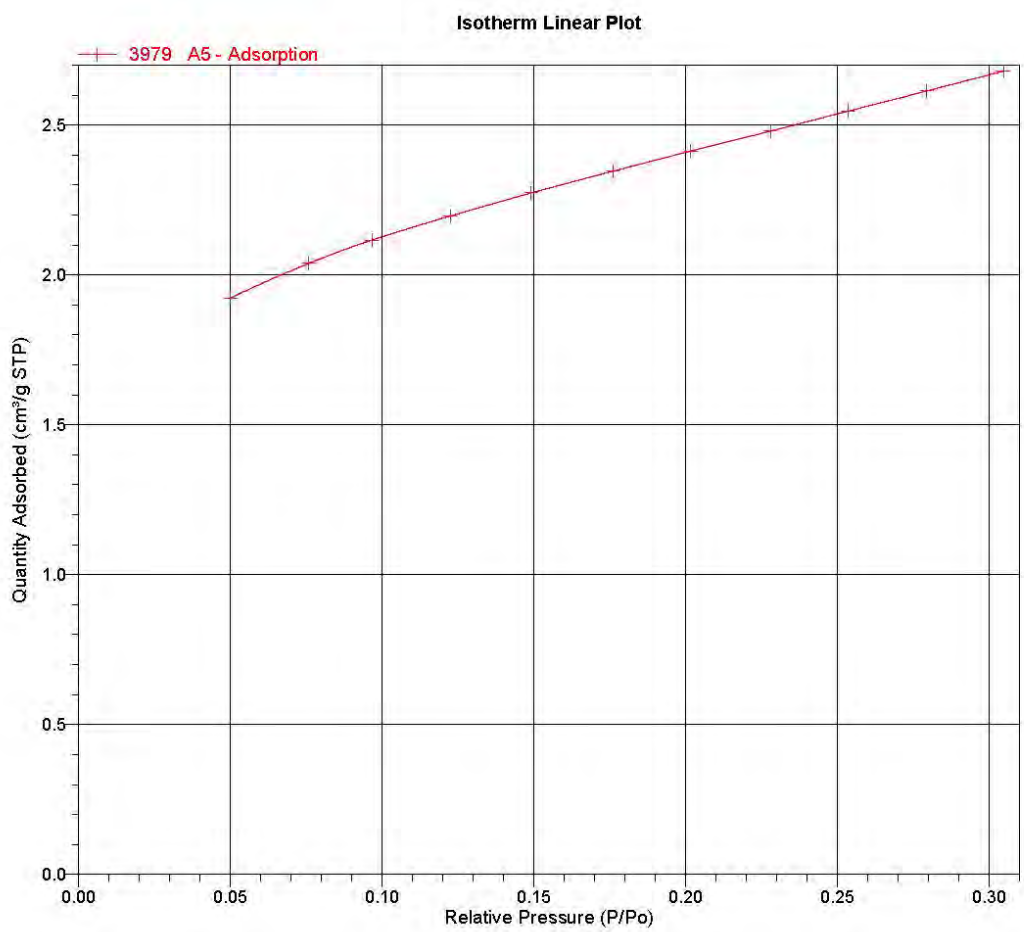
TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 3

Sample: 3979 A5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104011.SMP

Started: 6/29/2011 11:43:38AM
Completed: 6/29/2011 7:37:58PM
Report Time: 6/30/2011 8:29:45AM
Warm Free Space: 6.4430 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 5.1085 g
Cold Free Space: 15.8173 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3979 A5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104011.SMP

Started: 6/29/2011 11:43:38AM
Completed: 6/29/2011 7:37:58PM
Report Time: 6/30/2011 8:29:45AM
Warm Free Space: 6.4430 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 5.1085 g
Cold Free Space: 15.8173 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 8.5302 ± 0.0464 m^2/g
Slope: 0.508761 ± 0.002748 g/cm^3 STP
Y-Intercept: 0.001565 ± 0.000369 g/cm^3 STP
C: 326.043794
Qm: 1.9595 cm^3/g STP
Correlation Coefficient: 0.9999271
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.050022791	1.9233	0.027379
0.075797421	2.0387	0.040228
0.096642989	2.1166	0.050545
0.122435357	2.1968	0.063508
0.149154837	2.2739	0.077094
0.175958276	2.3461	0.091016
0.201713198	2.4137	0.104686

TriStar II 3020 V1.03 (V1.03)   Unit 2 Port 2   Serial #: 571   Page 5

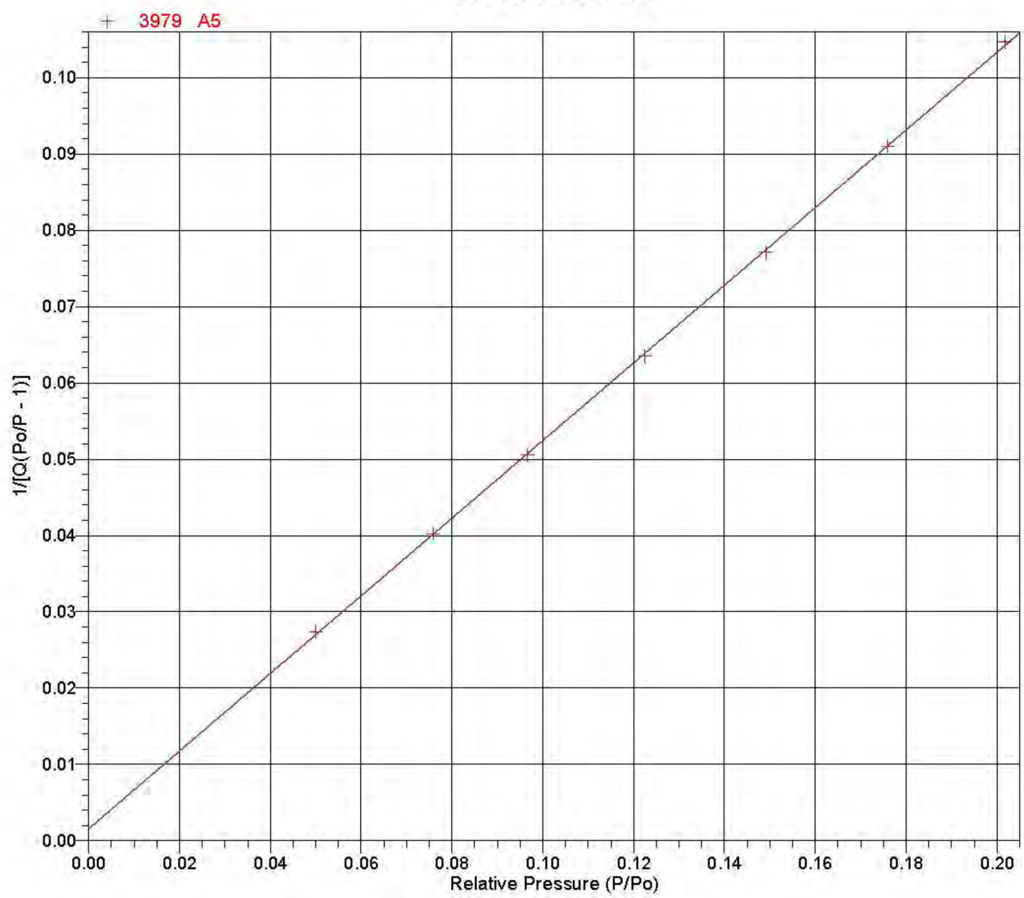
Sample: 3979   A5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104011.SMP

Started: 6/29/2011 11:43:38AM
Completed: 6/29/2011 7:37:58PM
Report Time: 6/30/2011 8:29:45AM
Warm Free Space: 6.4430 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 5.1085 g
Cold Free Space: 15.8173 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#24-4157

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 1

Sample: 4157 A6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104012.SMP

Started:	6/29/2011 11:43:38AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 7:37:58PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:30:36AM	Sample Mass:	4.1867 g
Warm Free Space:	6.6969 cm^3 Measured	Cold Free Space:	16.4315 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.276568492: 21.5972 m^2/g

BET Surface Area: 22.0987 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 4157 A6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104012.SMP

Started: 6/29/2011 11:43:38AM
Completed: 6/29/2011 7:37:58PM
Report Time: 6/30/2011 8:30:36AM
Warm Free Space: 6.6969 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.1867 g
Cold Free Space: 16.4315 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

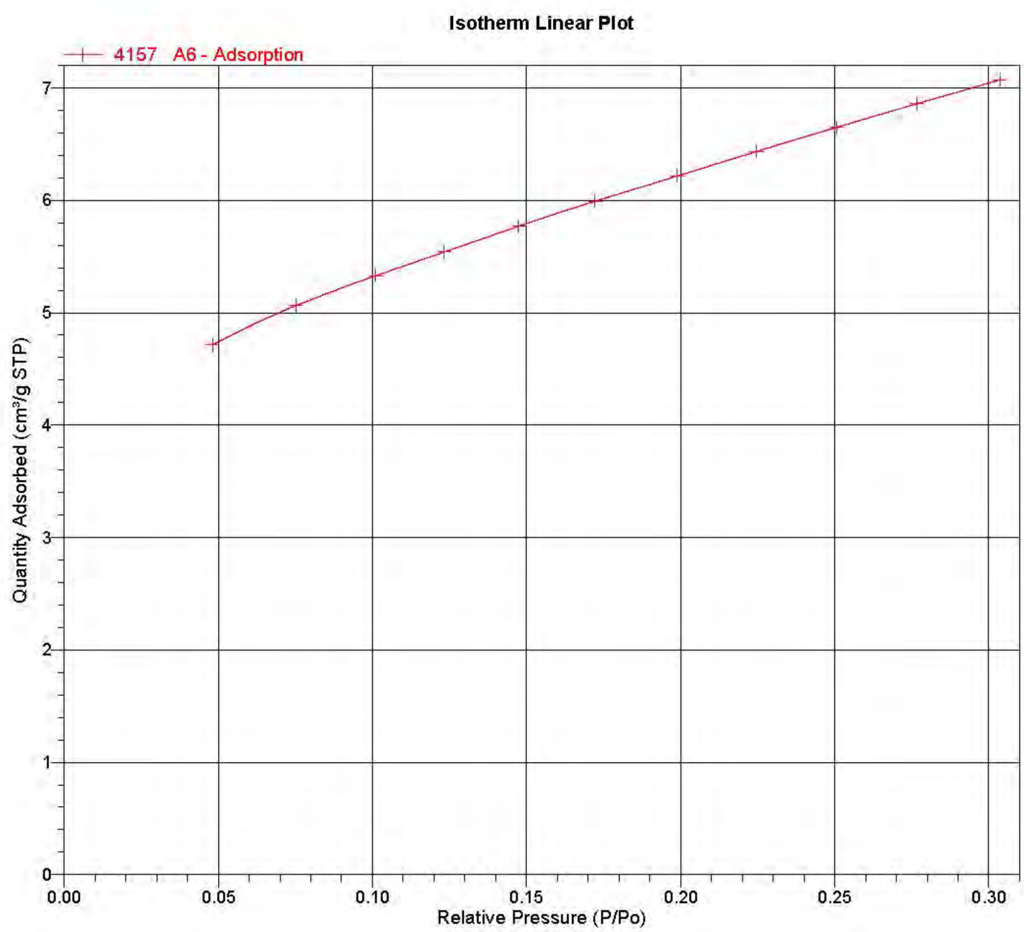
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:23	742.977234
0.048095053	35.724415	4.7155	02:17	742.787720
0.075120075	55.791107	5.0624	02:33	742.692383
0.101107565	75.076347	5.3300	02:45	742.539368
0.123311696	91.560982	5.5406	02:55	742.516602
0.147391998	109.416023	5.7692	03:05	742.347107
0.172272030	127.881805	5.9923	03:14	742.324829
0.198963991	147.690628	6.2166	03:22	742.298279
0.224604548	166.659851	6.4344	03:30	742.014587
0.250700486	186.008667	6.6498	03:37	741.955750
0.276568492	205.199051	6.8579	03:45	741.946594
0.303508551	225.128616	7.0710	03:52	741.753784

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 3

Sample: 4157 A6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104012.SMP

Started:	6/29/2011 11:43:38AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 7:37:58PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:30:36AM	Sample Mass:	4.1867 g
Warm Free Space:	6.6969 cm³ Measured	Cold Free Space:	16.4315 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 4157 A6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104012.SMP

Started: 6/29/2011 11:43:38AM
Completed: 6/29/2011 7:37:58PM
Report Time: 6/30/2011 8:30:36AM
Warm Free Space: 6.6969 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.1867 g
Cold Free Space: 16.4315 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 22.0987 ± 0.0979 m^2/g
Slope: 0.195769 ± 0.000859 g/cm^3 STP
Y-Intercept: 0.001220 ± 0.000152 g/cm^3 STP
C: 161.491095
Qm: 5.0764 cm^3/g STP
Correlation Coefficient: 0.9999229
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.048095053	4.7155	0.010715
0.075120075	5.0624	0.016044
0.101107565	5.3300	0.021103
0.123311696	5.5406	0.025387
0.147391998	5.7692	0.029965
0.172272030	5.9923	0.034733
0.198963991	6.2166	0.039955
0.224604548	6.4344	0.045018
0.250700486	6.6498	0.050314
0.276568492	6.8579	0.055746

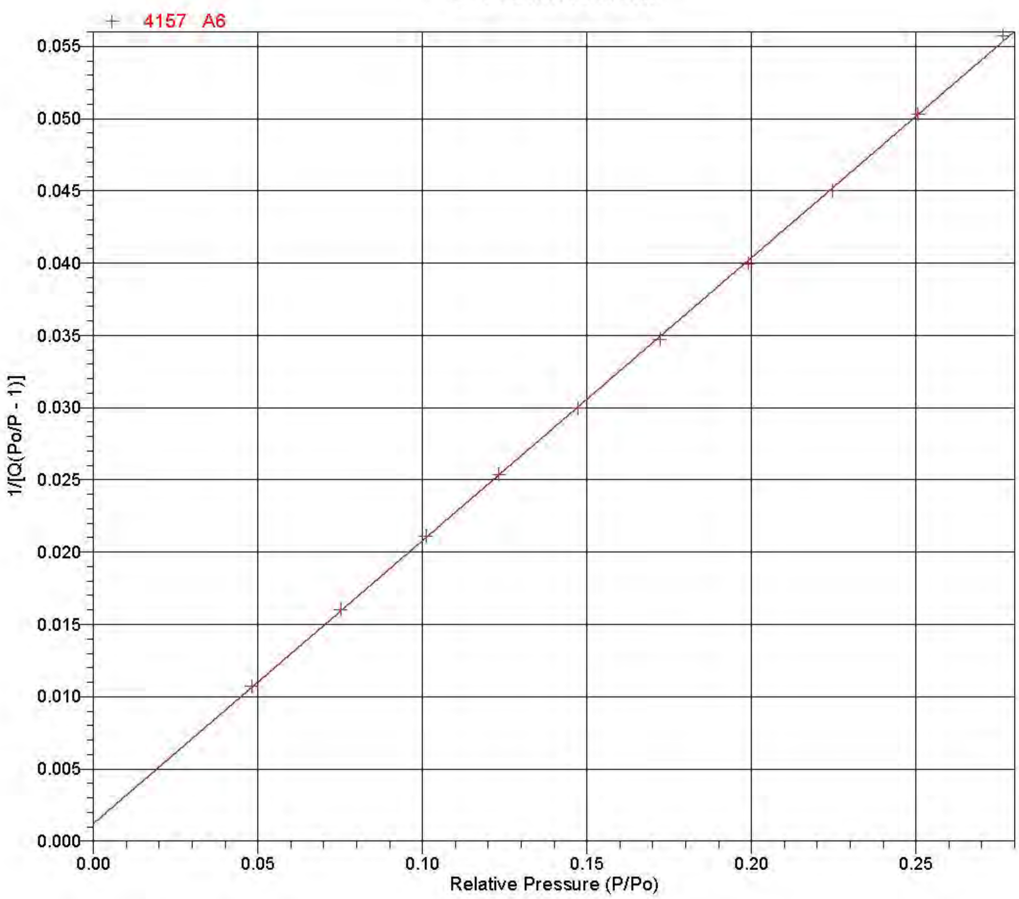
TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 5

Sample: 4157 A6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104012.SMP

Started:	6/29/2011 11:43:38AM	Analysis Adsorptive:	N2
Completed:	6/29/2011 7:37:58PM	Analysis Bath Temp.:	77.350 K
Report Time:	6/30/2011 8:30:36AM	Sample Mass:	4.1867 g
Warm Free Space:	6.6969 cm³ Measured	Cold Free Space:	16.4315 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#25-4164

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 1

Sample: 4164 C1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104013.SMP

Started: 6/30/2011 10:24:47AM
Completed: 6/30/2011 2:52:04PM
Report Time: 7/1/2011 8:27:28AM
Warm Free Space: 6.2275 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.8562 g
Cold Free Space: 14.9532 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.251800996: 10.7890 m²/g

BET Surface Area: 11.0070 m²/g

TriStar II 3020 V1.03 (V1.03)   Unit 2 Port 1   Serial #: 571   Page 2

Sample: 4164 C1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104013.SMP

Started: 6/30/2011 10:24:47AM
Completed: 6/30/2011 2:52:04PM
Report Time: 7/1/2011 8:27:28AM
Warm Free Space: 6.2275 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.8562 g
Cold Free Space: 14.9532 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

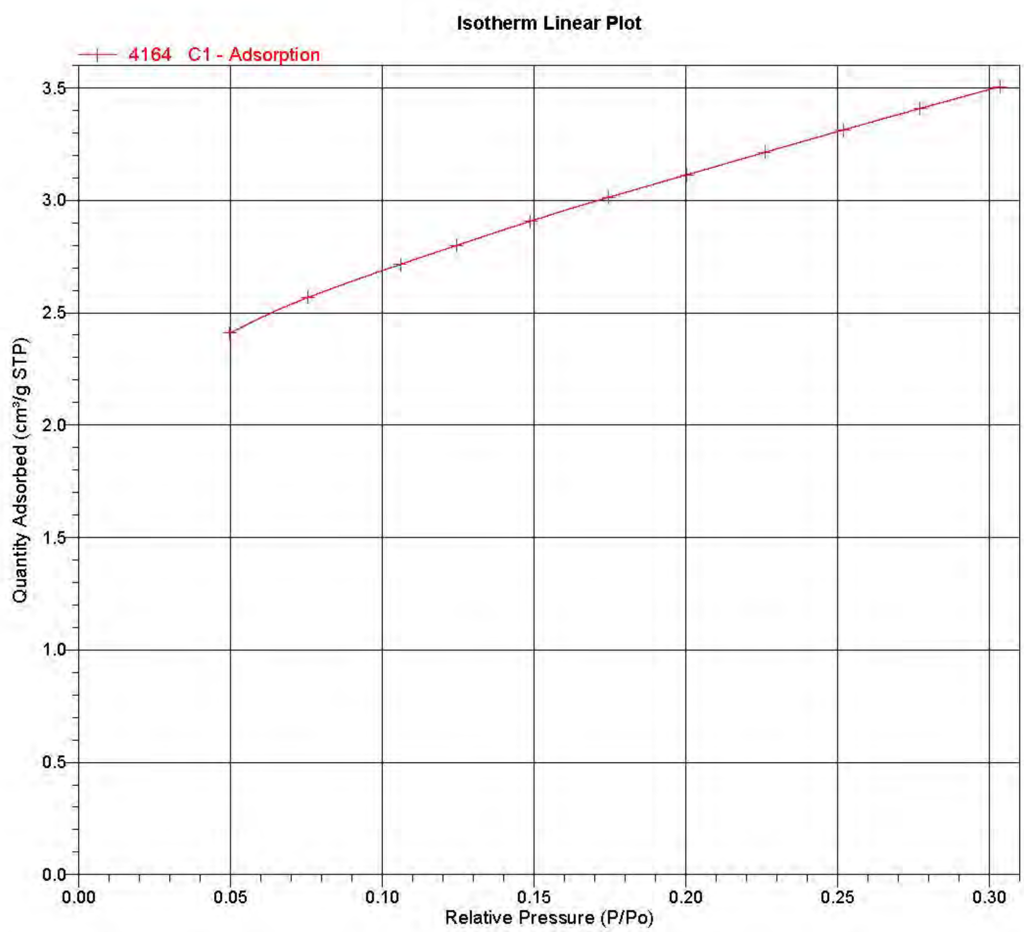
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	743.247498
0.049769056	37.010128	2.4107	02:15	743.637329
0.075512599	56.124104	2.5680	02:31	743.241577
0.106052061	78.813148	2.7156	02:41	743.155273
0.124330296	92.392784	2.7987	02:49	743.123657
0.148761011	110.536423	2.9071	02:56	743.046997
0.174592244	129.711914	3.0136	03:03	742.942017
0.200450953	148.893326	3.1141	03:09	742.791809
0.226080058	167.942490	3.2134	03:14	742.845215
0.251800996	187.016983	3.3125	03:20	742.717407
0.277211326	205.864975	3.4085	03:25	742.628296
0.303529524	225.369949	3.5063	03:30	742.497620

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 3

Sample: 4164 C1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104013.SMP

Started:	6/30/2011 10:24:47AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 2:52:04PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:27:28AM	Sample Mass:	4.8562 g
Warm Free Space:	6.2275 cm³ Measured	Cold Free Space:	14.9532 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 4164 C1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104013.SMP

Started:	6/30/2011 10:24:47AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 2:52:04PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:27:28AM	Sample Mass:	4.8562 g
Warm Free Space:	6.2275 cm³ Measured	Cold Free Space:	14.9532 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 11.0070 ± 0.0503 m²/g
Slope: 0.393605 ± 0.001782 g/cm³ STP
Y-Intercept: 0.001890 ± 0.000292 g/cm³ STP
C: 209.257391
Qm: 2.5285 cm³/g STP
Correlation Coefficient: 0.9999282
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.049769056	2.4107	0.021726
0.075512599	2.5680	0.031807
0.106052061	2.7156	0.043686
0.124330296	2.7987	0.050732
0.148761011	2.9071	0.060115
0.174592244	3.0136	0.070189
0.200450953	3.1141	0.080507
0.226080058	3.2134	0.090909
0.251800996	3.3125	0.101598

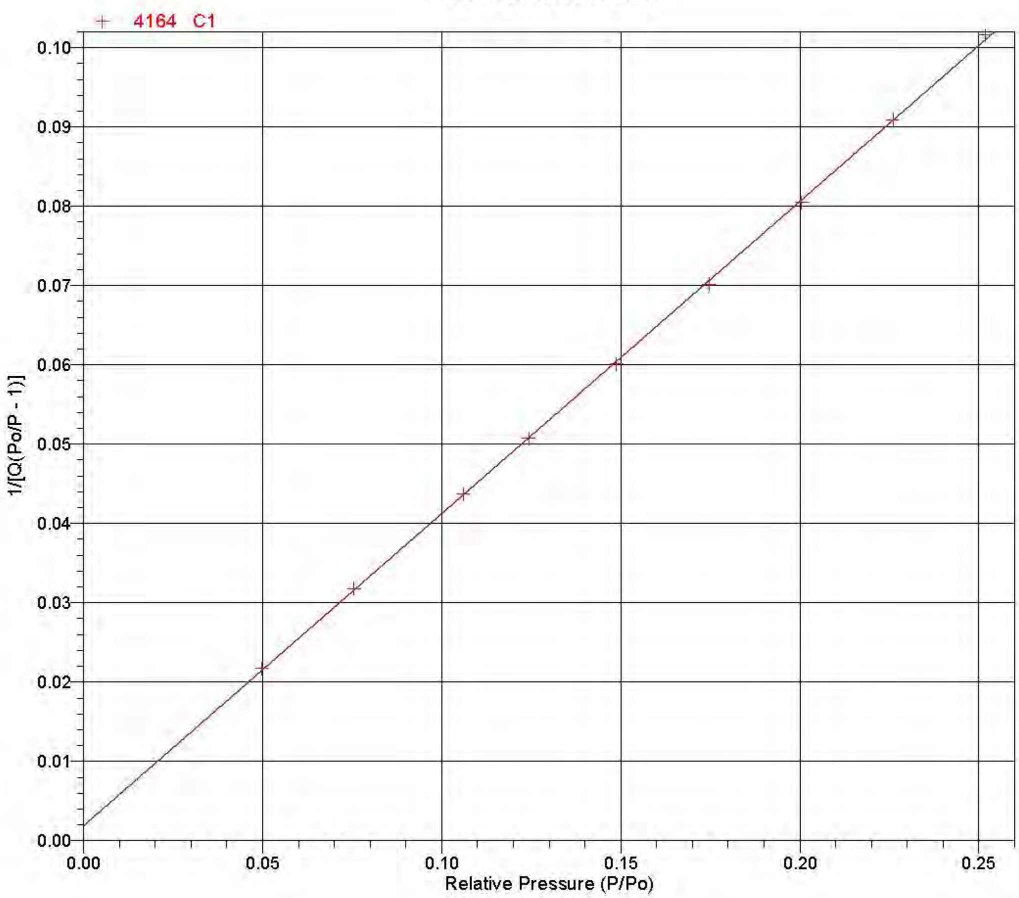
TriStar II 3020 V1.03 (V1.03) Unit 2 Port 1 Serial #: 571 Page 5

Sample: 4164 C1
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104013.SMP

Started:	6/30/2011 10:24:47AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 2:52:04PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:27:28AM	Sample Mass:	4.8562 g
Warm Free Space:	6.2275 cm³ Measured	Cold Free Space:	14.9532 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#26-4211

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 1

Sample: 4211 C2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104014.SMP

Started:	6/30/2011 10:24:47AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 2:52:04PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:28:09AM	Sample Mass:	6.1492 g
Warm Free Space:	6.9605 cm^3 Measured	Cold Free Space:	17.6958 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.277943095: 16.3403 m^2/g

BET Surface Area: 16.7063 m^2/g

MICROMERITICS ANALYTICAL SERVICES *The Particle Testing Authority*

Sample: 4211 C2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104014.SMP

Started: 6/30/2011 10:24:47AM
Completed: 6/30/2011 2:52:04PM
Report Time: 7/1/2011 8:28:09AM
Warm Free Space: 6.9605 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.1492 g
Cold Free Space: 17.6958 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	743.247498
0.047844852	35.555935	3.5674	02:42	743.150696
0.074181670	55.114708	3.8258	03:01	742.969360
0.099844938	74.157310	4.0299	03:16	742.724792
0.122564695	91.011101	4.1940	03:27	742.555603
0.147012473	109.151718	4.3659	03:38	742.465698
0.173649501	128.899948	4.5439	03:47	742.299561
0.199817481	148.316574	4.7094	03:55	742.260254
0.225597664	167.404221	4.8722	04:04	742.047668
0.251616192	186.688034	5.0352	04:11	741.955566
0.277943095	206.239273	5.1985	04:18	742.019775
0.304108599	225.653610	5.3625	04:26	742.016541

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 2 Serial #: 571 Page 3

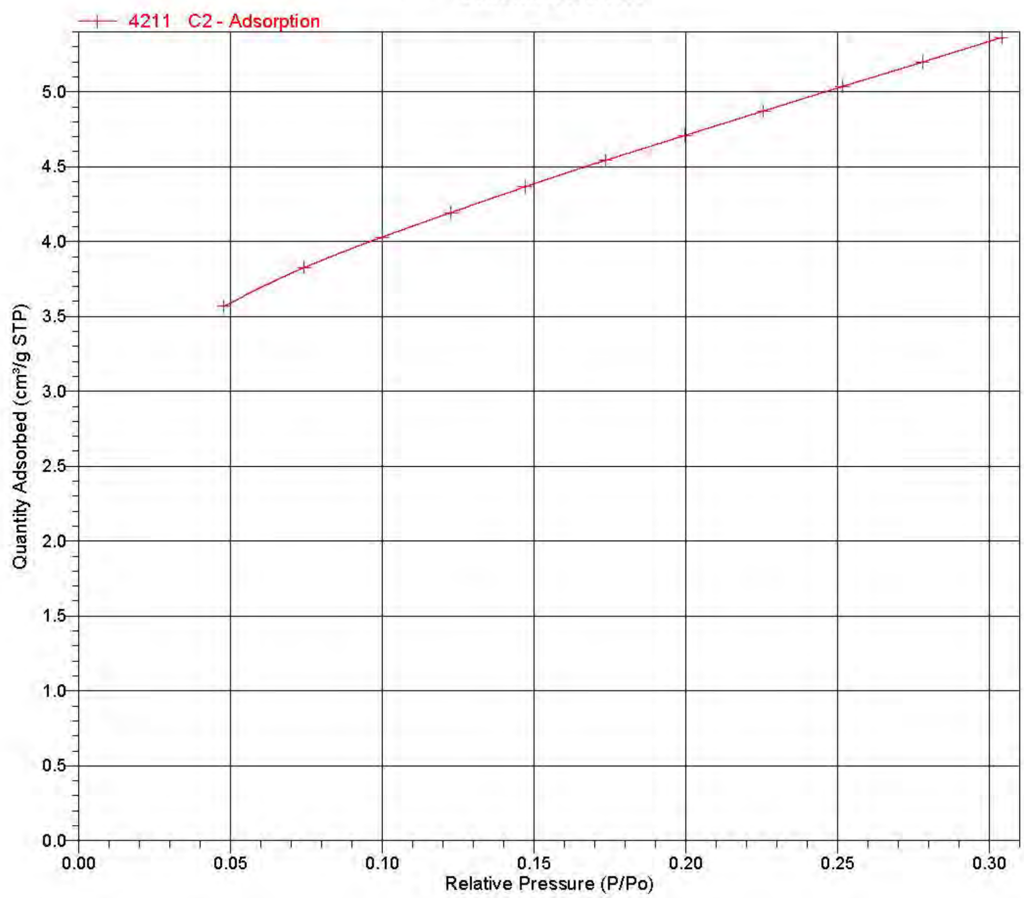
Sample: 4211 C2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104014.SMP

Started: 6/30/2011 10:24:47AM
Completed: 6/30/2011 2:52:04PM
Report Time: 7/1/2011 8:28:09AM
Warm Free Space: 6.9605 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.1492 g
Cold Free Space: 17.6958 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Linear Plot



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 4211 C2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104014.SMP

Started: 6/30/2011 10:24:47AM
Completed: 6/30/2011 2:52:04PM
Report Time: 7/1/2011 8:28:09AM
Warm Free Space: 6.9605 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.1492 g
Cold Free Space: 17.6958 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 16.7063 ± 0.0731 m²/g
Slope: 0.259012 ± 0.001123 g/cm³ STP
Y-Intercept: 0.001560 ± 0.000200 g/cm³ STP
C: 167.021132
Qm: 3.8377 cm³/g STP
Correlation Coefficient: 0.9999248
Molecular Cross-Sectional Area: 0.1620 nm²

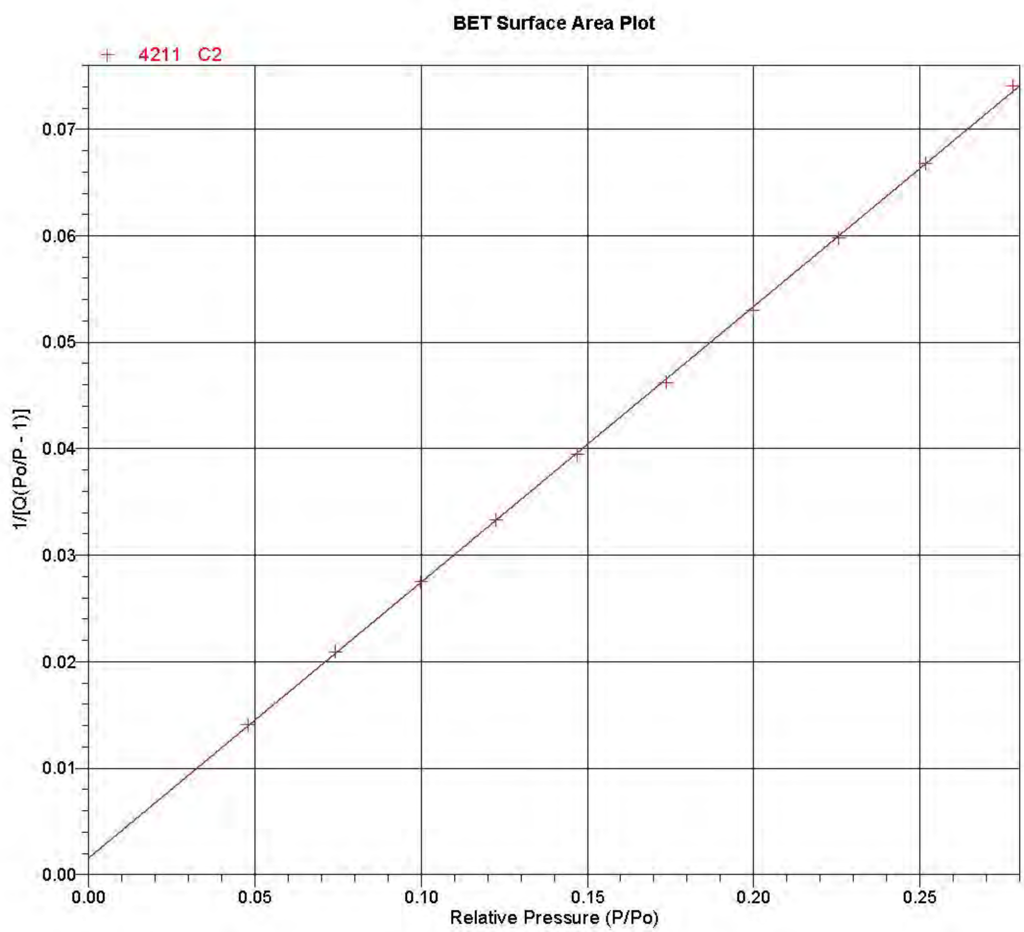
Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.047844852	3.5674	0.014085
0.074181670	3.8258	0.020943
0.099844938	4.0299	0.027524
0.122564695	4.1940	0.033306
0.147012473	4.3659	0.039477
0.173649501	4.5439	0.046247
0.199817481	4.7094	0.053025
0.225597664	4.8722	0.059792
0.251616192	5.0352	0.066773
0.277943095	5.1985	0.074047

TriStar II 3020 V1.03 (V1.03)	Unit 2 Port 2	Serial #: 571	Page 5

Sample: 4211 C2
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104014.SMP

Started:	6/30/2011 10:24:47AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 2:52:04PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:28:09AM	Sample Mass:	6.1492 g
Warm Free Space:	6.9605 cm³ Measured	Cold Free Space:	17.6958 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample#27-4224

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 1

Sample: 4224 C3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104015.SMP

Started:	6/30/2011 10:24:47AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 2:52:04PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:28:44AM	Sample Mass:	4.9629 g
Warm Free Space:	6.4913 cm^3 Measured	Cold Free Space:	15.8843 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.276004864: 17.1907 m^2/g

BET Surface Area: 17.6279 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 2

Sample: 4224 C3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104015.SMP

Started: 6/30/2011 10:24:47AM
Completed: 6/30/2011 2:52:04PM
Report Time: 7/1/2011 8:28:44AM
Warm Free Space: 6.4913 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.9629 g
Cold Free Space: 15.8843 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

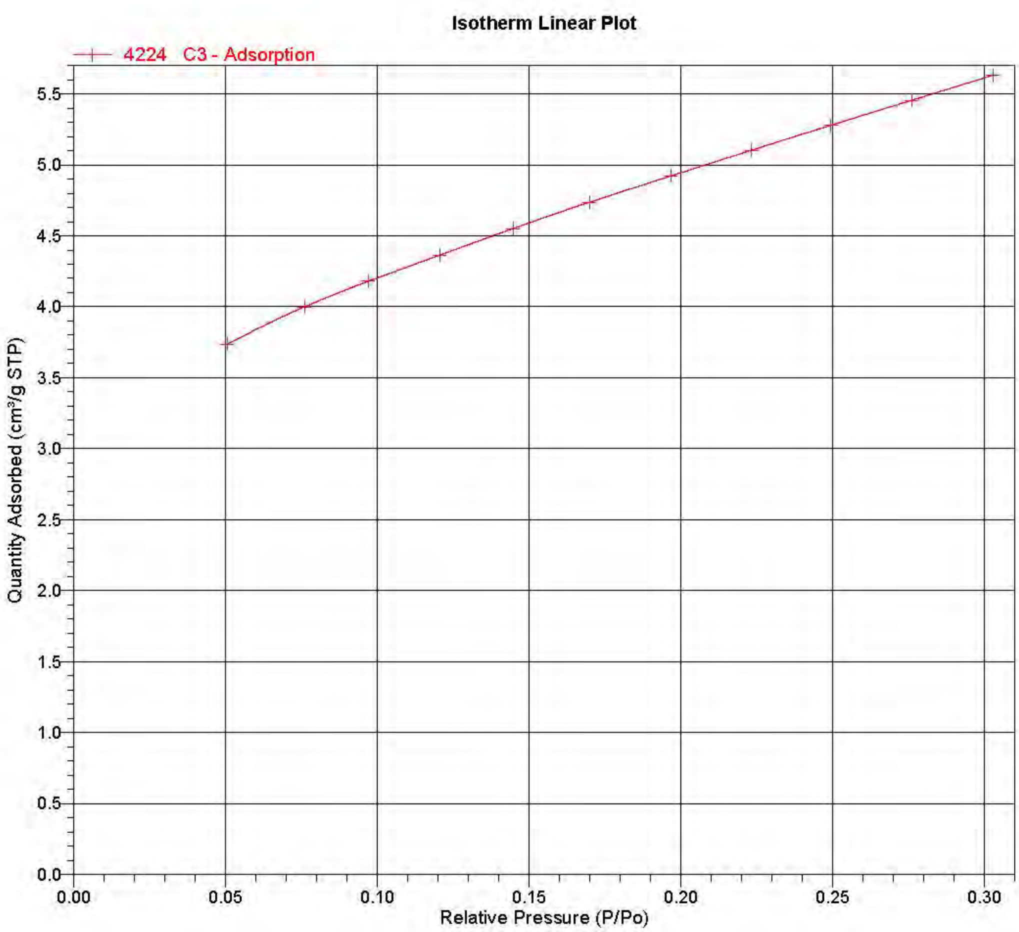
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:22	743.247498
0.050555415	37.577778	3.7363	02:33	743.298767
0.076004968	56.464756	3.9998	02:51	742.908752
0.096976696	72.040817	4.1797	03:03	742.867310
0.120536357	89.542320	4.3645	03:14	742.865662
0.144732988	107.483864	4.5512	03:24	742.635559
0.169849334	126.092667	4.7361	03:34	742.379517
0.196607481	145.952927	4.9210	03:43	742.356934
0.223246484	165.699020	5.1025	03:52	742.224548
0.249484163	185.154312	5.2791	04:00	742.148560
0.276004864	204.828964	5.4544	04:07	742.120850
0.302769955	224.634018	5.6302	04:14	741.929688

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 3

Sample: 4224 C3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104015.SMP

Started:	6/30/2011 10:24:47AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 2:52:04PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:28:44AM	Sample Mass:	4.9629 g
Warm Free Space:	6.4913 cm³ Measured	Cold Free Space:	15.8843 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 2 Port 3 Serial #: 571 Page 4

Sample: 4224 C3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104015.SMP

Started: 6/30/2011 10:24:47AM
Completed: 6/30/2011 2:52:04PM
Report Time: 7/1/2011 8:28:44AM
Warm Free Space: 6.4913 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.9629 g
Cold Free Space: 15.8843 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

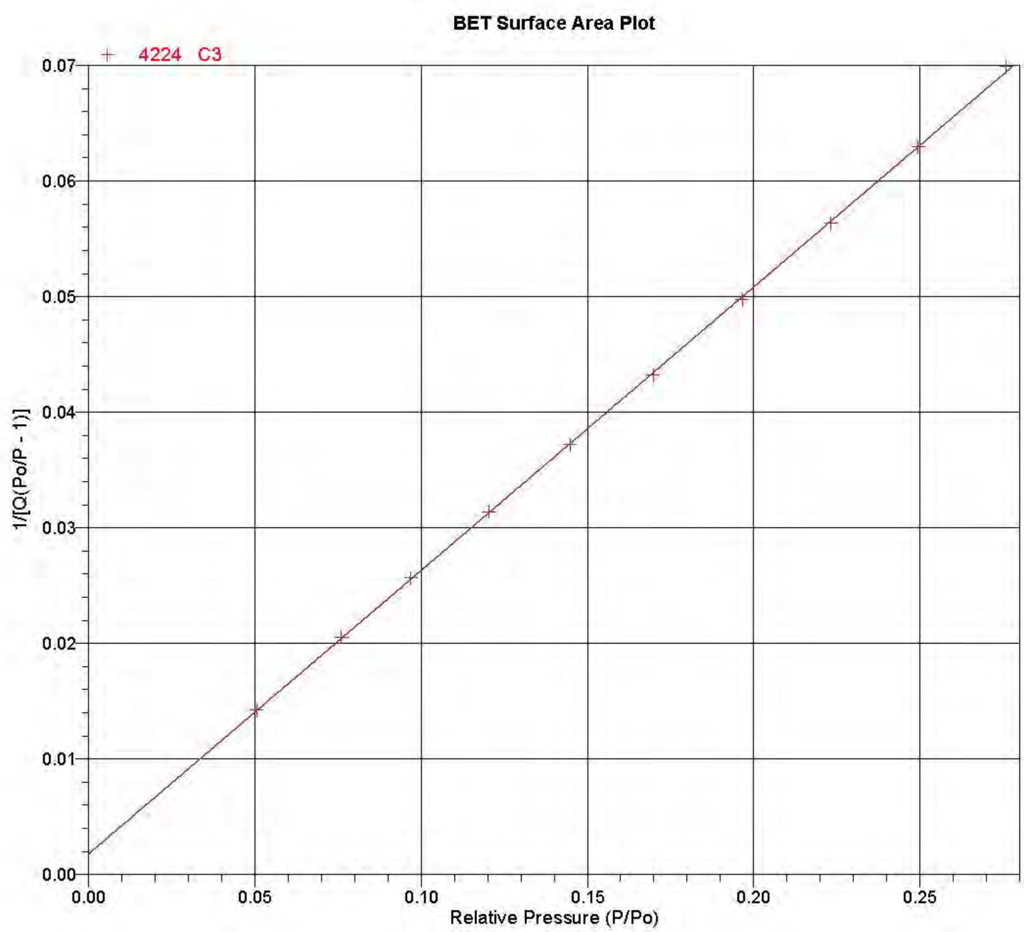
BET Surface Area: 17.6279 ± 0.0715 m^2/g
Slope: 0.245150 ± 0.000987 g/cm^3 STP
Y-Intercept: 0.001799 ± 0.000173 g/cm^3 STP
C: 137.247199
Qm: 4.0494 cm^3/g STP
Correlation Coefficient: 0.9999352
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.050555415	3.7363	0.014251
0.076004968	3.9998	0.020565
0.096976696	4.1797	0.025694
0.120536357	4.3645	0.031403
0.144732988	4.5512	0.037182
0.169849334	4.7361	0.043200
0.196607481	4.9210	0.049730
0.223246484	5.1025	0.056327
0.249484163	5.2791	0.062968
0.276004864	5.4544	0.069893

Sample: 4224 C3
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104015.SMP

Started:	6/30/2011 10:24:47AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 2:52:04PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:28:44AM	Sample Mass:	4.9629 g
Warm Free Space:	6.4913 cm³ Measured	Cold Free Space:	15.8843 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



Sample#28-4226

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 1

Sample: 4226 C4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104016.SMP

Started:	6/30/2011 10:28:39AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 5:30:28PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:24:40AM	Sample Mass:	6.4081 g
Warm Free Space:	7.1309 cm^3 Measured	Cold Free Space:	18.1263 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.301361079: 5.6555 m^2/g

BET Surface Area: 5.8016 m^2/g

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 2

Sample: 4226 C4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104016.SMP

Started: 6/30/2011 10:28:39AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:24:40AM
Warm Free Space: 7.1309 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.4081 g
Cold Free Space: 18.1263 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

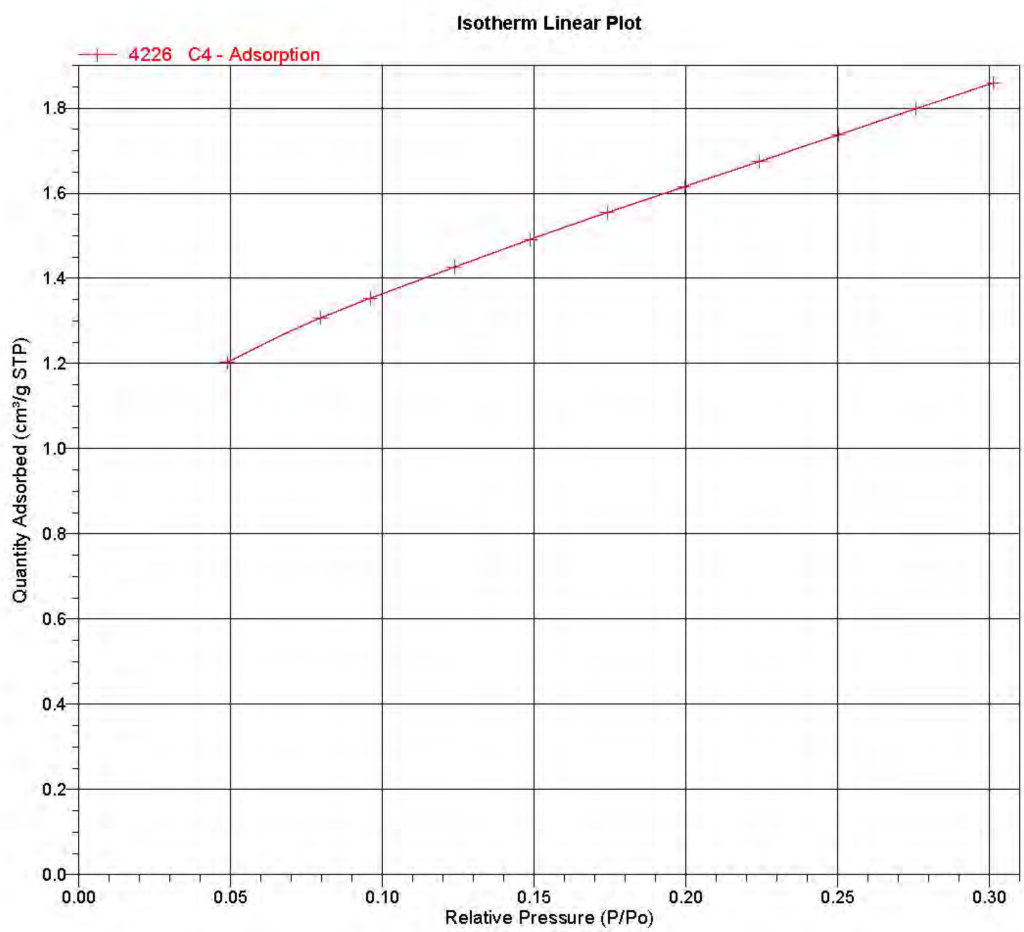
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	743.047363
0.048956330	36.400490	1.2033	01:47	743.529785
0.079725672	59.277336	1.3075	01:56	743.516296
0.095962981	71.347984	1.3533	02:02	743.494873
0.123742825	92.003357	1.4266	02:08	743.504578
0.148833028	110.654068	1.4918	02:13	743.477905
0.174089611	129.412186	1.5547	02:19	743.365356
0.199574232	148.342148	1.6154	02:24	743.293091
0.224097847	166.568466	1.6742	02:28	743.284546
0.250181486	185.945068	1.7371	02:33	743.240723
0.275797783	204.975525	1.7983	02:37	743.209473
0.301361079	223.953918	1.8596	02:41	743.141479

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 3

Sample: 4226 C4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104016.SMP

Started:	6/30/2011 10:28:39AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 5:30:28PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:24:40AM	Sample Mass:	6.4081 g
Warm Free Space:	7.1309 cm^3 Measured	Cold Free Space:	18.1263 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 4

Sample: 4226 C4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104016.SMP

Started: 6/30/2011 10:28:39AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:24:40AM
Warm Free Space: 7.1309 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.4081 g
Cold Free Space: 18.1263 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 5.8016 ± 0.0191 m^2/g
Slope: 0.743792 ± 0.002427 g/cm^3 STP
Y-Intercept: 0.006557 ± 0.000466 g/cm^3 STP
C: 114.430491
Qm: 1.3327 cm^3/g STP
Correlation Coefficient: 0.9999521
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.048956330	1.2033	0.042778
0.079725672	1.3075	0.066260
0.095962981	1.3533	0.078438
0.123742825	1.4266	0.098989
0.148833028	1.4918	0.117216
0.174089611	1.5547	0.135583
0.199574232	1.6154	0.154344
0.224097847	1.6742	0.172518
0.250181486	1.7371	0.192079
0.275797783	1.7983	0.211766
0.301361079	1.8596	0.231965

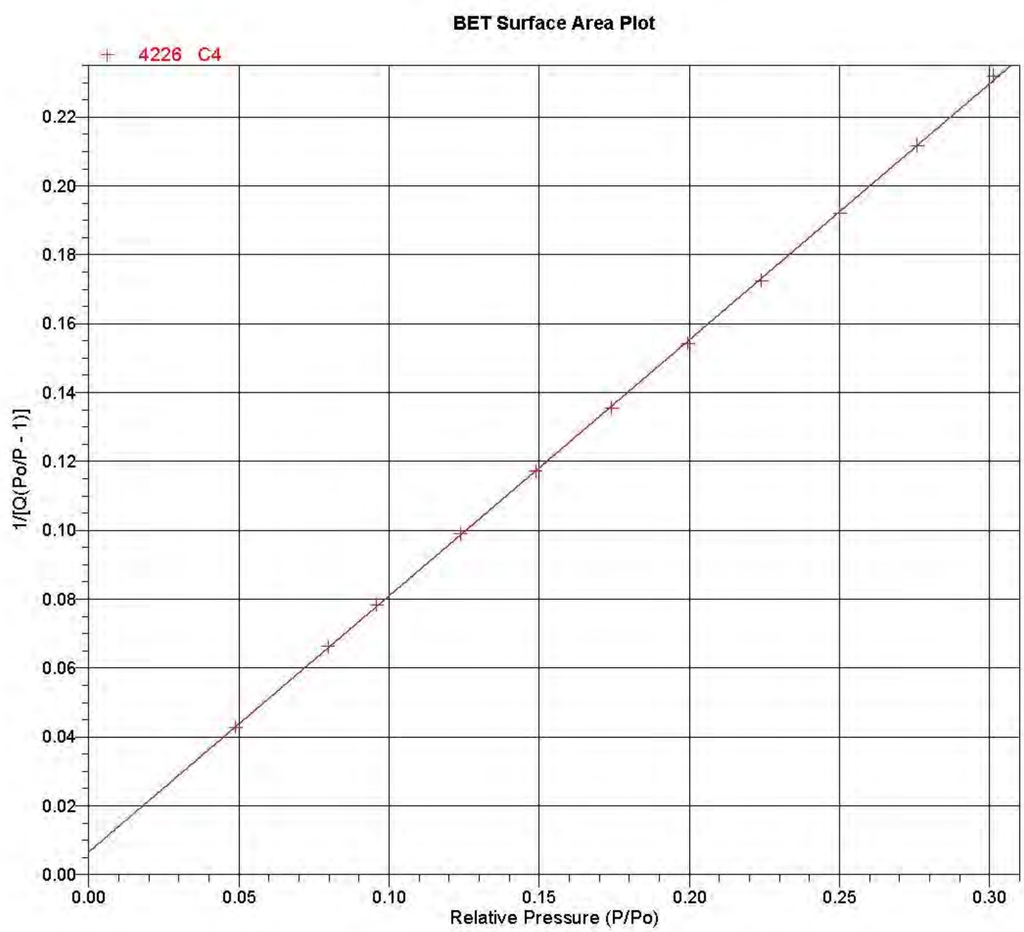
TriStar II 3020 V1.03 (V1.03) Unit 3 Port 1 Serial #: 238 Page 5

Sample: 4226 C4
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104016.SMP

Started: 6/30/2011 10:28:39AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:24:40AM
Warm Free Space: 7.1309 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 6.4081 g
Cold Free Space: 18.1263 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h



Sample#29-4458

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 1

Sample: 4458 C5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104017.SMP

Started:	6/30/2011 10:28:39AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 5:30:28PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:34:07AM	Sample Mass:	4.5913 g
Warm Free Space:	6.3961 cm^3 Measured	Cold Free Space:	15.4588 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.249894747: 9.1847 m^2/g

BET Surface Area: 9.3830 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 4458 C5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104017.SMP

Started: 6/30/2011 10:28:39AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:34:07AM
Warm Free Space: 6.3961 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5913 g
Cold Free Space: 15.4588 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	743.047363
0.051541980	38.258972	2.0546	04:04	742.287598
0.073354847	54.412216	2.1749	04:41	741.767151
0.095855083	71.070091	2.2749	05:05	741.432678
0.120876665	89.604004	2.3739	05:26	741.284546
0.145863363	108.081360	2.4698	05:49	740.976746
0.171990382	127.386444	2.5606	06:04	740.660278
0.198063644	146.664581	2.6466	06:18	740.492188
0.224180275	165.971313	2.7298	06:30	740.347534
0.249894747	185.051697	2.8128	06:42	740.518555
0.276313796	204.510391	2.8954	06:51	740.138184
0.301794512	223.380768	2.9763	07:00	740.175049

TriStar II 3020 V1.03 (V1.03)   Unit 3 Port 2   Serial #: 238   Page 3

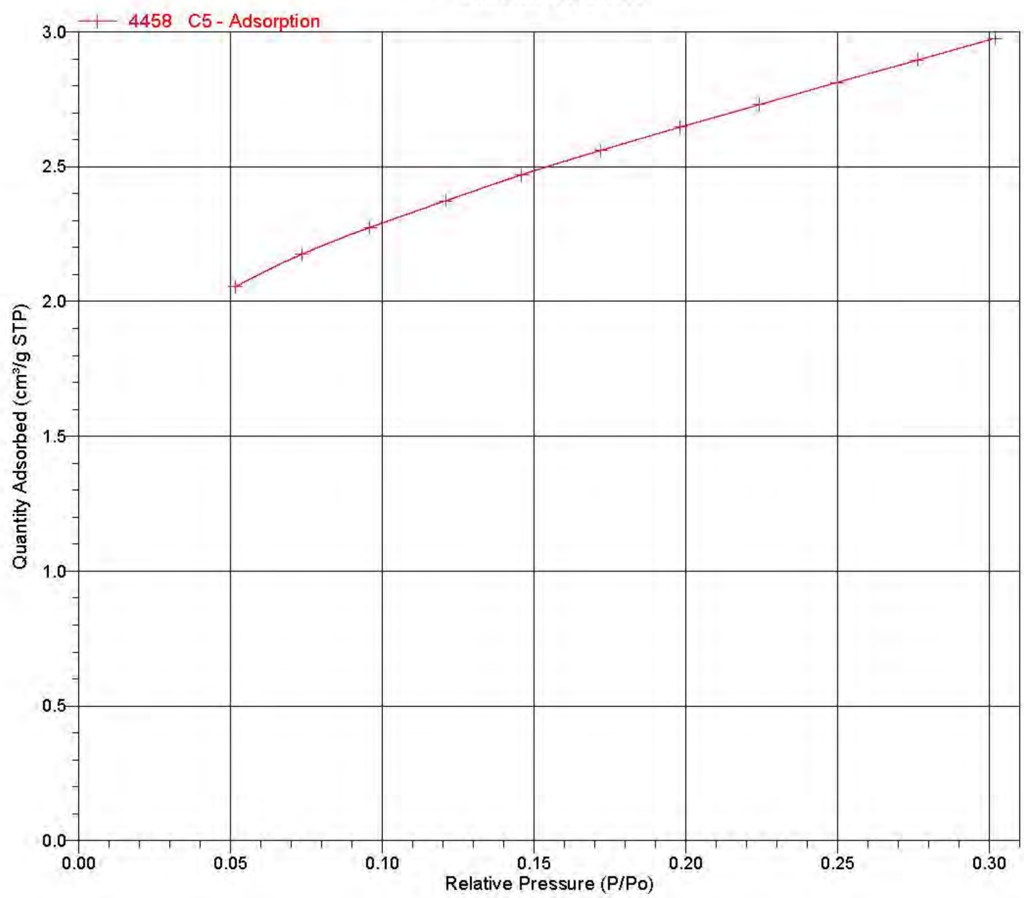
Sample: 4458 C5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104017.SMP

Started: 6/30/2011 10:28:39AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:34:07AM
Warm Free Space: 6.3961 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5913 g
Cold Free Space: 15.4588 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Linear Plot



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 2 Serial #: 238 Page 4

Sample: 4458 C5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104017.SMP

Started: 6/30/2011 10:28:39AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:34:07AM
Warm Free Space: 6.3961 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5913 g
Cold Free Space: 15.4588 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 9.3830 ± 0.0501 m²/g
Slope: 0.461667 ± 0.002445 g/cm³ STP
Y-Intercept: 0.002276 ± 0.000395 g/cm³ STP
C: 203.844543
Qm: 2.1554 cm³/g STP
Correlation Coefficient: 0.9999019
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm³/g STP)	1/[Q(Po/P - 1)]
0.051541980	2.0546	0.026450
0.073354847	2.1749	0.036397
0.095855083	2.2749	0.046604
0.120876665	2.3739	0.057921
0.145863363	2.4698	0.069144
0.171990382	2.5606	0.081119
0.198063644	2.6466	0.093320
0.224180275	2.7298	0.105853
0.249894747	2.8128	0.118441

TriStar II 3020 V1.03 (V1.03)　Unit 3 Port 2　Serial #: 238　

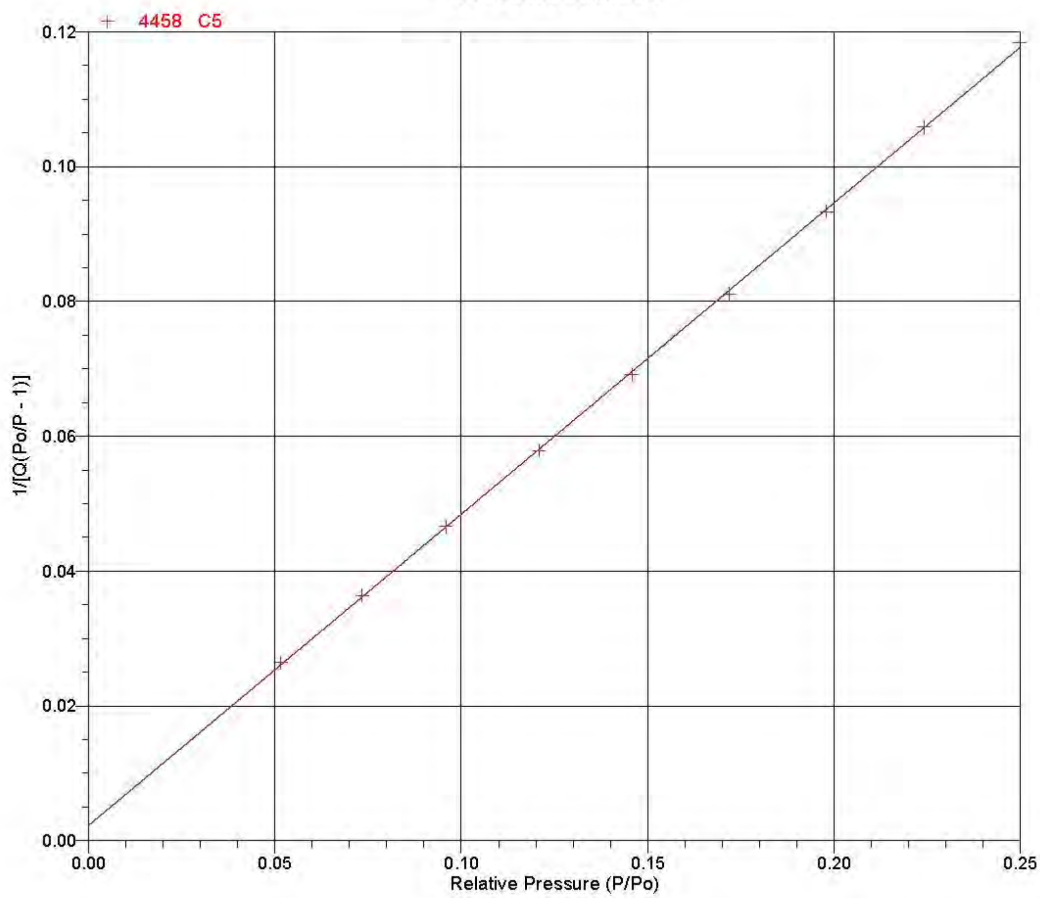
Sample: 4458 C5
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104017.SMP

Started: 6/30/2011 10:28:39AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:34:07AM
Warm Free Space: 6.3961 cm³ Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.5913 g
Cold Free Space: 15.4588 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



Sample#30-4515

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 1

Sample: 4515 C6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104018.SMP

Started:	6/30/2011 10:28:40AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 5:30:28PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:34:46AM	Sample Mass:	4.4029 g
Warm Free Space:	6.3935 cm^3 Measured	Cold Free Space:	15.4700 cm^3 Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm^3	Automatic Degas:	No

Comments: Degas at 110 C for 16h

Summary Report

Surface Area

Single point surface area at P/Po = 0.299120580: 3.1990 m^2/g

BET Surface Area: 3.3217 m^2/g

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 4515 C6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104018.SMP

Started: 6/30/2011 10:28:40AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:34:46AM
Warm Free Space: 6.3935 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.4029 g
Cold Free Space: 15.4700 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

Isotherm Tabular Report

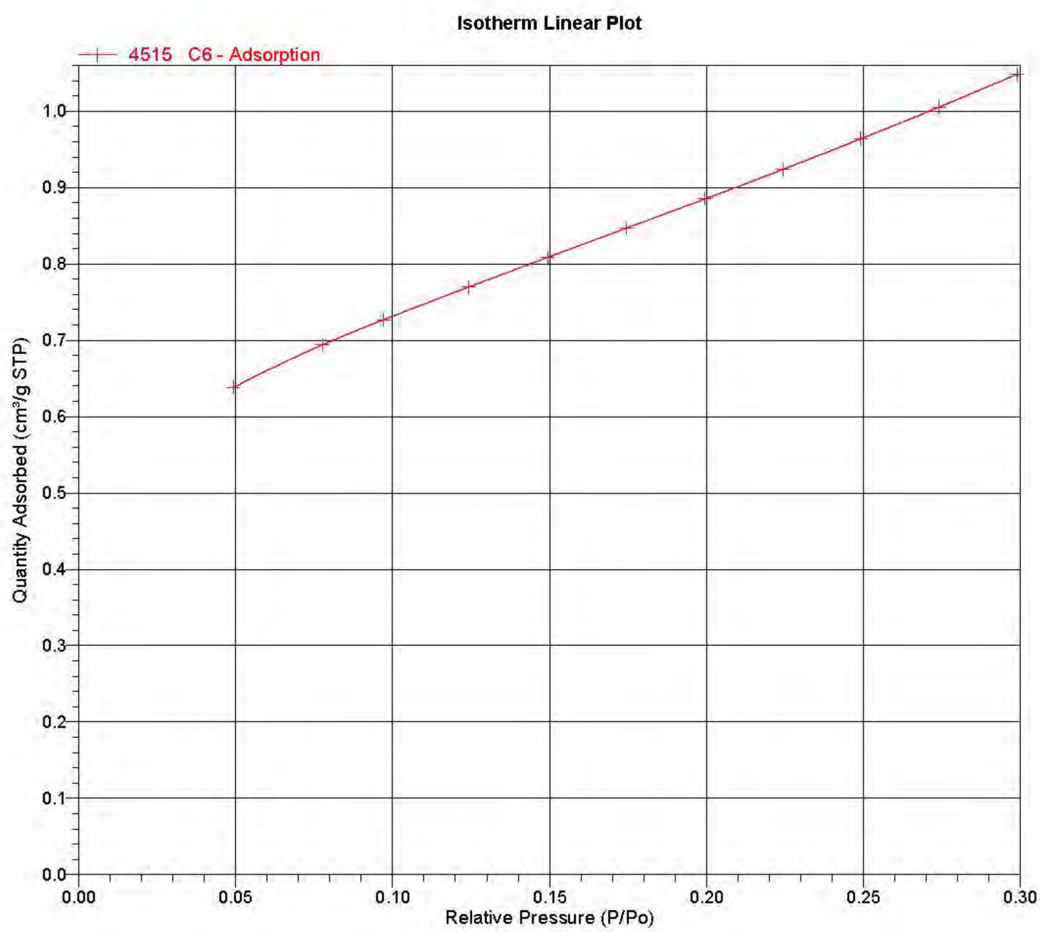
Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm^3/g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:19	743.047363
0.049236687	36.599056	0.6381	01:47	743.328979
0.077553395	57.662327	0.6939	01:55	743.517761
0.097109763	72.189919	0.7270	02:00	743.384766
0.124106458	92.273743	0.7696	02:05	743.504761
0.149400259	111.079430	0.8087	02:10	743.502258
0.174524245	129.745728	0.8469	02:14	743.425232
0.199551926	148.343338	0.8851	02:18	743.382141
0.224547436	166.908478	0.9241	02:22	743.310547
0.249260005	185.268356	0.9640	02:26	743.273499
0.274148471	203.767929	1.0054	02:30	743.275818
0.299120580	222.315948	1.0485	02:33	743.231873

TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 3

Sample: 4515 C6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104018.SMP

Started:	6/30/2011 10:28:40AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 5:30:28PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:34:46AM	Sample Mass:	4.4029 g
Warm Free Space:	6.3935 cm³ Measured	Cold Free Space:	15.4700 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h



TriStar II 3020 V1.03 (V1.03) Unit 3 Port 3 Serial #: 238 Page 4

Sample: 4515 C6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104018.SMP

Started: 6/30/2011 10:28:40AM
Completed: 6/30/2011 5:30:28PM
Report Time: 7/1/2011 8:34:46AM
Warm Free Space: 6.3935 cm^3 Measured
Equilibration Interval: 10 s
Sample Density: 1.000 g/cm^3

Analysis Adsorptive: N_2
Analysis Bath Temp.: 77.350 K
Sample Mass: 4.4029 g
Cold Free Space: 15.4700 cm^3 Measured
Low Pressure Dose: None
Automatic Degas: No

Comments: Degas at 110 C for 16h

BET Surface Area Report

BET Surface Area: 3.3217 ± 0.0156 m^2/g
Slope: 1.286880 ± 0.006029 g/cm^3 STP
Y-Intercept: 0.023660 ± 0.001207 g/cm^3 STP
C: 55.391195
Qm: 0.7630 cm^3/g STP
Correlation Coefficient: 0.9999122
Molecular Cross-Sectional Area: 0.1620 nm^2

Relative Pressure (P/Po)	Quantity Adsorbed (cm^3/g STP)	1/[Q(Po/P - 1)]
0.077553395	0.6939	0.121164
0.097109763	0.7270	0.147944
0.124106458	0.7696	0.184108
0.149400259	0.8087	0.217193
0.174524245	0.8469	0.249633
0.199551926	0.8851	0.281677
0.224547436	0.9241	0.313362
0.249260005	0.9640	0.344410
0.274148471	1.0054	0.375657
0.299120580	1.0485	0.407043

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

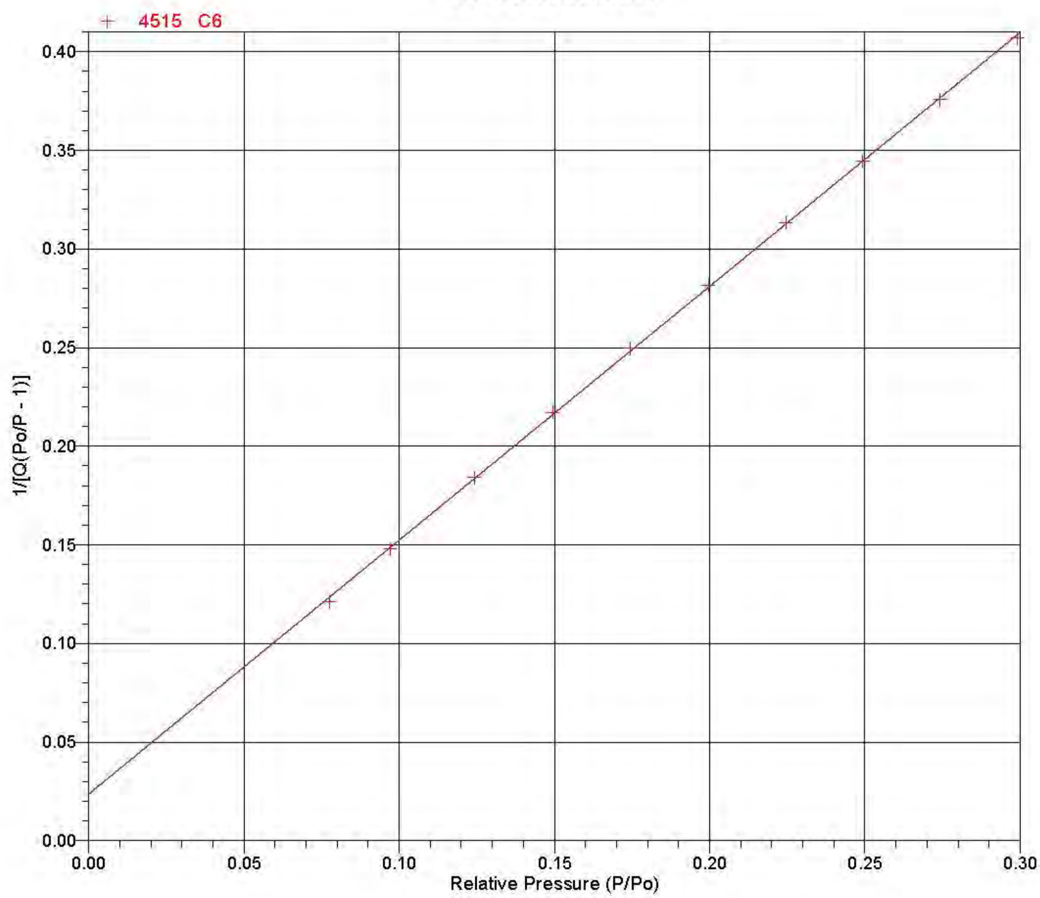
TriStar II 3020 V1.03 (V1.03)	Unit 3 Port 3	Serial #: 238	Page 5

Sample: 4515 C6
Operator: IAR/AT
Submitter: Brooklyn College
File: C:\...\06JUN\1104018.SMP

Started:	6/30/2011 10:28:40AM	Analysis Adsorptive:	N2
Completed:	6/30/2011 5:30:28PM	Analysis Bath Temp.:	77.350 K
Report Time:	7/1/2011 8:34:46AM	Sample Mass:	4.4029 g
Warm Free Space:	6.3935 cm³ Measured	Cold Free Space:	15.4700 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Comments: Degas at 110 C for 16h

BET Surface Area Plot



APPENDIX E: GRAIN SIZE MEASUREMENTS

Sample#1-120

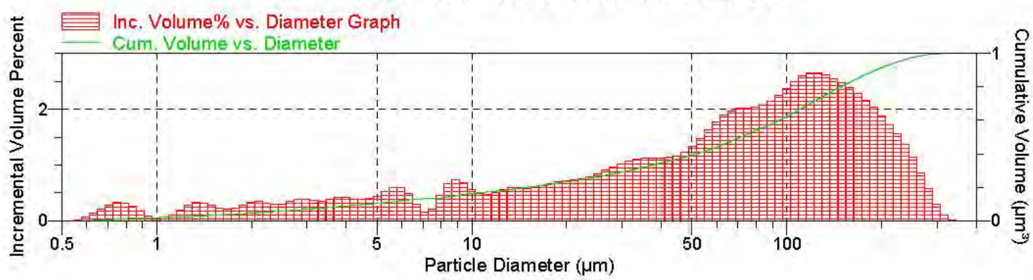
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 108 Page 1

Sample: 120
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103989.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/22/2011 1:49:19PM	Material:	Sediment / Water
Reported:	6/22/2011 2:06:44PM	Background:	Water RI 1.331
Background:	6/22/2011 11:03:38AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.02903 %
Obscuration: 32.1 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	85.757	0.251	Mode	125.835	0.000
Median	71.446	0.433			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	191.051
50.0	71.446
10.0	4.814

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 120
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103989.SMP

Test Number: 2
Analyzed: 6/22/2011 1:49:19PM
Reported: 6/22/2011 2:06:44PM
Background: 6/22/2011 11:03:38AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
344.747	325.462	334.965	100.0	0.0	0.0
325.462	307.256	316.228	99.9	0.1	0.0
307.256	290.068	298.538	99.6	0.3	0.0
290.068	273.842	281.838	99.0	0.6	0.0
273.842	258.523	266.073	98.2	0.9	0.0
258.523	244.062	251.189	97.0	1.1	0.1
244.062	230.409	237.137	95.7	1.4	0.1
230.409	217.520	223.872	94.1	1.6	0.1
217.520	205.353	211.349	92.4	1.7	0.0
205.353	193.865	199.526	90.5	1.9	0.0
193.865	183.021	188.365	88.5	2.0	0.1
183.021	172.783	177.828	86.3	2.2	0.2
172.783	163.117	167.880	84.0	2.3	0.2
163.117	153.993	158.489	81.7	2.4	0.2
153.993	145.378	149.624	79.2	2.5	0.2
145.378	137.246	141.254	76.6	2.6	0.2
137.246	129.569	133.352	74.0	2.6	0.1
129.569	122.321	125.893	71.4	2.7	0.1
122.321	115.478	118.850	68.7	2.7	0.1
115.478	109.018	112.202	66.1	2.6	0.1
109.018	102.920	105.925	63.6	2.5	0.1
102.920	97.163	100.000	61.2	2.4	0.1
97.163	91.728	94.406	59.0	2.2	0.2
91.728	86.596	89.125	56.8	2.1	0.2
86.596	81.752	84.140	54.8	2.1	0.2
81.752	77.179	79.433	52.7	2.0	0.2
77.179	72.862	74.989	50.7	2.0	0.2
72.862	68.786	70.795	48.7	2.0	0.2
68.786	64.938	66.834	46.7	2.0	0.2
64.938	61.306	63.096	44.8	1.9	0.2
61.306	57.876	59.566	43.0	1.8	0.2
57.876	54.639	56.234	41.4	1.6	0.2
54.639	51.582	53.088	39.9	1.5	0.2
51.582	48.697	50.119	38.6	1.3	0.2
48.697	45.973	47.315	37.4	1.2	0.2
45.973	43.401	44.668	36.2	1.2	0.2
43.401	40.973	42.170	35.1	1.1	0.2
40.973	38.681	39.811	33.9	1.1	0.1
38.681	36.517	37.584	32.8	1.1	0.1
36.517	34.475	35.481	31.7	1.1	0.1
34.475	32.546	33.497	30.6	1.1	0.2
32.546	30.726	31.623	29.5	1.1	0.2
30.726	29.007	29.854	28.5	1.0	0.2
29.007	27.384	28.184	27.6	1.0	0.2

Sample: 120
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103989.SMP

Test Number: 2
Analyzed: 6/22/2011 1:49:19PM
Reported: 6/22/2011 2:06:44PM
Background: 6/22/2011 11:03:38AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
27.384	25.852	26.607	26.7	0.9	0.2
25.852	24.406	25.119	25.8	0.8	0.2
24.406	23.041	23.714	25.0	0.8	0.2
23.041	21.752	22.387	24.3	0.8	0.2
21.752	20.535	21.135	23.5	0.7	0.2
20.535	19.387	19.953	22.8	0.7	0.2
19.387	18.302	18.836	22.1	0.7	0.2
18.302	17.278	17.783	21.5	0.7	0.2
17.278	16.312	16.788	20.8	0.6	0.2
16.312	15.399	15.849	20.2	0.6	0.2
15.399	14.538	14.962	19.6	0.6	0.2
14.538	13.725	14.125	19.1	0.6	0.2
13.725	12.957	13.335	18.5	0.6	0.2
12.957	12.232	12.589	17.9	0.6	0.2
12.232	11.548	11.885	17.4	0.5	0.2
11.548	10.902	11.220	16.9	0.5	0.2
10.902	10.292	10.593	16.5	0.5	0.2
10.292	9.716	10.000	15.9	0.6	0.2
9.716	9.173	9.441	15.2	0.7	0.2
9.173	8.660	8.913	14.5	0.7	0.2
8.660	8.175	8.414	13.8	0.7	0.2
8.175	7.718	7.943	13.4	0.4	0.2
7.718	7.286	7.499	13.1	0.2	0.2
7.286	6.879	7.079	13.0	0.2	0.2
6.879	6.494	6.683	12.7	0.3	0.2
6.494	6.131	6.310	12.2	0.5	0.2
6.131	5.788	5.957	11.6	0.6	0.1
5.788	5.464	5.623	11.0	0.6	0.1
5.464	5.158	5.309	10.5	0.5	0.1
5.158	4.870	5.012	10.1	0.4	0.1
4.870	4.597	4.732	9.7	0.4	0.1
4.597	4.340	4.467	9.3	0.4	0.1
4.340	4.097	4.217	8.9	0.4	0.1
4.097	3.868	3.981	8.5	0.4	0.1
3.868	3.652	3.758	8.1	0.4	0.1
3.652	3.447	3.548	7.7	0.4	0.1
3.447	3.255	3.350	7.3	0.4	0.1
3.255	3.073	3.162	7.0	0.4	0.1
3.073	2.901	2.985	6.6	0.4	0.1
2.901	2.738	2.818	6.2	0.4	0.1
2.738	2.585	2.661	5.9	0.3	0.1
2.585	2.441	2.512	5.6	0.3	0.1
2.441	2.304	2.371	5.3	0.3	0.1
2.304	2.175	2.239	5.0	0.3	0.0

Sample: 120
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103989.SMP

Test Number: 2
Analyzed: 6/22/2011 1:49:19PM
Reported: 6/22/2011 2:06:44PM
Background: 6/22/2011 11:03:38AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.175	2.054	2.113	4.6	0.3	0.0
2.054	1.939	1.995	4.3	0.3	0.0
1.939	1.830	1.884	4.0	0.3	0.0
1.830	1.728	1.778	3.8	0.2	0.0
1.728	1.631	1.679	3.6	0.2	0.0
1.631	1.540	1.585	3.4	0.2	0.0
1.540	1.454	1.496	3.1	0.3	0.0
1.454	1.372	1.413	2.8	0.3	0.0
1.372	1.296	1.334	2.5	0.3	0.0
1.296	1.223	1.259	2.2	0.3	0.0
1.223	1.155	1.189	2.0	0.2	0.0
1.155	1.090	1.122	1.9	0.1	0.0
1.090	1.029	1.059	1.9	0.0	0.0
1.029	0.972	1.000	1.8	0.0	0.0
0.972	0.917	0.944	1.8	0.1	0.0
0.917	0.866	0.891	1.6	0.2	0.0
0.866	0.818	0.841	1.3	0.3	0.0
0.818	0.772	0.794	1.0	0.3	0.0
0.772	0.729	0.750	0.7	0.3	0.0
0.729	0.688	0.708	0.4	0.3	0.0
0.688	0.649	0.668	0.2	0.2	0.0
0.649	0.613	0.631	0.1	0.1	0.0
0.613	0.579	0.596	0.0	0.1	0.0
0.579	0.546	0.562	0.0	0.0	0.0
0.546	0.516	0.531	0.0	0.0	0.0

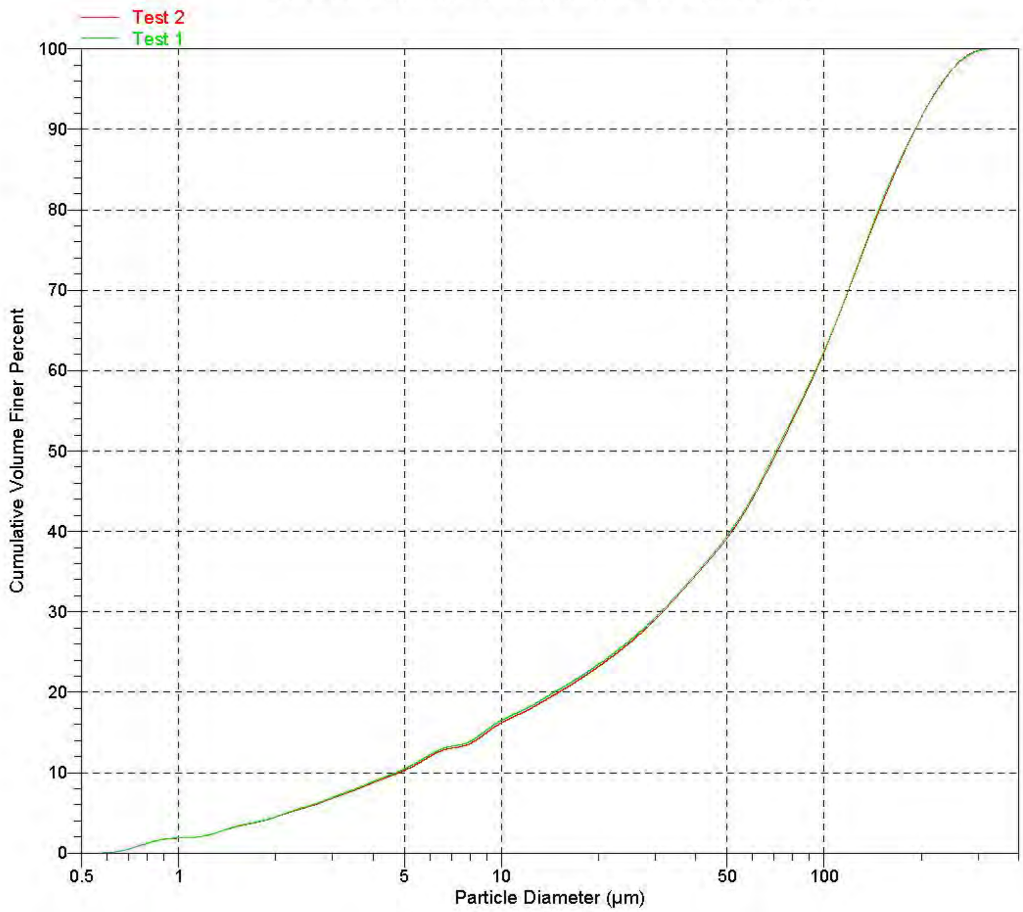
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 108 Page 5

Sample: 120
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103989.SMP

Test Number: 2
Analyzed: 6/22/2011 1:49:19PM
Reported: 6/22/2011 2:06:44PM
Background: 6/22/2011 11:03:38AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

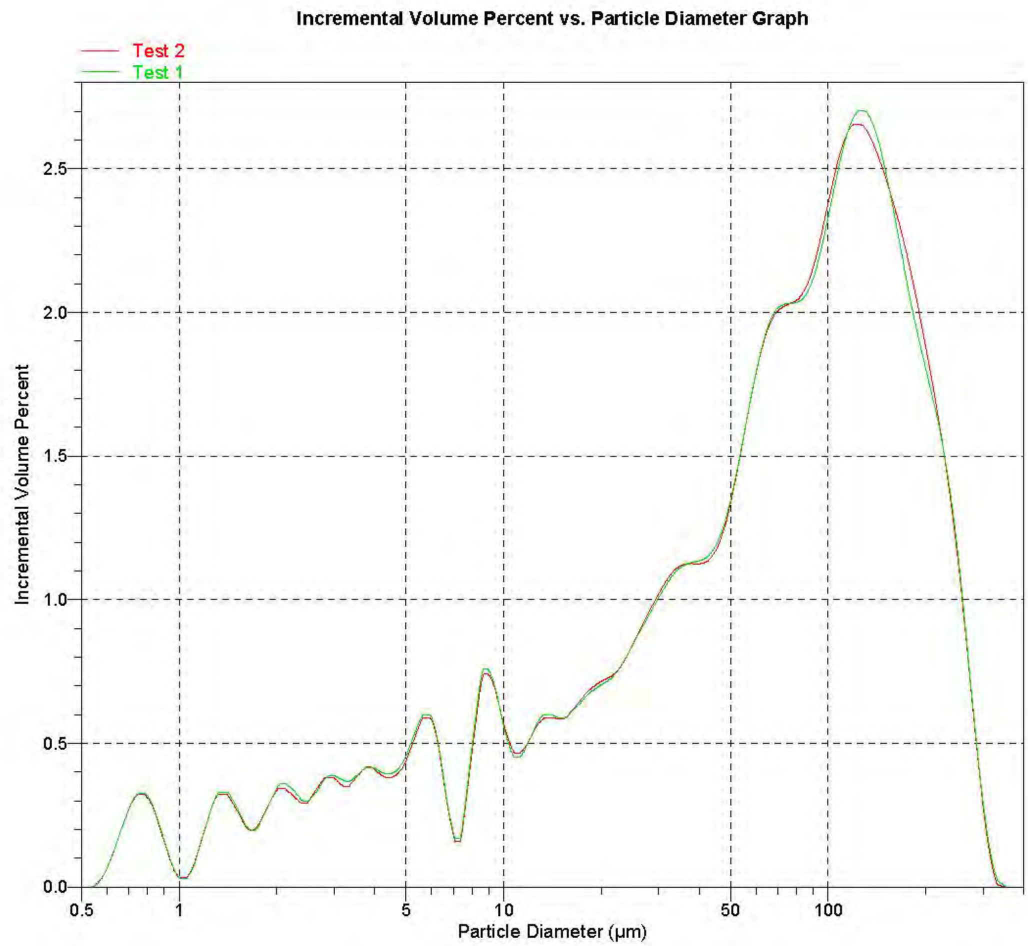


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 108 Page 6

Sample: 120
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103989.SMP

Test Number: 2
Analyzed: 6/22/2011 1:49:19PM
Reported: 6/22/2011 2:06:44PM
Background: 6/22/2011 11:03:38AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

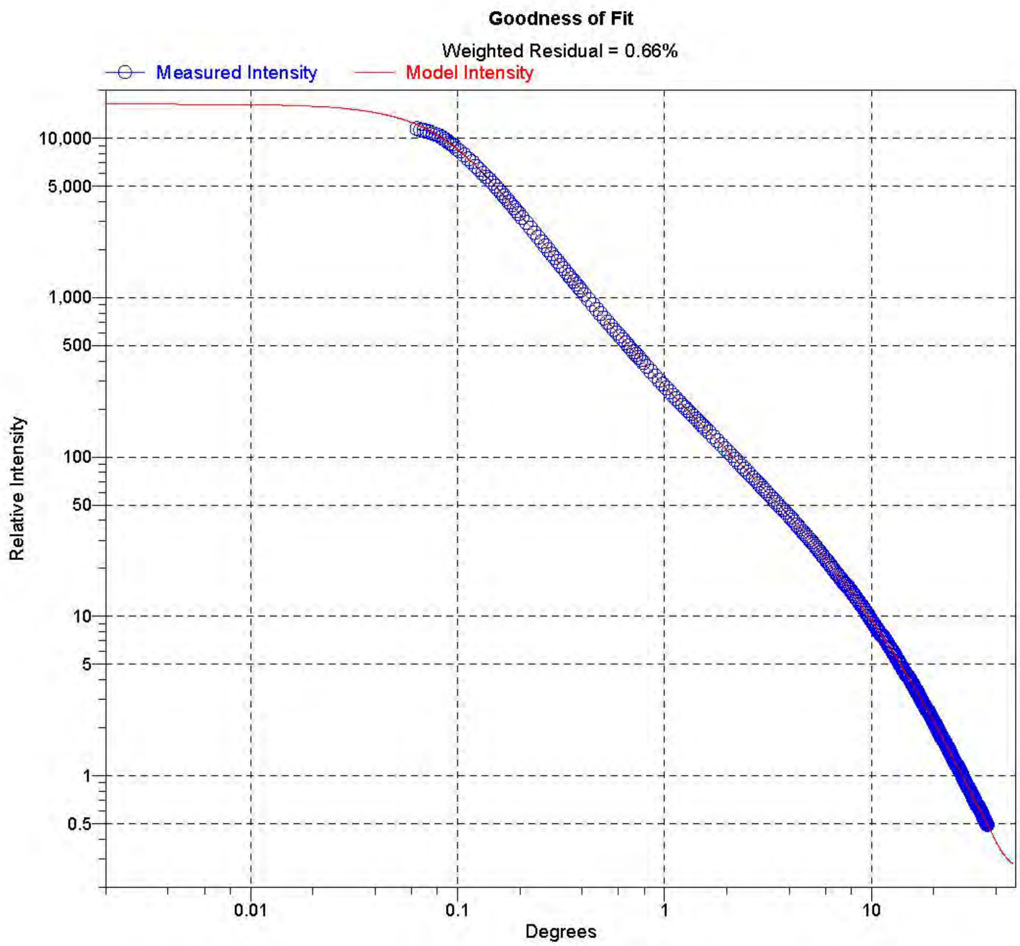


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 108 Page 7

Sample: 120
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103989.SMP

Test Number: 2
Analyzed: 6/22/2011 1:49:19PM
Reported: 6/22/2011 2:06:44PM
Background: 6/22/2011 11:03:38AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#2-277

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Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

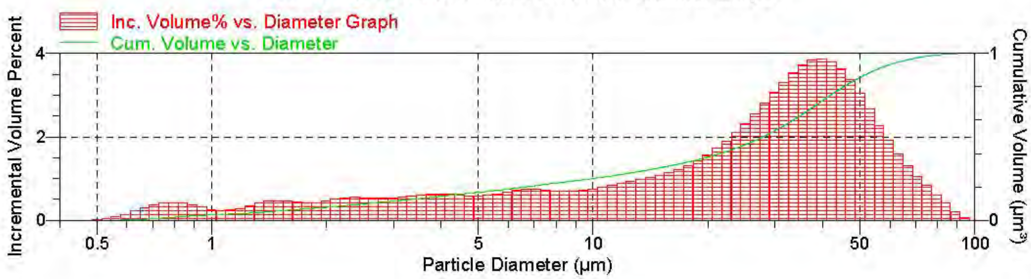
Sample: 277
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103990.SMP

Test Number: 2
Analyzed: 6/22/2011 1:59:04PM
Reported: 6/22/2011 2:12:23PM
Background: 6/22/2011 11:03:35AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used
Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.01267 %
Obscuration: 24.3 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	28.304	0.001	Mode	39.784	0.000
Median	27.866	0.025			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	54.921
50.0	27.866
10.0	2.558

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 277
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103990.SMP

Test Number: 2
Analyzed: 6/22/2011 1:59:04PM
Reported: 6/22/2011 2:12:24PM
Background: 6/22/2011 11:03:35AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
97.163	91.728	94.406	99.9	0.1	0.0
91.728	86.596	89.125	99.7	0.2	0.0
86.596	81.752	84.140	99.3	0.4	0.0
81.752	77.179	79.433	98.7	0.6	0.0
77.179	72.862	74.989	97.9	0.8	0.0
72.862	68.786	70.795	96.8	1.1	0.0
68.786	64.938	66.834	95.5	1.3	0.0
64.938	61.306	63.096	94.0	1.6	0.0
61.306	57.876	59.566	92.1	1.9	0.0
57.876	54.639	56.234	89.8	2.3	0.0
54.639	51.582	53.088	87.1	2.7	0.0
51.582	48.697	50.119	84.1	3.0	0.0
48.697	45.973	47.315	80.7	3.4	0.0
45.973	43.401	44.668	77.1	3.6	0.0
43.401	40.973	42.170	73.3	3.8	0.0
40.973	38.681	39.811	69.4	3.9	0.0
38.681	36.517	37.584	65.6	3.8	0.0
36.517	34.475	35.481	61.9	3.7	0.0
34.475	32.546	33.497	58.4	3.5	0.0
32.546	30.726	31.623	55.0	3.3	0.0
30.726	29.007	29.854	52.0	3.1	0.0
29.007	27.384	28.184	49.2	2.8	0.0
27.384	25.852	26.607	46.6	2.6	0.0
25.852	24.406	25.119	44.3	2.3	0.0
24.406	23.041	23.714	42.2	2.1	0.0
23.041	21.752	22.387	40.3	1.9	0.0
21.752	20.535	21.135	38.6	1.7	0.0
20.535	19.387	19.953	37.0	1.6	0.0
19.387	18.302	18.836	35.6	1.4	0.0
18.302	17.278	17.783	34.3	1.3	0.0
17.278	16.312	16.788	33.1	1.2	0.0
16.312	15.399	15.849	32.0	1.1	0.0
15.399	14.538	14.962	30.9	1.1	0.0
14.538	13.725	14.125	29.9	1.0	0.0
13.725	12.957	13.335	28.9	1.0	0.0
12.957	12.232	12.589	27.9	0.9	0.0
12.232	11.548	11.885	27.0	0.9	0.0
11.548	10.902	11.220	26.2	0.8	0.0
10.902	10.292	10.593	25.4	0.8	0.0
10.292	9.716	10.000	24.7	0.7	0.0
9.716	9.173	9.441	23.9	0.7	0.0
9.173	8.660	8.913	23.2	0.7	0.0
8.660	8.175	8.414	22.6	0.7	0.0
8.175	7.718	7.943	21.9	0.7	0.0

Sample: 277
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103990.SMP

Test Number: 2
Analyzed: 6/22/2011 1:59:04PM
Reported: 6/22/2011 2:12:24PM
Background: 6/22/2011 11:03:35AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
7.718	7.286	7.499	21.1	0.7	0.0
7.286	6.879	7.079	20.4	0.7	0.0
6.879	6.494	6.683	19.7	0.7	0.0
6.494	6.131	6.310	18.9	0.7	0.0
6.131	5.788	5.957	18.3	0.7	0.0
5.788	5.464	5.623	17.6	0.6	0.0
5.464	5.158	5.309	17.0	0.6	0.0
5.158	4.870	5.012	16.5	0.6	0.0
4.870	4.597	4.732	15.9	0.6	0.0
4.597	4.340	4.467	15.3	0.6	0.0
4.340	4.097	4.217	14.6	0.6	0.0
4.097	3.868	3.981	14.0	0.6	0.0
3.868	3.652	3.758	13.4	0.6	0.0
3.652	3.447	3.548	12.8	0.6	0.0
3.447	3.255	3.350	12.2	0.6	0.0
3.255	3.073	3.162	11.7	0.6	0.0
3.073	2.901	2.985	11.1	0.5	0.0
2.901	2.738	2.818	10.6	0.5	0.0
2.738	2.585	2.661	10.1	0.5	0.0
2.585	2.441	2.512	9.6	0.5	0.0
2.441	2.304	2.371	9.0	0.5	0.0
2.304	2.175	2.239	8.5	0.5	0.0
2.175	2.054	2.113	8.0	0.5	0.0
2.054	1.939	1.995	7.5	0.5	0.0
1.939	1.830	1.884	7.1	0.4	0.0
1.830	1.728	1.778	6.7	0.4	0.0
1.728	1.631	1.679	6.2	0.4	0.0
1.631	1.540	1.585	5.8	0.5	0.0
1.540	1.454	1.496	5.3	0.5	0.0
1.454	1.372	1.413	4.8	0.5	0.0
1.372	1.296	1.334	4.4	0.4	0.0
1.296	1.223	1.259	4.1	0.3	0.0
1.223	1.155	1.189	3.8	0.3	0.0
1.155	1.090	1.122	3.6	0.2	0.0
1.090	1.029	1.059	3.3	0.2	0.0
1.029	0.972	1.000	3.1	0.3	0.0
0.972	0.917	0.944	2.8	0.3	0.0
0.917	0.866	0.891	2.4	0.4	0.0
0.866	0.818	0.841	2.0	0.4	0.0
0.818	0.772	0.794	1.6	0.4	0.0
0.772	0.729	0.750	1.1	0.4	0.0
0.729	0.688	0.708	0.8	0.4	0.0
0.688	0.649	0.668	0.5	0.3	0.0
0.649	0.613	0.631	0.3	0.2	0.0

Sample: 277
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103990.SMP

Test Number: 2
Analyzed: 6/22/2011 1:59:04PM
Reported: 6/22/2011 2:12:24PM
Background: 6/22/2011 11:03:35AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

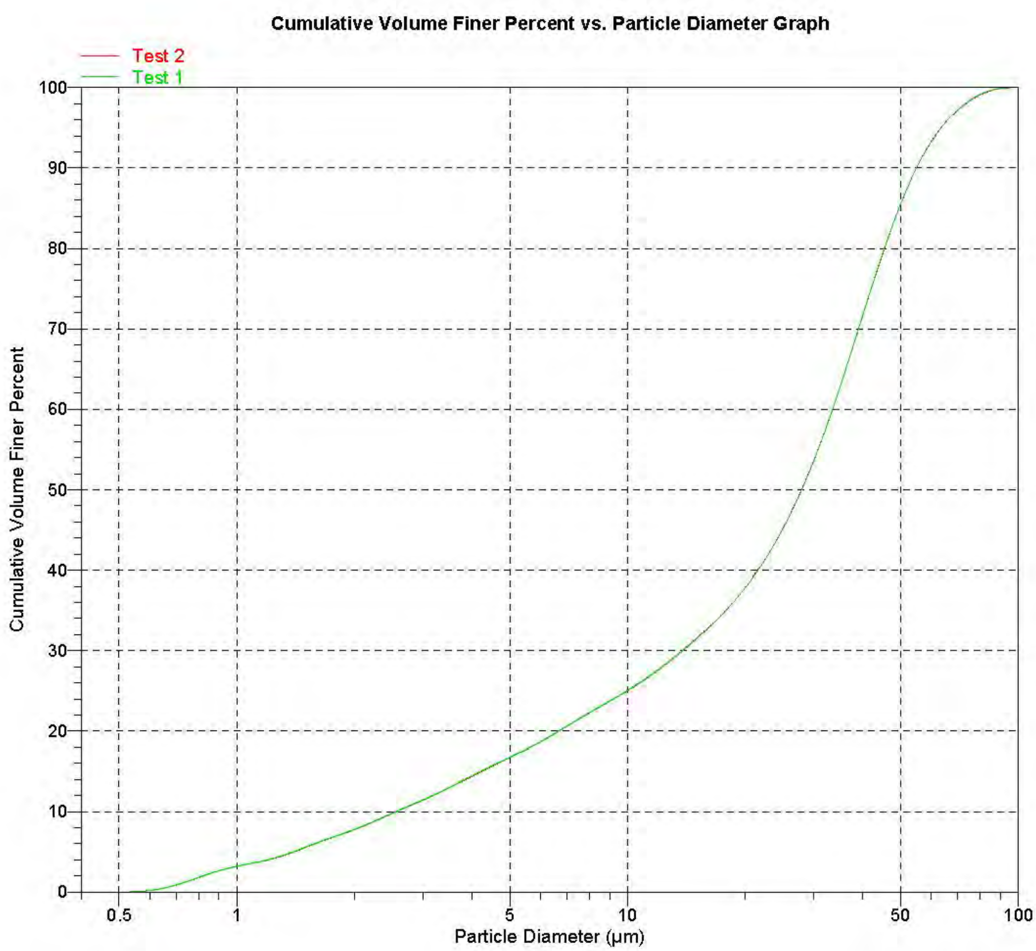
High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.613	0.579	0.596	0.1	0.1	0.0
0.579	0.546	0.562	0.0	0.1	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0
0.487	0.460	0.473	0.0	0.0	0.0

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 5

Sample: 277
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103990.SMP

Test Number: 2
Analyzed: 6/22/2011 1:59:04PM
Reported: 6/22/2011 2:12:24PM
Background: 6/22/2011 11:03:35AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

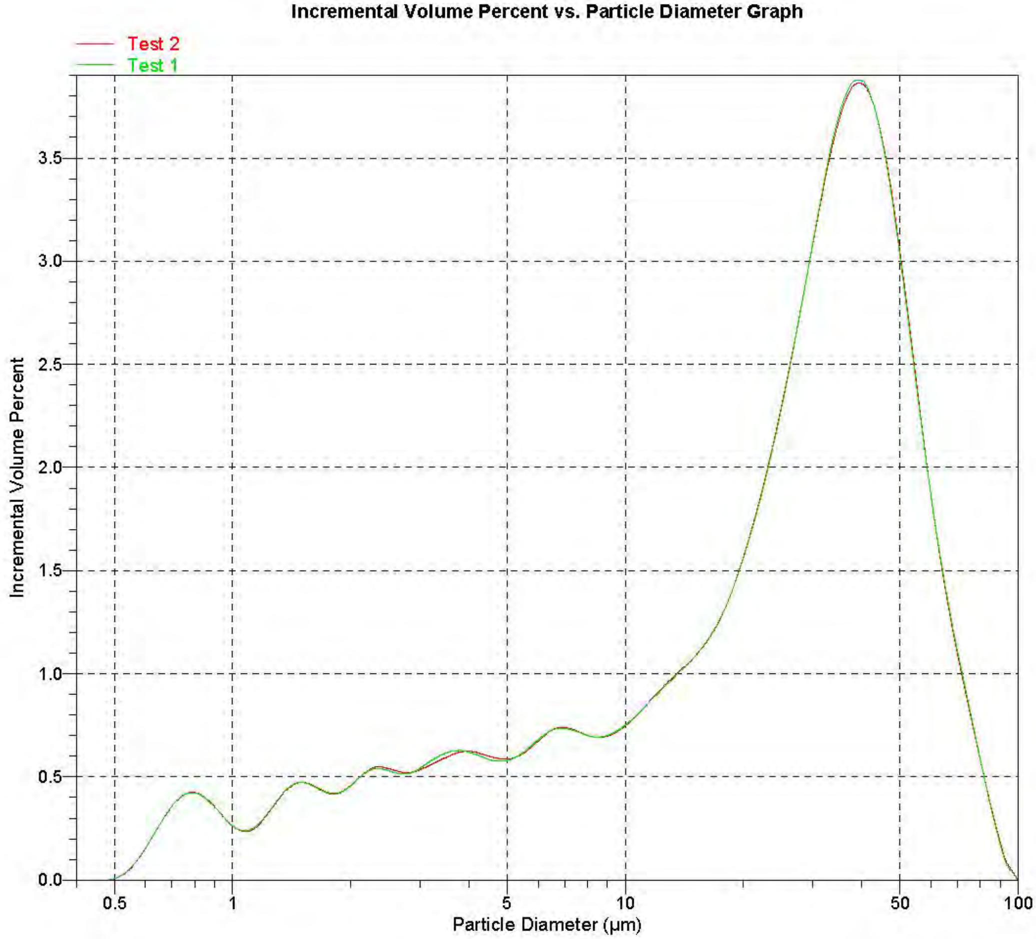


Sample: 277
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103990.SMP

Test Number: 2
Analyzed: 6/22/2011 1:59:04PM
Reported: 6/22/2011 2:12:24PM
Background: 6/22/2011 11:03:35AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph

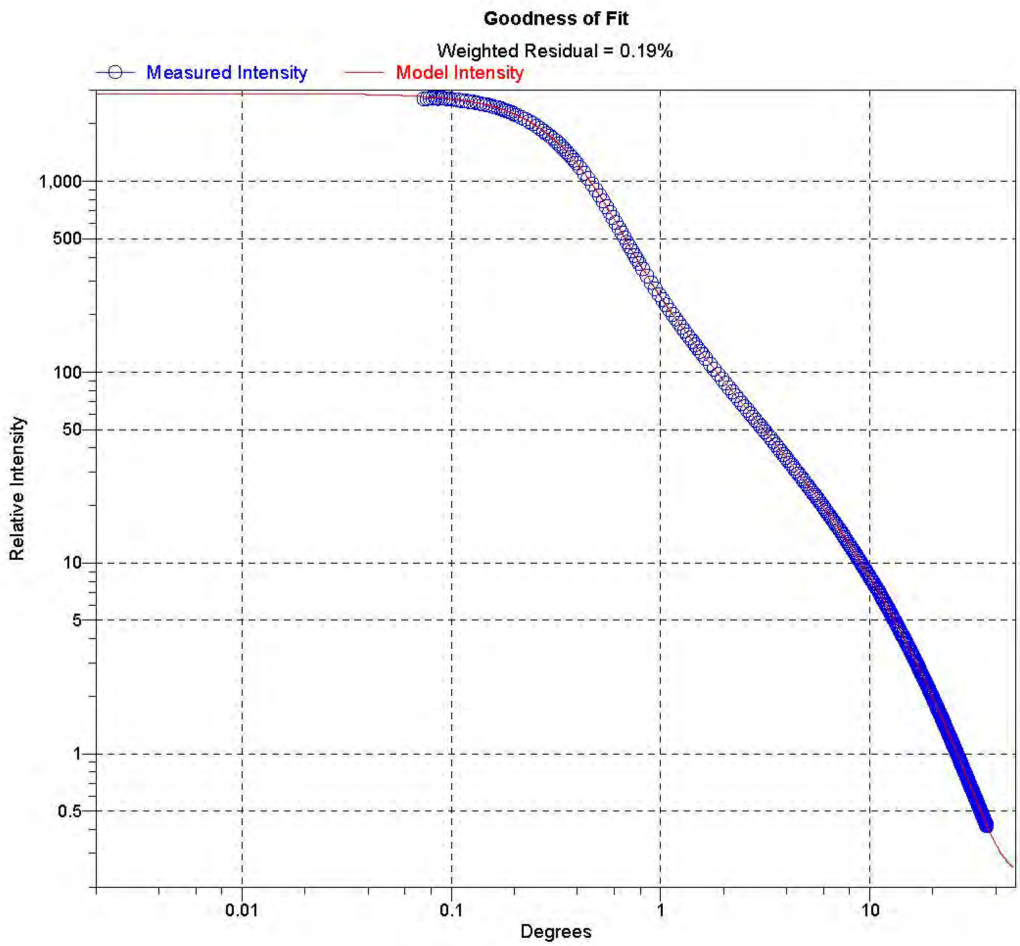


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

Sample: 277
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103990.SMP

Test Number: 2
Analyzed: 6/22/2011 1:59:04PM
Reported: 6/22/2011 2:12:24PM
Background: 6/22/2011 11:03:35AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#3-601

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 | Saturn DigiSizer II 5205 V1.01 | 5200 LSHU V3.00 S/N 127 | Page 1

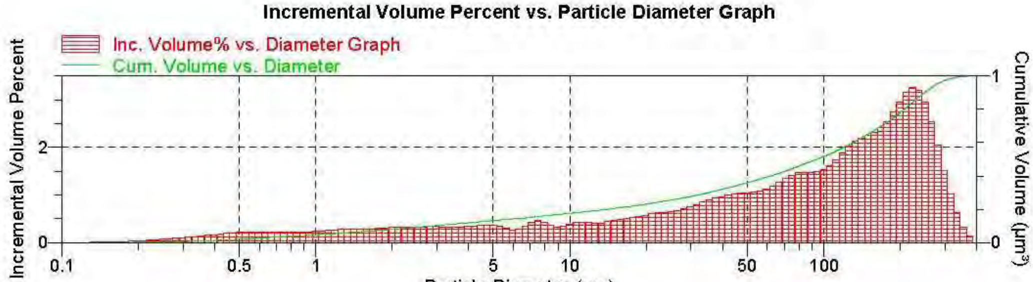
Sample: 601
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103991.SMP

Test Number: 2
Analyzed: 6/22/2011 2:42:38PM
Reported: 6/22/2011 3:32:49PM
Background: 6/22/2011 2:23:08PM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02676 %
Obscuration: 37.2 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	112.136	1.907	Mode	223.600	0.000
Median	93.794	2.285			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	249.193
50.0	93.794
10.0	2.888

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 2

Sample: 601
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103991.SMP

Test Number: 2
Analyzed: 6/22/2011 2:42:38PM
Reported: 6/22/2011 3:32:49PM
Background: 6/22/2011 2:23:08PM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
386.812	365.174	375.837	99.9	0.1	0.0
365.174	344.747	354.813	99.6	0.3	0.0
344.747	325.462	334.965	98.9	0.6	0.1
325.462	307.256	316.228	97.9	1.0	0.1
307.256	290.068	298.538	96.4	1.5	0.2
290.068	273.842	281.838	94.4	2.0	0.4
273.842	258.523	266.073	91.8	2.5	0.5
258.523	244.062	251.189	88.9	2.9	0.6
244.062	230.409	237.137	85.7	3.2	0.7
230.409	217.520	223.872	82.5	3.3	0.8
217.520	205.353	211.349	79.3	3.2	0.9
205.353	193.865	199.526	76.3	3.0	0.9
193.865	183.021	188.365	73.6	2.7	0.9
183.021	172.783	177.828	71.0	2.6	0.9
172.783	163.117	167.880	68.6	2.4	0.9
163.117	153.993	158.489	66.3	2.3	0.9
153.993	145.378	149.624	64.1	2.3	1.0
145.378	137.246	141.254	61.9	2.2	1.0
137.246	129.569	133.352	59.7	2.1	1.0
129.569	122.321	125.893	57.7	2.0	1.0
122.321	115.478	118.850	55.8	1.9	0.9
115.478	109.018	112.202	54.1	1.7	0.9
109.018	102.920	105.925	52.4	1.6	0.8
102.920	97.163	100.000	50.9	1.5	0.7
97.163	91.728	94.406	49.4	1.5	0.7
91.728	86.596	89.125	47.9	1.5	0.6
86.596	81.752	84.140	46.5	1.5	0.5
81.752	77.179	79.433	45.0	1.5	0.5
77.179	72.862	74.989	43.6	1.4	0.5
72.862	68.786	70.795	42.2	1.3	0.5
68.786	64.938	66.834	41.0	1.3	0.5
64.938	61.306	63.096	39.8	1.2	0.5
61.306	57.876	59.566	38.7	1.1	0.4
57.876	54.639	56.234	37.6	1.1	0.4
54.639	51.582	53.088	36.5	1.1	0.4
51.582	48.697	50.119	35.5	1.1	0.4
48.697	45.973	47.315	34.4	1.0	0.4
45.973	43.401	44.668	33.4	1.0	0.4
43.401	40.973	42.170	32.4	1.0	0.4

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 601
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103991.SMP

Test Number: 2
Analyzed: 6/22/2011 2:42:38PM
Reported: 6/22/2011 3:32:49PM
Background: 6/22/2011 2:23:08PM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
40.973	38.681	39.811	31.5	1.0	0.4
38.681	36.517	37.584	30.5	0.9	0.3
36.517	34.475	35.481	29.6	0.9	0.3
34.475	32.546	33.497	28.8	0.8	0.3
32.546	30.726	31.623	28.0	0.8	0.3
30.726	29.007	29.854	27.2	0.7	0.3
29.007	27.384	28.184	26.5	0.7	0.3
27.384	25.852	26.607	25.9	0.7	0.3
25.852	24.406	25.119	25.2	0.6	0.3
24.406	23.041	23.714	24.6	0.6	0.3
23.041	21.752	22.387	23.9	0.6	0.3
21.752	20.535	21.135	23.3	0.6	0.2
20.535	19.387	19.953	22.8	0.6	0.2
19.387	18.302	18.836	22.2	0.5	0.2
18.302	17.278	17.783	21.7	0.5	0.2
17.278	16.312	16.788	21.2	0.5	0.2
16.312	15.399	15.849	20.7	0.5	0.2
15.399	14.538	14.962	20.2	0.5	0.2
14.538	13.725	14.125	19.8	0.4	0.2
13.725	12.957	13.335	19.4	0.4	0.2
12.957	12.232	12.589	19.0	0.4	0.2
12.232	11.548	11.885	18.5	0.4	0.2
11.548	10.902	11.220	18.1	0.4	0.2
10.902	10.292	10.593	17.7	0.4	0.2
10.292	9.716	10.000	17.3	0.4	0.2
9.716	9.173	9.441	17.0	0.3	0.2
9.173	8.660	8.913	16.6	0.3	0.2
8.660	8.175	8.414	16.3	0.4	0.2
8.175	7.718	7.943	15.8	0.4	0.2
7.718	7.286	7.499	15.4	0.5	0.1
7.286	6.879	7.079	14.9	0.4	0.1
6.879	6.494	6.683	14.6	0.3	0.1
6.494	6.131	6.310	14.3	0.3	0.1
6.131	5.788	5.957	14.1	0.3	0.1
5.788	5.464	5.623	13.8	0.3	0.1
5.464	5.158	5.309	13.4	0.3	0.1
5.158	4.870	5.012	13.1	0.4	0.1
4.870	4.597	4.732	12.7	0.4	0.1
4.597	4.340	4.467	12.3	0.4	0.1

Micromeritics Instrument Corporation

Sample: 601
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103991.SMP

Test Number: 2
Analyzed: 6/22/2011 2:42:38PM
Reported: 6/22/2011 3:32:49PM
Background: 6/22/2011 2:23:08PM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
4.340	4.097	4.217	12.0	0.3	0.1
4.097	3.868	3.981	11.7	0.3	0.1
3.868	3.652	3.758	11.3	0.3	0.1
3.652	3.447	3.548	11.0	0.3	0.1
3.447	3.255	3.350	10.7	0.3	0.1
3.255	3.073	3.162	10.4	0.3	0.1
3.073	2.901	2.985	10.0	0.3	0.1
2.901	2.738	2.818	9.7	0.3	0.1
2.738	2.585	2.661	9.4	0.3	0.1
2.585	2.441	2.512	9.0	0.3	0.1
2.441	2.304	2.371	8.7	0.3	0.1
2.304	2.175	2.239	8.4	0.3	0.1
2.175	2.054	2.113	8.1	0.3	0.1
2.054	1.939	1.995	7.8	0.3	0.1
1.939	1.830	1.884	7.5	0.3	0.1
1.830	1.728	1.778	7.2	0.3	0.1
1.728	1.631	1.679	6.9	0.3	0.1
1.631	1.540	1.585	6.6	0.3	0.1
1.540	1.454	1.496	6.4	0.3	0.1
1.454	1.372	1.413	6.1	0.3	0.0
1.372	1.296	1.334	5.8	0.3	0.0
1.296	1.223	1.259	5.5	0.3	0.0
1.223	1.155	1.189	5.3	0.3	0.0
1.155	1.090	1.122	5.0	0.3	0.0
1.090	1.029	1.059	4.8	0.2	0.0
1.029	0.972	1.000	4.5	0.2	0.0
0.972	0.917	0.944	4.3	0.2	0.0
0.917	0.866	0.891	4.1	0.2	0.0
0.866	0.818	0.841	3.9	0.2	0.0
0.818	0.772	0.794	3.7	0.2	0.0
0.772	0.729	0.750	3.5	0.2	0.0
0.729	0.688	0.708	3.2	0.2	0.0
0.688	0.649	0.668	3.0	0.2	0.0
0.649	0.613	0.631	2.8	0.2	0.0
0.613	0.579	0.596	2.6	0.2	0.0
0.579	0.546	0.562	2.3	0.2	0.0
0.546	0.516	0.531	2.1	0.2	0.0
0.516	0.487	0.501	1.9	0.2	0.0
0.487	0.460	0.473	1.7	0.2	0.0

Micromeritics Instrument Corporation

Sample: 601
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103991.SMP

Test Number: 2
Analyzed: 6/22/2011 2:42:38PM
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Background: 6/22/2011 2:23:08PM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.460	0.434	0.447	1.5	0.2	0.0
0.434	0.410	0.422	1.3	0.2	0.0
0.410	0.387	0.398	1.2	0.2	0.0
0.387	0.365	0.376	1.0	0.2	0.0
0.365	0.345	0.355	0.9	0.1	0.0
0.345	0.325	0.335	0.7	0.1	0.0
0.325	0.307	0.316	0.6	0.1	0.0
0.307	0.290	0.299	0.5	0.1	0.0
0.290	0.274	0.282	0.4	0.1	0.0
0.274	0.259	0.266	0.4	0.1	0.0
0.259	0.244	0.251	0.3	0.1	0.0
0.244	0.230	0.237	0.2	0.1	0.0
0.230	0.218	0.224	0.2	0.1	0.0
0.218	0.205	0.211	0.1	0.0	0.0
0.205	0.194	0.200	0.1	0.0	0.0
0.194	0.183	0.188	0.1	0.0	0.0
0.183	0.173	0.178	0.1	0.0	0.0
0.173	0.163	0.168	0.0	0.0	0.0
0.163	0.154	0.158	0.0	0.0	0.0
0.154	0.145	0.150	0.0	0.0	0.0
0.145	0.137	0.141	0.0	0.0	0.0
0.137	0.130	0.133	0.0	0.0	0.0
0.130	0.122	0.126	0.0	0.0	0.0
0.122	0.115	0.119	0.0	0.0	0.0
0.115	0.109	0.112	0.0	0.0	0.0
0.109	0.103	0.106	0.0	0.0	0.0

Micromeritics Instrument Corporation

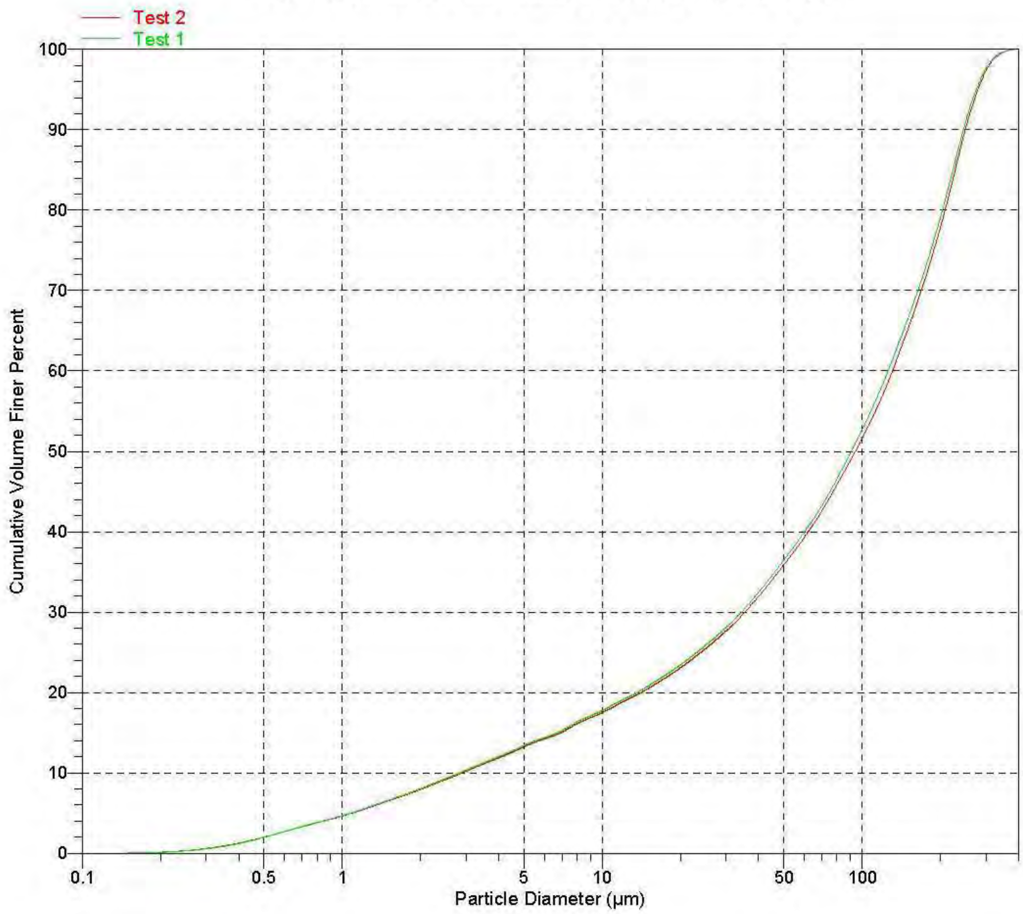
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 601
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103991.SMP

Test Number: 2
Analyzed: 6/22/2011 2:42:38PM
Reported: 6/22/2011 3:32:49PM
Background: 6/22/2011 2:23:08PM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



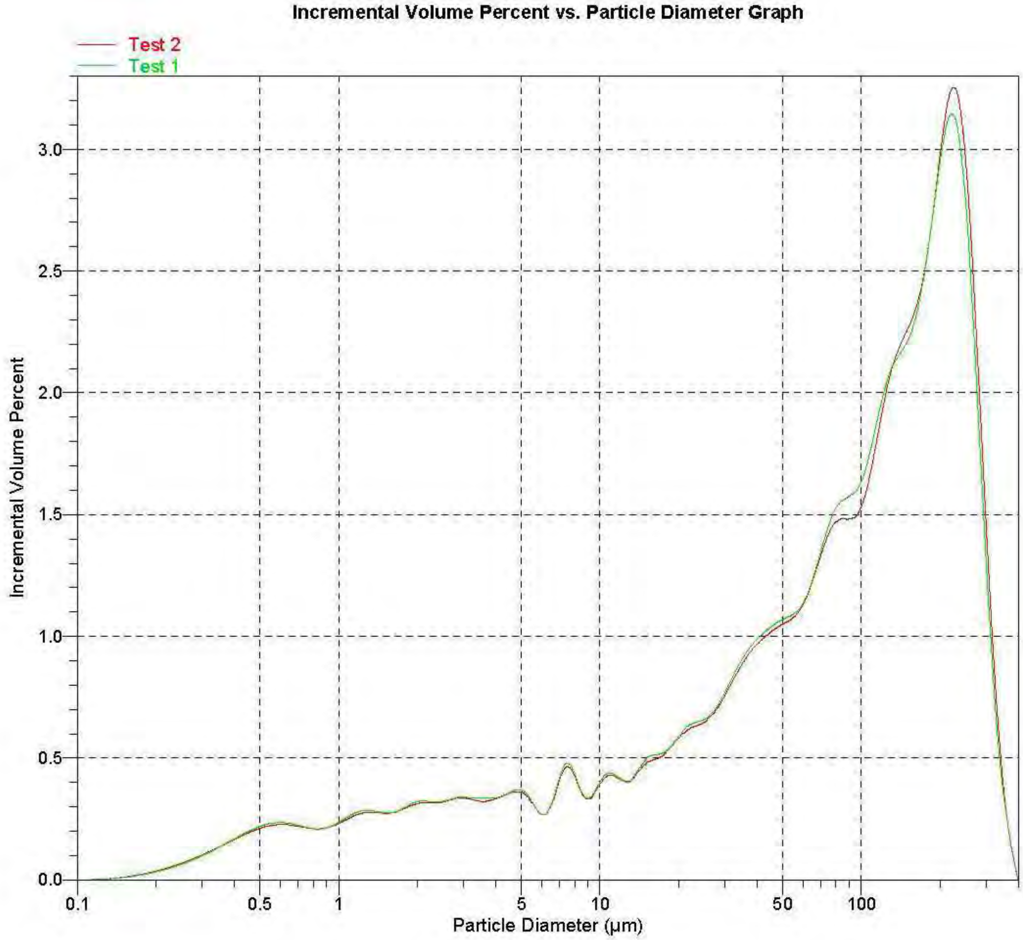
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 601
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103991.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/22/2011 2:42:38PM	Material:	Sediment / Water
Reported:	6/22/2011 3:32:49PM	Background:	Water RI 1.331
Background:	6/22/2011 2:23:08PM	Smoothing:	Medium

Incremental Volume Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

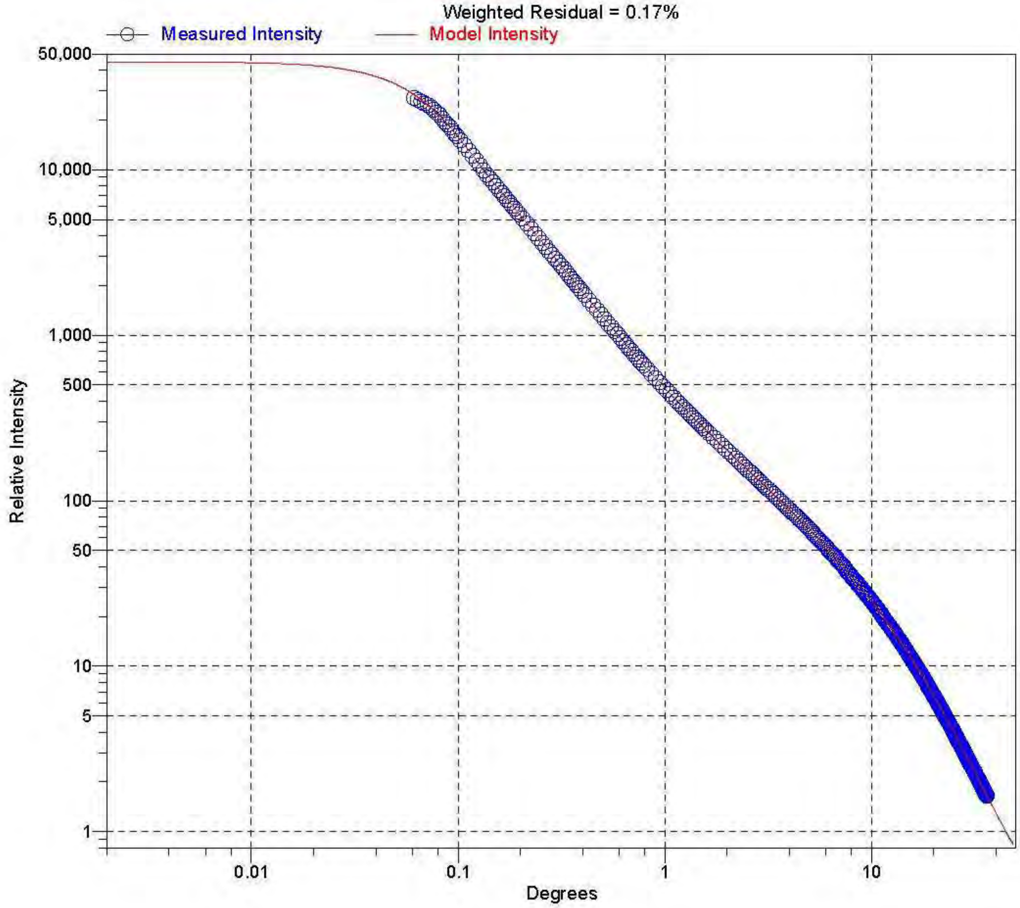
Sample: 601
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103991.SMP

Test Number: 2
Analyzed: 6/22/2011 2:42:38PM
Reported: 6/22/2011 3:32:49PM
Background: 6/22/2011 2:23:08PM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Goodness of Fit

Weighted Residual = 0.17%



Sample#4-868

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

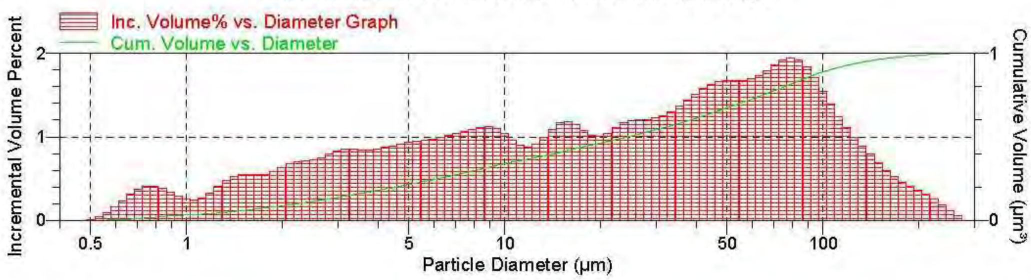
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

Sample: 868
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103992.SMP

Test Number: 2	Model: (1.570, 0.1000000), 1.331
Analyzed: 6/22/2011 2:44:32PM	Material: Sediment / Water
Reported: 6/22/2011 3:04:59PM	Background: Water RI 1.331
Background: 6/22/2011 11:03:35AM	Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m	Ultrasonic intensity: 100 %
Circulation time: Not Used	Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02390 %
Obscuration: 44.9 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	41.768	0.160	Mode	79.380	0.000
Median	24.322	0.032			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	104.540
50.0	24.322
10.0	2.248

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 868
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103992.SMP

Test Number: 2
Analyzed: 6/22/2011 2:44:32PM
Reported: 6/22/2011 3:04:59PM
Background: 6/22/2011 11:03:35AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
273.842	258.523	266.073	99.9	0.1	0.0
258.523	244.062	251.189	99.8	0.1	0.1
244.062	230.409	237.137	99.6	0.2	0.1
230.409	217.520	223.872	99.4	0.3	0.1
217.520	205.353	211.349	99.1	0.3	0.0
205.353	193.865	199.526	98.7	0.4	0.0
193.865	183.021	188.365	98.3	0.4	0.1
183.021	172.783	177.828	97.8	0.5	0.1
172.783	163.117	167.880	97.3	0.5	0.1
163.117	153.993	158.489	96.7	0.6	0.1
153.993	145.378	149.624	96.0	0.7	0.1
145.378	137.246	141.254	95.2	0.8	0.1
137.246	129.569	133.352	94.3	0.9	0.2
129.569	122.321	125.893	93.3	1.0	0.3
122.321	115.478	118.850	92.2	1.1	0.3
115.478	109.018	112.202	91.0	1.2	0.4
109.018	102.920	105.925	89.6	1.4	0.4
102.920	97.163	100.000	88.1	1.5	0.3
97.163	91.728	94.406	86.4	1.7	0.3
91.728	86.596	89.125	84.5	1.8	0.2
86.596	81.752	84.140	82.6	1.9	0.1
81.752	77.179	79.433	80.7	1.9	0.1
77.179	72.862	74.989	78.7	1.9	0.0
72.862	68.786	70.795	76.9	1.9	0.0
68.786	64.938	66.834	75.1	1.8	0.0
64.938	61.306	63.096	73.4	1.7	0.0
61.306	57.876	59.566	71.7	1.7	0.1
57.876	54.639	56.234	70.0	1.7	0.1
54.639	51.582	53.088	68.3	1.7	0.1
51.582	48.697	50.119	66.6	1.7	0.1
48.697	45.973	47.315	65.0	1.7	0.1
45.973	43.401	44.668	63.4	1.6	0.1
43.401	40.973	42.170	61.8	1.6	0.0
40.973	38.681	39.811	60.3	1.5	0.0
38.681	36.517	37.584	58.8	1.4	0.0
36.517	34.475	35.481	57.5	1.4	0.0
34.475	32.546	33.497	56.2	1.3	0.0
32.546	30.726	31.623	54.9	1.3	0.0
30.726	29.007	29.854	53.7	1.2	0.0
29.007	27.384	28.184	52.5	1.2	0.0
27.384	25.852	26.607	51.3	1.2	0.0
25.852	24.406	25.119	50.1	1.2	0.0
24.406	23.041	23.714	48.9	1.2	0.0
23.041	21.752	22.387	47.8	1.1	0.0

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Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
21.752	20.535	21.135	46.7	1.0	0.0
20.535	19.387	19.953	45.7	1.0	0.0
19.387	18.302	18.836	44.7	1.0	0.0
18.302	17.278	17.783	43.7	1.1	0.0
17.278	16.312	16.788	42.5	1.1	0.0
16.312	15.399	15.849	41.3	1.2	0.0
15.399	14.538	14.962	40.2	1.2	0.0
14.538	13.725	14.125	39.1	1.1	0.0
13.725	12.957	13.335	38.1	1.0	0.0
12.957	12.232	12.589	37.2	0.9	0.0
12.232	11.548	11.885	36.3	0.9	0.0
11.548	10.902	11.220	35.4	0.9	0.0
10.902	10.292	10.593	34.4	1.0	0.0
10.292	9.716	10.000	33.4	1.0	0.0
9.716	9.173	9.441	32.3	1.1	0.0
9.173	8.660	8.913	31.2	1.1	0.0
8.660	8.175	8.414	30.0	1.1	0.0
8.175	7.718	7.943	29.0	1.1	0.0
7.718	7.286	7.499	27.9	1.1	0.0
7.286	6.879	7.079	26.8	1.0	0.0
6.879	6.494	6.683	25.8	1.0	0.0
6.494	6.131	6.310	24.8	1.0	0.0
6.131	5.788	5.957	23.9	1.0	0.0
5.788	5.464	5.623	22.9	1.0	0.0
5.464	5.158	5.309	22.0	0.9	0.0
5.158	4.870	5.012	21.0	0.9	0.0
4.870	4.597	4.732	20.1	0.9	0.0
4.597	4.340	4.467	19.2	0.9	0.0
4.340	4.097	4.217	18.3	0.9	0.0
4.097	3.868	3.981	17.5	0.9	0.0
3.868	3.652	3.758	16.6	0.8	0.0
3.652	3.447	3.548	15.8	0.8	0.0
3.447	3.255	3.350	15.0	0.8	0.0
3.255	3.073	3.162	14.1	0.9	0.0
3.073	2.901	2.985	13.3	0.8	0.0
2.901	2.738	2.818	12.5	0.8	0.0
2.738	2.585	2.661	11.7	0.7	0.0
2.585	2.441	2.512	11.0	0.7	0.0
2.441	2.304	2.371	10.3	0.7	0.0
2.304	2.175	2.239	9.6	0.7	0.0
2.175	2.054	2.113	8.9	0.7	0.0
2.054	1.939	1.995	8.3	0.6	0.0
1.939	1.830	1.884	7.7	0.6	0.0
1.830	1.728	1.778	7.2	0.6	0.0

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Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

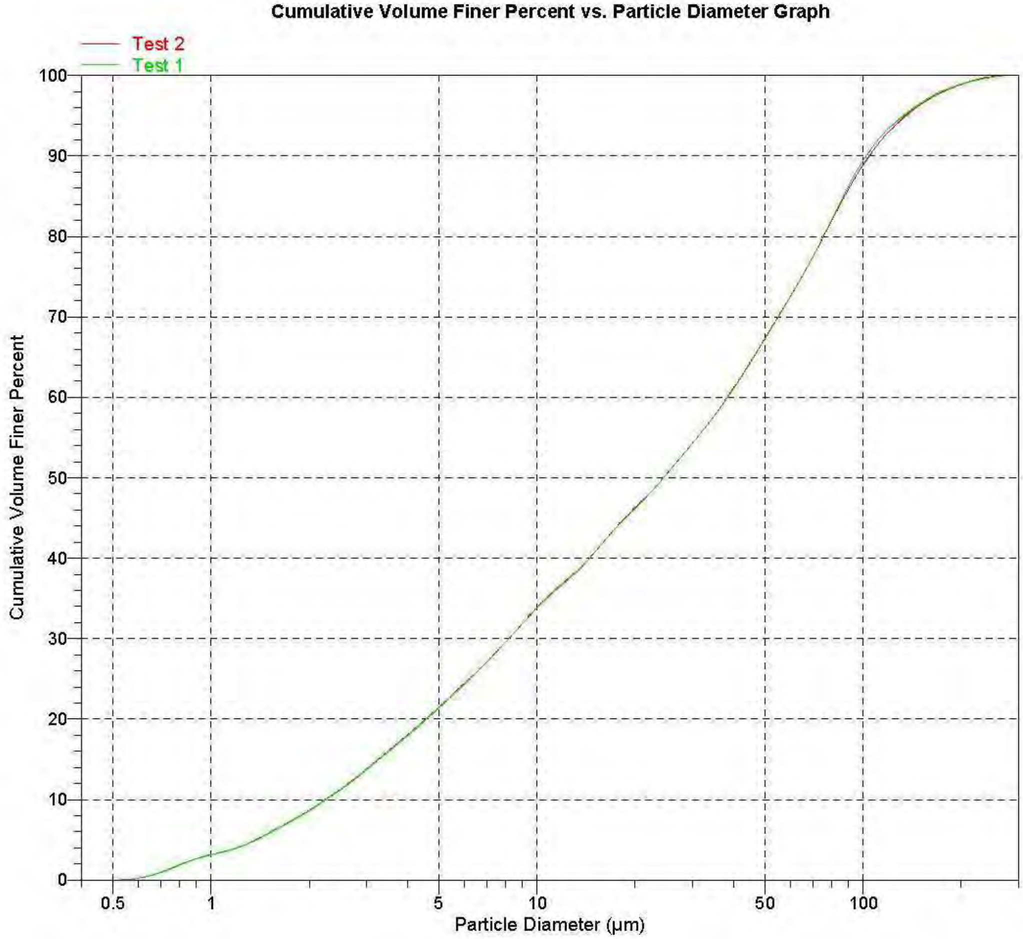
High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
1.728	1.631	1.679	6.6	0.5	0.0
1.631	1.540	1.585	6.1	0.5	0.0
1.540	1.454	1.496	5.5	0.5	0.0
1.454	1.372	1.413	5.0	0.5	0.0
1.372	1.296	1.334	4.5	0.5	0.0
1.296	1.223	1.259	4.1	0.4	0.0
1.223	1.155	1.189	3.8	0.3	0.0
1.155	1.090	1.122	3.5	0.3	0.0
1.090	1.029	1.059	3.3	0.2	0.0
1.029	0.972	1.000	3.0	0.2	0.0
0.972	0.917	0.944	2.7	0.3	0.0
0.917	0.866	0.891	2.4	0.3	0.0
0.866	0.818	0.841	2.0	0.4	0.0
0.818	0.772	0.794	1.6	0.4	0.0
0.772	0.729	0.750	1.2	0.4	0.0
0.729	0.688	0.708	0.8	0.4	0.0
0.688	0.649	0.668	0.5	0.3	0.0
0.649	0.613	0.631	0.3	0.2	0.0
0.613	0.579	0.596	0.1	0.2	0.0
0.579	0.546	0.562	0.0	0.1	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0
0.487	0.460	0.473	0.0	0.0	0.0

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 5

Sample: 868
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103992.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/22/2011 2:44:32PM	Material:	Sediment / Water
Reported:	6/22/2011 3:04:59PM	Background:	Water RI 1.331
Background:	6/22/2011 11:03:35AM	Smoothing:	Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



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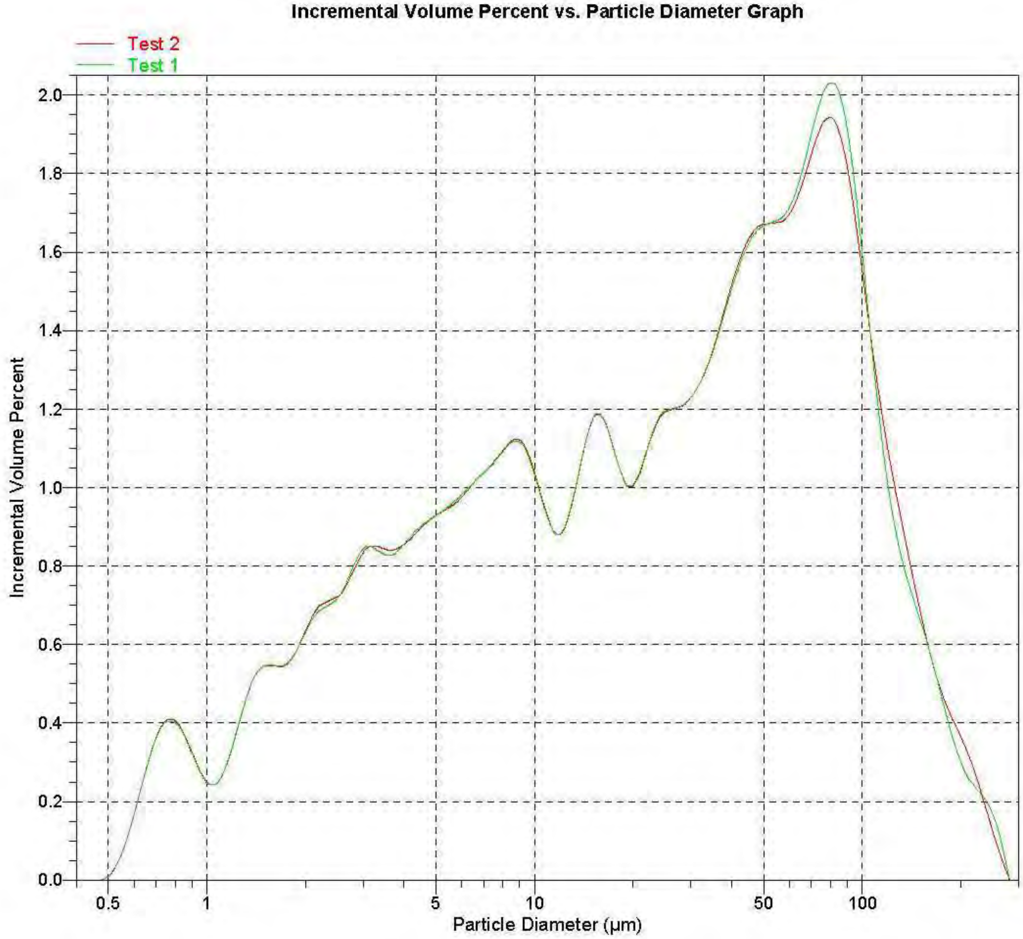
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

Sample: 868
Operator: TN
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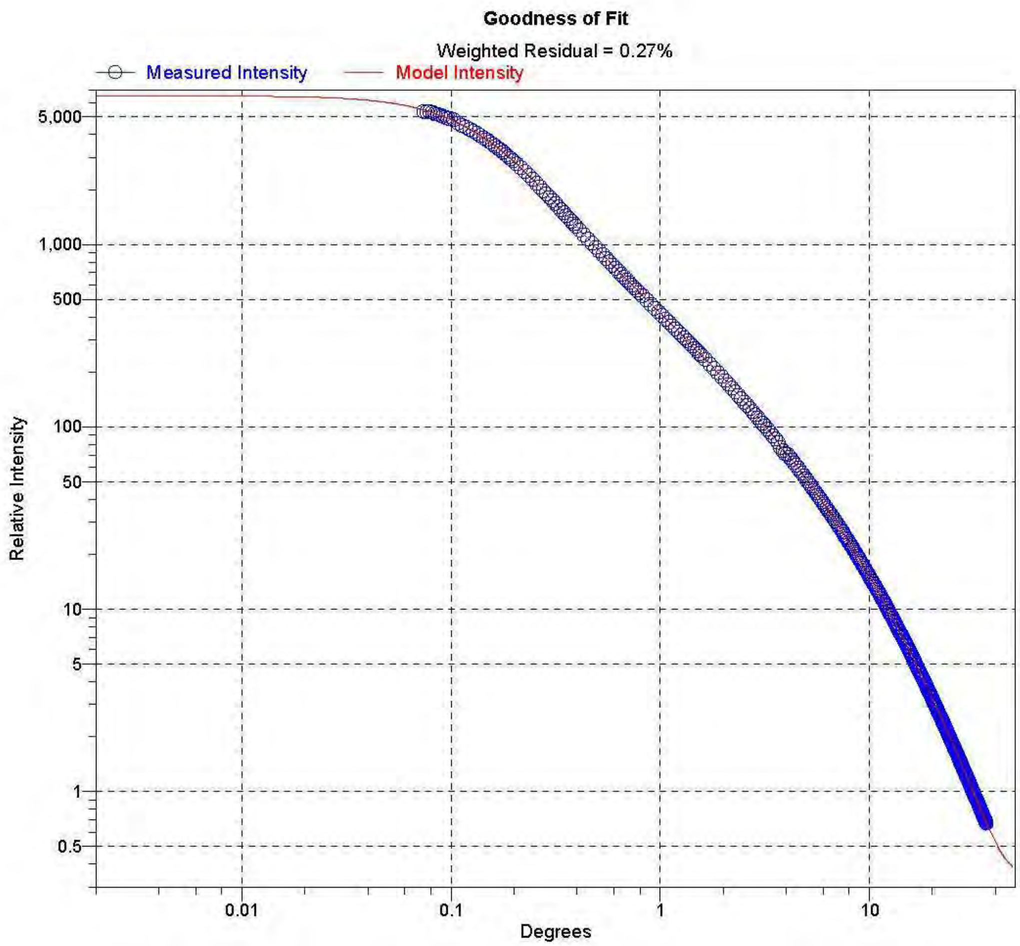


Sample#5-878

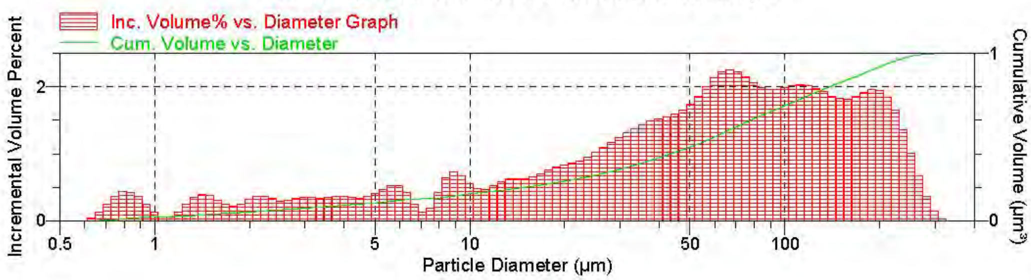
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 108 Page 1

Sample: 878
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103993.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/22/2011 2:35:14PM	Material:	Sediment / Water
Reported:	6/22/2011 3:03:24PM	Background:	Water RI 1.331
Background:	6/22/2011 11:03:38AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.02593 %
Obscuration: 31.0 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	78.567	1.582	Mode	66.804	0.000
Median	59.789	0.701			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	188.264
50.0	59.789
10.0	4.565

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Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
325.462	307.256	316.228	100.0	0.0	0.0
307.256	290.068	298.538	99.8	0.1	0.0
290.068	273.842	281.838	99.5	0.4	0.0
273.842	258.523	266.073	98.8	0.7	0.1
258.523	244.062	251.189	97.8	1.0	0.2
244.062	230.409	237.137	96.4	1.4	0.3
230.409	217.520	223.872	94.8	1.6	0.5
217.520	205.353	211.349	92.9	1.8	0.7
205.353	193.865	199.526	91.0	1.9	0.8
193.865	183.021	188.365	89.0	2.0	1.0
183.021	172.783	177.828	87.1	1.9	1.1
172.783	163.117	167.880	85.3	1.9	1.1
163.117	153.993	158.489	83.4	1.8	1.1
153.993	145.378	149.624	81.6	1.8	1.1
145.378	137.246	141.254	79.8	1.9	1.1
137.246	129.569	133.352	77.8	1.9	1.0
129.569	122.321	125.893	75.8	2.0	0.9
122.321	115.478	118.850	73.8	2.0	0.9
115.478	109.018	112.202	71.8	2.0	0.8
109.018	102.920	105.925	69.8	2.0	0.8
102.920	97.163	100.000	67.8	2.0	0.7
97.163	91.728	94.406	65.8	2.0	0.7
91.728	86.596	89.125	63.9	2.0	0.6
86.596	81.752	84.140	61.9	2.0	0.6
81.752	77.179	79.433	59.8	2.1	0.6
77.179	72.862	74.989	57.6	2.1	0.5
72.862	68.786	70.795	55.4	2.2	0.5
68.786	64.938	66.834	53.2	2.3	0.5
64.938	61.306	63.096	50.9	2.2	0.5
61.306	57.876	59.566	48.8	2.1	0.4
57.876	54.639	56.234	46.8	2.0	0.4
54.639	51.582	53.088	44.9	1.9	0.4
51.582	48.697	50.119	43.2	1.7	0.3
48.697	45.973	47.315	41.5	1.7	0.3
45.973	43.401	44.668	40.0	1.6	0.3
43.401	40.973	42.170	38.4	1.6	0.3
40.973	38.681	39.811	36.9	1.5	0.3
38.681	36.517	37.584	35.4	1.5	0.2
36.517	34.475	35.481	34.0	1.4	0.2
34.475	32.546	33.497	32.6	1.4	0.2
32.546	30.726	31.623	31.3	1.3	0.2
30.726	29.007	29.854	30.0	1.2	0.2
29.007	27.384	28.184	28.9	1.2	0.2
27.384	25.852	26.607	27.8	1.1	0.2

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High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
25.852	24.406	25.119	26.7	1.0	0.2
24.406	23.041	23.714	25.8	1.0	0.2
23.041	21.752	22.387	24.9	0.9	0.2
21.752	20.535	21.135	24.0	0.9	0.2
20.535	19.387	19.953	23.2	0.8	0.2
19.387	18.302	18.836	22.4	0.8	0.2
18.302	17.278	17.783	21.6	0.8	0.2
17.278	16.312	16.788	20.9	0.7	0.1
16.312	15.399	15.849	20.3	0.7	0.1
15.399	14.538	14.962	19.6	0.6	0.1
14.538	13.725	14.125	19.0	0.6	0.1
13.725	12.957	13.335	18.4	0.6	0.1
12.957	12.232	12.589	17.8	0.6	0.1
12.232	11.548	11.885	17.3	0.5	0.1
11.548	10.902	11.220	16.8	0.5	0.1
10.902	10.292	10.593	16.3	0.5	0.1
10.292	9.716	10.000	15.8	0.6	0.1
9.716	9.173	9.441	15.1	0.7	0.1
9.173	8.660	8.913	14.4	0.7	0.1
8.660	8.175	8.414	13.7	0.6	0.1
8.175	7.718	7.943	13.3	0.4	0.1
7.718	7.286	7.499	13.1	0.2	0.1
7.286	6.879	7.079	13.0	0.1	0.1
6.879	6.494	6.683	12.7	0.2	0.1
6.494	6.131	6.310	12.3	0.4	0.1
6.131	5.788	5.957	11.8	0.5	0.1
5.788	5.464	5.623	11.3	0.5	0.1
5.464	5.158	5.309	10.8	0.5	0.1
5.158	4.870	5.012	10.4	0.4	0.1
4.870	4.597	4.732	10.0	0.4	0.1
4.597	4.340	4.467	9.7	0.3	0.1
4.340	4.097	4.217	9.4	0.3	0.1
4.097	3.868	3.981	9.0	0.4	0.1
3.868	3.652	3.758	8.6	0.4	0.1
3.652	3.447	3.548	8.3	0.3	0.1
3.447	3.255	3.350	8.0	0.3	0.1
3.255	3.073	3.162	7.6	0.3	0.1
3.073	2.901	2.985	7.3	0.4	0.1
2.901	2.738	2.818	6.9	0.3	0.1
2.738	2.585	2.661	6.6	0.3	0.1
2.585	2.441	2.512	6.3	0.3	0.1
2.441	2.304	2.371	6.0	0.3	0.1
2.304	2.175	2.239	5.6	0.4	0.1
2.175	2.054	2.113	5.3	0.4	0.1

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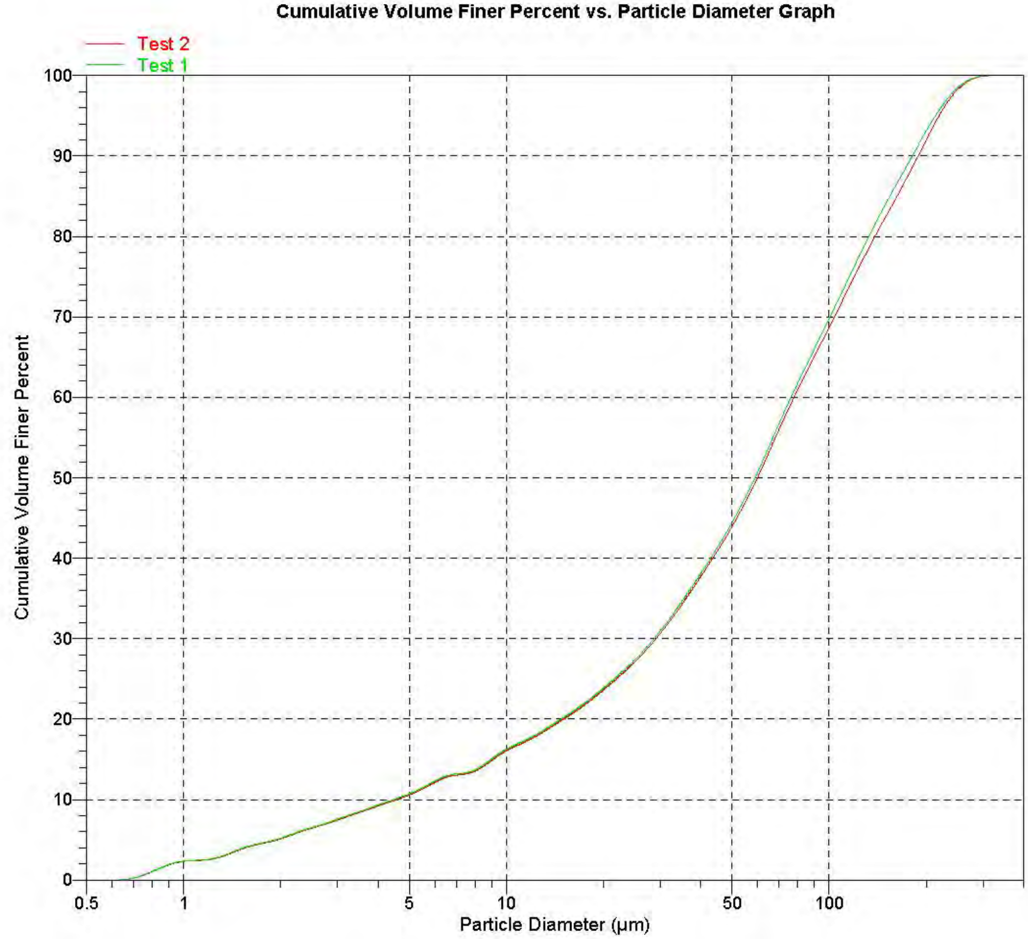
High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.054	1.939	1.995	5.0	0.3	0.0
1.939	1.830	1.884	4.7	0.3	0.0
1.830	1.728	1.778	4.5	0.2	0.0
1.728	1.631	1.679	4.3	0.2	0.0
1.631	1.540	1.585	4.0	0.3	0.0
1.540	1.454	1.496	3.6	0.4	0.0
1.454	1.372	1.413	3.2	0.4	0.0
1.372	1.296	1.334	2.8	0.3	0.0
1.296	1.223	1.259	2.6	0.2	0.0
1.223	1.155	1.189	2.5	0.1	0.0
1.155	1.090	1.122	2.4	0.1	0.0
1.090	1.029	1.059	2.4	0.1	0.0
1.029	0.972	1.000	2.2	0.1	0.0
0.972	0.917	0.944	2.0	0.2	0.0
0.917	0.866	0.891	1.6	0.4	0.0
0.866	0.818	0.841	1.2	0.4	0.0
0.818	0.772	0.794	0.8	0.4	0.0
0.772	0.729	0.750	0.4	0.4	0.0
0.729	0.688	0.708	0.2	0.3	0.0
0.688	0.649	0.668	0.0	0.1	0.0
0.649	0.613	0.631	0.0	0.0	0.0
0.613	0.579	0.596	0.0	0.0	0.0

Sample: 878
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103993.SMP

Test Number: 2
Analyzed: 6/22/2011 2:35:14PM
Reported: 6/22/2011 3:03:24PM
Background: 6/22/2011 11:03:38AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

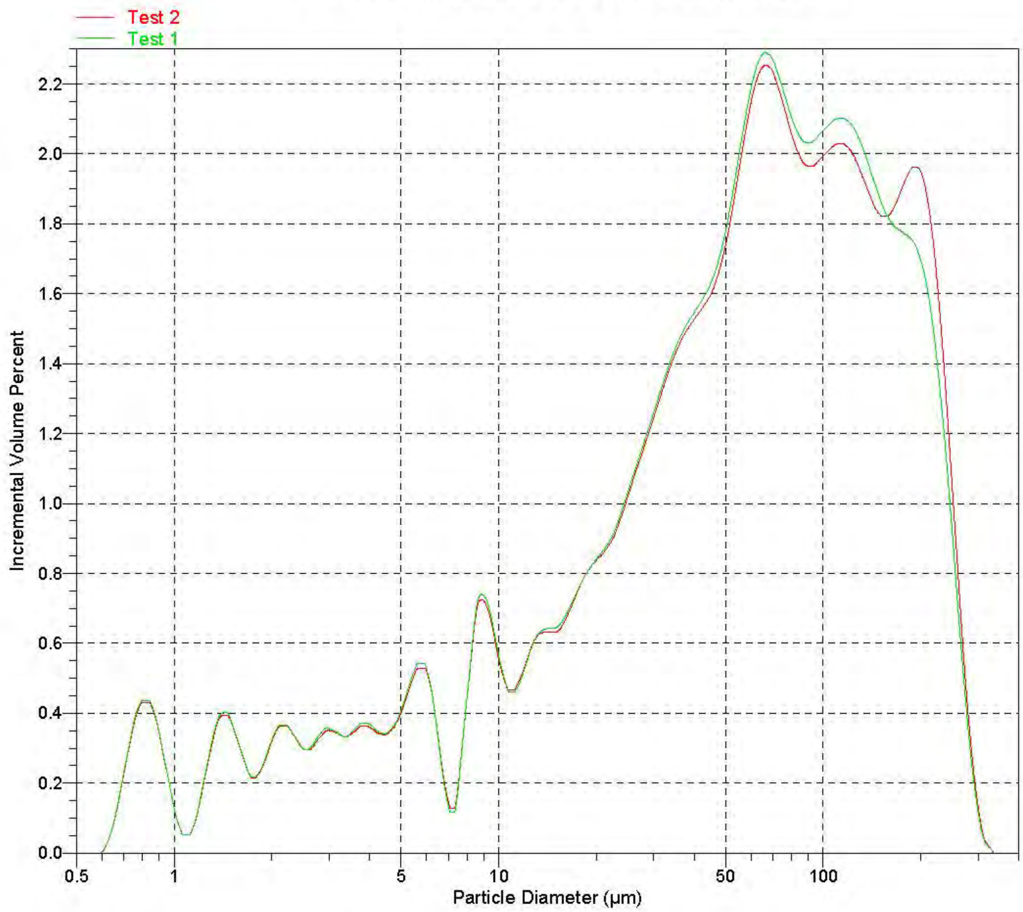


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 108 Page 6

Sample: 878
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103993.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/22/2011 2:35:14PM	Material:	Sediment / Water
Reported:	6/22/2011 3:03:24PM	Background:	Water RI 1.331
Background:	6/22/2011 11:03:38AM	Smoothing:	Medium

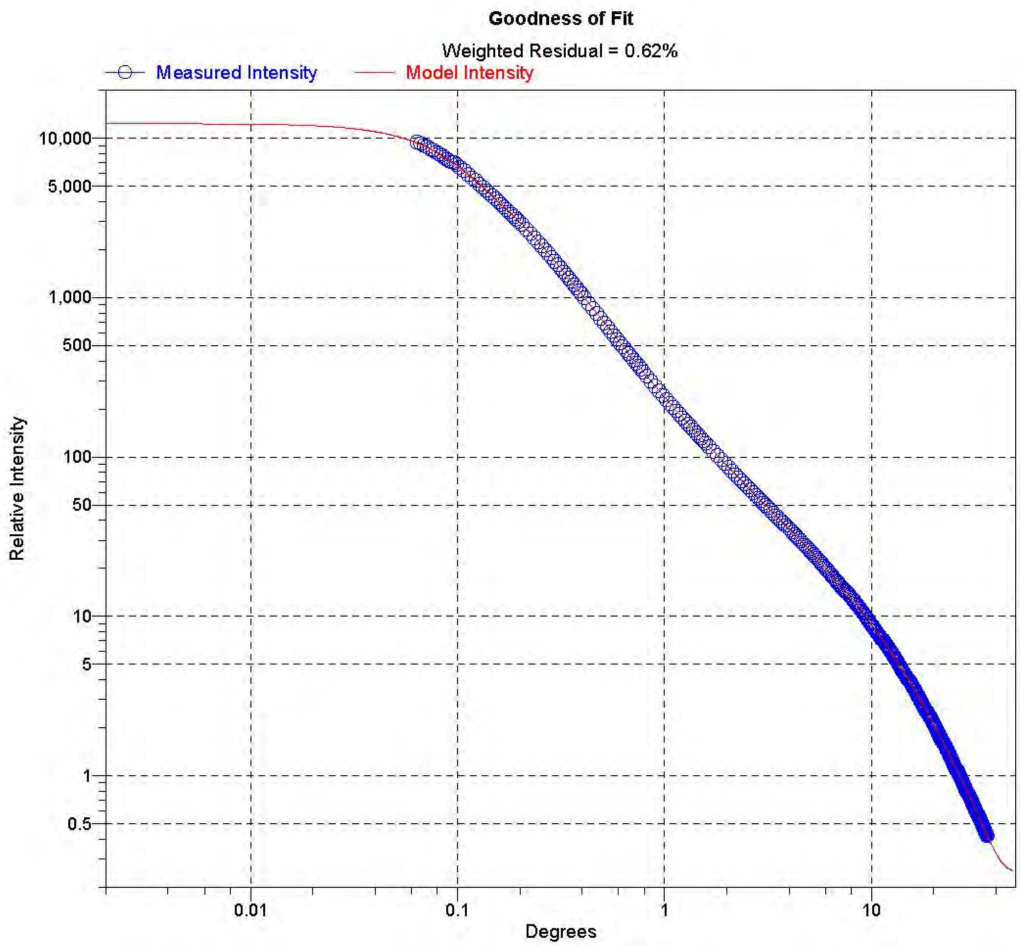
Incremental Volume Percent vs. Particle Diameter Graph



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 878
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103993.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/22/2011 2:35:14PM	Material:	Sediment / Water
Reported:	6/22/2011 3:03:24PM	Background:	Water RI 1.331
Background:	6/22/2011 11:03:38AM	Smoothing:	Medium



Sample#6-900

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 1

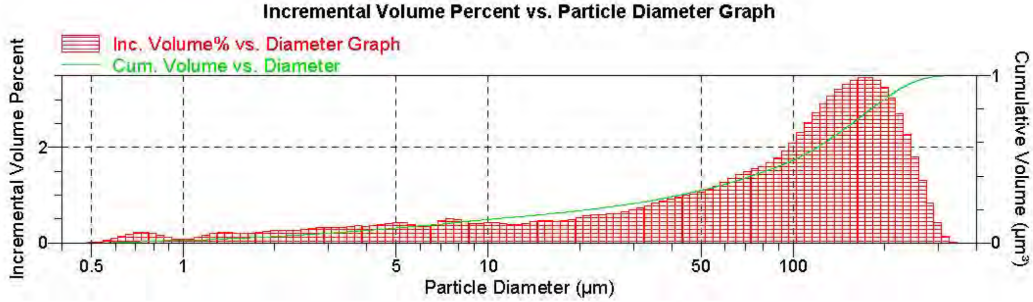
Sample: 900
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1103994B.SMP

Test Number: 2
Analyzed: 6/23/2011 1:44:44PM
Reported: 6/23/2011 2:36:15PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.03225 %
Obscuration: 30.7 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	105.878	1.030	Mode	167.676	0.000
Median	101.595	0.252			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	215.061
50.0	101.595
10.0	5.820

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127

Sample: 900
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1103994B.SMP

Test Number: 2
Analyzed: 6/23/2011 1:44:44PM
Reported: 6/23/2011 2:36:16PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
344.747	325.462	334.965	100.0	0.0	0.0
325.462	307.256	316.228	99.9	0.1	0.1
307.256	290.068	298.538	99.4	0.4	0.3
290.068	273.842	281.838	98.6	0.8	0.4
273.842	258.523	266.073	97.3	1.3	0.6
258.523	244.062	251.189	95.5	1.8	0.7
244.062	230.409	237.137	93.3	2.3	0.8
230.409	217.520	223.872	90.6	2.7	0.8
217.520	205.353	211.349	87.6	3.0	0.7
205.353	193.865	199.526	84.3	3.3	0.7
193.865	183.021	188.365	80.9	3.4	0.6
183.021	172.783	177.828	77.5	3.5	0.6
172.783	163.117	167.880	74.0	3.5	0.5
163.117	153.993	158.489	70.6	3.4	0.4
153.993	145.378	149.624	67.2	3.3	0.4
145.378	137.246	141.254	64.0	3.2	0.3
137.246	129.569	133.352	61.0	3.1	0.2
129.569	122.321	125.893	58.1	2.9	0.1
122.321	115.478	118.850	55.3	2.7	0.0
115.478	109.018	112.202	52.8	2.5	0.1
109.018	102.920	105.925	50.5	2.3	0.1
102.920	97.163	100.000	48.4	2.1	0.1
97.163	91.728	94.406	46.5	1.9	0.1
91.728	86.596	89.125	44.7	1.8	0.0
86.596	81.752	84.140	43.0	1.7	0.0
81.752	77.179	79.433	41.4	1.6	0.1
77.179	72.862	74.989	39.9	1.5	0.1
72.862	68.786	70.795	38.4	1.5	0.1
68.786	64.938	66.834	36.9	1.4	0.2
64.938	61.306	63.096	35.6	1.3	0.2
61.306	57.876	59.566	34.3	1.3	0.2
57.876	54.639	56.234	33.1	1.2	0.2
54.639	51.582	53.088	32.0	1.1	0.2
51.582	48.697	50.119	31.0	1.1	0.1
48.697	45.973	47.315	29.9	1.0	0.1
45.973	43.401	44.668	28.9	1.0	0.1
43.401	40.973	42.170	28.0	1.0	0.1
40.973	38.681	39.811	27.0	0.9	0.1
38.681	36.517	37.584	26.2	0.9	0.1

Micromeritics Instrument Corporation

Sample: 900
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1103994B.SMP

Test Number: 2
Analyzed: 6/23/2011 1:44:44PM
Reported: 6/23/2011 2:36:16PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
36.517	34.475	35.481	25.3	0.8	0.1
34.475	32.546	33.497	24.5	0.8	0.1
32.546	30.726	31.623	23.8	0.7	0.1
30.726	29.007	29.854	23.1	0.7	0.1
29.007	27.384	28.184	22.5	0.6	0.1
27.384	25.852	26.607	21.9	0.6	0.1
25.852	24.406	25.119	21.3	0.6	0.1
24.406	23.041	23.714	20.7	0.6	0.1
23.041	21.752	22.387	20.1	0.6	0.1
21.752	20.535	21.135	19.5	0.6	0.1
20.535	19.387	19.953	19.0	0.5	0.1
19.387	18.302	18.836	18.5	0.5	0.1
18.302	17.278	17.783	18.0	0.5	0.1
17.278	16.312	16.788	17.6	0.5	0.1
16.312	15.399	15.849	17.1	0.5	0.1
15.399	14.538	14.962	16.7	0.5	0.1
14.538	13.725	14.125	16.2	0.4	0.1
13.725	12.957	13.335	15.8	0.4	0.1
12.957	12.232	12.589	15.4	0.4	0.1
12.232	11.548	11.885	15.0	0.4	0.1
11.548	10.902	11.220	14.6	0.4	0.1
10.902	10.292	10.593	14.2	0.4	0.1
10.292	9.716	10.000	13.8	0.4	0.1
9.716	9.173	9.441	13.4	0.4	0.1
9.173	8.660	8.913	12.9	0.4	0.1
8.660	8.175	8.414	12.5	0.4	0.1
8.175	7.718	7.943	12.0	0.5	0.1
7.718	7.286	7.499	11.5	0.5	0.1
7.286	6.879	7.079	11.0	0.5	0.1
6.879	6.494	6.683	10.7	0.4	0.1
6.494	6.131	6.310	10.3	0.3	0.1
6.131	5.788	5.957	10.0	0.3	0.1
5.788	5.464	5.623	9.6	0.4	0.1
5.464	5.158	5.309	9.2	0.4	0.1
5.158	4.870	5.012	8.7	0.4	0.1
4.870	4.597	4.732	8.3	0.4	0.1
4.597	4.340	4.467	7.9	0.4	0.1
4.340	4.097	4.217	7.6	0.4	0.1
4.097	3.868	3.981	7.2	0.4	0.1

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 900
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1103994B.SMP

Test Number: 2
Analyzed: 6/23/2011 1:44:44PM
Reported: 6/23/2011 2:36:16PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.868	3.652	3.758	6.9	0.4	0.1
3.652	3.447	3.548	6.5	0.3	0.1
3.447	3.255	3.350	6.2	0.3	0.1
3.255	3.073	3.162	5.9	0.3	0.1
3.073	2.901	2.985	5.6	0.3	0.1
2.901	2.738	2.818	5.3	0.3	0.1
2.738	2.585	2.661	5.0	0.3	0.1
2.585	2.441	2.512	4.7	0.3	0.1
2.441	2.304	2.371	4.4	0.3	0.1
2.304	2.175	2.239	4.2	0.3	0.1
2.175	2.054	2.113	3.9	0.3	0.1
2.054	1.939	1.995	3.6	0.3	0.1
1.939	1.830	1.884	3.4	0.2	0.0
1.830	1.728	1.778	3.2	0.2	0.0
1.728	1.631	1.679	3.0	0.2	0.0
1.631	1.540	1.585	2.8	0.2	0.0
1.540	1.454	1.496	2.6	0.2	0.1
1.454	1.372	1.413	2.4	0.2	0.0
1.372	1.296	1.334	2.2	0.2	0.0
1.296	1.223	1.259	2.0	0.2	0.0
1.223	1.155	1.189	1.8	0.2	0.0
1.155	1.090	1.122	1.7	0.1	0.0
1.090	1.029	1.059	1.6	0.1	0.0
1.029	0.972	1.000	1.5	0.1	0.0
0.972	0.917	0.944	1.4	0.1	0.0
0.917	0.866	0.891	1.3	0.1	0.0
0.866	0.818	0.841	1.1	0.2	0.0
0.818	0.772	0.794	0.9	0.2	0.0
0.772	0.729	0.750	0.7	0.2	0.0
0.729	0.688	0.708	0.5	0.2	0.0
0.688	0.649	0.668	0.3	0.2	0.0
0.649	0.613	0.631	0.2	0.1	0.0
0.613	0.579	0.596	0.1	0.1	0.0
0.579	0.546	0.562	0.0	0.1	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0
0.487	0.460	0.473	0.0	0.0	0.0

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

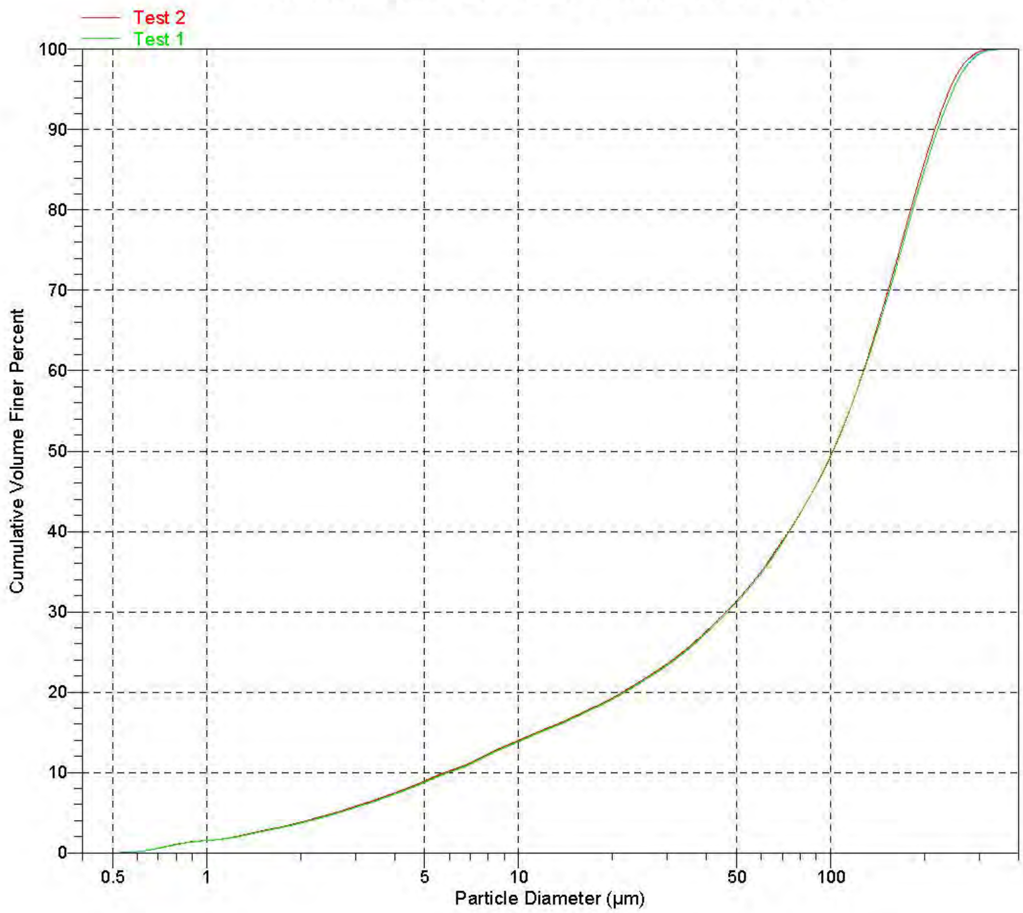
Micromeritics Instrument Corporation

Sample: 900
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1103994B.SMP

Test Number: 2
Analyzed: 6/23/2011 1:44:44PM
Reported: 6/23/2011 2:36:16PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

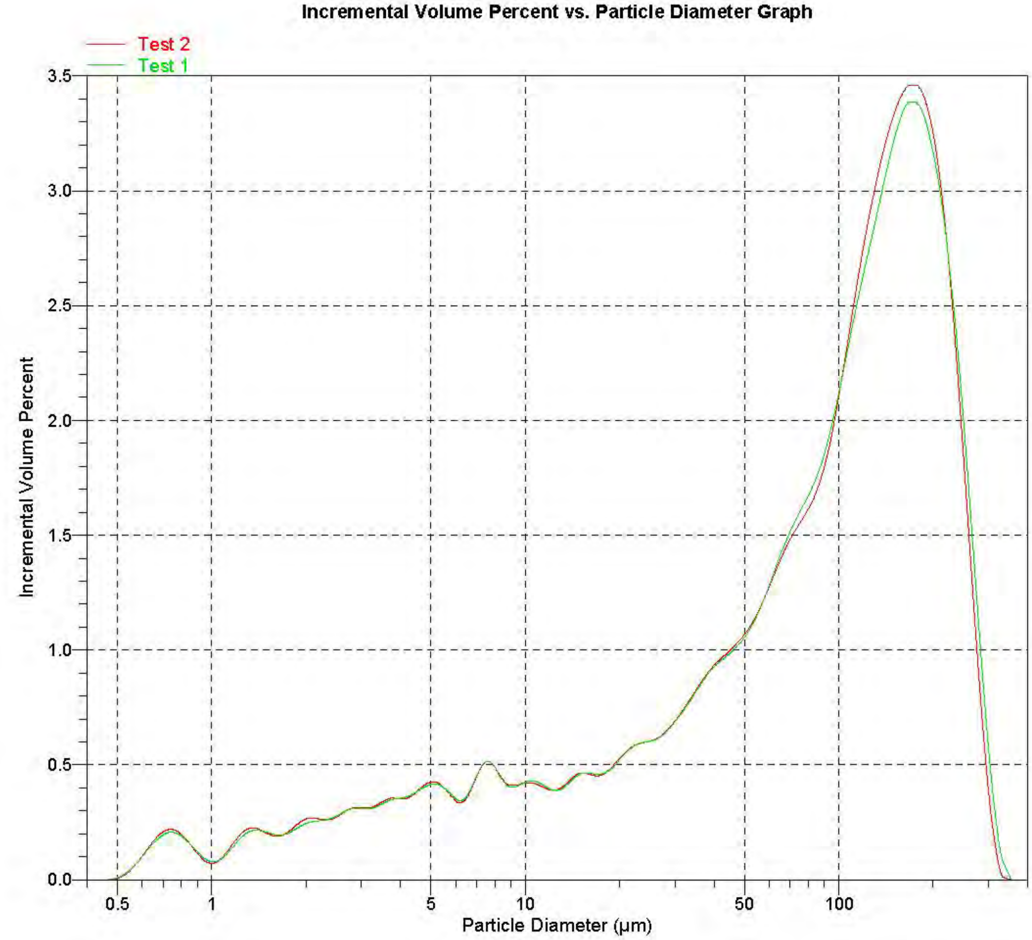
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 900
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1103994B.SMP

Test Number: 2
Analyzed: 6/23/2011 1:44:44PM
Reported: 6/23/2011 2:36:16PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph

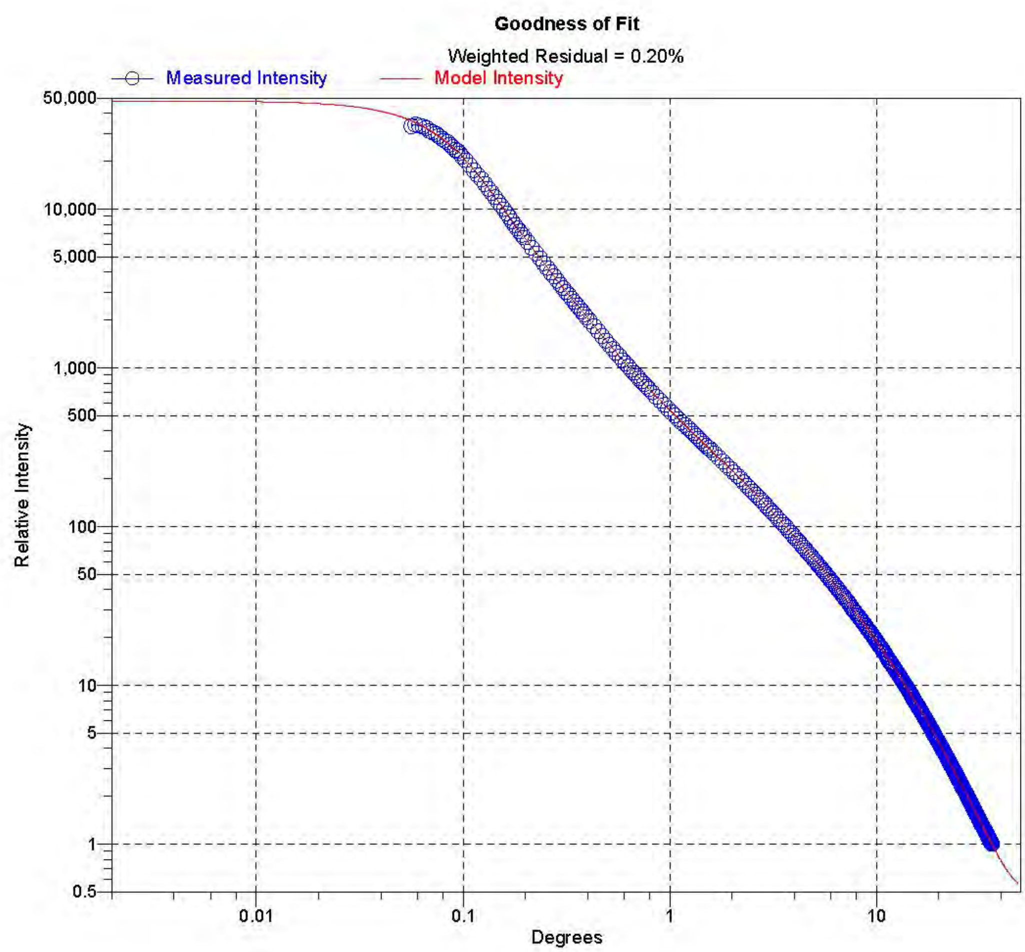


Micromeritics Instrument Corporation

Sample: 900
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1103994B.SMP

Test Number: 2
Analyzed: 6/23/2011 1:44:44PM
Reported: 6/23/2011 2:36:16PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#7-1081

Micromeritics Instrument Corporation

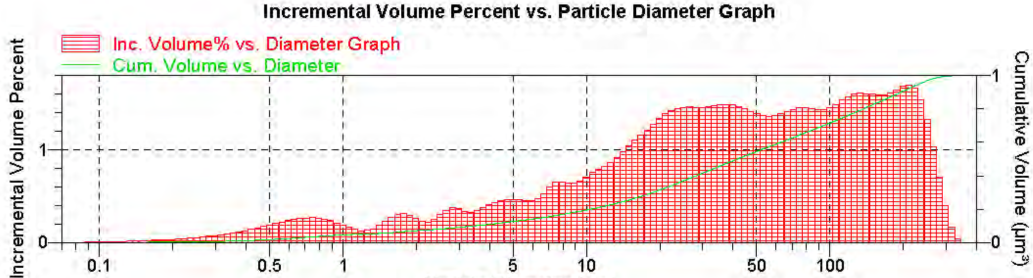
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 1

Sample: 1081
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103995.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/23/2011 2:55:06PM	Material:	Sediment / Water
Reported:	6/23/2011 3:02:19PM	Background:	Water RI 1.331
Background:	6/23/2011 10:24:40AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.02014 %
Obscuration: 30.1 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	72.513	0.160	Mode	211.092	0.000
Median	41.648	0.053			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	195.327
50.0	41.648
10.0	3.477

Micromeritics Instrument Corporation

Sample: 1081
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103995.SMP

Test Number: 2
Analyzed: 6/23/2011 2:55:06PM
Reported: 6/23/2011 3:02:19PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
344.747	325.462	334.965	100.0	0.0	0.0
325.462	307.256	316.228	99.8	0.2	0.0
307.256	290.068	298.538	99.4	0.4	0.0
290.068	273.842	281.838	98.7	0.7	0.0
273.842	258.523	266.073	97.7	1.0	0.0
258.523	244.062	251.189	96.4	1.3	0.0
244.062	230.409	237.137	94.8	1.5	0.0
230.409	217.520	223.872	93.2	1.7	0.0
217.520	205.353	211.349	91.5	1.7	0.0
205.353	193.865	199.526	89.8	1.7	0.0
193.865	183.021	188.365	88.1	1.6	0.0
183.021	172.783	177.828	86.5	1.6	0.0
172.783	163.117	167.880	84.9	1.6	0.1
163.117	153.993	158.489	83.3	1.6	0.1
153.993	145.378	149.624	81.7	1.6	0.2
145.378	137.246	141.254	80.1	1.6	0.2
137.246	129.569	133.352	78.5	1.6	0.2
129.569	122.321	125.893	76.9	1.6	0.2
122.321	115.478	118.850	75.3	1.6	0.1
115.478	109.018	112.202	73.8	1.5	0.1
109.018	102.920	105.925	72.3	1.5	0.1
102.920	97.163	100.000	70.9	1.5	0.0
97.163	91.728	94.406	69.4	1.4	0.0
91.728	86.596	89.125	68.0	1.4	0.1
86.596	81.752	84.140	66.5	1.4	0.1
81.752	77.179	79.433	65.1	1.5	0.1
77.179	72.862	74.989	63.6	1.5	0.1
72.862	68.786	70.795	62.2	1.4	0.1
68.786	64.938	66.834	60.8	1.4	0.1
64.938	61.306	63.096	59.4	1.4	0.1
61.306	57.876	59.566	58.0	1.4	0.1
57.876	54.639	56.234	56.7	1.4	0.1
54.639	51.582	53.088	55.3	1.4	0.1
51.582	48.697	50.119	53.9	1.4	0.0
48.697	45.973	47.315	52.5	1.4	0.0
45.973	43.401	44.668	51.0	1.4	0.0
43.401	40.973	42.170	49.6	1.5	0.0
40.973	38.681	39.811	48.1	1.5	0.0
38.681	36.517	37.584	46.6	1.5	0.0

Micromeritics Instrument Corporation

Sample: 1081
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103995.SMP

Test Number: 2
Analyzed: 6/23/2011 2:55:06PM
Reported: 6/23/2011 3:02:19PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
36.517	34.475	35.481	45.1	1.5	0.0
34.475	32.546	33.497	43.6	1.5	0.0
32.546	30.726	31.623	42.2	1.5	0.0
30.726	29.007	29.854	40.7	1.5	0.0
29.007	27.384	28.184	39.3	1.5	0.0
27.384	25.852	26.607	37.8	1.5	0.0
25.852	24.406	25.119	36.3	1.5	0.0
24.406	23.041	23.714	34.9	1.4	0.0
23.041	21.752	22.387	33.5	1.4	0.0
21.752	20.535	21.135	32.1	1.4	0.0
20.535	19.387	19.953	30.7	1.3	0.0
19.387	18.302	18.836	29.5	1.3	0.0
18.302	17.278	17.783	28.3	1.2	0.0
17.278	16.312	16.788	27.1	1.2	0.0
16.312	15.399	15.849	26.0	1.1	0.0
15.399	14.538	14.962	24.9	1.0	0.0
14.538	13.725	14.125	24.0	1.0	0.0
13.725	12.957	13.335	23.0	0.9	0.0
12.957	12.232	12.589	22.2	0.9	0.0
12.232	11.548	11.885	21.4	0.8	0.0
11.548	10.902	11.220	20.6	0.8	0.0
10.902	10.292	10.593	19.8	0.8	0.0
10.292	9.716	10.000	19.1	0.7	0.0
9.716	9.173	9.441	18.4	0.7	0.0
9.173	8.660	8.913	17.8	0.6	0.0
8.660	8.175	8.414	17.2	0.6	0.0
8.175	7.718	7.943	16.5	0.7	0.0
7.718	7.286	7.499	15.9	0.6	0.0
7.286	6.879	7.079	15.3	0.6	0.0
6.879	6.494	6.683	14.7	0.5	0.0
6.494	6.131	6.310	14.3	0.5	0.1
6.131	5.788	5.957	13.8	0.4	0.1
5.788	5.464	5.623	13.4	0.4	0.1
5.464	5.158	5.309	12.9	0.5	0.1
5.158	4.870	5.012	12.4	0.5	0.1
4.870	4.597	4.732	12.0	0.5	0.1
4.597	4.340	4.467	11.5	0.4	0.1
4.340	4.097	4.217	11.1	0.4	0.1
4.097	3.868	3.981	10.7	0.4	0.1

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127

Sample: 1081
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103995.SMP

Test Number: 2
Analyzed: 6/23/2011 2:55:06PM
Reported: 6/23/2011 3:02:19PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.868	3.652	3.758	10.3	0.4	0.1
3.652	3.447	3.548	10.0	0.3	0.1
3.447	3.255	3.350	9.6	0.3	0.1
3.255	3.073	3.162	9.3	0.3	0.1
3.073	2.901	2.985	8.9	0.4	0.1
2.901	2.738	2.818	8.6	0.4	0.1
2.738	2.585	2.661	8.2	0.4	0.1
2.585	2.441	2.512	7.9	0.3	0.1
2.441	2.304	2.371	7.7	0.2	0.1
2.304	2.175	2.239	7.4	0.2	0.1
2.175	2.054	2.113	7.2	0.2	0.1
2.054	1.939	1.995	7.0	0.3	0.1
1.939	1.830	1.884	6.7	0.3	0.1
1.830	1.728	1.778	6.3	0.3	0.1
1.728	1.631	1.679	6.0	0.3	0.1
1.631	1.540	1.585	5.8	0.3	0.1
1.540	1.454	1.496	5.5	0.2	0.1
1.454	1.372	1.413	5.4	0.2	0.1
1.372	1.296	1.334	5.2	0.1	0.1
1.296	1.223	1.259	5.1	0.1	0.1
1.223	1.155	1.189	5.0	0.1	0.1
1.155	1.090	1.122	4.8	0.1	0.1
1.090	1.029	1.059	4.6	0.2	0.1
1.029	0.972	1.000	4.5	0.2	0.1
0.972	0.917	0.944	4.2	0.2	0.1
0.917	0.866	0.891	4.0	0.2	0.1
0.866	0.818	0.841	3.8	0.3	0.1
0.818	0.772	0.794	3.5	0.3	0.1
0.772	0.729	0.750	3.2	0.3	0.1
0.729	0.688	0.708	3.0	0.3	0.1
0.688	0.649	0.668	2.7	0.3	0.1
0.649	0.613	0.631	2.5	0.2	0.1
0.613	0.579	0.596	2.2	0.2	0.1
0.579	0.546	0.562	2.0	0.2	0.1
0.546	0.516	0.531	1.8	0.2	0.1
0.516	0.487	0.501	1.6	0.2	0.1
0.487	0.460	0.473	1.4	0.2	0.1
0.460	0.434	0.447	1.3	0.2	0.1
0.434	0.410	0.422	1.1	0.1	0.1

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 1081
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103995.SMP

Test Number: 2
Analyzed: 6/23/2011 2:55:06PM
Reported: 6/23/2011 3:02:19PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.410	0.387	0.398	1.0	0.1	0.1
0.387	0.365	0.376	0.9	0.1	0.1
0.365	0.345	0.355	0.8	0.1	0.1
0.345	0.325	0.335	0.7	0.1	0.1
0.325	0.307	0.316	0.6	0.1	0.1
0.307	0.290	0.299	0.5	0.1	0.1
0.290	0.274	0.282	0.5	0.1	0.1
0.274	0.259	0.266	0.4	0.1	0.1
0.259	0.244	0.251	0.4	0.1	0.1
0.244	0.230	0.237	0.3	0.0	0.1
0.230	0.218	0.224	0.3	0.0	0.1
0.218	0.205	0.211	0.2	0.0	0.1
0.205	0.194	0.200	0.2	0.0	0.0
0.194	0.183	0.188	0.2	0.0	0.0
0.183	0.173	0.178	0.1	0.0	0.0
0.173	0.163	0.168	0.1	0.0	0.0
0.163	0.154	0.158	0.1	0.0	0.0
0.154	0.145	0.150	0.1	0.0	0.0
0.145	0.137	0.141	0.1	0.0	0.0
0.137	0.130	0.133	0.1	0.0	0.0
0.130	0.122	0.126	0.0	0.0	0.0
0.122	0.115	0.119	0.0	0.0	0.0
0.115	0.109	0.112	0.0	0.0	0.0
0.109	0.103	0.106	0.0	0.0	0.0
0.103	0.097	0.100	0.0	0.0	0.0

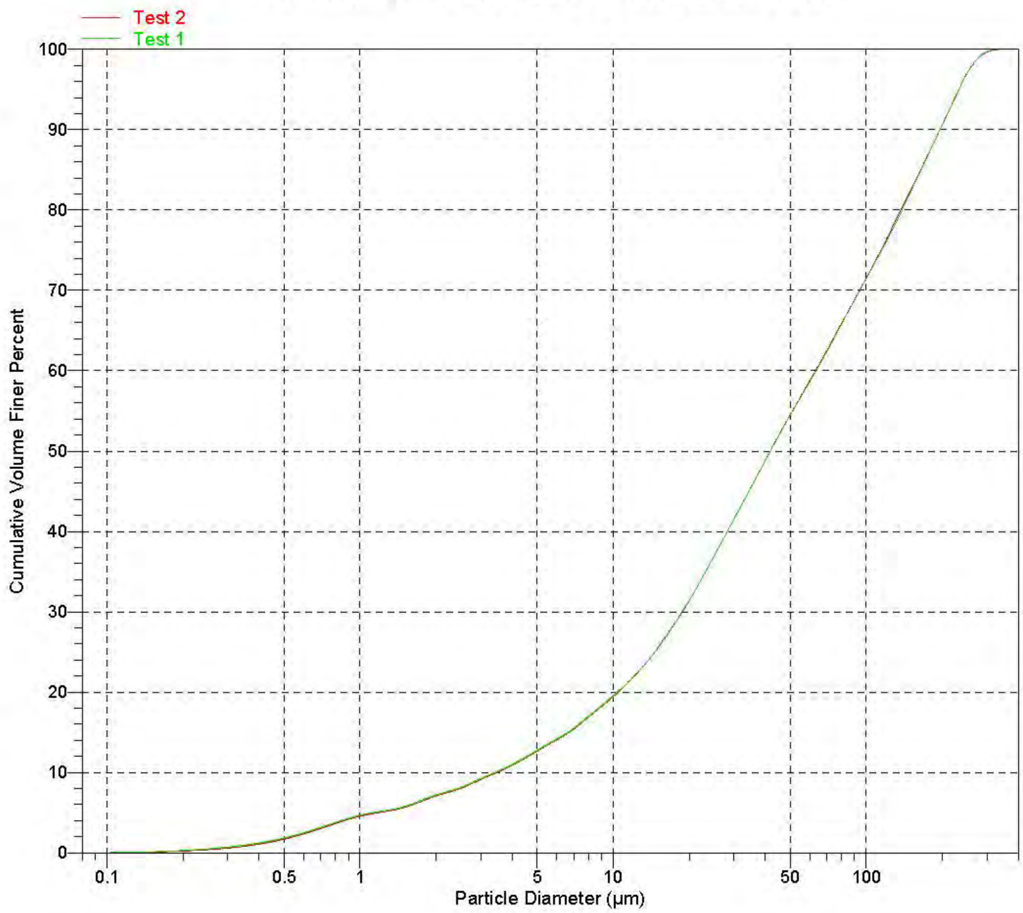
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 1081
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103995.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/23/2011 2:55:06PM	Material:	Sediment / Water
Reported:	6/23/2011 3:02:19PM	Background:	Water RI 1.331
Background:	6/23/2011 10:24:40AM	Smoothing:	Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

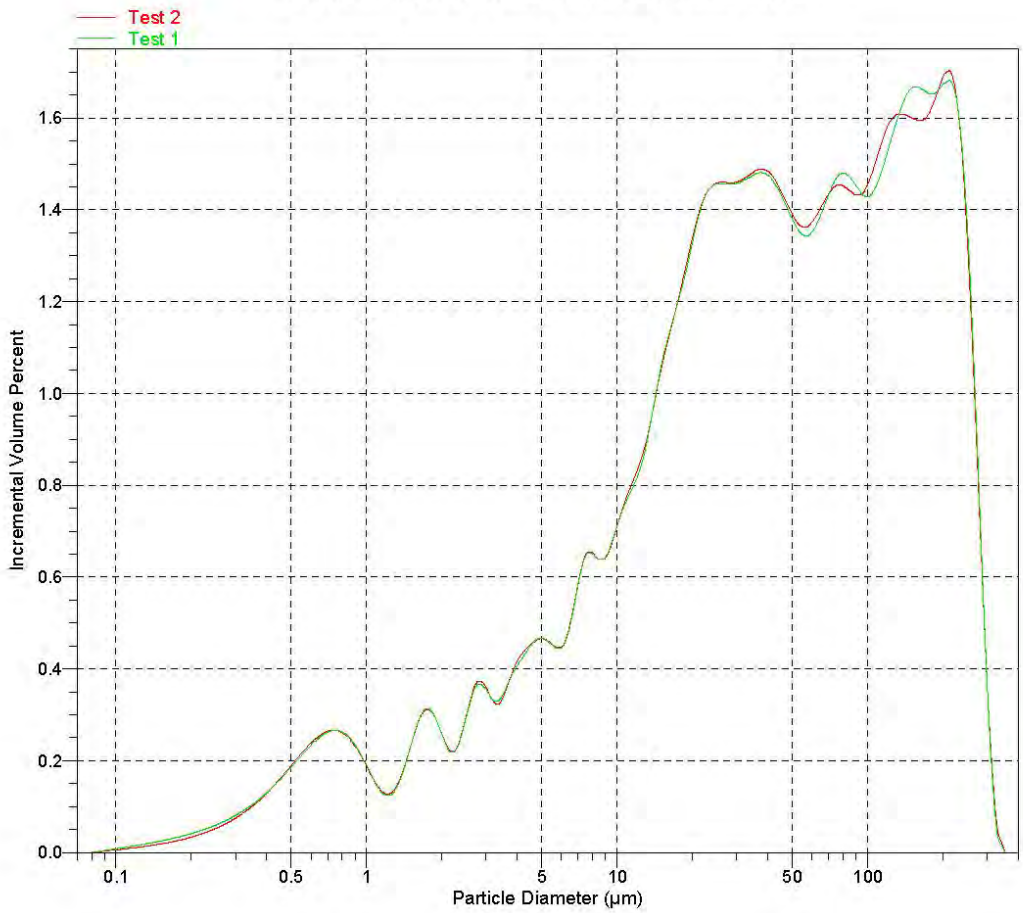
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 1081
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103995.SMP

Test Number: 2
Analyzed: 6/23/2011 2:55:06PM
Reported: 6/23/2011 3:02:19PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



Sample#8-1461

Micromeritics Instrument Corporation

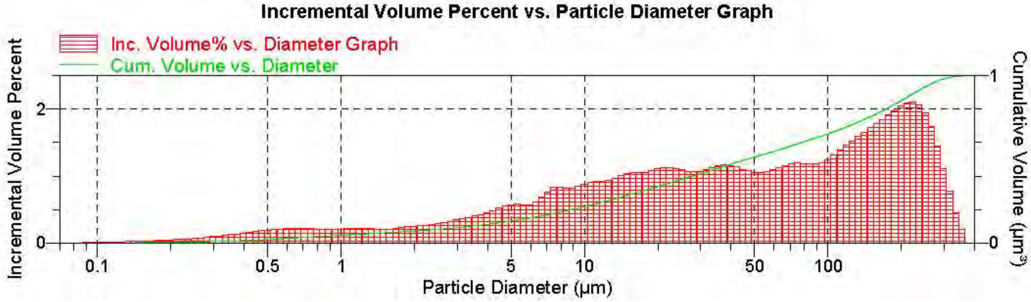
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 1

Sample: 1461
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103996.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 8:03:31AM	Material:	Sediment / Water
Reported:	6/24/2011 8:17:13AM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.02275 %
Obscuration: 33.8 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	85.511	0.698	Mode	223.600	0.000
Median	46.410	0.484			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	228.546
50.0	46.410
10.0	3.451

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01   Saturn DigiSizer II 5205 V1.01   5200 LSHU V3.00 S/N 127

Sample: 1461
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103996.SMP

Test Number: 2
Analyzed: 6/24/2011 8:03:31AM
Reported: 6/24/2011 8:17:13AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
365.174	344.747	354.813	99.8	0.2	0.0
344.747	325.462	334.965	99.4	0.4	0.0
325.462	307.256	316.228	98.6	0.8	0.1
307.256	290.068	298.538	97.5	1.1	0.1
290.068	273.842	281.838	96.0	1.4	0.2
273.842	258.523	266.073	94.3	1.7	0.2
258.523	244.062	251.189	92.4	1.9	0.3
244.062	230.409	237.137	90.3	2.1	0.3
230.409	217.520	223.872	88.2	2.1	0.4
217.520	205.353	211.349	86.1	2.1	0.4
205.353	193.865	199.526	84.0	2.1	0.4
193.865	183.021	188.365	82.0	2.0	0.3
183.021	172.783	177.828	80.1	1.9	0.3
172.783	163.117	167.880	78.3	1.8	0.3
163.117	153.993	158.489	76.5	1.8	0.3
153.993	145.378	149.624	74.8	1.7	0.3
145.378	137.246	141.254	73.1	1.7	0.2
137.246	129.569	133.352	71.5	1.6	0.2
129.569	122.321	125.893	70.0	1.5	0.2
122.321	115.478	118.850	68.5	1.5	0.2
115.478	109.018	112.202	67.1	1.4	0.2
109.018	102.920	105.925	65.8	1.3	0.2
102.920	97.163	100.000	64.6	1.3	0.2
97.163	91.728	94.406	63.4	1.2	0.2
91.728	86.596	89.125	62.2	1.2	0.2
86.596	81.752	84.140	61.0	1.2	0.2
81.752	77.179	79.433	59.8	1.2	0.2
77.179	72.862	74.989	58.6	1.2	0.2
72.862	68.786	70.795	57.4	1.2	0.2
68.786	64.938	66.834	56.3	1.2	0.2
64.938	61.306	63.096	55.2	1.1	0.2
61.306	57.876	59.566	54.1	1.1	0.2
57.876	54.639	56.234	53.0	1.1	0.2
54.639	51.582	53.088	52.0	1.1	0.2
51.582	48.697	50.119	50.9	1.1	0.2
48.697	45.973	47.315	49.8	1.1	0.2
45.973	43.401	44.668	48.7	1.1	0.2
43.401	40.973	42.170	47.6	1.1	0.2
40.973	38.681	39.811	46.4	1.2	0.2

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 1461
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103996.SMP

Test Number: 2
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Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
38.681	36.517	37.584	45.3	1.2	0.2
36.517	34.475	35.481	44.1	1.2	0.2
34.475	32.546	33.497	43.0	1.1	0.2
32.546	30.726	31.623	41.9	1.1	0.1
30.726	29.007	29.854	40.8	1.1	0.1
29.007	27.384	28.184	39.8	1.1	0.1
27.384	25.852	26.607	38.7	1.1	0.1
25.852	24.406	25.119	37.6	1.1	0.1
24.406	23.041	23.714	36.5	1.1	0.1
23.041	21.752	22.387	35.4	1.1	0.1
21.752	20.535	21.135	34.2	1.1	0.1
20.535	19.387	19.953	33.1	1.1	0.1
19.387	18.302	18.836	32.0	1.1	0.1
18.302	17.278	17.783	31.0	1.1	0.1
17.278	16.312	16.788	29.9	1.0	0.1
16.312	15.399	15.849	28.9	1.0	0.1
15.399	14.538	14.962	27.9	1.0	0.1
14.538	13.725	14.125	26.9	1.0	0.1
13.725	12.957	13.335	25.9	1.0	0.1
12.957	12.232	12.589	24.9	0.9	0.1
12.232	11.548	11.885	24.0	0.9	0.1
11.548	10.902	11.220	23.1	0.9	0.1
10.902	10.292	10.593	22.2	0.9	0.1
10.292	9.716	10.000	21.3	0.9	0.0
9.716	9.173	9.441	20.5	0.8	0.0
9.173	8.660	8.913	19.7	0.8	0.0
8.660	8.175	8.414	18.8	0.8	0.0
8.175	7.718	7.943	18.0	0.8	0.0
7.718	7.286	7.499	17.2	0.8	0.0
7.286	6.879	7.079	16.4	0.8	0.0
6.879	6.494	6.683	15.7	0.7	0.0
6.494	6.131	6.310	15.1	0.6	0.0
6.131	5.788	5.957	14.6	0.6	0.0
5.788	5.464	5.623	14.0	0.6	0.0
5.464	5.158	5.309	13.4	0.6	0.0
5.158	4.870	5.012	12.8	0.6	0.0
4.870	4.597	4.732	12.3	0.6	0.0
4.597	4.340	4.467	11.8	0.5	0.1
4.340	4.097	4.217	11.3	0.5	0.1

Micromeritics Instrument Corporation

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Model: (1.570, 0.1000000), 1.331
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Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
4.097	3.868	3.981	10.8	0.5	0.1
3.868	3.652	3.758	10.4	0.4	0.1
3.652	3.447	3.548	10.0	0.4	0.1
3.447	3.255	3.350	9.6	0.4	0.1
3.255	3.073	3.162	9.3	0.4	0.1
3.073	2.901	2.985	8.9	0.3	0.1
2.901	2.738	2.818	8.6	0.3	0.1
2.738	2.585	2.661	8.3	0.3	0.1
2.585	2.441	2.512	8.0	0.3	0.1
2.441	2.304	2.371	7.7	0.3	0.1
2.304	2.175	2.239	7.5	0.3	0.1
2.175	2.054	2.113	7.2	0.3	0.1
2.054	1.939	1.995	7.0	0.2	0.1
1.939	1.830	1.884	6.7	0.2	0.1
1.830	1.728	1.778	6.5	0.2	0.1
1.728	1.631	1.679	6.3	0.2	0.1
1.631	1.540	1.585	6.1	0.2	0.1
1.540	1.454	1.496	5.9	0.2	0.1
1.454	1.372	1.413	5.7	0.2	0.1
1.372	1.296	1.334	5.5	0.2	0.1
1.296	1.223	1.259	5.2	0.2	0.1
1.223	1.155	1.189	5.0	0.2	0.1
1.155	1.090	1.122	4.8	0.2	0.0
1.090	1.029	1.059	4.6	0.2	0.0
1.029	0.972	1.000	4.4	0.2	0.0
0.972	0.917	0.944	4.2	0.2	0.0
0.917	0.866	0.891	4.0	0.2	0.0
0.866	0.818	0.841	3.8	0.2	0.0
0.818	0.772	0.794	3.6	0.2	0.0
0.772	0.729	0.750	3.4	0.2	0.0
0.729	0.688	0.708	3.2	0.2	0.0
0.688	0.649	0.668	2.9	0.2	0.0
0.649	0.613	0.631	2.7	0.2	0.0
0.613	0.579	0.596	2.5	0.2	0.0
0.579	0.546	0.562	2.3	0.2	0.0
0.546	0.516	0.531	2.1	0.2	0.0
0.516	0.487	0.501	1.9	0.2	0.0
0.487	0.460	0.473	1.7	0.2	0.0
0.460	0.434	0.447	1.6	0.2	0.0

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 1461
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103996.SMP

Test Number: 2
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Report by Size Class

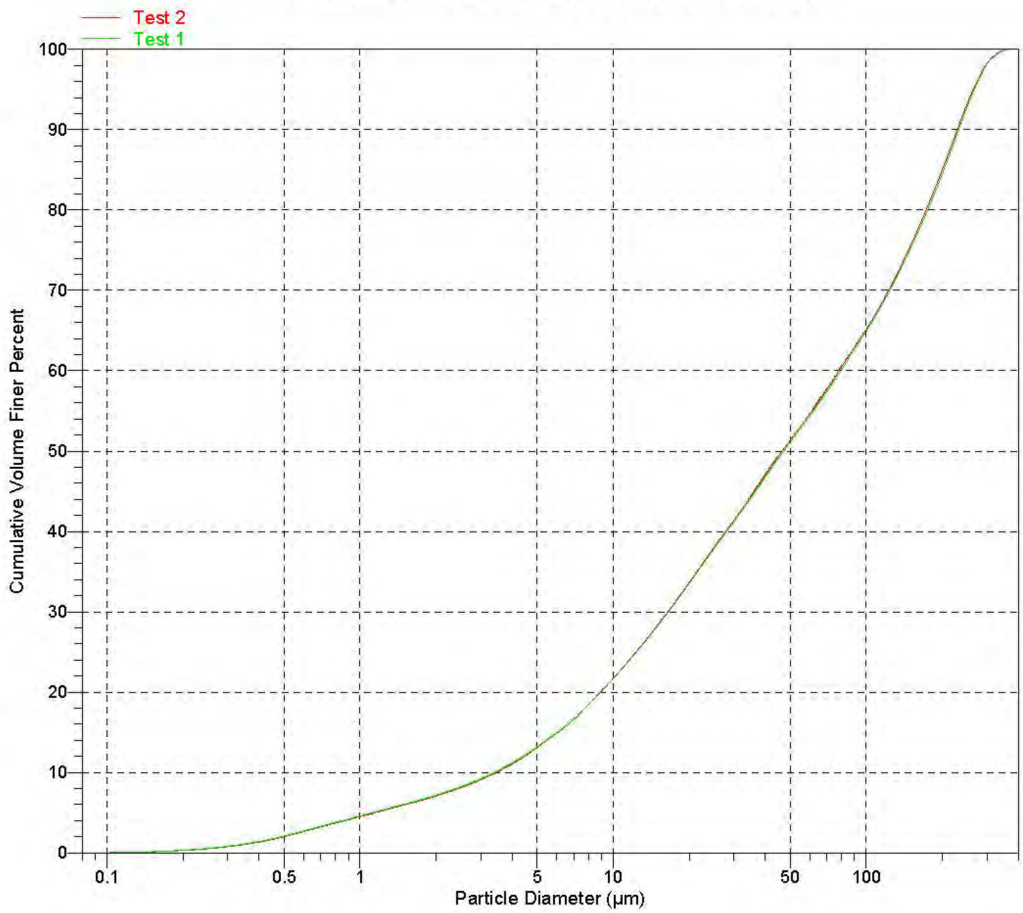
High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.434	0.410	0.422	1.4	0.2	0.0
0.410	0.387	0.398	1.3	0.1	0.0
0.387	0.365	0.376	1.1	0.1	0.0
0.365	0.345	0.355	1.0	0.1	0.0
0.345	0.325	0.335	0.9	0.1	0.0
0.325	0.307	0.316	0.8	0.1	0.0
0.307	0.290	0.299	0.7	0.1	0.0
0.290	0.274	0.282	0.6	0.1	0.0
0.274	0.259	0.266	0.6	0.1	0.0
0.259	0.244	0.251	0.5	0.1	0.0
0.244	0.230	0.237	0.4	0.1	0.0
0.230	0.218	0.224	0.4	0.1	0.0
0.218	0.205	0.211	0.3	0.0	0.0
0.205	0.194	0.200	0.3	0.0	0.0
0.194	0.183	0.188	0.2	0.0	0.0
0.183	0.173	0.178	0.2	0.0	0.0
0.173	0.163	0.168	0.2	0.0	0.0
0.163	0.154	0.158	0.1	0.0	0.0
0.154	0.145	0.150	0.1	0.0	0.0
0.145	0.137	0.141	0.1	0.0	0.0
0.137	0.130	0.133	0.1	0.0	0.0
0.130	0.122	0.126	0.1	0.0	0.0
0.122	0.115	0.119	0.0	0.0	0.0
0.115	0.109	0.112	0.0	0.0	0.0
0.109	0.103	0.106	0.0	0.0	0.0
0.103	0.097	0.100	0.0	0.0	0.0

Micromeritics Instrument Corporation

Sample: 1461
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103996.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 8:03:31AM	Material:	Sediment / Water
Reported:	6/24/2011 8:17:13AM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

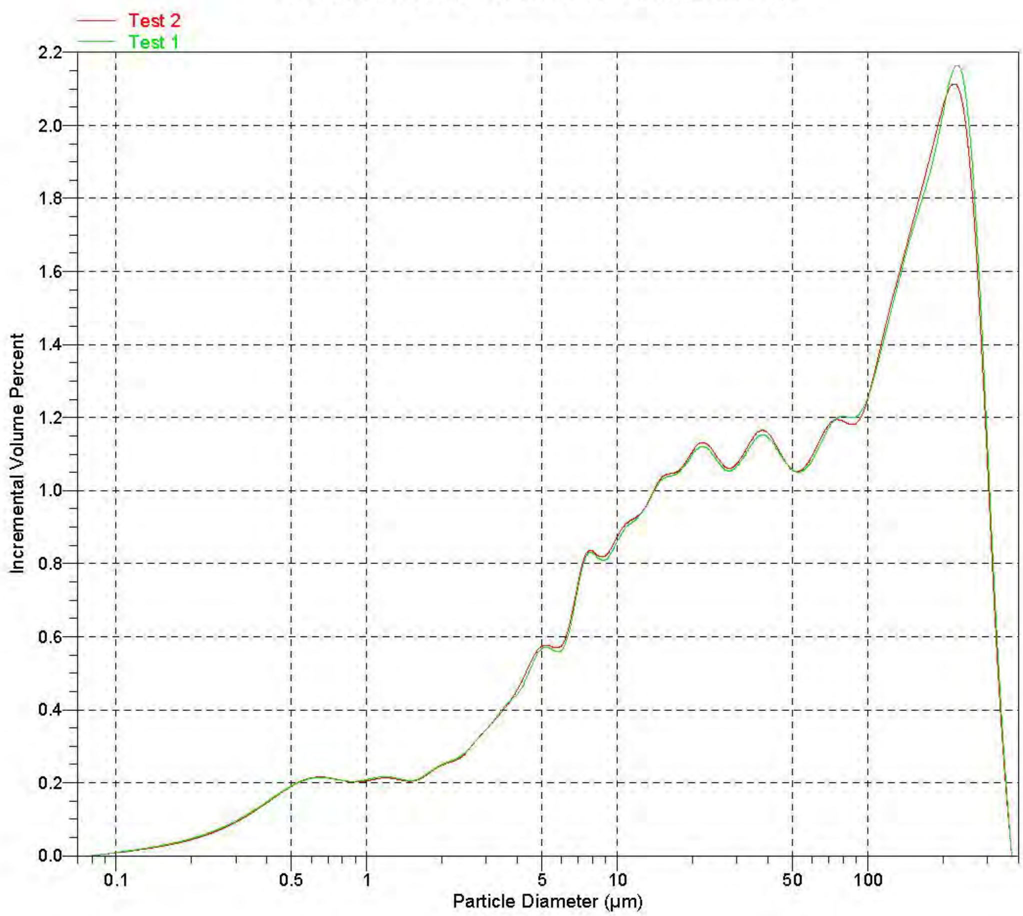
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 1461
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103996.SMP

Test Number: 2
Analyzed: 6/24/2011 8:03:31AM
Reported: 6/24/2011 8:17:13AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

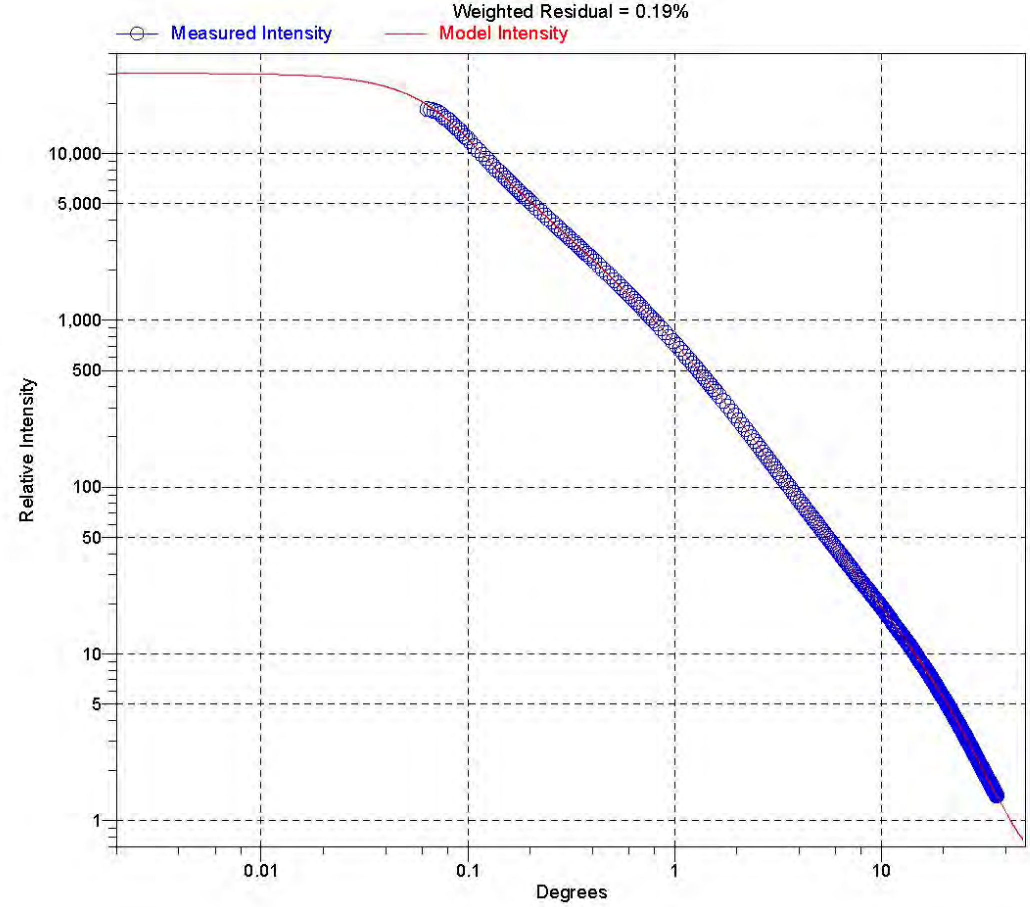
Saturn DigiSizer II 5205 V1.01   Saturn DigiSizer II 5205 V1.01   5200 LSHU V3.00 S/N 127   Page 8

Sample: 1461
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103996.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 8:03:31AM	Material:	Sediment / Water
Reported:	6/24/2011 8:17:14AM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Goodness of Fit

Weighted Residual = 0.19%



Sample#9-1712

Micromeritics Instrument Corporation

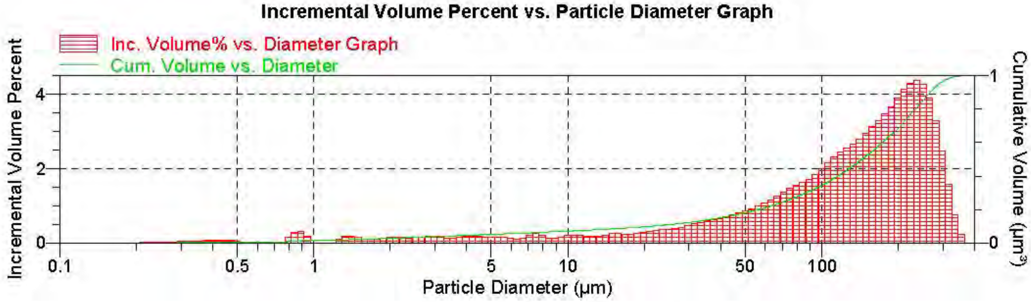
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 1

Sample: 1712
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103997.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 10:07:35AM	Material:	Sediment / Water
Reported:	6/24/2011 10:14:19AM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.05029 %
Obscuration: 30.4 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	145.820	1.496	Mode	236.849	0.000
Median	144.292	1.386			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	266.498
50.0	144.292
10.0	21.453

Micromeritics Instrument Corporation

Sample: 1712
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103997.SMP

Test Number: 2
Analyzed: 6/24/2011 10:07:35AM
Reported: 6/24/2011 10:14:19AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
365.174	344.747	354.813	99.8	0.2	0.0
344.747	325.462	334.965	99.0	0.8	0.1
325.462	307.256	316.228	97.5	1.5	0.3
307.256	290.068	298.538	95.0	2.4	0.5
290.068	273.842	281.838	91.8	3.3	0.6
273.842	258.523	266.073	87.9	3.9	0.8
258.523	244.062	251.189	83.6	4.3	0.9
244.062	230.409	237.137	79.3	4.4	0.9
230.409	217.520	223.872	74.9	4.3	1.0
217.520	205.353	211.349	70.8	4.1	1.0
205.353	193.865	199.526	66.9	3.9	0.9
193.865	183.021	188.365	63.2	3.7	0.9
183.021	172.783	177.828	59.8	3.5	0.8
172.783	163.117	167.880	56.5	3.3	0.7
163.117	153.993	158.489	53.3	3.1	0.6
153.993	145.378	149.624	50.4	3.0	0.5
145.378	137.246	141.254	47.6	2.8	0.4
137.246	129.569	133.352	44.9	2.7	0.4
129.569	122.321	125.893	42.4	2.5	0.3
122.321	115.478	118.850	39.9	2.4	0.3
115.478	109.018	112.202	37.6	2.3	0.2
109.018	102.920	105.925	35.4	2.2	0.2
102.920	97.163	100.000	33.4	2.0	0.2
97.163	91.728	94.406	31.6	1.8	0.2
91.728	86.596	89.125	29.9	1.7	0.2
86.596	81.752	84.140	28.3	1.6	0.1
81.752	77.179	79.433	26.7	1.5	0.1
77.179	72.862	74.989	25.3	1.5	0.1
72.862	68.786	70.795	23.9	1.4	0.1
68.786	64.938	66.834	22.6	1.3	0.1
64.938	61.306	63.096	21.5	1.2	0.1
61.306	57.876	59.566	20.4	1.1	0.1
57.876	54.639	56.234	19.4	1.0	0.1
54.639	51.582	53.088	18.5	0.9	0.1
51.582	48.697	50.119	17.6	0.9	0.1
48.697	45.973	47.315	16.8	0.8	0.1
45.973	43.401	44.668	16.1	0.7	0.1
43.401	40.973	42.170	15.4	0.7	0.1
40.973	38.681	39.811	14.7	0.7	0.1

Micromeritics Instrument Corporation

Sample: 1712
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103997.SMP

Test Number: 2
Analyzed: 6/24/2011 10:07:35AM
Reported: 6/24/2011 10:14:19AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
38.681	36.517	37.584	14.1	0.6	0.0
36.517	34.475	35.481	13.5	0.6	0.0
34.475	32.546	33.497	12.9	0.6	0.0
32.546	30.726	31.623	12.4	0.5	0.0
30.726	29.007	29.854	11.9	0.5	0.0
29.007	27.384	28.184	11.5	0.4	0.0
27.384	25.852	26.607	11.1	0.4	0.0
25.852	24.406	25.119	10.8	0.4	0.0
24.406	23.041	23.714	10.4	0.4	0.0
23.041	21.752	22.387	10.1	0.3	0.0
21.752	20.535	21.135	9.8	0.3	0.0
20.535	19.387	19.953	9.5	0.3	0.0
19.387	18.302	18.836	9.2	0.3	0.0
18.302	17.278	17.783	9.0	0.2	0.0
17.278	16.312	16.788	8.7	0.2	0.0
16.312	15.399	15.849	8.5	0.2	0.0
15.399	14.538	14.962	8.2	0.2	0.0
14.538	13.725	14.125	8.0	0.2	0.0
13.725	12.957	13.335	7.9	0.2	0.0
12.957	12.232	12.589	7.7	0.2	0.0
12.232	11.548	11.885	7.5	0.2	0.0
11.548	10.902	11.220	7.3	0.2	0.0
10.902	10.292	10.593	7.1	0.2	0.0
10.292	9.716	10.000	6.9	0.2	0.0
9.716	9.173	9.441	6.7	0.1	0.0
9.173	8.660	8.913	6.6	0.1	0.0
8.660	8.175	8.414	6.5	0.1	0.0
8.175	7.718	7.943	6.3	0.2	0.0
7.718	7.286	7.499	6.0	0.3	0.0
7.286	6.879	7.079	5.8	0.2	0.0
6.879	6.494	6.683	5.7	0.1	0.0
6.494	6.131	6.310	5.6	0.1	0.0
6.131	5.788	5.957	5.5	0.1	0.0
5.788	5.464	5.623	5.3	0.1	0.0
5.464	5.158	5.309	5.2	0.2	0.0
5.158	4.870	5.012	5.0	0.1	0.0
4.870	4.597	4.732	4.9	0.1	0.1
4.597	4.340	4.467	4.7	0.2	0.0
4.340	4.097	4.217	4.5	0.2	0.0

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 1712
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103997.SMP

Test Number: 2
Analyzed: 6/24/2011 10:07:35AM
Reported: 6/24/2011 10:14:19AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
4.097	3.868	3.981	4.4	0.2	0.0
3.868	3.652	3.758	4.2	0.1	0.0
3.652	3.447	3.548	4.1	0.1	0.0
3.447	3.255	3.350	4.0	0.1	0.0
3.255	3.073	3.162	3.8	0.1	0.0
3.073	2.901	2.985	3.7	0.2	0.0
2.901	2.738	2.818	3.5	0.2	0.0
2.738	2.585	2.661	3.3	0.2	0.0
2.585	2.441	2.512	3.2	0.1	0.0
2.441	2.304	2.371	3.1	0.1	0.0
2.304	2.175	2.239	2.9	0.1	0.0
2.175	2.054	2.113	2.8	0.1	0.0
2.054	1.939	1.995	2.6	0.1	0.0
1.939	1.830	1.884	2.5	0.1	0.0
1.830	1.728	1.778	2.4	0.1	0.1
1.728	1.631	1.679	2.3	0.1	0.0
1.631	1.540	1.585	2.2	0.1	0.0
1.540	1.454	1.496	2.1	0.1	0.0
1.454	1.372	1.413	1.9	0.2	0.0
1.372	1.296	1.334	1.7	0.2	0.0
1.296	1.223	1.259	1.6	0.1	0.1
1.223	1.155	1.189	1.6	0.0	0.1
1.155	1.090	1.122	1.6	0.0	0.1
1.090	1.029	1.059	1.6	0.0	0.1
1.029	0.972	1.000	1.6	0.0	0.1
0.972	0.917	0.944	1.4	0.2	0.0
0.917	0.866	0.891	1.1	0.3	0.1
0.866	0.818	0.841	0.8	0.3	0.0
0.818	0.772	0.794	0.7	0.2	0.1
0.772	0.729	0.750	0.7	0.0	0.1
0.729	0.688	0.708	0.7	0.0	0.1
0.688	0.649	0.668	0.7	0.0	0.1
0.649	0.613	0.631	0.7	0.0	0.1
0.613	0.579	0.596	0.7	0.0	0.1
0.579	0.546	0.562	0.7	0.0	0.1
0.546	0.516	0.531	0.7	0.0	0.1
0.516	0.487	0.501	0.6	0.0	0.1
0.487	0.460	0.473	0.6	0.1	0.1
0.460	0.434	0.447	0.5	0.1	0.0

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 1712
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103997.SMP

Test Number: 2
Analyzed: 6/24/2011 10:07:35AM
Reported: 6/24/2011 10:14:19AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.434	0.410	0.422	0.4	0.1	0.0
0.410	0.387	0.398	0.4	0.1	0.0
0.387	0.365	0.376	0.3	0.1	0.0
0.365	0.345	0.355	0.2	0.1	0.0
0.345	0.325	0.335	0.2	0.0	0.0
0.325	0.307	0.316	0.1	0.0	0.0
0.307	0.290	0.299	0.1	0.0	0.0
0.290	0.274	0.282	0.1	0.0	0.0
0.274	0.259	0.266	0.1	0.0	0.0
0.259	0.244	0.251	0.0	0.0	0.0
0.244	0.230	0.237	0.0	0.0	0.0
0.230	0.218	0.224	0.0	0.0	0.0
0.218	0.205	0.211	0.0	0.0	0.0
0.205	0.194	0.200	0.0	0.0	0.0
0.194	0.183	0.188	0.0	0.0	0.0
0.183	0.173	0.178	0.0	0.0	0.0
0.173	0.163	0.168	0.0	0.0	0.0
0.163	0.154	0.158	0.0	0.0	0.0
0.154	0.145	0.150	0.0	0.0	0.0

Micromeritics Instrument Corporation

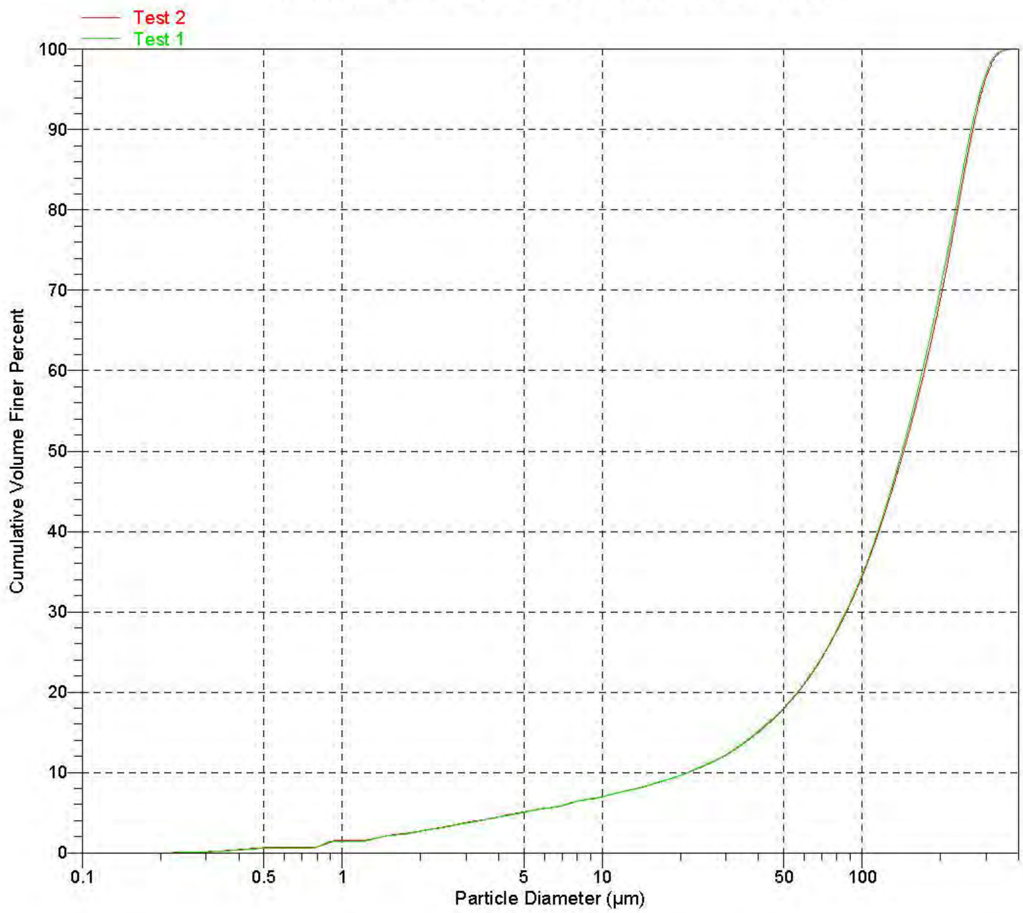
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 1712
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103997.SMP

Test Number: 2
Analyzed: 6/24/2011 10:07:35AM
Reported: 6/24/2011 10:14:19AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



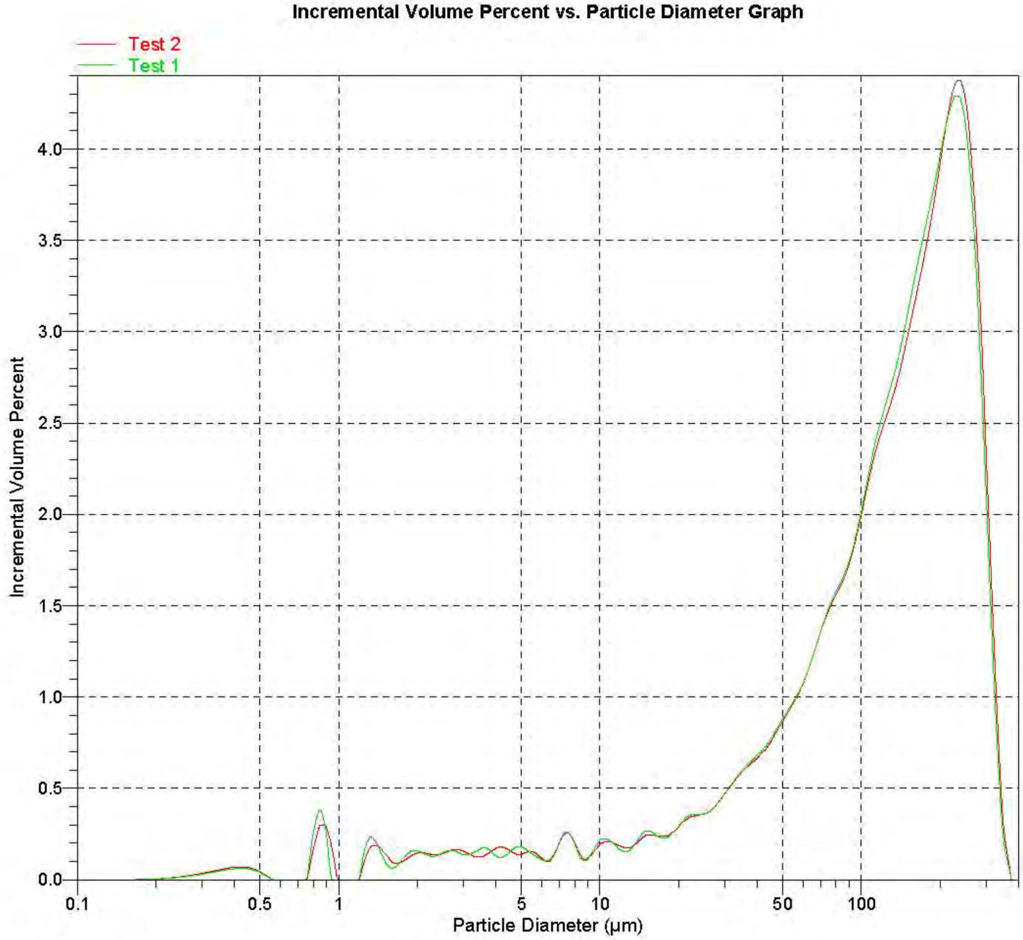
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 1712
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103997.SMP

Test Number: 2	Model: (1.570, 0.1000000), 1.331
Analyzed: 6/24/2011 10:07:35AM	Material: Sediment / Water
Reported: 6/24/2011 10:14:19AM	Background: Water RI 1.331
Background: 6/24/2011 7:44:28AM	Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph

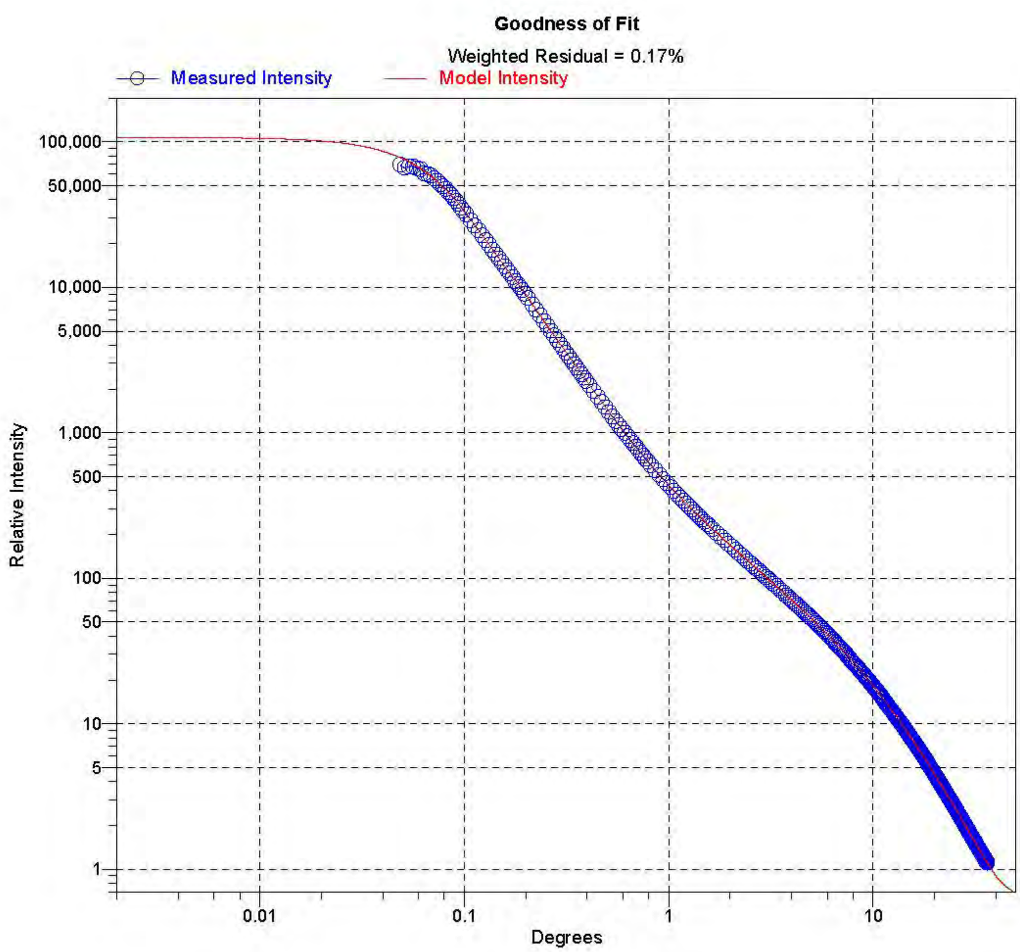


Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 8

Sample: 1712
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103997.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 10:07:35AM	Material:	Sediment / Water
Reported:	6/24/2011 10:14:20AM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium



Sample#10-2177

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 1

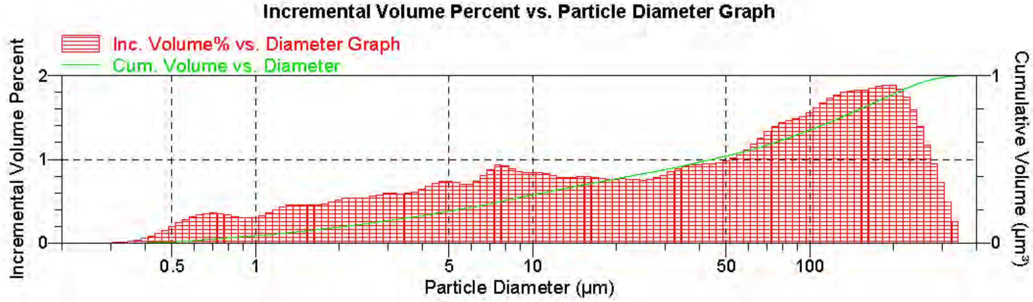
Sample: 2177
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103998A.SMP

Test Number: 2
Analyzed: 6/24/2011 11:16:49AM
Reported: 6/24/2011 11:23:40AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.01256 %
Obscuration: 25.6 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	76.894	1.865	Mode	188.136	0.000
Median	44.367	1.373			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	206.025
50.0	44.367
10.0	2.116

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 2

Sample: 2177
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103998A.SMP

Test Number: 2
Analyzed: 6/24/2011 11:16:49AM
Reported: 6/24/2011 11:23:40AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
344.747	325.462	334.965	99.8	0.2	0.1
325.462	307.256	316.228	99.3	0.5	0.3
307.256	290.068	298.538	98.6	0.7	0.5
290.068	273.842	281.838	97.6	0.9	0.6
273.842	258.523	266.073	96.4	1.2	0.7
258.523	244.062	251.189	95.1	1.4	0.7
244.062	230.409	237.137	93.5	1.6	0.7
230.409	217.520	223.872	91.7	1.7	0.7
217.520	205.353	211.349	89.9	1.8	0.7
205.353	193.865	199.526	88.0	1.9	0.7
193.865	183.021	188.365	86.1	1.9	0.7
183.021	172.783	177.828	84.2	1.9	0.8
172.783	163.117	167.880	82.4	1.8	0.8
163.117	153.993	158.489	80.6	1.8	0.8
153.993	145.378	149.624	78.7	1.8	0.8
145.378	137.246	141.254	76.9	1.8	0.7
137.246	129.569	133.352	75.1	1.8	0.7
129.569	122.321	125.893	73.4	1.8	0.6
122.321	115.478	118.850	71.6	1.7	0.6
115.478	109.018	112.202	69.9	1.7	0.6
109.018	102.920	105.925	68.3	1.6	0.6
102.920	97.163	100.000	66.8	1.6	0.6
97.163	91.728	94.406	65.3	1.5	0.6
91.728	86.596	89.125	63.8	1.5	0.5
86.596	81.752	84.140	62.3	1.5	0.5
81.752	77.179	79.433	60.9	1.4	0.5
77.179	72.862	74.989	59.5	1.4	0.5
72.862	68.786	70.795	58.2	1.3	0.5
68.786	64.938	66.834	56.9	1.3	0.5
64.938	61.306	63.096	55.7	1.2	0.5
61.306	57.876	59.566	54.6	1.1	0.5
57.876	54.639	56.234	53.5	1.1	0.5
54.639	51.582	53.088	52.5	1.0	0.5
51.582	48.697	50.119	51.5	1.0	0.5
48.697	45.973	47.315	50.6	1.0	0.5
45.973	43.401	44.668	49.6	0.9	0.5
43.401	40.973	42.170	48.7	0.9	0.5
40.973	38.681	39.811	47.8	0.9	0.5
38.681	36.517	37.584	46.8	0.9	0.5

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 2177
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103998A.SMP

Test Number: 2
Analyzed: 6/24/2011 11:16:49AM
Reported: 6/24/2011 11:23:40AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
36.517	34.475	35.481	45.9	0.9	0.5
34.475	32.546	33.497	45.0	0.9	0.5
32.546	30.726	31.623	44.2	0.9	0.4
30.726	29.007	29.854	43.3	0.8	0.4
29.007	27.384	28.184	42.6	0.8	0.4
27.384	25.852	26.607	41.8	0.8	0.4
25.852	24.406	25.119	41.1	0.8	0.4
24.406	23.041	23.714	40.3	0.8	0.4
23.041	21.752	22.387	39.5	0.8	0.4
21.752	20.535	21.135	38.8	0.8	0.4
20.535	19.387	19.953	38.0	0.8	0.4
19.387	18.302	18.836	37.2	0.8	0.4
18.302	17.278	17.783	36.5	0.8	0.4
17.278	16.312	16.788	35.7	0.8	0.3
16.312	15.399	15.849	34.9	0.8	0.3
15.399	14.538	14.962	34.1	0.8	0.3
14.538	13.725	14.125	33.3	0.8	0.3
13.725	12.957	13.335	32.5	0.8	0.3
12.957	12.232	12.589	31.8	0.8	0.3
12.232	11.548	11.885	30.9	0.8	0.3
11.548	10.902	11.220	30.1	0.8	0.3
10.902	10.292	10.593	29.3	0.8	0.3
10.292	9.716	10.000	28.4	0.8	0.3
9.716	9.173	9.441	27.6	0.8	0.3
9.173	8.660	8.913	26.7	0.8	0.3
8.660	8.175	8.414	25.9	0.9	0.3
8.175	7.718	7.943	24.9	0.9	0.2
7.718	7.286	7.499	24.0	0.9	0.2
7.286	6.879	7.079	23.1	0.9	0.2
6.879	6.494	6.683	22.3	0.8	0.2
6.494	6.131	6.310	21.6	0.7	0.2
6.131	5.788	5.957	20.9	0.7	0.2
5.788	5.464	5.623	20.2	0.7	0.2
5.464	5.158	5.309	19.5	0.7	0.2
5.158	4.870	5.012	18.7	0.7	0.2
4.870	4.597	4.732	18.0	0.7	0.2
4.597	4.340	4.467	17.3	0.7	0.2
4.340	4.097	4.217	16.6	0.7	0.2
4.097	3.868	3.981	16.0	0.6	0.1

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127

Sample: 2177
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103998A.SMP

Test Number: 2
Analyzed: 6/24/2011 11:16:49AM
Reported: 6/24/2011 11:23:40AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.868	3.652	3.758	15.4	0.6	0.1
3.652	3.447	3.548	14.8	0.6	0.1
3.447	3.255	3.350	14.2	0.6	0.1
3.255	3.073	3.162	13.6	0.6	0.1
3.073	2.901	2.985	13.0	0.6	0.1
2.901	2.738	2.818	12.4	0.6	0.1
2.738	2.585	2.661	11.9	0.6	0.1
2.585	2.441	2.512	11.3	0.5	0.1
2.441	2.304	2.371	10.8	0.5	0.1
2.304	2.175	2.239	10.3	0.5	0.1
2.175	2.054	2.113	9.7	0.5	0.1
2.054	1.939	1.995	9.2	0.5	0.1
1.939	1.830	1.884	8.7	0.5	0.1
1.830	1.728	1.778	8.2	0.5	0.1
1.728	1.631	1.679	7.8	0.5	0.1
1.631	1.540	1.585	7.3	0.5	0.1
1.540	1.454	1.496	6.9	0.5	0.1
1.454	1.372	1.413	6.4	0.5	0.1
1.372	1.296	1.334	6.0	0.4	0.1
1.296	1.223	1.259	5.5	0.4	0.0
1.223	1.155	1.189	5.2	0.4	0.0
1.155	1.090	1.122	4.8	0.4	0.0
1.090	1.029	1.059	4.5	0.3	0.0
1.029	0.972	1.000	4.2	0.3	0.0
0.972	0.917	0.944	3.9	0.3	0.0
0.917	0.866	0.891	3.6	0.3	0.0
0.866	0.818	0.841	3.2	0.3	0.0
0.818	0.772	0.794	2.9	0.3	0.0
0.772	0.729	0.750	2.6	0.3	0.0
0.729	0.688	0.708	2.2	0.4	0.0
0.688	0.649	0.668	1.8	0.4	0.0
0.649	0.613	0.631	1.5	0.3	0.0
0.613	0.579	0.596	1.2	0.3	0.0
0.579	0.546	0.562	0.9	0.3	0.0
0.546	0.516	0.531	0.7	0.2	0.0
0.516	0.487	0.501	0.5	0.2	0.0
0.487	0.460	0.473	0.3	0.2	0.0
0.460	0.434	0.447	0.2	0.1	0.0
0.434	0.410	0.422	0.1	0.1	0.0

Micromeritics Instrument Corporation

Sample: 2177
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103998A.SMP

Test Number: 2
Analyzed: 6/24/2011 11:16:49AM
Reported: 6/24/2011 11:23:40AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.410	0.387	0.398	0.1	0.1	0.0
0.387	0.365	0.376	0.0	0.0	0.0
0.365	0.345	0.355	0.0	0.0	0.0
0.345	0.325	0.335	0.0	0.0	0.0
0.325	0.307	0.316	0.0	0.0	0.0
0.307	0.290	0.299	0.0	0.0	0.0
0.290	0.274	0.282	0.0	0.0	0.0

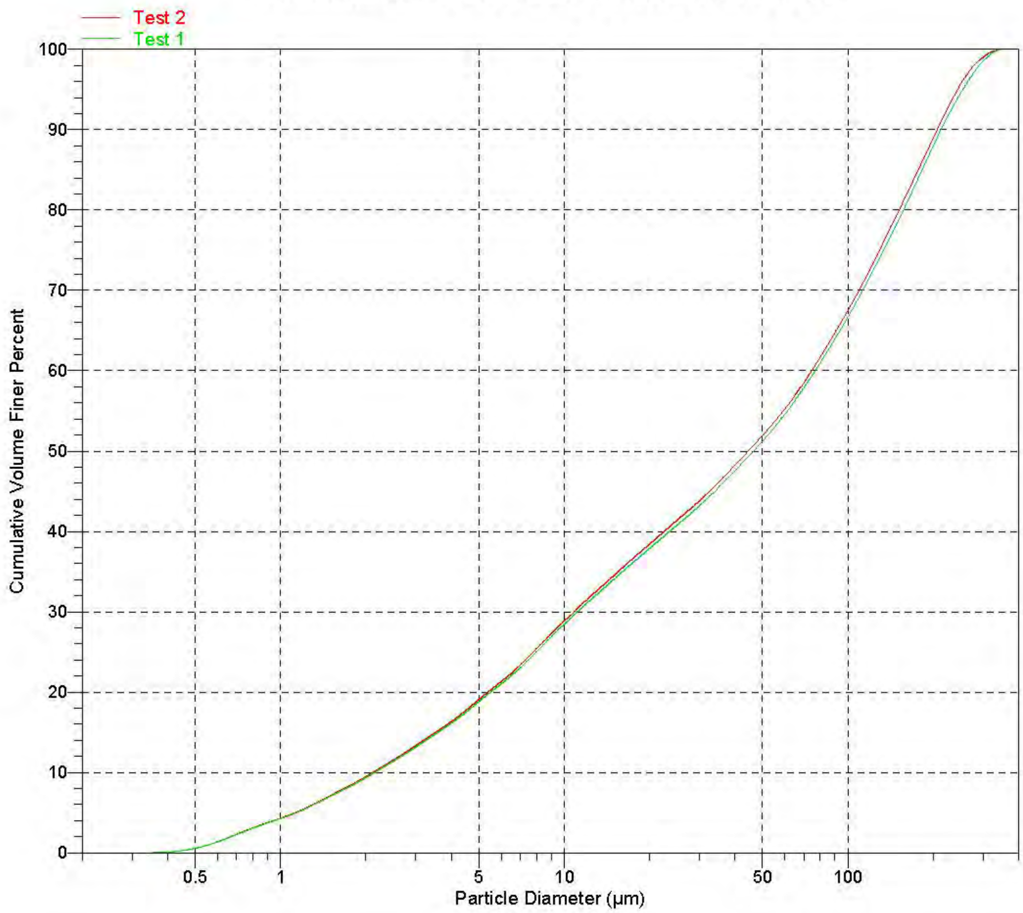
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01   Saturn DigiSizer II 5205 V1.01   5200 LSHU V3.00 S/N 127

Sample: 2177
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103998A.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 11:16:49AM	Material:	Sediment / Water
Reported:	6/24/2011 11:23:40AM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



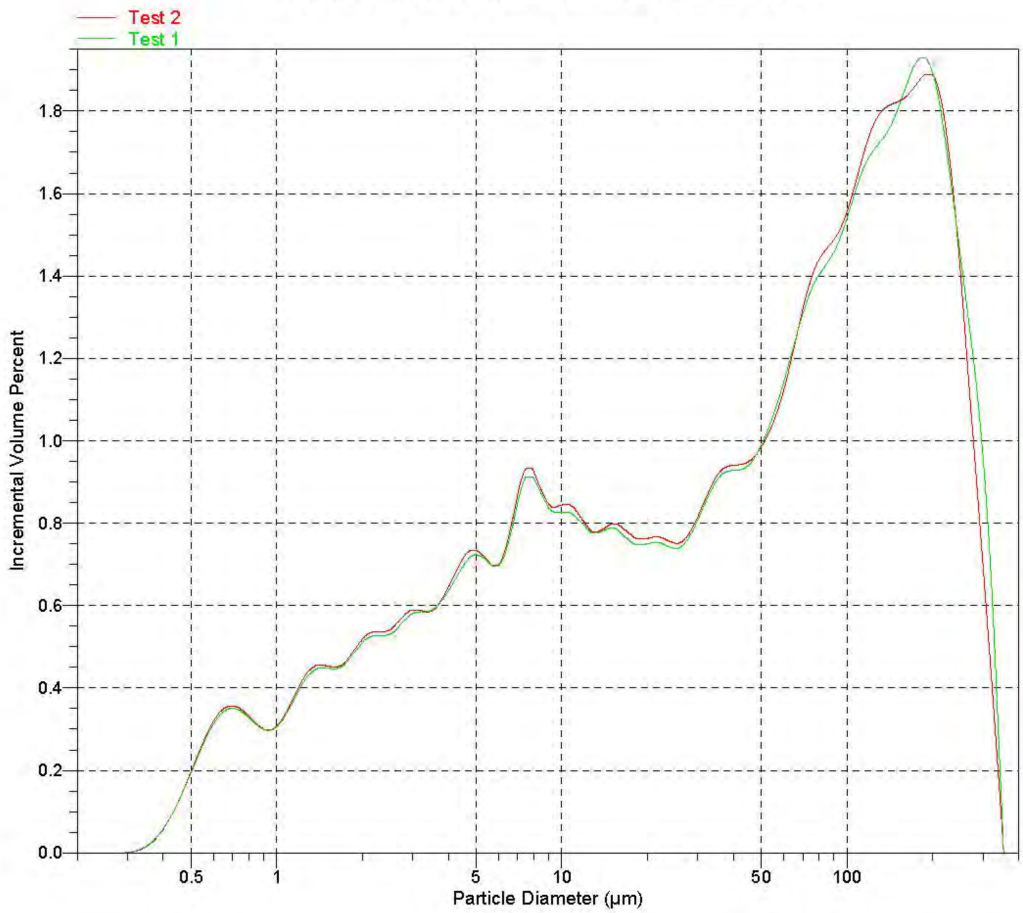
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 2177
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103998A.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 11:16:49AM	Material:	Sediment / Water
Reported:	6/24/2011 11:23:40AM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Incremental Volume Percent vs. Particle Diameter Graph

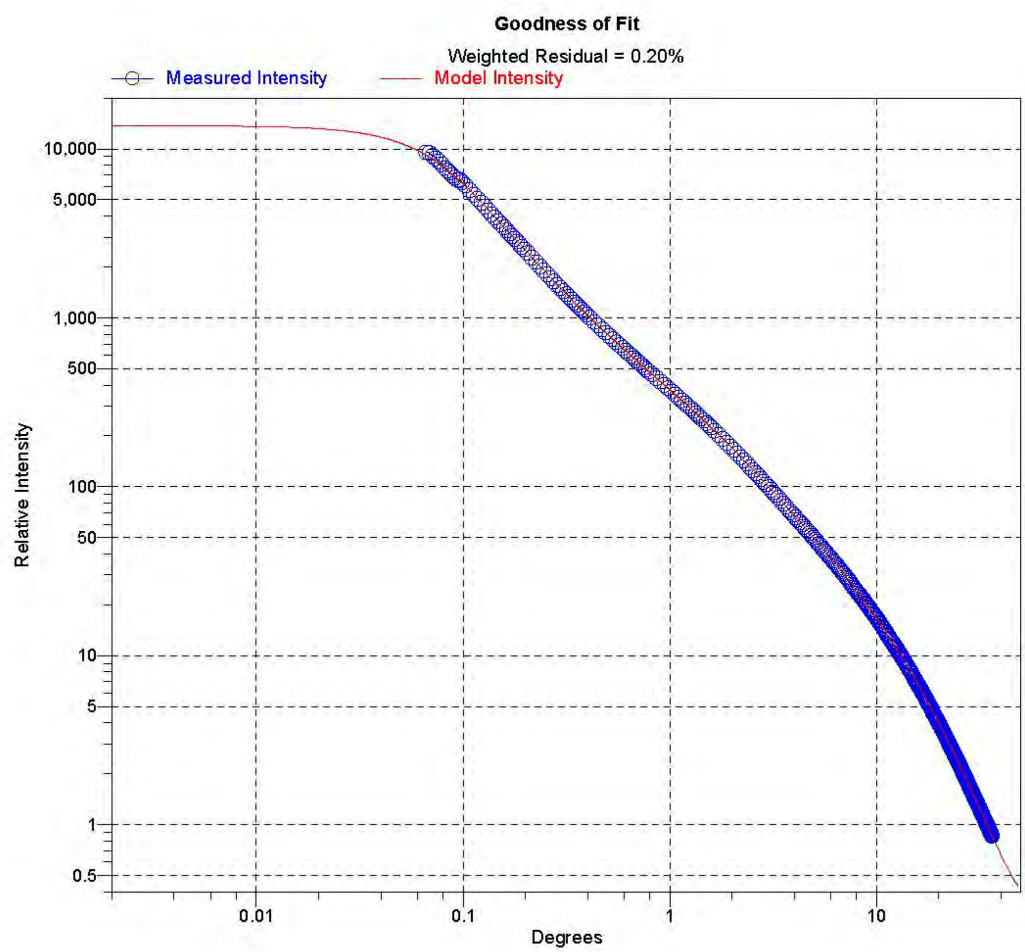


Micromeritics Instrument Corporation

Sample: 2177
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103998A.SMP

Test Number: 2
Analyzed: 6/24/2011 11:16:49AM
Reported: 6/24/2011 11:23:40AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#11-2472

Micromeritics Instrument Corporation

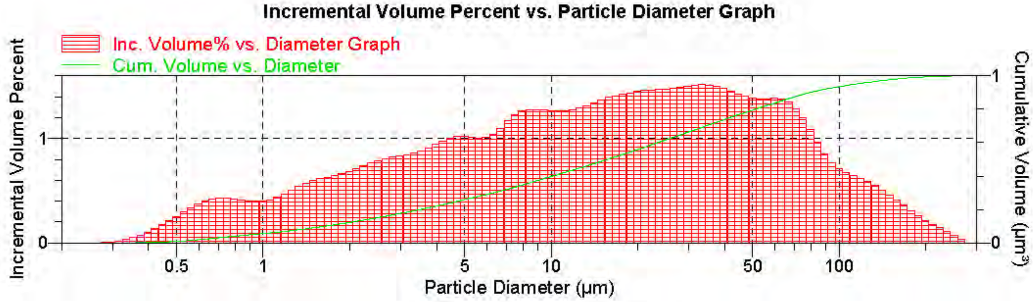
Saturn DigiSizer II 5205 V1.01   Saturn DigiSizer II 5205 V1.01   5200 LSHU V3.00 S/N 127   Page 1

Sample: 2472
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103999A.SMP

Test Number: 2	Model: (1.570, 0.1000000), 1.331
Analyzed: 6/24/2011 1:58:50PM	Material: Sediment / Water
Reported: 6/24/2011 2:04:27PM	Background: Water RI 1.331
Background: 6/24/2011 7:44:28AM	Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m	Ultrasonic intensity: 100 %
Circulation time: Not Used	Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.01067 %
Obscuration: 28.6 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	30.776	0.081	Mode	33.456	0.000
Median	15.705	0.037			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	79.160
50.0	15.705
10.0	1.643

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127

Sample: 2472
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103999A.SMP

Test Number: 2
Analyzed: 6/24/2011 1:58:50PM
Reported: 6/24/2011 2:04:27PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
273.842	258.523	266.073	100.0	0.0	0.0
258.523	244.062	251.189	99.9	0.1	0.0
244.062	230.409	237.137	99.8	0.1	0.0
230.409	217.520	223.872	99.6	0.1	0.0
217.520	205.353	211.349	99.5	0.2	0.0
205.353	193.865	199.526	99.2	0.2	0.0
193.865	183.021	188.365	99.0	0.3	0.0
183.021	172.783	177.828	98.7	0.3	0.0
172.783	163.117	167.880	98.3	0.4	0.0
163.117	153.993	158.489	97.9	0.4	0.0
153.993	145.378	149.624	97.4	0.5	0.0
145.378	137.246	141.254	96.9	0.5	0.0
137.246	129.569	133.352	96.4	0.5	0.0
129.569	122.321	125.893	95.8	0.6	0.0
122.321	115.478	118.850	95.2	0.6	0.0
115.478	109.018	112.202	94.5	0.6	0.0
109.018	102.920	105.925	93.9	0.7	0.0
102.920	97.163	100.000	93.2	0.7	0.0
97.163	91.728	94.406	92.4	0.8	0.0
91.728	86.596	89.125	91.5	0.8	0.1
86.596	81.752	84.140	90.6	1.0	0.1
81.752	77.179	79.433	89.5	1.1	0.1
77.179	72.862	74.989	88.3	1.2	0.1
72.862	68.786	70.795	87.0	1.3	0.1
68.786	64.938	66.834	85.7	1.3	0.1
64.938	61.306	63.096	84.3	1.4	0.0
61.306	57.876	59.566	82.9	1.4	0.0
57.876	54.639	56.234	81.5	1.4	0.0
54.639	51.582	53.088	80.2	1.4	0.0
51.582	48.697	50.119	78.8	1.4	0.0
48.697	45.973	47.315	77.4	1.4	0.1
45.973	43.401	44.668	76.0	1.4	0.1
43.401	40.973	42.170	74.5	1.5	0.1
40.973	38.681	39.811	73.0	1.5	0.1
38.681	36.517	37.584	71.5	1.5	0.1
36.517	34.475	35.481	70.0	1.5	0.1
34.475	32.546	33.497	68.5	1.5	0.1
32.546	30.726	31.623	67.0	1.5	0.1
30.726	29.007	29.854	65.5	1.5	0.1

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 3

Sample: 2472
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103999A.SMP

Test Number: 2
Analyzed: 6/24/2011 1:58:50PM
Reported: 6/24/2011 2:04:27PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
29.007	27.384	28.184	64.0	1.5	0.1
27.384	25.852	26.607	62.5	1.5	0.1
25.852	24.406	25.119	61.0	1.5	0.1
24.406	23.041	23.714	59.6	1.5	0.1
23.041	21.752	22.387	58.1	1.5	0.1
21.752	20.535	21.135	56.6	1.5	0.1
20.535	19.387	19.953	55.2	1.4	0.1
19.387	18.302	18.836	53.8	1.4	0.1
18.302	17.278	17.783	52.3	1.4	0.1
17.278	16.312	16.788	50.9	1.4	0.1
16.312	15.399	15.849	49.5	1.4	0.1
15.399	14.538	14.962	48.2	1.4	0.1
14.538	13.725	14.125	46.8	1.3	0.1
13.725	12.957	13.335	45.5	1.3	0.1
12.957	12.232	12.589	44.2	1.3	0.0
12.232	11.548	11.885	42.9	1.3	0.0
11.548	10.902	11.220	41.7	1.3	0.0
10.902	10.292	10.593	40.4	1.3	0.0
10.292	9.716	10.000	39.1	1.3	0.0
9.716	9.173	9.441	37.9	1.3	0.0
9.173	8.660	8.913	36.6	1.3	0.0
8.660	8.175	8.414	35.3	1.3	0.0
8.175	7.718	7.943	34.0	1.3	0.0
7.718	7.286	7.499	32.8	1.2	0.0
7.286	6.879	7.079	31.6	1.2	0.0
6.879	6.494	6.683	30.5	1.1	0.0
6.494	6.131	6.310	29.5	1.0	0.0
6.131	5.788	5.957	28.5	1.0	0.0
5.788	5.464	5.623	27.5	1.0	0.0
5.464	5.158	5.309	26.5	1.0	0.0
5.158	4.870	5.012	25.5	1.0	0.0
4.870	4.597	4.732	24.4	1.0	0.0
4.597	4.340	4.467	23.4	1.0	0.0
4.340	4.097	4.217	22.4	1.0	0.0
4.097	3.868	3.981	21.5	0.9	0.0
3.868	3.652	3.758	20.6	0.9	0.0
3.652	3.447	3.548	19.7	0.9	0.0
3.447	3.255	3.350	18.8	0.9	0.0
3.255	3.073	3.162	18.0	0.8	0.0

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 2472
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103999A.SMP

Test Number: 2
Analyzed: 6/24/2011 1:58:50PM
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Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.073	2.901	2.985	17.2	0.8	0.0
2.901	2.738	2.818	16.4	0.8	0.0
2.738	2.585	2.661	15.5	0.8	0.0
2.585	2.441	2.512	14.8	0.8	0.0
2.441	2.304	2.371	14.0	0.8	0.0
2.304	2.175	2.239	13.3	0.7	0.0
2.175	2.054	2.113	12.5	0.7	0.0
2.054	1.939	1.995	11.9	0.7	0.0
1.939	1.830	1.884	11.2	0.7	0.0
1.830	1.728	1.778	10.6	0.6	0.0
1.728	1.631	1.679	9.9	0.6	0.0
1.631	1.540	1.585	9.3	0.6	0.0
1.540	1.454	1.496	8.7	0.6	0.0
1.454	1.372	1.413	8.1	0.6	0.0
1.372	1.296	1.334	7.6	0.5	0.0
1.296	1.223	1.259	7.1	0.5	0.0
1.223	1.155	1.189	6.6	0.5	0.0
1.155	1.090	1.122	6.2	0.4	0.0
1.090	1.029	1.059	5.8	0.4	0.0
1.029	0.972	1.000	5.4	0.4	0.0
0.972	0.917	0.944	5.0	0.4	0.0
0.917	0.866	0.891	4.6	0.4	0.0
0.866	0.818	0.841	4.2	0.4	0.0
0.818	0.772	0.794	3.7	0.4	0.0
0.772	0.729	0.750	3.3	0.4	0.0
0.729	0.688	0.708	2.9	0.4	0.0
0.688	0.649	0.668	2.5	0.4	0.0
0.649	0.613	0.631	2.1	0.4	0.0
0.613	0.579	0.596	1.7	0.4	0.0
0.579	0.546	0.562	1.4	0.3	0.0
0.546	0.516	0.531	1.1	0.3	0.0
0.516	0.487	0.501	0.8	0.3	0.0
0.487	0.460	0.473	0.6	0.2	0.0
0.460	0.434	0.447	0.4	0.2	0.0
0.434	0.410	0.422	0.3	0.1	0.0
0.410	0.387	0.398	0.2	0.1	0.0
0.387	0.365	0.376	0.1	0.1	0.0
0.365	0.345	0.355	0.1	0.1	0.0
0.345	0.325	0.335	0.0	0.0	0.0

Micromeritics Instrument Corporation

Sample: 2472
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103999A.SMP

Test Number: 2
Analyzed: 6/24/2011 1:58:50PM
Reported: 6/24/2011 2:04:27PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.325	0.307	0.316	0.0	0.0	0.0
0.307	0.290	0.299	0.0	0.0	0.0
0.290	0.274	0.282	0.0	0.0	0.0
0.274	0.259	0.266	0.0	0.0	0.0
0.259	0.244	0.251	0.0	0.0	0.0
0.244	0.230	0.237	0.0	0.0	0.0

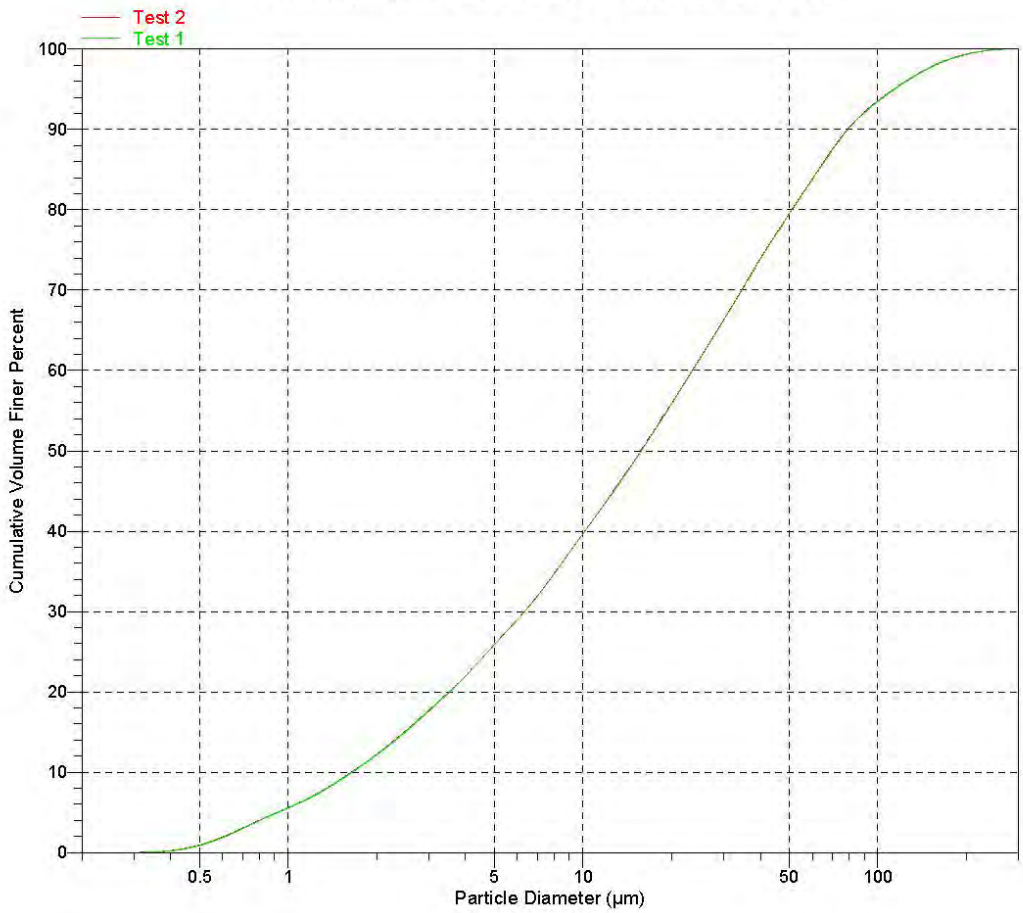
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 2472
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103999A.SMP

Test Number: 2	Model: (1.570, 0.1000000), 1.331
Analyzed: 6/24/2011 1:58:50PM	Material: Sediment / Water
Reported: 6/24/2011 2:04:27PM	Background: Water RI 1.331
Background: 6/24/2011 7:44:28AM	Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

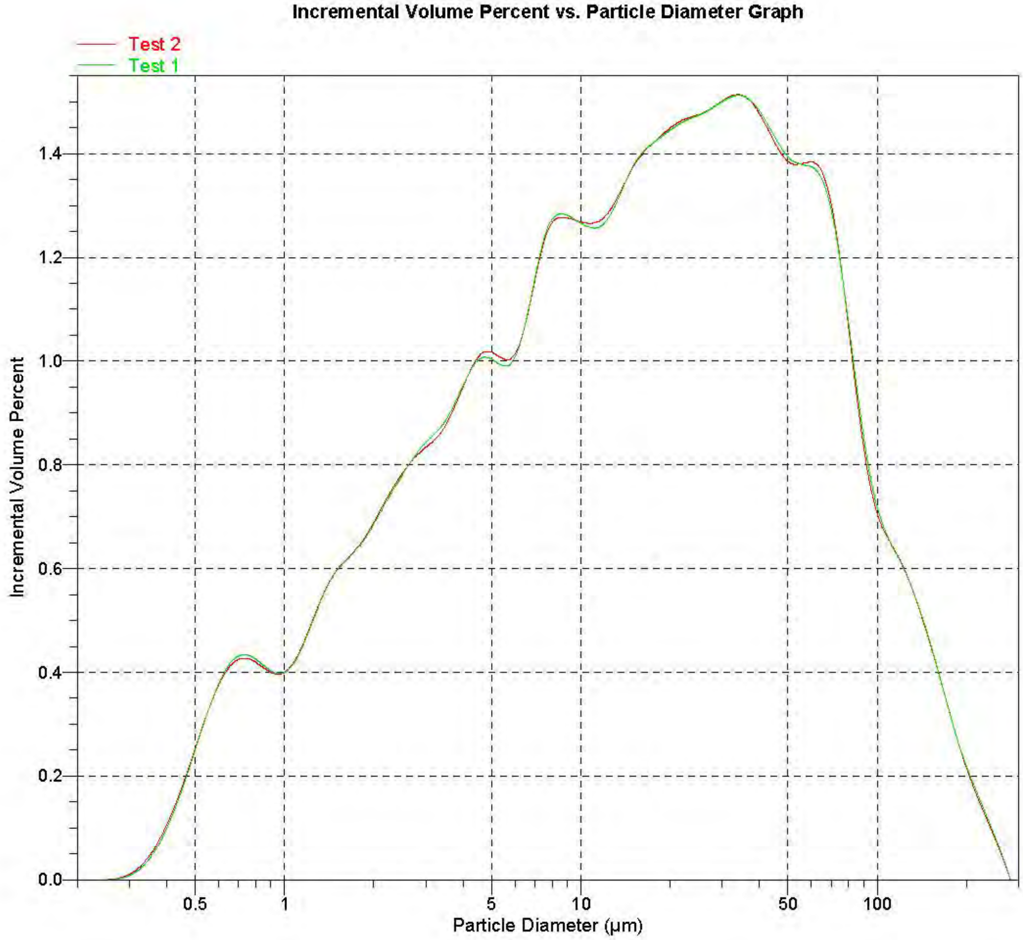
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 2472
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103999A.SMP

Test Number: 2
Analyzed: 6/24/2011 1:58:50PM
Reported: 6/24/2011 2:04:27PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

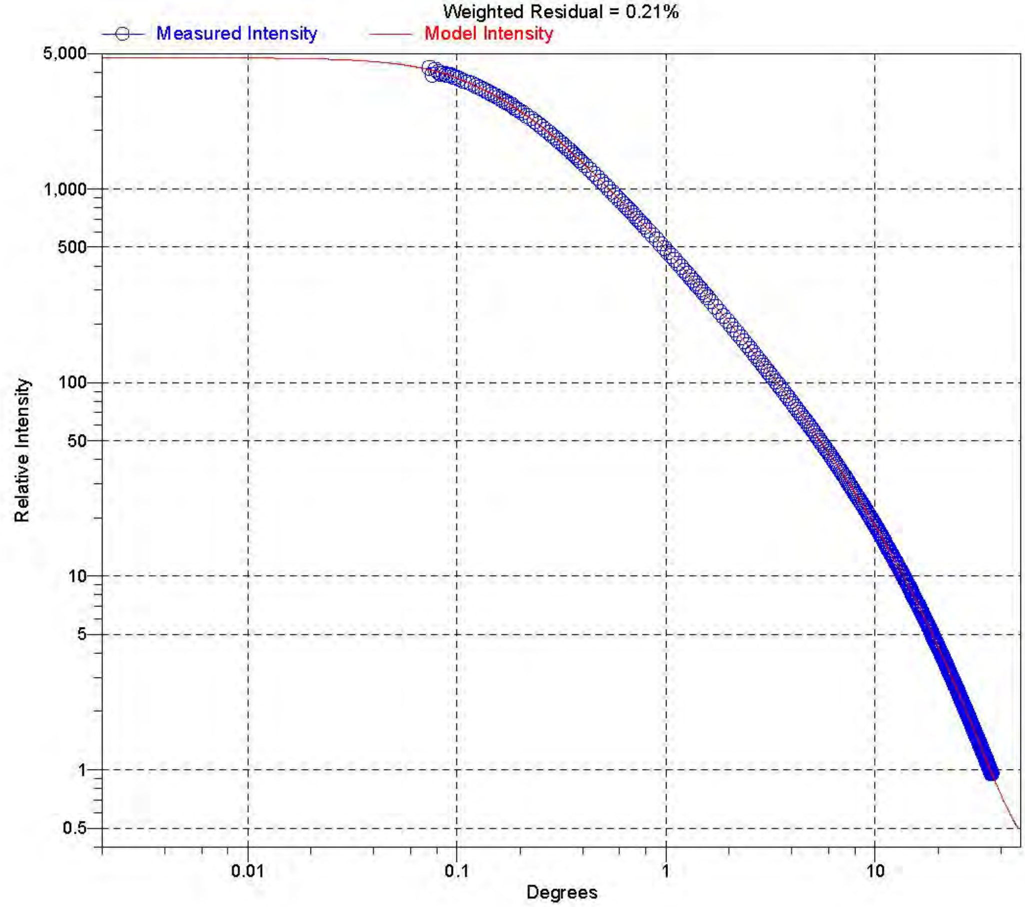
Sample: 2472
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1103999A.SMP

Test Number: 2
Analyzed: 6/24/2011 1:58:50PM
Reported: 6/24/2011 2:04:27PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Goodness of Fit

Weighted Residual = 0.21%



Sample#12-2609

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 | Saturn DigiSizer II 5205 V1.01 | 5200 LSHU V3.00 S/N 127 | Page 1

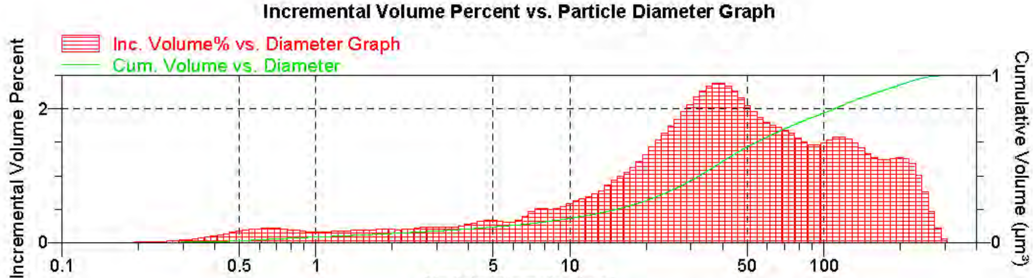
Sample: 2609
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1104000.SMP

Test Number: 2
Analyzed: 6/23/2011 2:14:37PM
Reported: 6/23/2011 2:34:33PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02807 %
Obscuration: 33.6 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	64.166	0.365	Mode	37.538	0.000
Median	41.433	0.144			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	162.689
50.0	41.433
10.0	5.674

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 2609
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1104000.SMP

Test Number: 2
Analyzed: 6/23/2011 2:14:37PM
Reported: 6/23/2011 2:34:33PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
307.256	290.068	298.538	100.0	0.0	0.0
290.068	273.842	281.838	99.7	0.2	0.1
273.842	258.523	266.073	99.3	0.5	0.2
258.523	244.062	251.189	98.5	0.8	0.2
244.062	230.409	237.137	97.5	1.0	0.2
230.409	217.520	223.872	96.3	1.2	0.2
217.520	205.353	211.349	95.1	1.3	0.2
205.353	193.865	199.526	93.8	1.3	0.1
193.865	183.021	188.365	92.5	1.3	0.1
183.021	172.783	177.828	91.3	1.2	0.1
172.783	163.117	167.880	90.1	1.2	0.1
163.117	153.993	158.489	88.8	1.3	0.1
153.993	145.378	149.624	87.4	1.3	0.1
145.378	137.246	141.254	86.0	1.4	0.1
137.246	129.569	133.352	84.5	1.5	0.1
129.569	122.321	125.893	83.0	1.6	0.1
122.321	115.478	118.850	81.4	1.6	0.1
115.478	109.018	112.202	79.8	1.6	0.1
109.018	102.920	105.925	78.3	1.5	0.1
102.920	97.163	100.000	76.8	1.5	0.2
97.163	91.728	94.406	75.3	1.5	0.2
91.728	86.596	89.125	73.9	1.5	0.2
86.596	81.752	84.140	72.4	1.5	0.1
81.752	77.179	79.433	70.8	1.6	0.1
77.179	72.862	74.989	69.2	1.6	0.1
72.862	68.786	70.795	67.5	1.7	0.1
68.786	64.938	66.834	65.7	1.7	0.1
64.938	61.306	63.096	64.0	1.8	0.1
61.306	57.876	59.566	62.2	1.8	0.1
57.876	54.639	56.234	60.3	1.9	0.2
54.639	51.582	53.088	58.4	2.0	0.2
51.582	48.697	50.119	56.3	2.1	0.2
48.697	45.973	47.315	54.1	2.2	0.2
45.973	43.401	44.668	51.9	2.3	0.2
43.401	40.973	42.170	49.5	2.3	0.1
40.973	38.681	39.811	47.2	2.4	0.1
38.681	36.517	37.584	44.8	2.4	0.1
36.517	34.475	35.481	42.4	2.3	0.1
34.475	32.546	33.497	40.1	2.3	0.1

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 3

Sample: 2609
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1104000.SMP

Test Number: 2
Analyzed: 6/23/2011 2:14:37PM
Reported: 6/23/2011 2:34:33PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
32.546	30.726	31.623	38.0	2.2	0.1
30.726	29.007	29.854	35.9	2.1	0.1
29.007	27.384	28.184	33.9	2.0	0.1
27.384	25.852	26.607	32.1	1.8	0.1
25.852	24.406	25.119	30.3	1.7	0.1
24.406	23.041	23.714	28.7	1.6	0.1
23.041	21.752	22.387	27.2	1.5	0.1
21.752	20.535	21.135	25.7	1.4	0.1
20.535	19.387	19.953	24.4	1.3	0.1
19.387	18.302	18.836	23.2	1.2	0.1
18.302	17.278	17.783	22.1	1.1	0.1
17.278	16.312	16.788	21.0	1.1	0.1
16.312	15.399	15.849	20.0	1.0	0.1
15.399	14.538	14.962	19.1	0.9	0.1
14.538	13.725	14.125	18.2	0.9	0.1
13.725	12.957	13.335	17.4	0.8	0.1
12.957	12.232	12.589	16.7	0.7	0.1
12.232	11.548	11.885	16.0	0.7	0.1
11.548	10.902	11.220	15.4	0.7	0.1
10.902	10.292	10.593	14.7	0.6	0.1
10.292	9.716	10.000	14.2	0.6	0.1
9.716	9.173	9.441	13.6	0.5	0.1
9.173	8.660	8.913	13.1	0.5	0.1
8.660	8.175	8.414	12.6	0.5	0.1
8.175	7.718	7.943	12.1	0.5	0.0
7.718	7.286	7.499	11.6	0.5	0.1
7.286	6.879	7.079	11.1	0.5	0.1
6.879	6.494	6.683	10.7	0.4	0.1
6.494	6.131	6.310	10.4	0.3	0.1
6.131	5.788	5.957	10.1	0.3	0.1
5.788	5.464	5.623	9.8	0.3	0.0
5.464	5.158	5.309	9.5	0.3	0.0
5.158	4.870	5.012	9.2	0.3	0.0
4.870	4.597	4.732	8.8	0.3	0.0
4.597	4.340	4.467	8.5	0.3	0.1
4.340	4.097	4.217	8.2	0.3	0.1
4.097	3.868	3.981	7.9	0.3	0.1
3.868	3.652	3.758	7.7	0.3	0.1
3.652	3.447	3.548	7.5	0.2	0.0

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 2609
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1104000.SMP

Test Number: 2
Analyzed: 6/23/2011 2:14:37PM
Reported: 6/23/2011 2:34:33PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.447	3.255	3.350	7.2	0.2	0.0
3.255	3.073	3.162	7.0	0.2	0.0
3.073	2.901	2.985	6.8	0.2	0.0
2.901	2.738	2.818	6.5	0.2	0.0
2.738	2.585	2.661	6.3	0.2	0.0
2.585	2.441	2.512	6.1	0.2	0.0
2.441	2.304	2.371	5.9	0.2	0.0
2.304	2.175	2.239	5.7	0.2	0.0
2.175	2.054	2.113	5.5	0.2	0.0
2.054	1.939	1.995	5.3	0.2	0.0
1.939	1.830	1.884	5.1	0.2	0.0
1.830	1.728	1.778	4.9	0.2	0.0
1.728	1.631	1.679	4.7	0.2	0.0
1.631	1.540	1.585	4.5	0.2	0.0
1.540	1.454	1.496	4.4	0.2	0.0
1.454	1.372	1.413	4.2	0.2	0.0
1.372	1.296	1.334	4.0	0.2	0.0
1.296	1.223	1.259	3.8	0.2	0.0
1.223	1.155	1.189	3.7	0.2	0.0
1.155	1.090	1.122	3.5	0.2	0.0
1.090	1.029	1.059	3.3	0.2	0.0
1.029	0.972	1.000	3.2	0.2	0.0
0.972	0.917	0.944	3.0	0.2	0.0
0.917	0.866	0.891	2.8	0.2	0.0
0.866	0.818	0.841	2.7	0.2	0.0
0.818	0.772	0.794	2.5	0.2	0.0
0.772	0.729	0.750	2.3	0.2	0.0
0.729	0.688	0.708	2.1	0.2	0.0
0.688	0.649	0.668	1.8	0.2	0.0
0.649	0.613	0.631	1.6	0.2	0.0
0.613	0.579	0.596	1.4	0.2	0.0
0.579	0.546	0.562	1.2	0.2	0.0
0.546	0.516	0.531	1.1	0.2	0.0
0.516	0.487	0.501	0.9	0.2	0.0
0.487	0.460	0.473	0.7	0.1	0.0
0.460	0.434	0.447	0.6	0.1	0.0
0.434	0.410	0.422	0.5	0.1	0.0
0.410	0.387	0.398	0.4	0.1	0.0
0.387	0.365	0.376	0.3	0.1	0.0

Micromeritics Analytical Services — The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 2609
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1104000.SMP

Test Number: 2
Analyzed: 6/23/2011 2:14:37PM
Reported: 6/23/2011 2:34:33PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

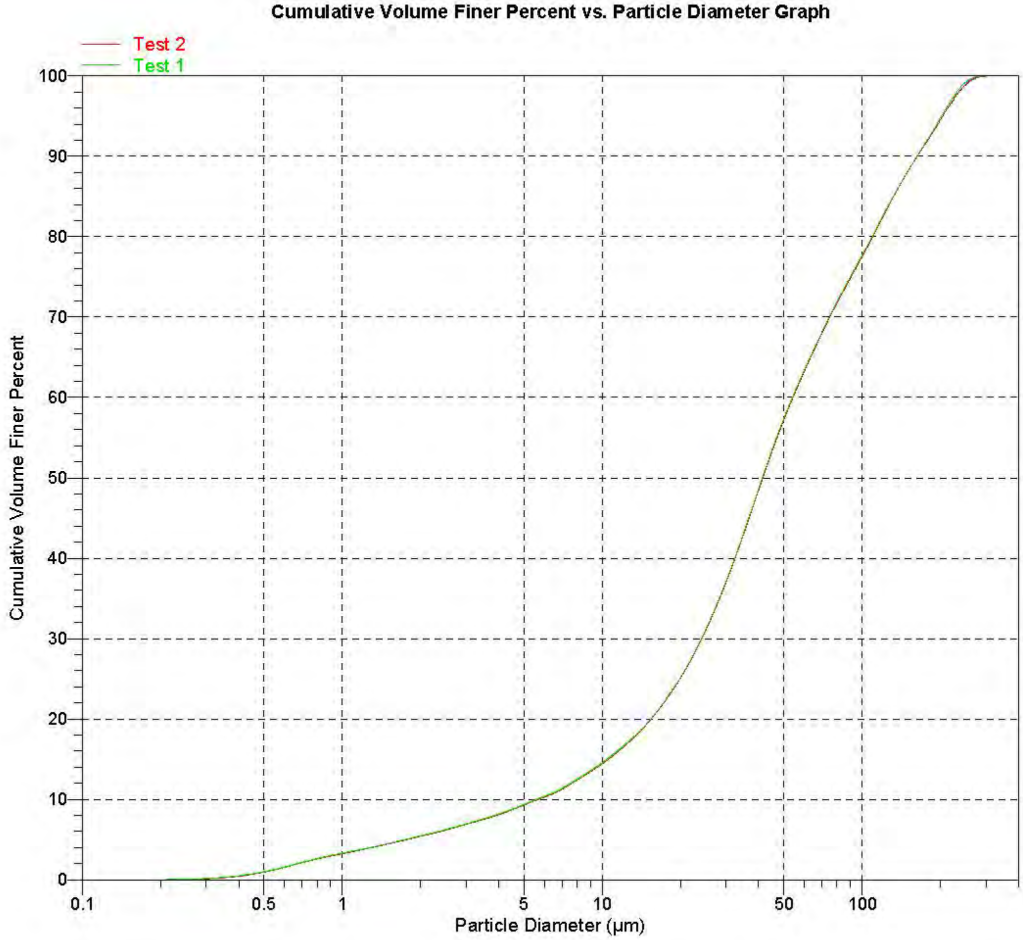
High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.365	0.345	0.355	0.2	0.1	0.0
0.345	0.325	0.335	0.2	0.1	0.0
0.325	0.307	0.316	0.1	0.0	0.0
0.307	0.290	0.299	0.1	0.0	0.0
0.290	0.274	0.282	0.1	0.0	0.0
0.274	0.259	0.266	0.0	0.0	0.0
0.259	0.244	0.251	0.0	0.0	0.0
0.244	0.230	0.237	0.0	0.0	0.0
0.230	0.218	0.224	0.0	0.0	0.0
0.218	0.205	0.211	0.0	0.0	0.0
0.205	0.194	0.200	0.0	0.0	0.0
0.194	0.183	0.188	0.0	0.0	0.0
0.183	0.173	0.178	0.0	0.0	0.0
0.173	0.163	0.168	0.0	0.0	0.0
0.163	0.154	0.158	0.0	0.0	0.0

Micromeritics Instrument Corporation

Sample: 2609
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1104000.SMP

Test Number: 2	Model: (1.570, 0.1000000), 1.331
Analyzed: 6/23/2011 2:14:37PM	Material: Sediment / Water
Reported: 6/23/2011 2:34:33PM	Background: Water RI 1.331
Background: 6/23/2011 10:24:40AM	Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



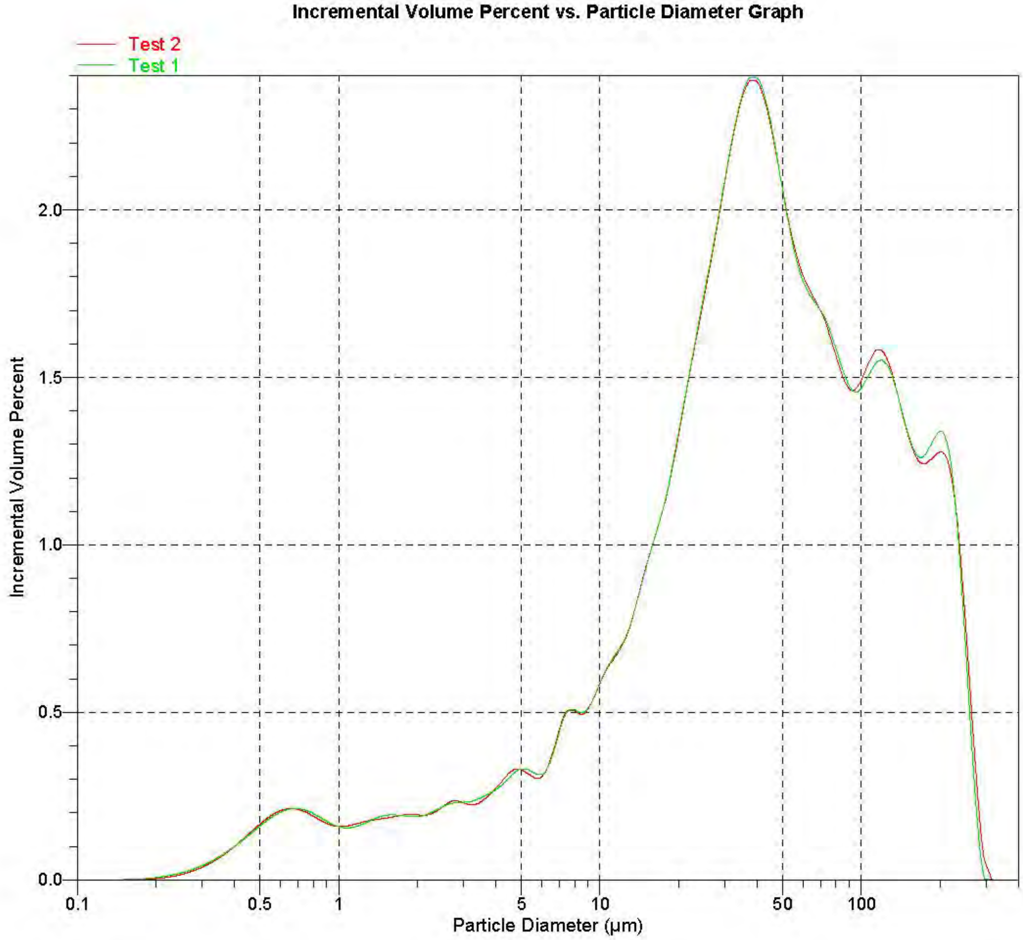
Micromeritics Instrument Corporation

Sample: 2609
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1104000.SMP

Test Number: 2
Analyzed: 6/23/2011 2:14:37PM
Reported: 6/23/2011 2:34:33PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



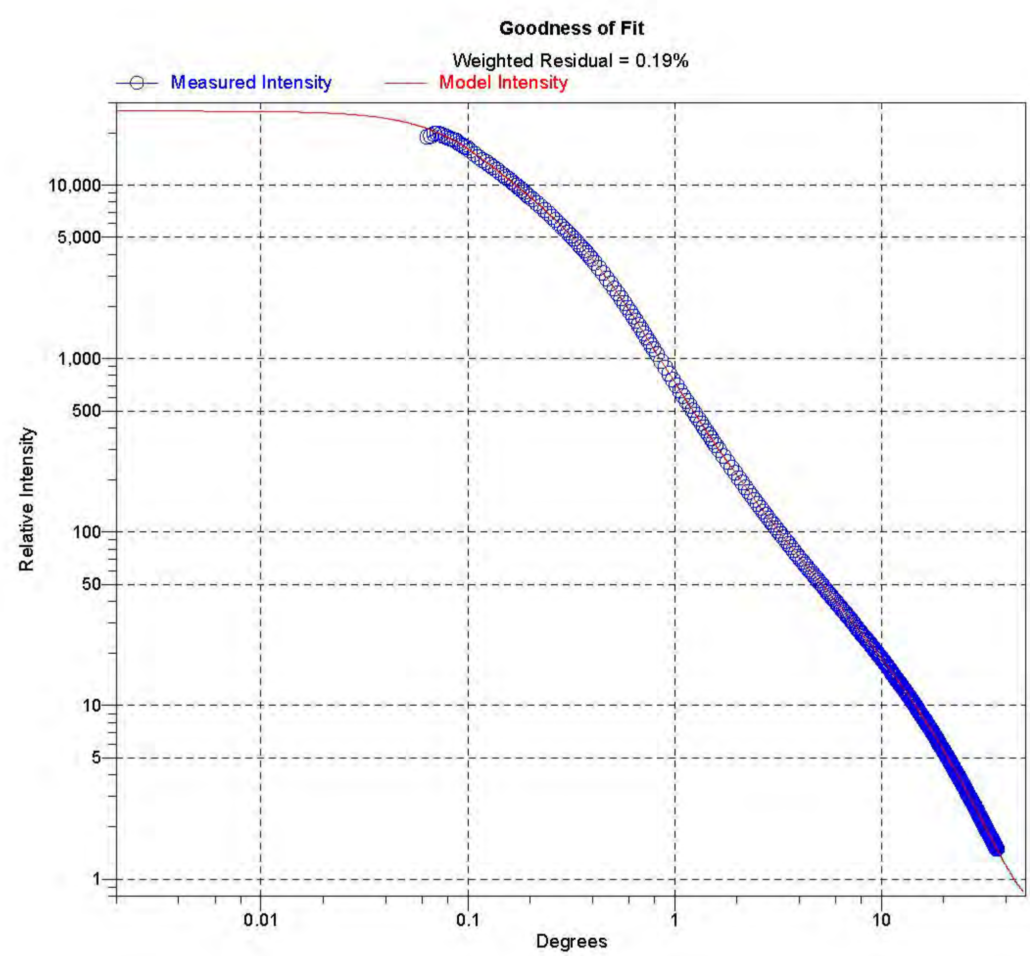
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 8

Sample: 2609
Operator: TN
Submitter: Brooklyn College of CUNY
File: C:\...\REPORTED\1104000.SMP

Test Number: 2
Analyzed: 6/23/2011 2:14:37PM
Reported: 6/23/2011 2:34:33PM
Background: 6/23/2011 10:24:40AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#13-3088

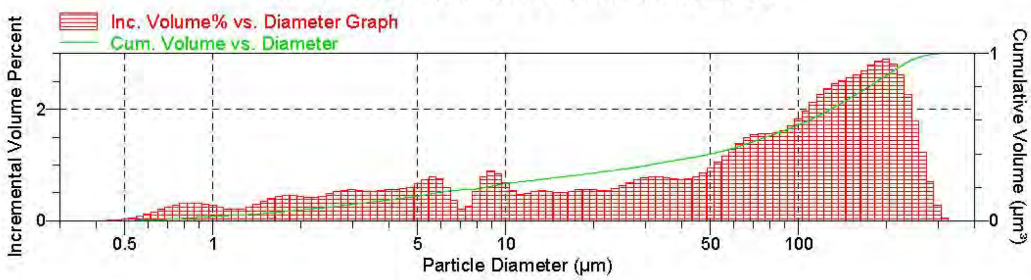
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 108 Page 1

Sample: 3088
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104001.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 8:52:40AM	Material:	Sediment / Water
Reported:	6/24/2011 9:28:58AM	Background:	Water RI 1.331
Background:	6/24/2011 8:21:41AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.03555 %
Obscuration: 45.9 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	92.971	0.877	Mode	199.435	0.000
Median	77.620	1.590			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	212.644
50.0	77.620
10.0	3.085

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3088
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104001.SMP

Test Number: 2
Analyzed: 6/24/2011 8:52:40AM
Reported: 6/24/2011 9:28:58AM
Background: 6/24/2011 8:21:41AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
325.462	307.256	316.228	99.9	0.1	0.0
307.256	290.068	298.538	99.7	0.3	0.1
290.068	273.842	281.838	99.0	0.7	0.1
273.842	258.523	266.073	97.7	1.2	0.2
258.523	244.062	251.189	96.0	1.8	0.2
244.062	230.409	237.137	93.7	2.3	0.3
230.409	217.520	223.872	91.1	2.6	0.3
217.520	205.353	211.349	88.3	2.8	0.3
205.353	193.865	199.526	85.4	2.9	0.3
193.865	183.021	188.365	82.5	2.9	0.3
183.021	172.783	177.828	79.7	2.8	0.2
172.783	163.117	167.880	77.0	2.7	0.2
163.117	153.993	158.489	74.4	2.6	0.1
153.993	145.378	149.624	71.9	2.6	0.1
145.378	137.246	141.254	69.3	2.5	0.1
137.246	129.569	133.352	66.9	2.5	0.1
129.569	122.321	125.893	64.5	2.4	0.2
122.321	115.478	118.850	62.2	2.3	0.2
115.478	109.018	112.202	60.1	2.1	0.3
109.018	102.920	105.925	58.1	2.0	0.4
102.920	97.163	100.000	56.3	1.8	0.4
97.163	91.728	94.406	54.6	1.7	0.5
91.728	86.596	89.125	53.0	1.6	0.5
86.596	81.752	84.140	51.4	1.6	0.5
81.752	77.179	79.433	49.8	1.6	0.6
77.179	72.862	74.989	48.3	1.6	0.6
72.862	68.786	70.795	46.7	1.5	0.6
68.786	64.938	66.834	45.3	1.5	0.6
64.938	61.306	63.096	43.9	1.4	0.6
61.306	57.876	59.566	42.6	1.3	0.5
57.876	54.639	56.234	41.4	1.2	0.5
54.639	51.582	53.088	40.4	1.0	0.5
51.582	48.697	50.119	39.4	0.9	0.5
48.697	45.973	47.315	38.6	0.9	0.5
45.973	43.401	44.668	37.8	0.8	0.5
43.401	40.973	42.170	37.0	0.8	0.5
40.973	38.681	39.811	36.3	0.7	0.5
38.681	36.517	37.584	35.5	0.7	0.5
36.517	34.475	35.481	34.8	0.8	0.5
34.475	32.546	33.497	34.0	0.8	0.4
32.546	30.726	31.623	33.2	0.8	0.4
30.726	29.007	29.854	32.4	0.8	0.4
29.007	27.384	28.184	31.7	0.7	0.4
27.384	25.852	26.607	31.0	0.7	0.4

Sample: 3088
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104001.SMP

Test Number: 2
Analyzed: 6/24/2011 8:52:40AM
Reported: 6/24/2011 9:28:58AM
Background: 6/24/2011 8:21:41AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
25.852	24.406	25.119	30.4	0.6	0.4
24.406	23.041	23.714	29.8	0.6	0.4
23.041	21.752	22.387	29.3	0.5	0.4
21.752	20.535	21.135	28.7	0.5	0.4
20.535	19.387	19.953	28.2	0.6	0.3
19.387	18.302	18.836	27.6	0.6	0.3
18.302	17.278	17.783	27.1	0.6	0.3
17.278	16.312	16.788	26.6	0.5	0.3
16.312	15.399	15.849	26.0	0.5	0.3
15.399	14.538	14.962	25.5	0.5	0.3
14.538	13.725	14.125	25.0	0.5	0.3
13.725	12.957	13.335	24.5	0.5	0.3
12.957	12.232	12.589	23.9	0.5	0.3
12.232	11.548	11.885	23.5	0.5	0.3
11.548	10.902	11.220	23.0	0.5	0.3
10.902	10.292	10.593	22.5	0.5	0.3
10.292	9.716	10.000	21.8	0.7	0.3
9.716	9.173	9.441	20.9	0.8	0.3
9.173	8.660	8.913	20.0	0.9	0.3
8.660	8.175	8.414	19.3	0.8	0.2
8.175	7.718	7.943	18.7	0.5	0.2
7.718	7.286	7.499	18.5	0.3	0.2
7.286	6.879	7.079	18.3	0.2	0.2
6.879	6.494	6.683	17.9	0.4	0.2
6.494	6.131	6.310	17.3	0.6	0.2
6.131	5.788	5.957	16.6	0.7	0.2
5.788	5.464	5.623	15.8	0.8	0.2
5.464	5.158	5.309	15.0	0.7	0.2
5.158	4.870	5.012	14.4	0.7	0.2
4.870	4.597	4.732	13.8	0.6	0.2
4.597	4.340	4.467	13.2	0.6	0.2
4.340	4.097	4.217	12.6	0.6	0.2
4.097	3.868	3.981	12.1	0.6	0.2
3.868	3.652	3.758	11.6	0.5	0.2
3.652	3.447	3.548	11.0	0.5	0.2
3.447	3.255	3.350	10.5	0.5	0.1
3.255	3.073	3.162	10.0	0.5	0.1
3.073	2.901	2.985	9.4	0.6	0.1
2.901	2.738	2.818	8.9	0.5	0.1
2.738	2.585	2.661	8.3	0.5	0.1
2.585	2.441	2.512	7.9	0.5	0.1
2.441	2.304	2.371	7.4	0.4	0.1
2.304	2.175	2.239	7.0	0.4	0.1
2.175	2.054	2.113	6.6	0.4	0.1

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3088
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104001.SMP

Test Number: 2
Analyzed: 6/24/2011 8:52:40AM
Reported: 6/24/2011 9:28:58AM
Background: 6/24/2011 8:21:41AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.054	1.939	1.995	6.2	0.4	0.1
1.939	1.830	1.884	5.7	0.4	0.1
1.830	1.728	1.778	5.3	0.4	0.1
1.728	1.631	1.679	4.8	0.4	0.1
1.631	1.540	1.585	4.4	0.4	0.1
1.540	1.454	1.496	4.1	0.3	0.1
1.454	1.372	1.413	3.8	0.3	0.0
1.372	1.296	1.334	3.5	0.2	0.0
1.296	1.223	1.259	3.3	0.2	0.0
1.223	1.155	1.189	3.1	0.2	0.0
1.155	1.090	1.122	2.9	0.2	0.0
1.090	1.029	1.059	2.7	0.2	0.0
1.029	0.972	1.000	2.4	0.3	0.0
0.972	0.917	0.944	2.1	0.3	0.0
0.917	0.866	0.891	1.8	0.3	0.0
0.866	0.818	0.841	1.5	0.3	0.0
0.818	0.772	0.794	1.2	0.3	0.0
0.772	0.729	0.750	0.9	0.3	0.0
0.729	0.688	0.708	0.7	0.2	0.0
0.688	0.649	0.668	0.5	0.2	0.0
0.649	0.613	0.631	0.3	0.2	0.0
0.613	0.579	0.596	0.2	0.1	0.0
0.579	0.546	0.562	0.1	0.1	0.0
0.546	0.516	0.531	0.1	0.1	0.0
0.516	0.487	0.501	0.0	0.0	0.0
0.487	0.460	0.473	0.0	0.0	0.0
0.460	0.434	0.447	0.0	0.0	0.0
0.434	0.410	0.422	0.0	0.0	0.0
0.410	0.387	0.398	0.0	0.0	0.0

Sample: 3088
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104001.SMP

Test Number: 2
Analyzed: 6/24/2011 8:52:40AM
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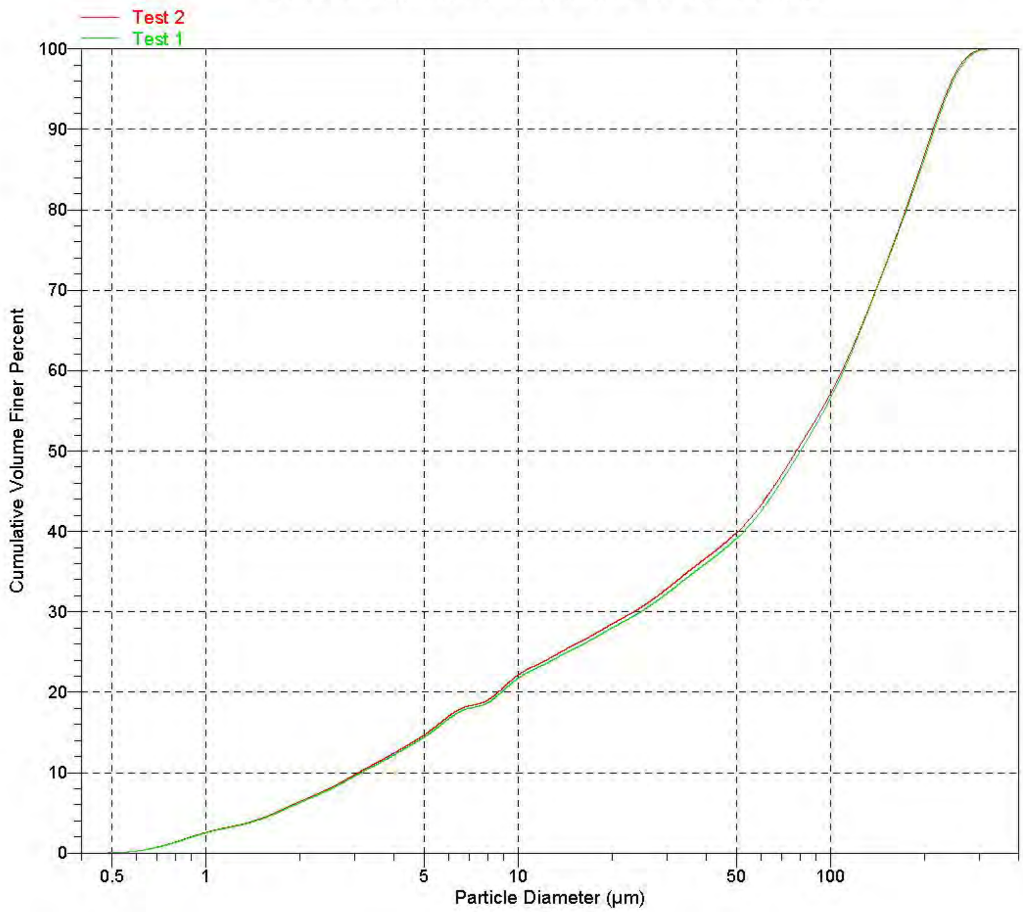
Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



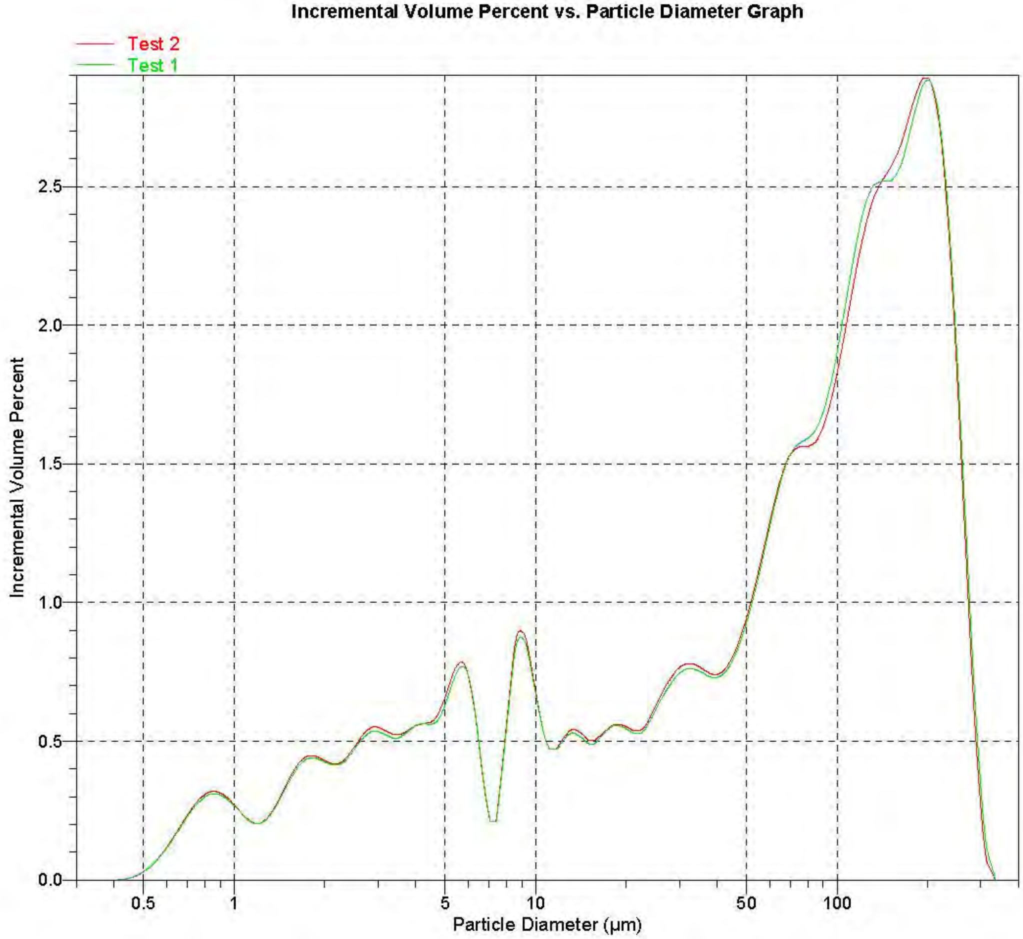
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 108 Page 6

Sample: 3088
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104001.SMP

Test Number: 2
Analyzed: 6/24/2011 8:52:40AM
Reported: 6/24/2011 9:28:58AM
Background: 6/24/2011 8:21:41AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph

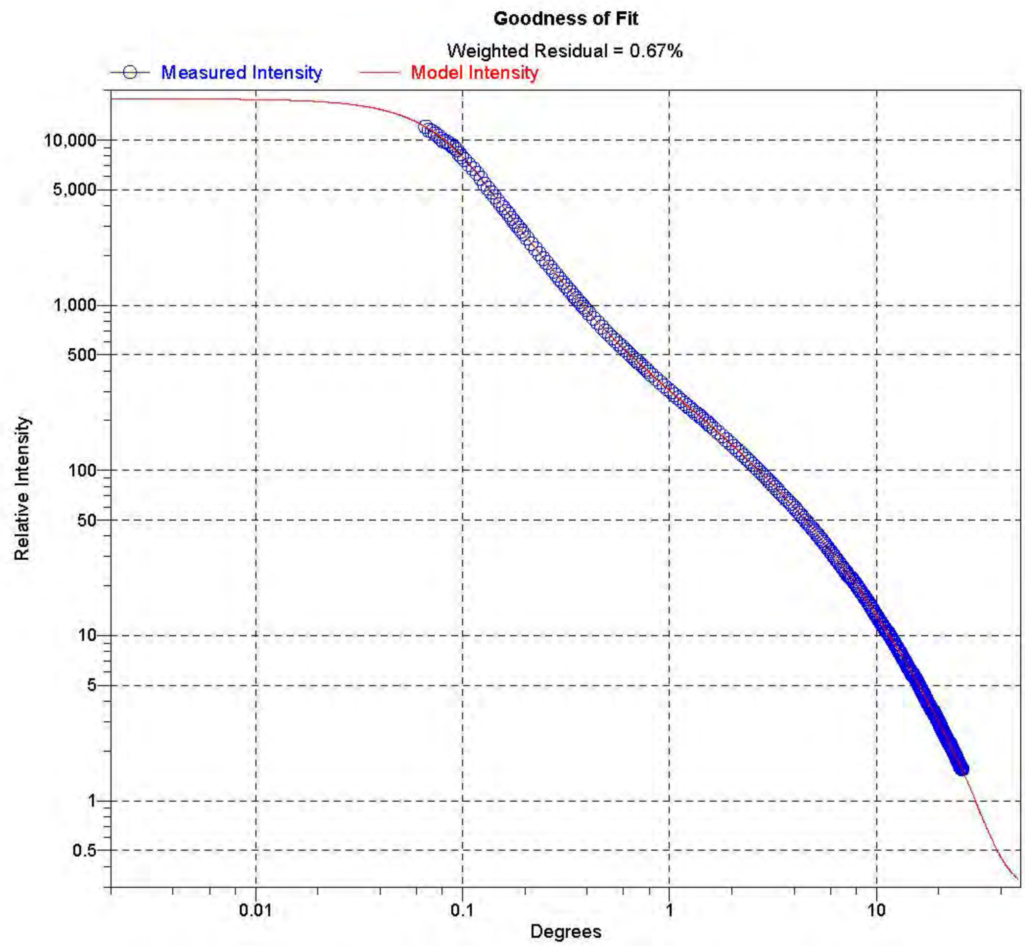


MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3088
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104001.SMP

Test Number: 2
Analyzed: 6/24/2011 8:52:40AM
Reported: 6/24/2011 9:28:58AM
Background: 6/24/2011 8:21:41AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#14-3155

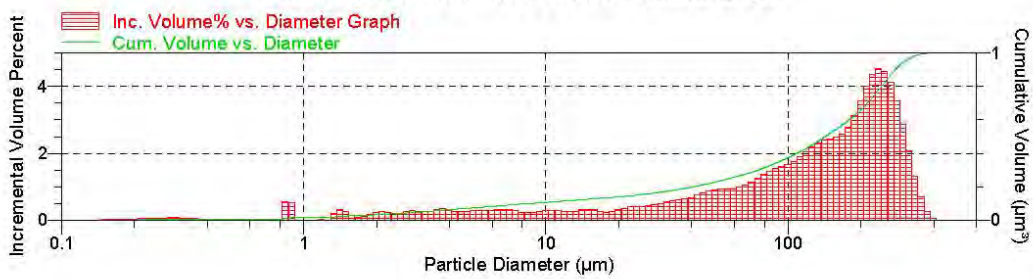
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

Sample: 3115
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104002.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 8:55:45AM	Material:	Sediment / Water
Reported:	6/24/2011 9:38:26AM	Background:	Water RI 1.331
Background:	6/24/2011 8:21:25AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.04192 %
Obscuration: 31.3 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	145.568	1.444	Mode	236.979	0.000
Median	142.815	1.815			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	276.989
50.0	142.815
10.0	8.836

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 2

Sample: 3115
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104002.SMP

Test Number: 2
Analyzed: 6/24/2011 8:55:45AM
Reported: 6/24/2011 9:38:26AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
409.732	386.812	398.107	99.9	0.1	0.0
386.812	365.174	375.837	99.7	0.3	0.0
365.174	344.747	354.813	99.0	0.7	0.1
344.747	325.462	334.965	97.7	1.3	0.2
325.462	307.256	316.228	95.6	2.1	0.3
307.256	290.068	298.538	92.8	2.8	0.4
290.068	273.842	281.838	89.2	3.6	0.5
273.842	258.523	266.073	85.1	4.1	0.6
258.523	244.062	251.189	80.7	4.5	0.7
244.062	230.409	237.137	76.1	4.5	0.8
230.409	217.520	223.872	71.8	4.4	0.9
217.520	205.353	211.349	67.7	4.0	1.0
205.353	193.865	199.526	64.2	3.6	1.0
193.865	183.021	188.365	61.0	3.1	0.9
183.021	172.783	177.828	58.2	2.8	0.8
172.783	163.117	167.880	55.7	2.6	0.7
163.117	153.993	158.489	53.2	2.5	0.6
153.993	145.378	149.624	50.7	2.4	0.6
145.378	137.246	141.254	48.3	2.4	0.5
137.246	129.569	133.352	46.0	2.3	0.5
129.569	122.321	125.893	43.8	2.2	0.5
122.321	115.478	118.850	41.8	2.0	0.5
115.478	109.018	112.202	39.9	1.9	0.5
109.018	102.920	105.925	38.1	1.8	0.4
102.920	97.163	100.000	36.5	1.7	0.3
97.163	91.728	94.406	34.9	1.6	0.3
91.728	86.596	89.125	33.3	1.5	0.2
86.596	81.752	84.140	31.9	1.5	0.1
81.752	77.179	79.433	30.5	1.4	0.1
77.179	72.862	74.989	29.2	1.3	0.0
72.862	68.786	70.795	28.1	1.1	0.0
68.786	64.938	66.834	27.0	1.1	0.1
64.938	61.306	63.096	26.0	1.0	0.1
61.306	57.876	59.566	25.1	0.9	0.1
57.876	54.639	56.234	24.2	0.9	0.2
54.639	51.582	53.088	23.3	0.9	0.2
51.582	48.697	50.119	22.4	0.9	0.2
48.697	45.973	47.315	21.5	0.9	0.1
45.973	43.401	44.668	20.7	0.8	0.1
43.401	40.973	42.170	19.9	0.7	0.1
40.973	38.681	39.811	19.3	0.7	0.1
38.681	36.517	37.584	18.6	0.6	0.1
36.517	34.475	35.481	18.0	0.6	0.1
34.475	32.546	33.497	17.5	0.6	0.1

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 3

Sample: 3115
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104002.SMP

Test Number: 2
Analyzed: 6/24/2011 8:55:45AM
Reported: 6/24/2011 9:38:26AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
32.546	30.726	31.623	16.9	0.5	0.1
30.726	29.007	29.854	16.4	0.5	0.1
29.007	27.384	28.184	16.0	0.5	0.1
27.384	25.852	26.607	15.5	0.4	0.1
25.852	24.406	25.119	15.1	0.4	0.1
24.406	23.041	23.714	14.7	0.4	0.1
23.041	21.752	22.387	14.4	0.4	0.1
21.752	20.535	21.135	14.0	0.4	0.1
20.535	19.387	19.953	13.7	0.3	0.1
19.387	18.302	18.836	13.4	0.3	0.1
18.302	17.278	17.783	13.2	0.2	0.1
17.278	16.312	16.788	12.9	0.3	0.1
16.312	15.399	15.849	12.6	0.3	0.1
15.399	14.538	14.962	12.3	0.3	0.1
14.538	13.725	14.125	12.0	0.3	0.1
13.725	12.957	13.335	11.7	0.3	0.1
12.957	12.232	12.589	11.5	0.2	0.1
12.232	11.548	11.885	11.2	0.3	0.1
11.548	10.902	11.220	11.0	0.3	0.1
10.902	10.292	10.593	10.7	0.3	0.1
10.292	9.716	10.000	10.4	0.3	0.1
9.716	9.173	9.441	10.2	0.3	0.1
9.173	8.660	8.913	9.9	0.2	0.1
8.660	8.175	8.414	9.7	0.2	0.1
8.175	7.718	7.943	9.5	0.2	0.1
7.718	7.286	7.499	9.2	0.3	0.1
7.286	6.879	7.079	8.9	0.3	0.1
6.879	6.494	6.683	8.5	0.3	0.1
6.494	6.131	6.310	8.2	0.3	0.0
6.131	5.788	5.957	8.0	0.3	0.0
5.788	5.464	5.623	7.7	0.3	0.0
5.464	5.158	5.309	7.4	0.3	0.0
5.158	4.870	5.012	7.1	0.3	0.1
4.870	4.597	4.732	6.8	0.3	0.1
4.597	4.340	4.467	6.6	0.3	0.1
4.340	4.097	4.217	6.3	0.3	0.1
4.097	3.868	3.981	6.0	0.3	0.0
3.868	3.652	3.758	5.7	0.3	0.0
3.652	3.447	3.548	5.4	0.3	0.0
3.447	3.255	3.350	5.1	0.3	0.0
3.255	3.073	3.162	4.9	0.2	0.0
3.073	2.901	2.985	4.6	0.3	0.0
2.901	2.738	2.818	4.3	0.3	0.0
2.738	2.585	2.661	4.1	0.2	0.0

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3115
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104002.SMP

Test Number: 2
Analyzed: 6/24/2011 8:55:45AM
Reported: 6/24/2011 9:38:26AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.585	2.441	2.512	3.9	0.2	0.0
2.441	2.304	2.371	3.7	0.2	0.0
2.304	2.175	2.239	3.5	0.2	0.0
2.175	2.054	2.113	3.2	0.2	0.0
2.054	1.939	1.995	3.0	0.2	0.0
1.939	1.830	1.884	2.8	0.2	0.0
1.830	1.728	1.778	2.7	0.1	0.0
1.728	1.631	1.679	2.7	0.1	0.0
1.631	1.540	1.585	2.5	0.1	0.0
1.540	1.454	1.496	2.3	0.3	0.0
1.454	1.372	1.413	2.0	0.3	0.0
1.372	1.296	1.334	1.7	0.2	0.0
1.296	1.223	1.259	1.7	0.0	0.0
1.223	1.155	1.189	1.7	0.0	0.0
1.155	1.090	1.122	1.7	0.0	0.0
1.090	1.029	1.059	1.7	0.0	0.0
1.029	0.972	1.000	1.7	0.0	0.0
0.972	0.917	0.944	1.7	0.0	0.0
0.917	0.866	0.891	1.2	0.5	0.0
0.866	0.818	0.841	0.6	0.5	0.0
0.818	0.772	0.794	0.6	0.0	0.0
0.772	0.729	0.750	0.6	0.0	0.0
0.729	0.688	0.708	0.6	0.0	0.0
0.688	0.649	0.668	0.6	0.0	0.0
0.649	0.613	0.631	0.6	0.0	0.0
0.613	0.579	0.596	0.6	0.0	0.0
0.579	0.546	0.562	0.6	0.0	0.0
0.546	0.516	0.531	0.6	0.0	0.0
0.516	0.487	0.501	0.6	0.0	0.0
0.487	0.460	0.473	0.6	0.0	0.0
0.460	0.434	0.447	0.6	0.0	0.0
0.434	0.410	0.422	0.6	0.0	0.0
0.410	0.387	0.398	0.6	0.0	0.0
0.387	0.365	0.376	0.6	0.0	0.0
0.365	0.345	0.355	0.6	0.0	0.0
0.345	0.325	0.335	0.5	0.1	0.0
0.325	0.307	0.316	0.5	0.1	0.0
0.307	0.290	0.299	0.4	0.1	0.0
0.290	0.274	0.282	0.4	0.1	0.0
0.274	0.259	0.266	0.3	0.1	0.0
0.259	0.244	0.251	0.2	0.1	0.0
0.244	0.230	0.237	0.2	0.0	0.0
0.230	0.218	0.224	0.1	0.0	0.0
0.218	0.205	0.211	0.1	0.0	0.0

Sample: 3115
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104002.SMP

Test Number: 2
Analyzed: 6/24/2011 8:55:45AM
Reported: 6/24/2011 9:38:26AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.205	0.194	0.200	0.1	0.0	0.0
0.194	0.183	0.188	0.1	0.0	0.0
0.183	0.173	0.178	0.0	0.0	0.0
0.173	0.163	0.168	0.0	0.0	0.0
0.163	0.154	0.158	0.0	0.0	0.0
0.154	0.145	0.150	0.0	0.0	0.0
0.145	0.137	0.141	0.0	0.0	0.0
0.137	0.130	0.133	0.0	0.0	0.0
0.130	0.122	0.126	0.0	0.0	0.0
0.122	0.115	0.119	0.0	0.0	0.0
0.115	0.109	0.112	0.0	0.0	0.0

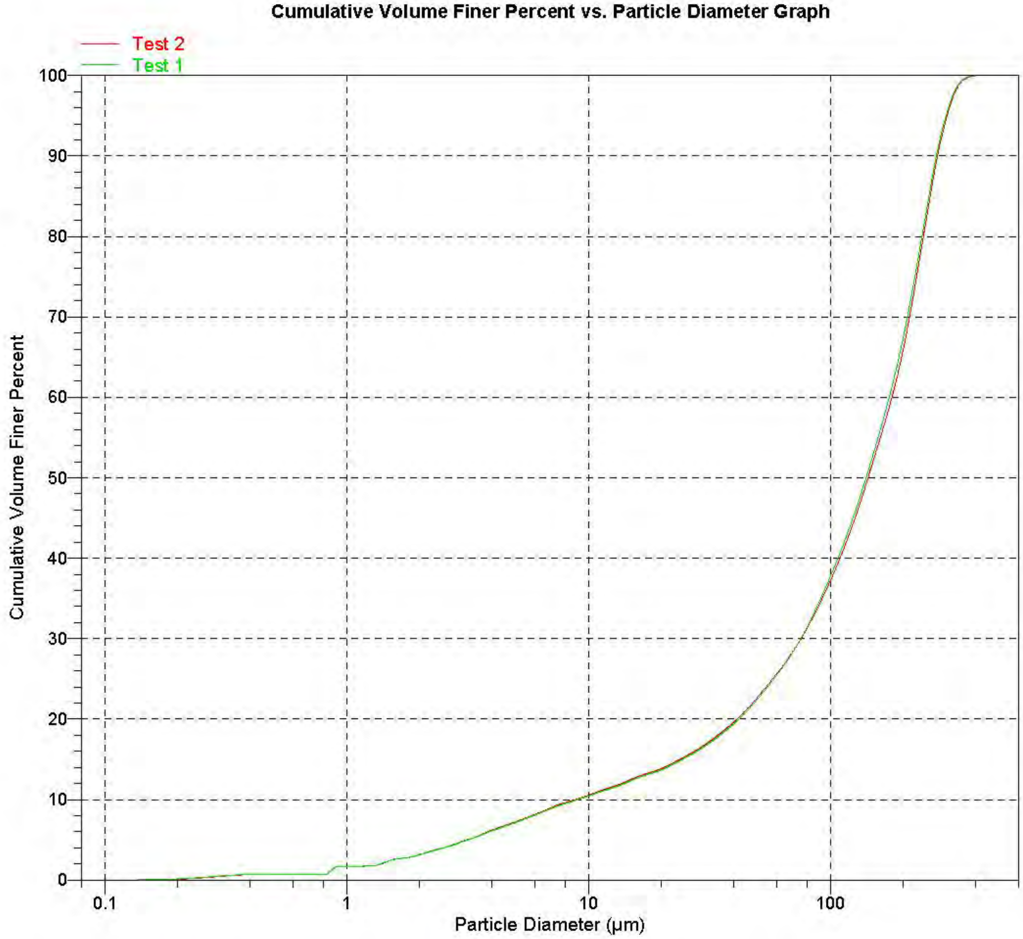
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 6

Sample: 3115
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104002.SMP

Test Number: 2
Analyzed: 6/24/2011 8:55:45AM
Reported: 6/24/2011 9:38:26AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

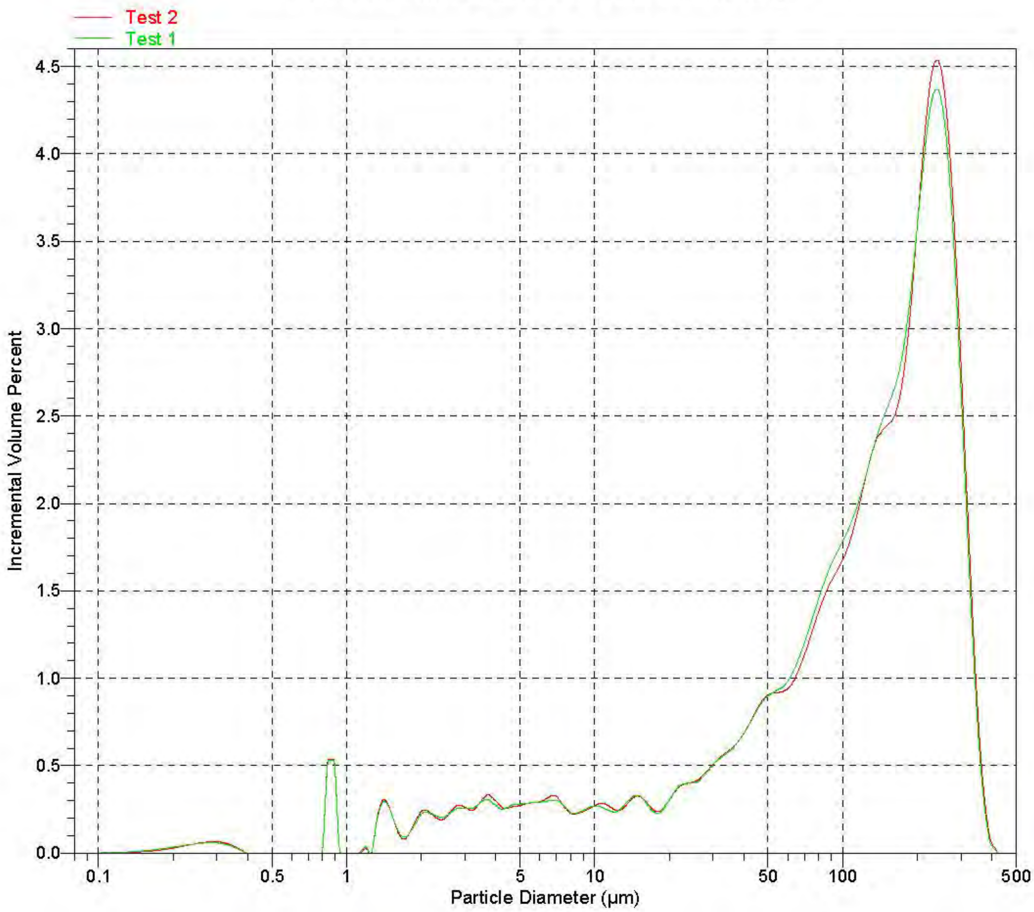


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

Sample: 3115
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104002.SMP

Test Number: 2	Model: (1.570, 0.1000000), 1.331
Analyzed: 6/24/2011 8:55:45AM	Material: Sediment / Water
Reported: 6/24/2011 9:38:26AM	Background: Water RI 1.331
Background: 6/24/2011 8:21:25AM	Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph

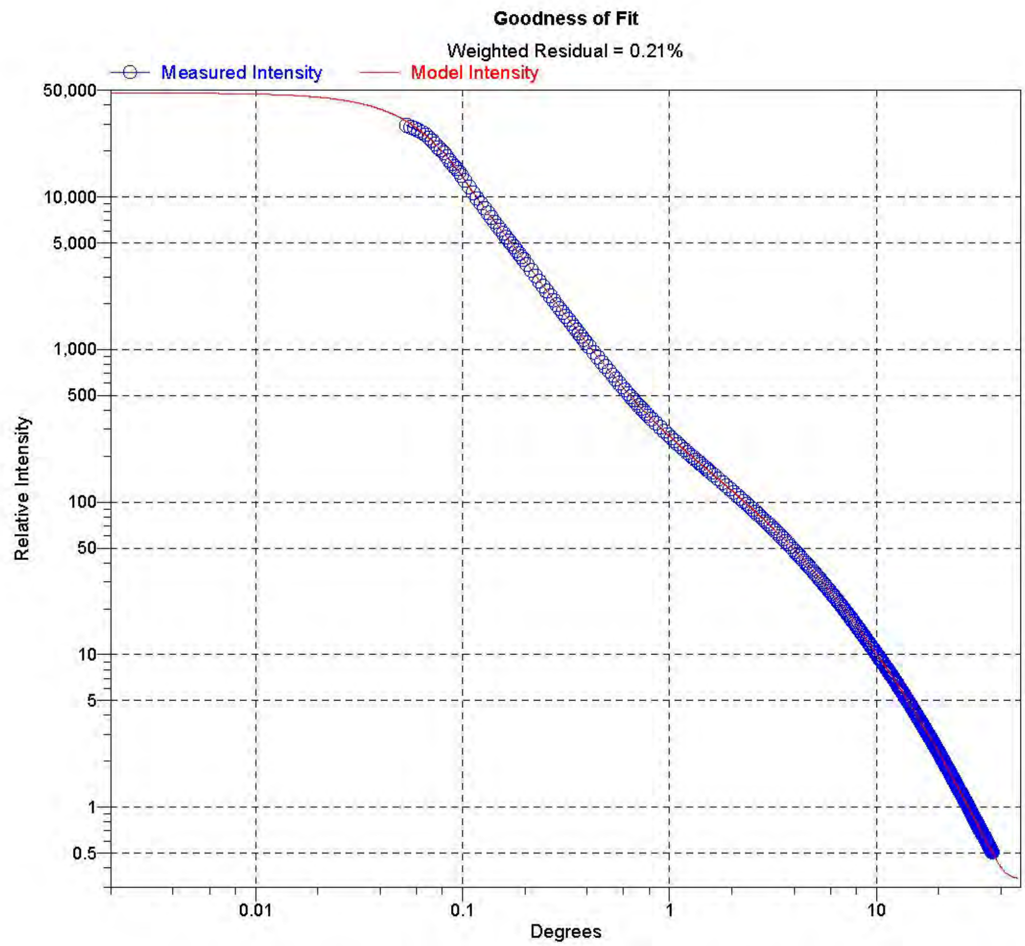


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 8

Sample: 3115
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104002.SMP

Test Number: 2
Analyzed: 6/24/2011 8:55:45AM
Reported: 6/24/2011 9:38:26AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#15-3138

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

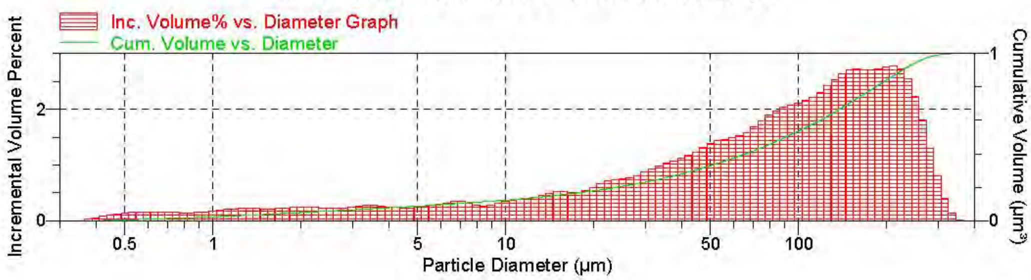
Sample: 3138
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104003A.SMP

Test Number: 2
Analyzed: 6/24/2011 10:37:17AM
Reported: 6/24/2011 10:48:44AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02696 %
Obscuration: 28.0 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	105.159	1.628	Mode	211.208	0.000
Median	90.471	0.923			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	226.566
50.0	90.471
10.0	6.589

Sample: 3138
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104003A.SMP

Test Number: 2
Analyzed: 6/24/2011 10:37:17AM
Reported: 6/24/2011 10:48:44AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
365.174	344.747	354.813	100.0	0.0	0.0
344.747	325.462	334.965	99.9	0.1	0.1
325.462	307.256	316.228	99.5	0.4	0.3
307.256	290.068	298.538	98.7	0.8	0.4
290.068	273.842	281.838	97.4	1.3	0.6
273.842	258.523	266.073	95.6	1.8	0.8
258.523	244.062	251.189	93.3	2.2	0.9
244.062	230.409	237.137	90.8	2.5	0.9
230.409	217.520	223.872	88.1	2.7	0.9
217.520	205.353	211.349	85.3	2.8	0.9
205.353	193.865	199.526	82.5	2.8	0.8
193.865	183.021	188.365	79.8	2.7	0.8
183.021	172.783	177.828	77.1	2.7	0.7
172.783	163.117	167.880	74.4	2.7	0.7
163.117	153.993	158.489	71.7	2.7	0.6
153.993	145.378	149.624	69.0	2.7	0.6
145.378	137.246	141.254	66.3	2.6	0.6
137.246	129.569	133.352	63.8	2.5	0.6
129.569	122.321	125.893	61.4	2.4	0.6
122.321	115.478	118.850	59.1	2.3	0.6
115.478	109.018	112.202	56.8	2.2	0.5
109.018	102.920	105.925	54.7	2.2	0.5
102.920	97.163	100.000	52.6	2.1	0.4
97.163	91.728	94.406	50.5	2.1	0.4
91.728	86.596	89.125	48.5	2.0	0.3
86.596	81.752	84.140	46.5	2.0	0.3
81.752	77.179	79.433	44.6	1.9	0.3
77.179	72.862	74.989	42.8	1.8	0.3
72.862	68.786	70.795	41.1	1.7	0.2
68.786	64.938	66.834	39.5	1.6	0.2
64.938	61.306	63.096	38.0	1.5	0.2
61.306	57.876	59.566	36.5	1.5	0.1
57.876	54.639	56.234	35.1	1.5	0.1
54.639	51.582	53.088	33.6	1.4	0.1
51.582	48.697	50.119	32.3	1.4	0.1
48.697	45.973	47.315	30.9	1.3	0.1
45.973	43.401	44.668	29.7	1.2	0.1
43.401	40.973	42.170	28.5	1.2	0.1
40.973	38.681	39.811	27.4	1.1	0.1
38.681	36.517	37.584	26.4	1.1	0.1
36.517	34.475	35.481	25.3	1.0	0.1
34.475	32.546	33.497	24.3	1.0	0.1
32.546	30.726	31.623	23.4	0.9	0.1
30.726	29.007	29.854	22.5	0.9	0.1

Sample: 3138
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104003A.SMP

Test Number: 2
Analyzed: 6/24/2011 10:37:17AM
Reported: 6/24/2011 10:48:44AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
29.007	27.384	28.184	21.7	0.8	0.1
27.384	25.852	26.607	21.0	0.8	0.1
25.852	24.406	25.119	20.2	0.7	0.1
24.406	23.041	23.714	19.5	0.7	0.1
23.041	21.752	22.387	18.8	0.7	0.1
21.752	20.535	21.135	18.1	0.7	0.1
20.535	19.387	19.953	17.5	0.6	0.1
19.387	18.302	18.836	17.0	0.5	0.1
18.302	17.278	17.783	16.4	0.5	0.1
17.278	16.312	16.788	15.9	0.5	0.0
16.312	15.399	15.849	15.4	0.5	0.0
15.399	14.538	14.962	14.9	0.5	0.0
14.538	13.725	14.125	14.4	0.5	0.0
13.725	12.957	13.335	14.0	0.4	0.0
12.957	12.232	12.589	13.5	0.4	0.0
12.232	11.548	11.885	13.1	0.4	0.0
11.548	10.902	11.220	12.8	0.4	0.0
10.902	10.292	10.593	12.4	0.4	0.0
10.292	9.716	10.000	12.0	0.3	0.0
9.716	9.173	9.441	11.7	0.3	0.0
9.173	8.660	8.913	11.5	0.3	0.0
8.660	8.175	8.414	11.2	0.3	0.0
8.175	7.718	7.943	10.9	0.3	0.0
7.718	7.286	7.499	10.6	0.3	0.0
7.286	6.879	7.079	10.3	0.3	0.0
6.879	6.494	6.683	9.9	0.3	0.0
6.494	6.131	6.310	9.6	0.3	0.0
6.131	5.788	5.957	9.3	0.3	0.0
5.788	5.464	5.623	9.0	0.3	0.0
5.464	5.158	5.309	8.8	0.3	0.0
5.158	4.870	5.012	8.5	0.2	0.0
4.870	4.597	4.732	8.3	0.2	0.0
4.597	4.340	4.467	8.1	0.2	0.0
4.340	4.097	4.217	7.8	0.2	0.0
4.097	3.868	3.981	7.6	0.2	0.0
3.868	3.652	3.758	7.3	0.3	0.0
3.652	3.447	3.548	7.1	0.3	0.0
3.447	3.255	3.350	6.8	0.3	0.0
3.255	3.073	3.162	6.6	0.3	0.0
3.073	2.901	2.985	6.3	0.2	0.0
2.901	2.738	2.818	6.1	0.2	0.0
2.738	2.585	2.661	5.9	0.2	0.0
2.585	2.441	2.512	5.6	0.2	0.0
2.441	2.304	2.371	5.4	0.2	0.0

Sample: 3138
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104003A.SMP

Test Number: 2
Analyzed: 6/24/2011 10:37:17AM
Reported: 6/24/2011 10:48:44AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.304	2.175	2.239	5.2	0.2	0.0
2.175	2.054	2.113	5.0	0.2	0.0
2.054	1.939	1.995	4.7	0.2	0.0
1.939	1.830	1.884	4.5	0.2	0.0
1.830	1.728	1.778	4.3	0.2	0.0
1.728	1.631	1.679	4.0	0.2	0.0
1.631	1.540	1.585	3.8	0.2	0.0
1.540	1.454	1.496	3.6	0.2	0.0
1.454	1.372	1.413	3.4	0.2	0.0
1.372	1.296	1.334	3.2	0.2	0.0
1.296	1.223	1.259	3.0	0.2	0.0
1.223	1.155	1.189	2.7	0.2	0.0
1.155	1.090	1.122	2.5	0.2	0.0
1.090	1.029	1.059	2.3	0.2	0.0
1.029	0.972	1.000	2.2	0.2	0.0
0.972	0.917	0.944	2.0	0.2	0.0
0.917	0.866	0.891	1.9	0.1	0.0
0.866	0.818	0.841	1.7	0.1	0.0
0.818	0.772	0.794	1.6	0.1	0.1
0.772	0.729	0.750	1.4	0.1	0.1
0.729	0.688	0.708	1.3	0.2	0.1
0.688	0.649	0.668	1.1	0.2	0.1
0.649	0.613	0.631	1.0	0.2	0.1
0.613	0.579	0.596	0.8	0.2	0.1
0.579	0.546	0.562	0.7	0.2	0.1
0.546	0.516	0.531	0.5	0.1	0.1
0.516	0.487	0.501	0.4	0.1	0.0
0.487	0.460	0.473	0.3	0.1	0.0
0.460	0.434	0.447	0.2	0.1	0.0
0.434	0.410	0.422	0.1	0.1	0.0
0.410	0.387	0.398	0.0	0.1	0.0
0.387	0.365	0.376	0.0	0.0	0.0
0.365	0.345	0.355	0.0	0.0	0.0

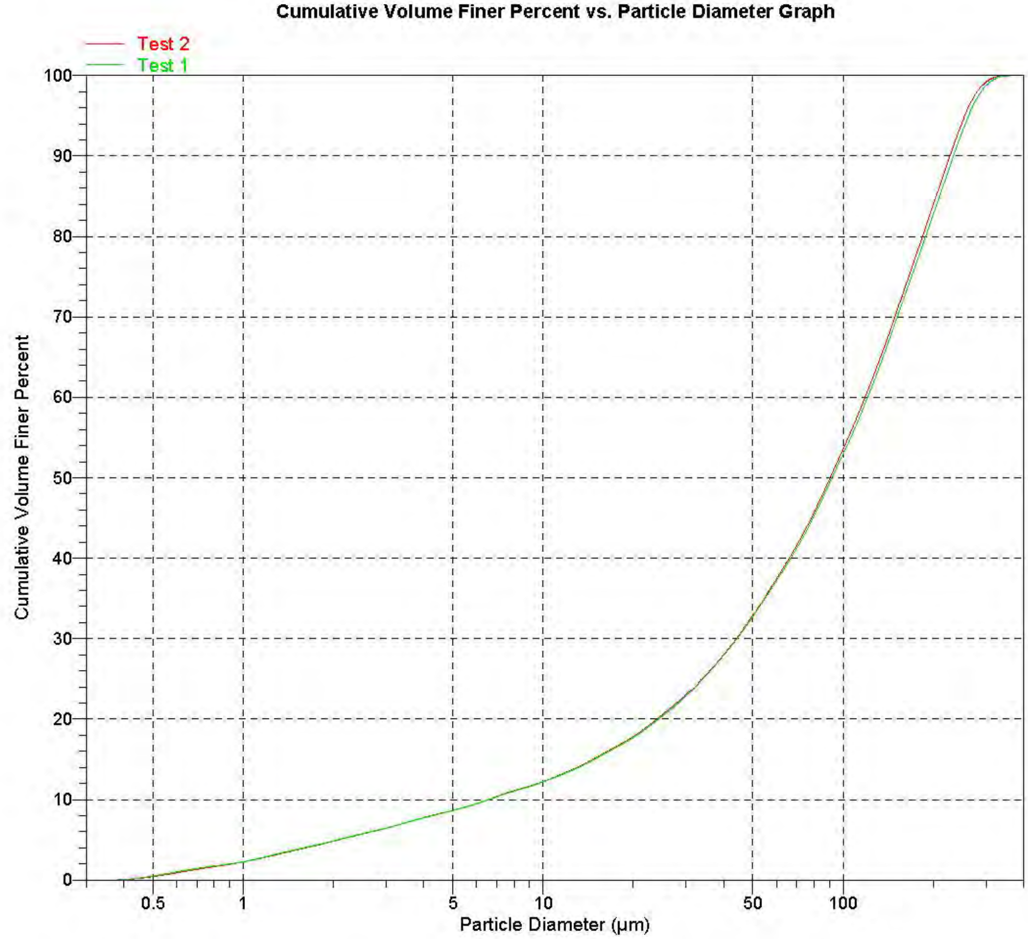
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 5

Sample: 3138
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104003A.SMP

Test Number: 2
Analyzed: 6/24/2011 10:37:17AM
Reported: 6/24/2011 10:48:44AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

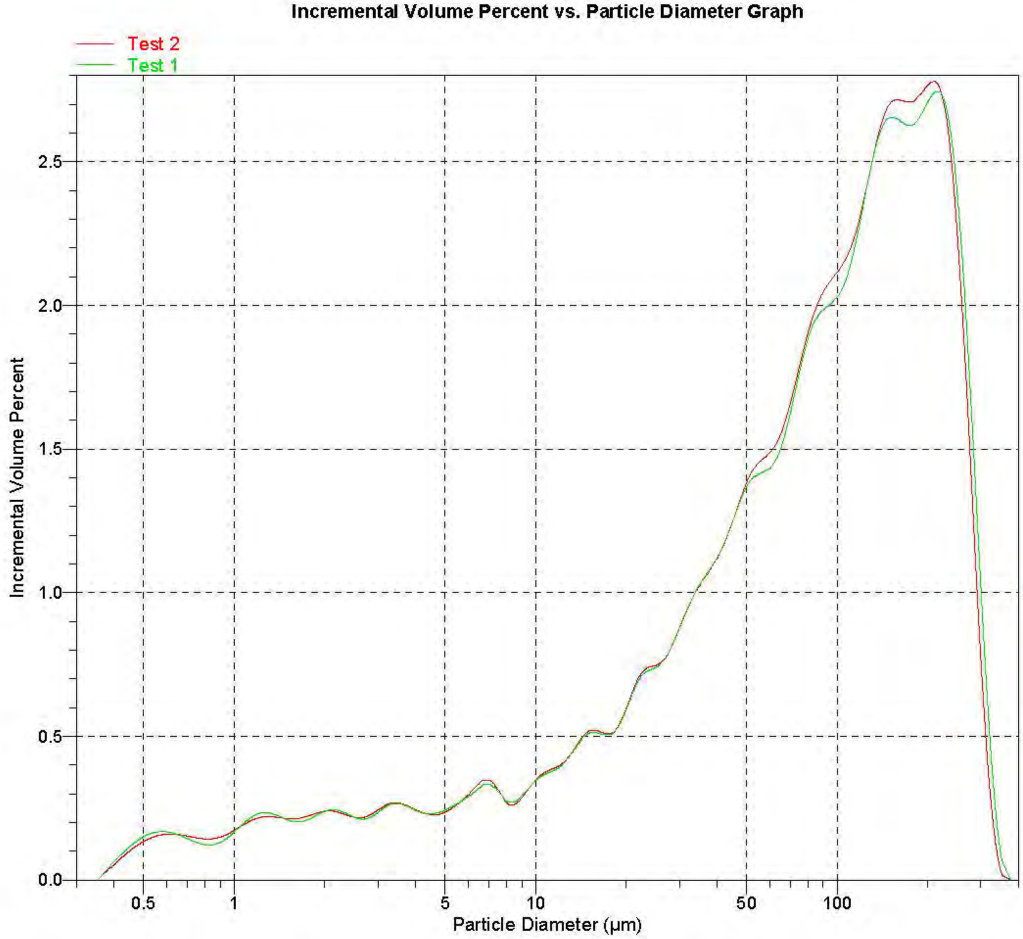


Sample: 3138
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104003A.SMP

Test Number: 2
Analyzed: 6/24/2011 10:37:17AM
Reported: 6/24/2011 10:48:44AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph

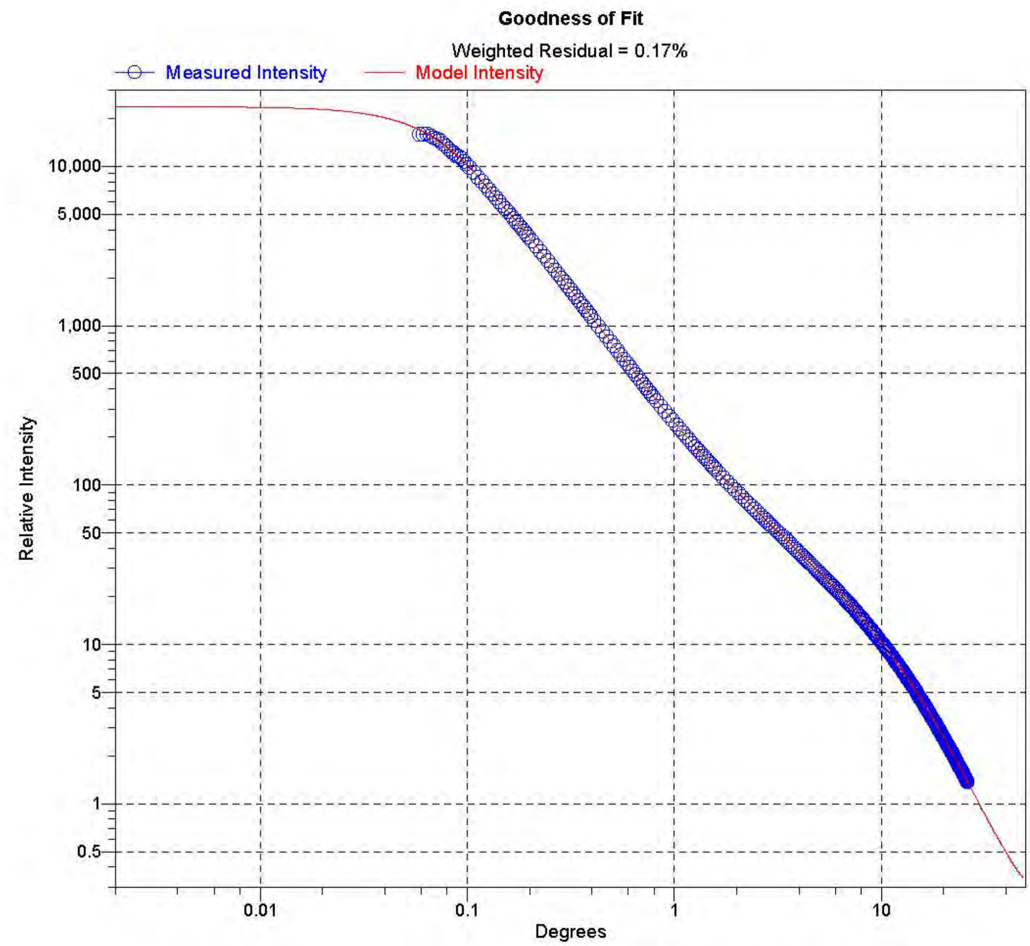


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

Sample: 3138
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104003A.SMP

Test Number: 2
Analyzed: 6/24/2011 10:37:17AM
Reported: 6/24/2011 10:48:44AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#16-3141

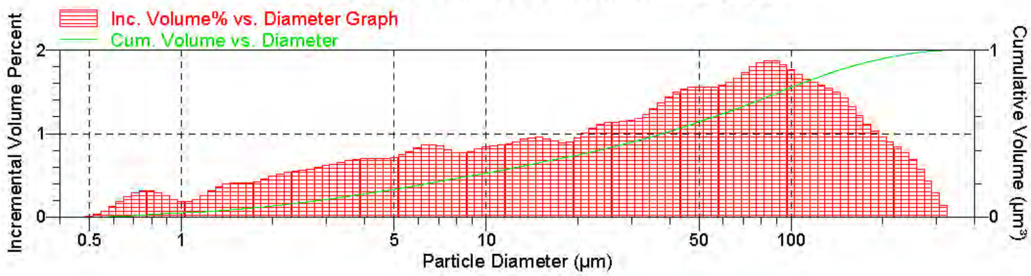
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

Sample: 3141.
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104004.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 11:28:28AM	Material:	Sediment / Water
Reported:	6/24/2011 11:30:32AM	Background:	Water RI 1.331
Background:	6/24/2011 8:21:25AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.01938 %
Obscuration: 31.8 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	60.713	0.480	Mode	84.083	0.000
Median	38.020	0.408			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	155.719
50.0	38.020
10.0	2.866

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3141.
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104004.SMP

Test Number: 2
Analyzed: 6/24/2011 11:28:28AM
Reported: 6/24/2011 11:30:32AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
325.462	307.256	316.228	99.9	0.1	0.0
307.256	290.068	298.538	99.6	0.3	0.1
290.068	273.842	281.838	99.1	0.4	0.1
273.842	258.523	266.073	98.6	0.6	0.1
258.523	244.062	251.189	97.9	0.7	0.0
244.062	230.409	237.137	97.1	0.8	0.1
230.409	217.520	223.872	96.3	0.8	0.2
217.520	205.353	211.349	95.4	0.9	0.3
205.353	193.865	199.526	94.4	1.0	0.3
193.865	183.021	188.365	93.4	1.0	0.3
183.021	172.783	177.828	92.3	1.1	0.3
172.783	163.117	167.880	91.1	1.2	0.3
163.117	153.993	158.489	89.7	1.3	0.2
153.993	145.378	149.624	88.3	1.4	0.2
145.378	137.246	141.254	86.8	1.5	0.2
137.246	129.569	133.352	85.3	1.5	0.2
129.569	122.321	125.893	83.7	1.6	0.2
122.321	115.478	118.850	82.1	1.6	0.2
115.478	109.018	112.202	80.4	1.7	0.2
109.018	102.920	105.925	78.7	1.7	0.2
102.920	97.163	100.000	76.9	1.8	0.2
97.163	91.728	94.406	75.1	1.8	0.2
91.728	86.596	89.125	73.2	1.9	0.2
86.596	81.752	84.140	71.4	1.9	0.2
81.752	77.179	79.433	69.5	1.9	0.2
77.179	72.862	74.989	67.7	1.8	0.2
72.862	68.786	70.795	66.0	1.7	0.2
68.786	64.938	66.834	64.3	1.7	0.2
64.938	61.306	63.096	62.7	1.6	0.2
61.306	57.876	59.566	61.1	1.6	0.2
57.876	54.639	56.234	59.6	1.6	0.2
54.639	51.582	53.088	58.0	1.6	0.2
51.582	48.697	50.119	56.4	1.6	0.2
48.697	45.973	47.315	54.9	1.6	0.2
45.973	43.401	44.668	53.4	1.5	0.2
43.401	40.973	42.170	51.9	1.5	0.3
40.973	38.681	39.811	50.4	1.4	0.3
38.681	36.517	37.584	49.0	1.4	0.3
36.517	34.475	35.481	47.8	1.3	0.3
34.475	32.546	33.497	46.5	1.2	0.3
32.546	30.726	31.623	45.3	1.2	0.3
30.726	29.007	29.854	44.2	1.2	0.3
29.007	27.384	28.184	43.0	1.1	0.3
27.384	25.852	26.607	41.9	1.1	0.3

Sample: 3141.
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104004.SMP

Test Number: 2
Analyzed: 6/24/2011 11:28:28AM
Reported: 6/24/2011 11:30:32AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
25.852	24.406	25.119	40.8	1.1	0.3
24.406	23.041	23.714	39.6	1.1	0.3
23.041	21.752	22.387	38.6	1.1	0.3
21.752	20.535	21.135	37.6	1.0	0.3
20.535	19.387	19.953	36.6	0.9	0.3
19.387	18.302	18.836	35.7	0.9	0.3
18.302	17.278	17.783	34.8	0.9	0.3
17.278	16.312	16.788	33.9	0.9	0.3
16.312	15.399	15.849	33.0	0.9	0.3
15.399	14.538	14.962	32.0	1.0	0.3
14.538	13.725	14.125	31.1	1.0	0.3
13.725	12.957	13.335	30.2	0.9	0.3
12.957	12.232	12.589	29.3	0.9	0.3
12.232	11.548	11.885	28.4	0.9	0.3
11.548	10.902	11.220	27.5	0.9	0.3
10.902	10.292	10.593	26.6	0.9	0.3
10.292	9.716	10.000	25.8	0.8	0.3
9.716	9.173	9.441	25.0	0.8	0.3
9.173	8.660	8.913	24.2	0.8	0.2
8.660	8.175	8.414	23.4	0.8	0.2
8.175	7.718	7.943	22.7	0.8	0.2
7.718	7.286	7.499	21.9	0.8	0.2
7.286	6.879	7.079	21.0	0.8	0.2
6.879	6.494	6.683	20.1	0.9	0.2
6.494	6.131	6.310	19.3	0.9	0.2
6.131	5.788	5.957	18.4	0.8	0.2
5.788	5.464	5.623	17.7	0.8	0.2
5.464	5.158	5.309	16.9	0.7	0.2
5.158	4.870	5.012	16.2	0.7	0.2
4.870	4.597	4.732	15.5	0.7	0.2
4.597	4.340	4.467	14.8	0.7	0.1
4.340	4.097	4.217	14.1	0.7	0.1
4.097	3.868	3.981	13.4	0.7	0.1
3.868	3.652	3.758	12.7	0.7	0.1
3.652	3.447	3.548	12.0	0.7	0.1
3.447	3.255	3.350	11.4	0.7	0.1
3.255	3.073	3.162	10.7	0.6	0.1
3.073	2.901	2.985	10.1	0.6	0.1
2.901	2.738	2.818	9.5	0.6	0.1
2.738	2.585	2.661	9.0	0.6	0.1
2.585	2.441	2.512	8.4	0.6	0.1
2.441	2.304	2.371	7.9	0.5	0.1
2.304	2.175	2.239	7.3	0.5	0.1
2.175	2.054	2.113	6.8	0.5	0.1

Sample: 3141.
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104004.SMP

Test Number: 2
Analyzed: 6/24/2011 11:28:28AM
Reported: 6/24/2011 11:30:32AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

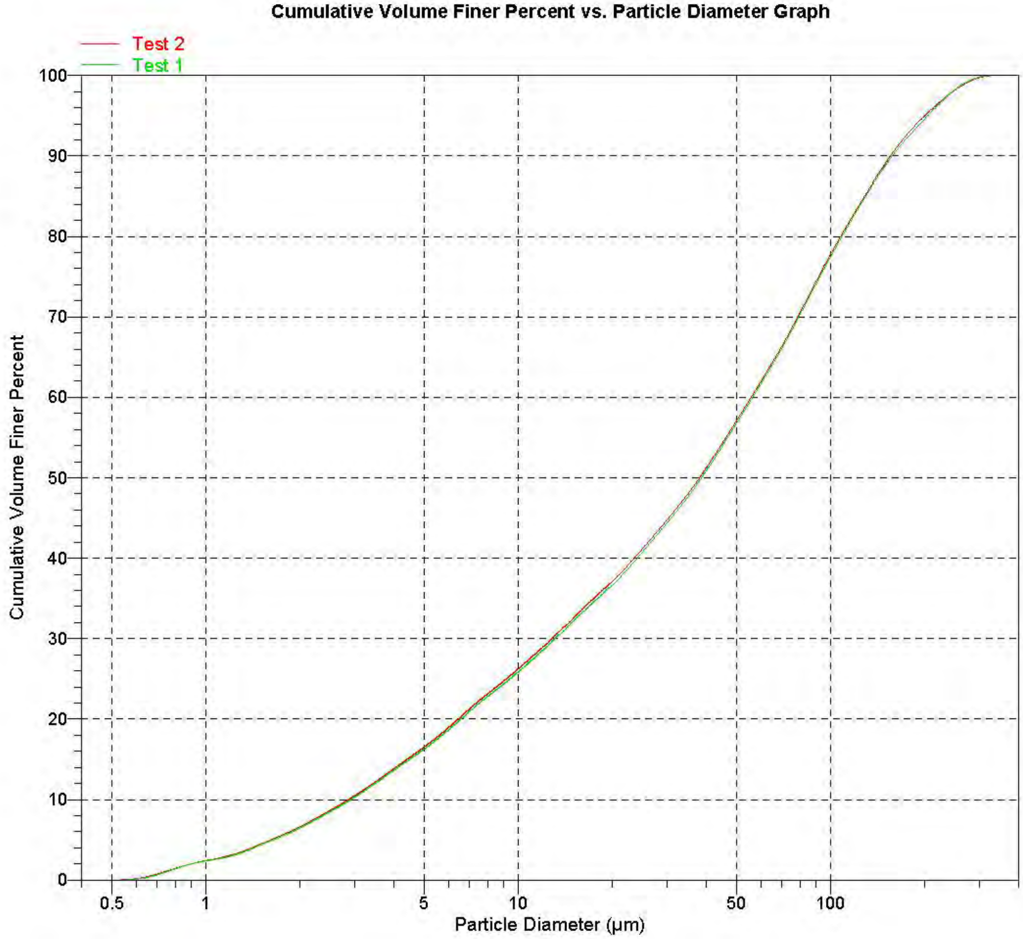
High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.054	1.939	1.995	6.3	0.5	0.1
1.939	1.830	1.884	5.9	0.5	0.1
1.830	1.728	1.778	5.4	0.4	0.1
1.728	1.631	1.679	5.0	0.4	0.1
1.631	1.540	1.585	4.6	0.4	0.1
1.540	1.454	1.496	4.2	0.4	0.1
1.454	1.372	1.413	3.8	0.4	0.1
1.372	1.296	1.334	3.5	0.4	0.1
1.296	1.223	1.259	3.1	0.3	0.1
1.223	1.155	1.189	2.9	0.3	0.1
1.155	1.090	1.122	2.7	0.2	0.0
1.090	1.029	1.059	2.5	0.2	0.0
1.029	0.972	1.000	2.3	0.2	0.0
0.972	0.917	0.944	2.1	0.2	0.0
0.917	0.866	0.891	1.8	0.2	0.0
0.866	0.818	0.841	1.6	0.3	0.0
0.818	0.772	0.794	1.2	0.3	0.0
0.772	0.729	0.750	0.9	0.3	0.1
0.729	0.688	0.708	0.7	0.3	0.1
0.688	0.649	0.668	0.4	0.2	0.1
0.649	0.613	0.631	0.2	0.2	0.1
0.613	0.579	0.596	0.1	0.1	0.0
0.579	0.546	0.562	0.0	0.1	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0
0.487	0.460	0.473	0.0	0.0	0.0

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 5

Sample: 3141.
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104004.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 11:28:28AM	Material:	Sediment / Water
Reported:	6/24/2011 11:30:32AM	Background:	Water RI 1.331
Background:	6/24/2011 8:21:25AM	Smoothing:	Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

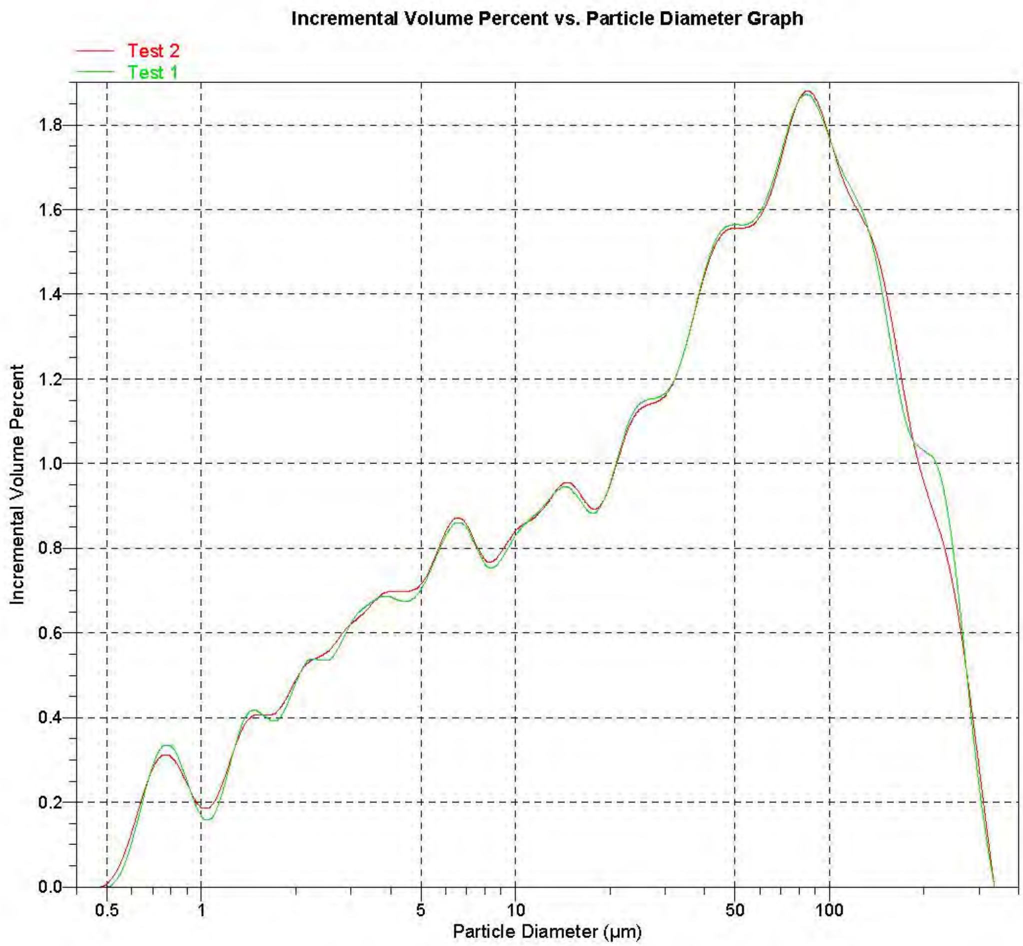


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 6

Sample: 3141.
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104004.SMP

Test Number: 2
Analyzed: 6/24/2011 11:28:28AM
Reported: 6/24/2011 11:30:32AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

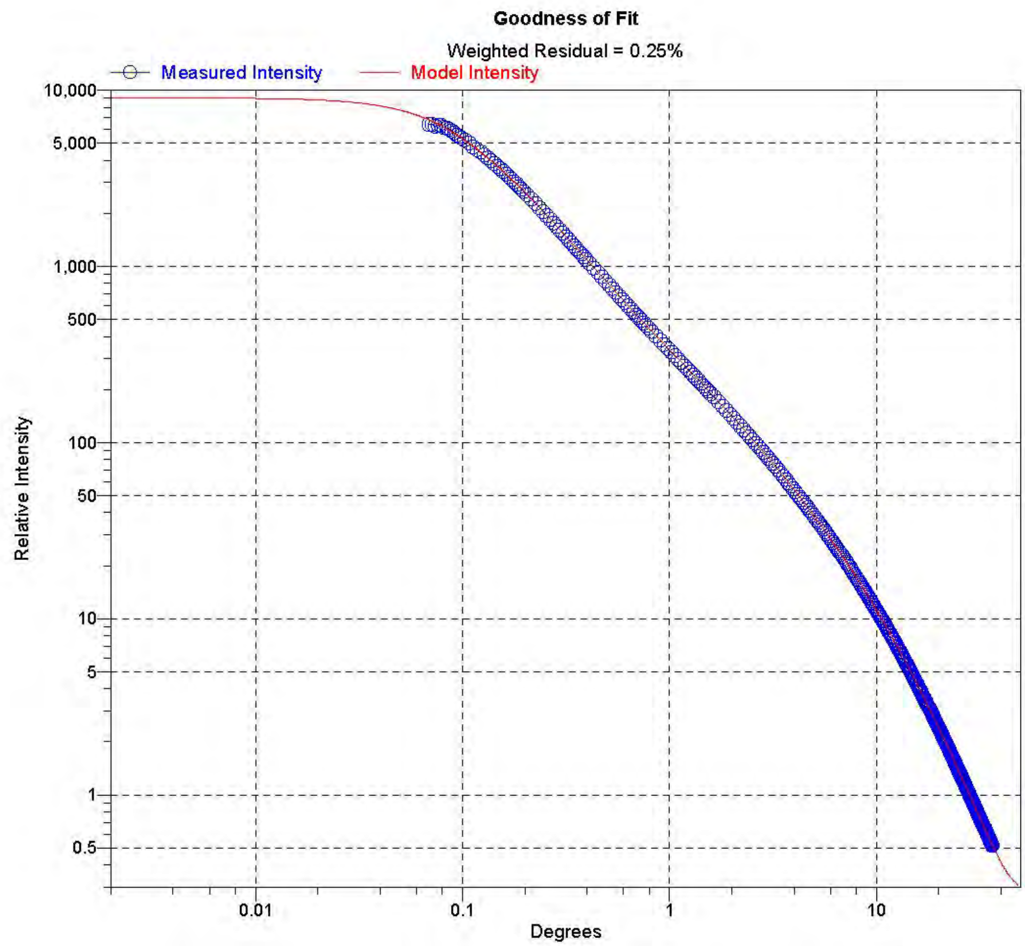


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

Sample: 3141.
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104004.SMP

Test Number: 2
Analyzed: 6/24/2011 11:28:28AM
Reported: 6/24/2011 11:30:32AM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#17-3146

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 1

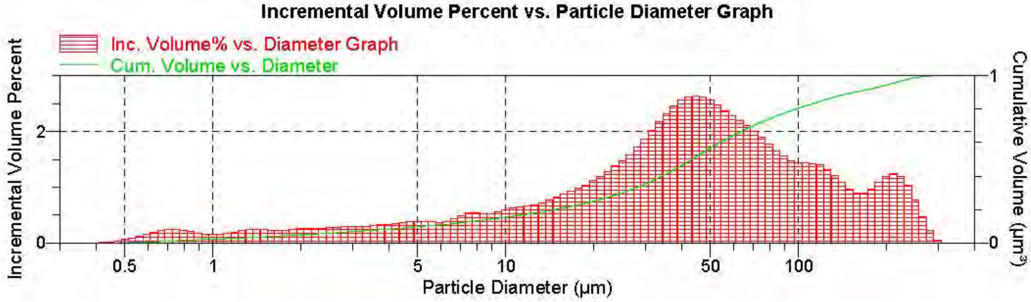
Sample: 3146
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104005.SMP

Test Number: 2
Analyzed: 6/24/2011 2:33:04PM
Reported: 6/24/2011 2:45:39PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02426 %
Obscuration: 29.0 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	62.252	0.523	Mode	44.614	0.000
Median	43.292	0.151			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	154.107
50.0	43.292
10.0	5.259

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 3146
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104005.SMP

Test Number: 2
Analyzed: 6/24/2011 2:33:04PM
Reported: 6/24/2011 2:45:39PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
307.256	290.068	298.538	99.9	0.1	0.0
290.068	273.842	281.838	99.7	0.2	0.1
273.842	258.523	266.073	99.3	0.5	0.2
258.523	244.062	251.189	98.5	0.8	0.3
244.062	230.409	237.137	97.5	1.0	0.4
230.409	217.520	223.872	96.3	1.2	0.4
217.520	205.353	211.349	95.0	1.2	0.4
205.353	193.865	199.526	93.8	1.2	0.4
193.865	183.021	188.365	92.7	1.1	0.3
183.021	172.783	177.828	91.8	1.0	0.2
172.783	163.117	167.880	90.9	0.9	0.2
163.117	153.993	158.489	90.0	0.9	0.1
153.993	145.378	149.624	89.0	1.0	0.1
145.378	137.246	141.254	88.0	1.1	0.2
137.246	129.569	133.352	86.7	1.2	0.2
129.569	122.321	125.893	85.4	1.3	0.2
122.321	115.478	118.850	84.0	1.4	0.2
115.478	109.018	112.202	82.6	1.4	0.2
109.018	102.920	105.925	81.2	1.4	0.1
102.920	97.163	100.000	79.7	1.4	0.1
97.163	91.728	94.406	78.2	1.5	0.0
91.728	86.596	89.125	76.7	1.6	0.1
86.596	81.752	84.140	75.0	1.7	0.1
81.752	77.179	79.433	73.3	1.8	0.0
77.179	72.862	74.989	71.4	1.9	0.0
72.862	68.786	70.795	69.4	2.0	0.0
68.786	64.938	66.834	67.3	2.1	0.1
64.938	61.306	63.096	65.1	2.2	0.1
61.306	57.876	59.566	62.8	2.3	0.2
57.876	54.639	56.234	60.4	2.4	0.2
54.639	51.582	53.088	57.9	2.5	0.2
51.582	48.697	50.119	55.4	2.6	0.2
48.697	45.973	47.315	52.8	2.6	0.2
45.973	43.401	44.668	50.1	2.6	0.2
43.401	40.973	42.170	47.5	2.6	0.2
40.973	38.681	39.811	44.9	2.6	0.1
38.681	36.517	37.584	42.5	2.5	0.1
36.517	34.475	35.481	40.2	2.3	0.1
34.475	32.546	33.497	38.0	2.2	0.1

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 3

Sample: 3146
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104005.SMP

Test Number: 2
Analyzed: 6/24/2011 2:33:04PM
Reported: 6/24/2011 2:45:39PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
32.546	30.726	31.623	36.0	2.0	0.1
30.726	29.007	29.854	34.1	1.9	0.1
29.007	27.384	28.184	32.4	1.7	0.1
27.384	25.852	26.607	30.8	1.6	0.1
25.852	24.406	25.119	29.3	1.5	0.1
24.406	23.041	23.714	27.9	1.4	0.1
23.041	21.752	22.387	26.6	1.3	0.1
21.752	20.535	21.135	25.4	1.2	0.1
20.535	19.387	19.953	24.3	1.1	0.1
19.387	18.302	18.836	23.3	1.0	0.1
18.302	17.278	17.783	22.3	1.0	0.1
17.278	16.312	16.788	21.4	0.9	0.1
16.312	15.399	15.849	20.5	0.9	0.1
15.399	14.538	14.962	19.7	0.8	0.1
14.538	13.725	14.125	18.9	0.8	0.0
13.725	12.957	13.335	18.2	0.7	0.0
12.957	12.232	12.589	17.5	0.7	0.0
12.232	11.548	11.885	16.9	0.7	0.0
11.548	10.902	11.220	16.2	0.6	0.0
10.902	10.292	10.593	15.6	0.6	0.0
10.292	9.716	10.000	15.0	0.6	0.0
9.716	9.173	9.441	14.5	0.6	0.0
9.173	8.660	8.913	13.9	0.5	0.0
8.660	8.175	8.414	13.4	0.5	0.0
8.175	7.718	7.943	12.9	0.5	0.0
7.718	7.286	7.499	12.3	0.5	0.0
7.286	6.879	7.079	11.8	0.5	0.0
6.879	6.494	6.683	11.4	0.4	0.0
6.494	6.131	6.310	11.0	0.4	0.0
6.131	5.788	5.957	10.6	0.4	0.0
5.788	5.464	5.623	10.3	0.4	0.0
5.464	5.158	5.309	9.9	0.4	0.0
5.158	4.870	5.012	9.5	0.4	0.0
4.870	4.597	4.732	9.1	0.4	0.0
4.597	4.340	4.467	8.7	0.4	0.0
4.340	4.097	4.217	8.4	0.3	0.0
4.097	3.868	3.981	8.1	0.3	0.0
3.868	3.652	3.758	7.7	0.3	0.0
3.652	3.447	3.548	7.4	0.3	0.0

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127

Sample: 3146
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104005.SMP

Test Number: 2
Analyzed: 6/24/2011 2:33:04PM
Reported: 6/24/2011 2:45:39PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.447	3.255	3.350	7.1	0.3	0.0
3.255	3.073	3.162	6.8	0.3	0.0
3.073	2.901	2.985	6.5	0.3	0.0
2.901	2.738	2.818	6.2	0.3	0.0
2.738	2.585	2.661	5.9	0.3	0.0
2.585	2.441	2.512	5.7	0.3	0.0
2.441	2.304	2.371	5.4	0.3	0.0
2.304	2.175	2.239	5.1	0.3	0.0
2.175	2.054	2.113	4.9	0.3	0.0
2.054	1.939	1.995	4.6	0.3	0.0
1.939	1.830	1.884	4.4	0.2	0.0
1.830	1.728	1.778	4.2	0.2	0.0
1.728	1.631	1.679	3.9	0.2	0.0
1.631	1.540	1.585	3.7	0.2	0.0
1.540	1.454	1.496	3.5	0.2	0.0
1.454	1.372	1.413	3.2	0.2	0.0
1.372	1.296	1.334	3.0	0.2	0.0
1.296	1.223	1.259	2.8	0.2	0.0
1.223	1.155	1.189	2.6	0.2	0.0
1.155	1.090	1.122	2.4	0.2	0.0
1.090	1.029	1.059	2.3	0.2	0.0
1.029	0.972	1.000	2.1	0.1	0.0
0.972	0.917	0.944	2.0	0.2	0.0
0.917	0.866	0.891	1.8	0.2	0.0
0.866	0.818	0.841	1.6	0.2	0.0
0.818	0.772	0.794	1.4	0.2	0.0
0.772	0.729	0.750	1.1	0.2	0.0
0.729	0.688	0.708	0.9	0.2	0.0
0.688	0.649	0.668	0.7	0.2	0.0
0.649	0.613	0.631	0.5	0.2	0.0
0.613	0.579	0.596	0.3	0.2	0.0
0.579	0.546	0.562	0.2	0.1	0.0
0.546	0.516	0.531	0.1	0.1	0.0
0.516	0.487	0.501	0.1	0.1	0.0
0.487	0.460	0.473	0.0	0.0	0.0
0.460	0.434	0.447	0.0	0.0	0.0
0.434	0.410	0.422	0.0	0.0	0.0
0.410	0.387	0.398	0.0	0.0	0.0
0.387	0.365	0.376	0.0	0.0	0.0

Micromeritics Instrument Corporation

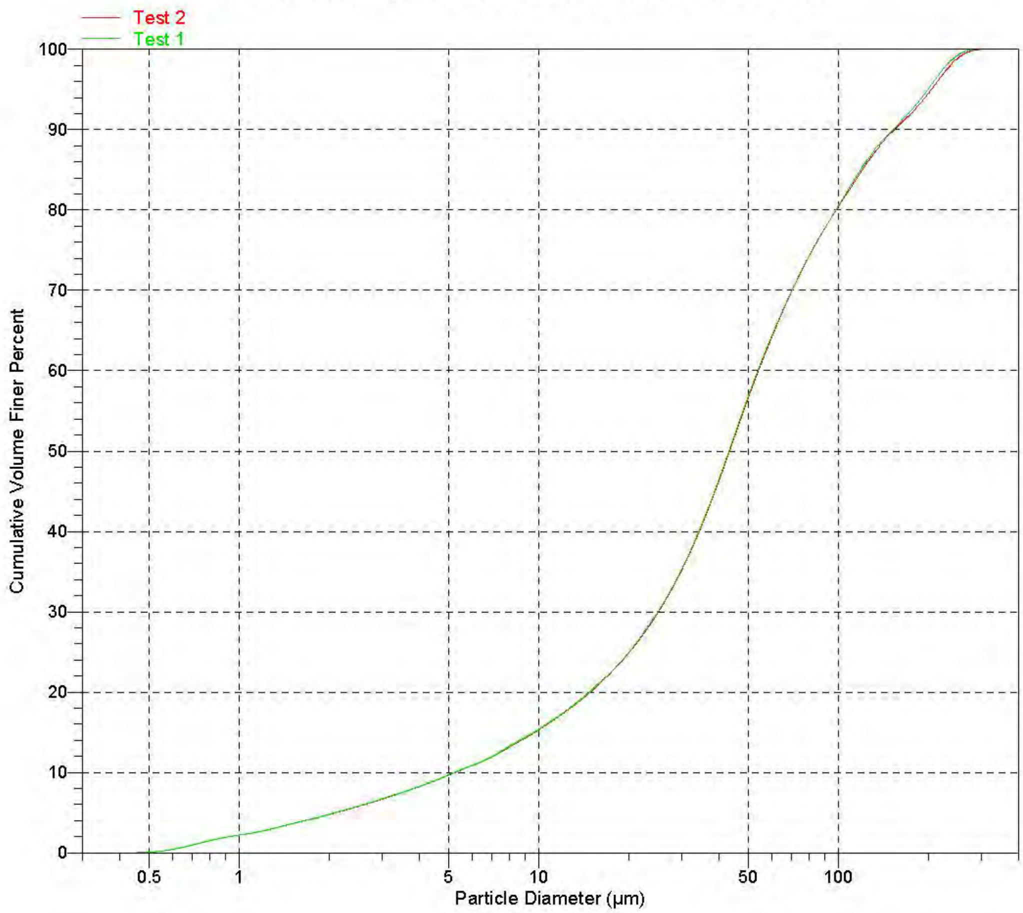
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 5

Sample: 3146
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104005.SMP

Test Number: 2
Analyzed: 6/24/2011 2:33:04PM
Reported: 6/24/2011 2:45:39PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



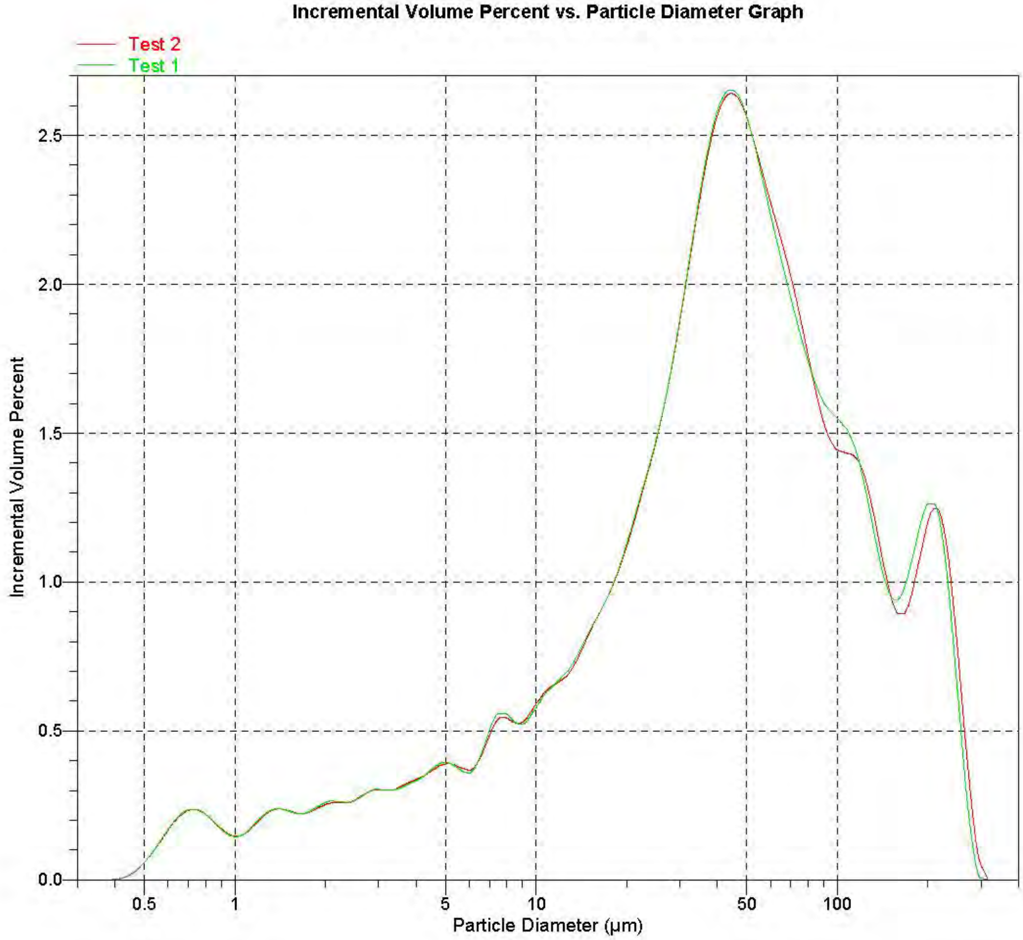
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 3146
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104005.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 2:33:04PM	Material:	Sediment / Water
Reported:	6/24/2011 2:45:39PM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Incremental Volume Percent vs. Particle Diameter Graph

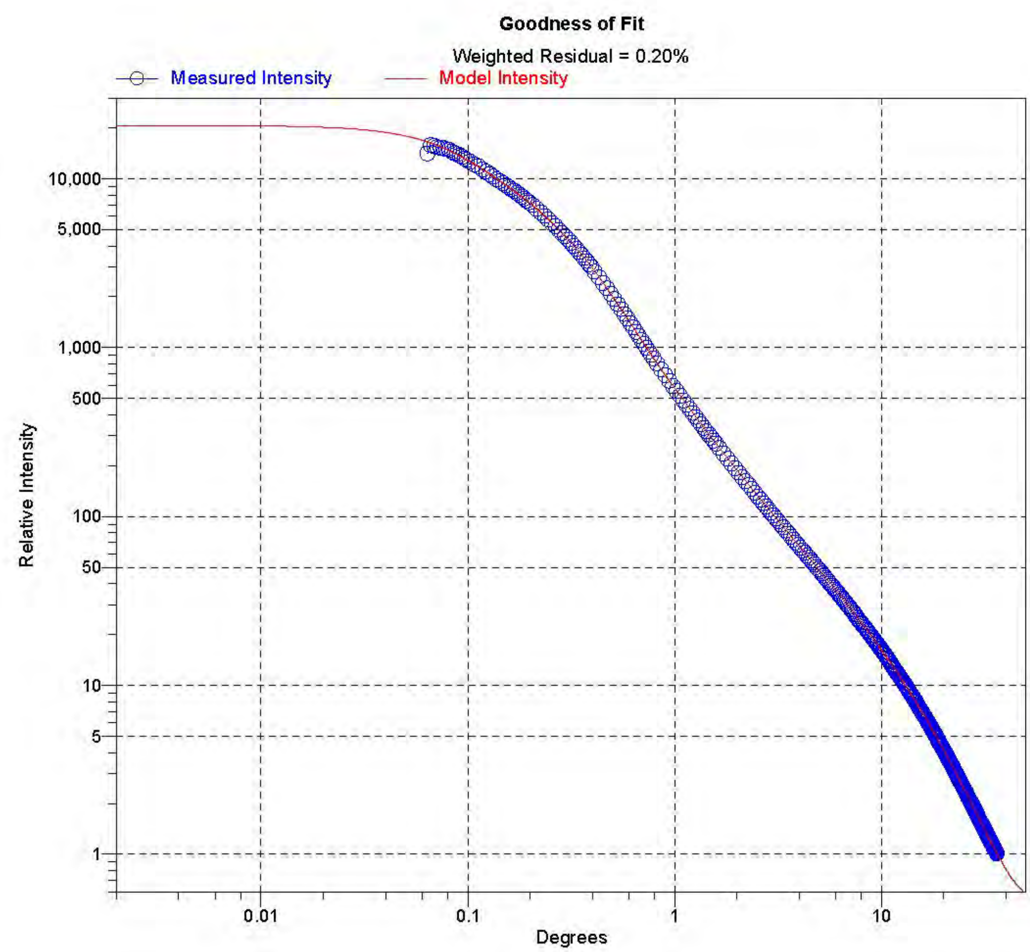


Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127

Sample: 3146
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104005.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 2:33:04PM	Material:	Sediment / Water
Reported:	6/24/2011 2:45:39PM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium



Sample#18-3149

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 | Saturn DigiSizer II 5205 V1.01 | 5200 LSHU V3.00 S/N 127 | Page 1

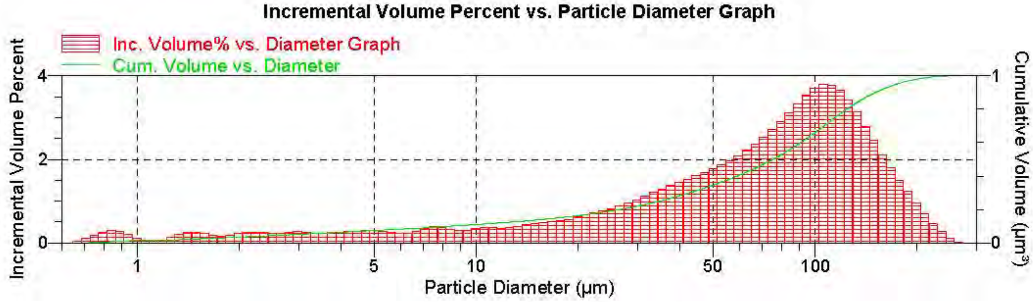
Sample: 3149
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104006.SMP

Test Number: 2
Analyzed: 6/24/2011 3:07:23PM
Reported: 6/24/2011 3:25:13PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.03388 %
Obscuration: 29.5 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	78.655	0.610	Mode	105.797	0.000
Median	75.214	0.467			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	150.753
50.0	75.214
10.0	8.337

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 3149
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104006.SMP

Test Number: 2
Analyzed: 6/24/2011 3:07:23PM
Reported: 6/24/2011 3:25:13PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
273.842	258.523	266.073	100.0	0.0	0.0
258.523	244.062	251.189	99.9	0.1	0.0
244.062	230.409	237.137	99.6	0.3	0.1
230.409	217.520	223.872	99.1	0.5	0.2
217.520	205.353	211.349	98.4	0.7	0.3
205.353	193.865	199.526	97.5	1.0	0.4
193.865	183.021	188.365	96.3	1.2	0.5
183.021	172.783	177.828	94.8	1.5	0.5
172.783	163.117	167.880	93.0	1.8	0.5
163.117	153.993	158.489	90.9	2.1	0.4
153.993	145.378	149.624	88.4	2.4	0.3
145.378	137.246	141.254	85.6	2.8	0.2
137.246	129.569	133.352	82.5	3.1	0.2
129.569	122.321	125.893	79.1	3.4	0.1
122.321	115.478	118.850	75.4	3.7	0.1
115.478	109.018	112.202	71.7	3.8	0.1
109.018	102.920	105.925	67.9	3.8	0.2
102.920	97.163	100.000	64.2	3.7	0.2
97.163	91.728	94.406	60.6	3.5	0.3
91.728	86.596	89.125	57.3	3.3	0.3
86.596	81.752	84.140	54.2	3.1	0.3
81.752	77.179	79.433	51.2	2.9	0.3
77.179	72.862	74.989	48.5	2.7	0.3
72.862	68.786	70.795	46.0	2.5	0.3
68.786	64.938	66.834	43.6	2.4	0.3
64.938	61.306	63.096	41.4	2.2	0.2
61.306	57.876	59.566	39.3	2.1	0.2
57.876	54.639	56.234	37.3	2.0	0.2
54.639	51.582	53.088	35.5	1.9	0.2
51.582	48.697	50.119	33.7	1.8	0.2
48.697	45.973	47.315	32.0	1.7	0.2
45.973	43.401	44.668	30.4	1.6	0.2
43.401	40.973	42.170	28.9	1.5	0.2
40.973	38.681	39.811	27.4	1.4	0.2
38.681	36.517	37.584	26.0	1.4	0.2
36.517	34.475	35.481	24.7	1.3	0.2
34.475	32.546	33.497	23.5	1.2	0.2
32.546	30.726	31.623	22.4	1.1	0.2
30.726	29.007	29.854	21.4	1.0	0.2

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 3

Sample: 3149
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104006.SMP

Test Number: 2
Analyzed: 6/24/2011 3:07:23PM
Reported: 6/24/2011 3:25:13PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
29.007	27.384	28.184	20.5	0.9	0.2
27.384	25.852	26.607	19.6	0.9	0.2
25.852	24.406	25.119	18.8	0.8	0.2
24.406	23.041	23.714	18.0	0.8	0.2
23.041	21.752	22.387	17.3	0.7	0.2
21.752	20.535	21.135	16.6	0.7	0.2
20.535	19.387	19.953	16.0	0.6	0.2
19.387	18.302	18.836	15.4	0.6	0.2
18.302	17.278	17.783	14.9	0.5	0.2
17.278	16.312	16.788	14.4	0.5	0.2
16.312	15.399	15.849	13.9	0.5	0.2
15.399	14.538	14.962	13.4	0.5	0.2
14.538	13.725	14.125	13.0	0.4	0.1
13.725	12.957	13.335	12.6	0.4	0.1
12.957	12.232	12.589	12.2	0.4	0.1
12.232	11.548	11.885	11.9	0.4	0.1
11.548	10.902	11.220	11.5	0.4	0.1
10.902	10.292	10.593	11.1	0.4	0.1
10.292	9.716	10.000	10.8	0.3	0.1
9.716	9.173	9.441	10.5	0.3	0.1
9.173	8.660	8.913	10.2	0.3	0.1
8.660	8.175	8.414	9.9	0.3	0.1
8.175	7.718	7.943	9.5	0.4	0.1
7.718	7.286	7.499	9.1	0.4	0.1
7.286	6.879	7.079	8.8	0.3	0.1
6.879	6.494	6.683	8.5	0.3	0.1
6.494	6.131	6.310	8.3	0.2	0.1
6.131	5.788	5.957	8.1	0.2	0.1
5.788	5.464	5.623	7.9	0.2	0.1
5.464	5.158	5.309	7.6	0.3	0.1
5.158	4.870	5.012	7.3	0.3	0.1
4.870	4.597	4.732	7.0	0.3	0.1
4.597	4.340	4.467	6.7	0.3	0.1
4.340	4.097	4.217	6.4	0.3	0.0
4.097	3.868	3.981	6.2	0.3	0.0
3.868	3.652	3.758	5.9	0.2	0.1
3.652	3.447	3.548	5.7	0.2	0.1
3.447	3.255	3.350	5.5	0.2	0.1
3.255	3.073	3.162	5.2	0.3	0.1

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 3149
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104006.SMP

Test Number: 2
Analyzed: 6/24/2011 3:07:23PM
Reported: 6/24/2011 3:25:13PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.073	2.901	2.985	5.0	0.3	0.1
2.901	2.738	2.818	4.7	0.3	0.1
2.738	2.585	2.661	4.5	0.2	0.0
2.585	2.441	2.512	4.2	0.2	0.0
2.441	2.304	2.371	4.0	0.2	0.0
2.304	2.175	2.239	3.7	0.3	0.0
2.175	2.054	2.113	3.5	0.2	0.0
2.054	1.939	1.995	3.3	0.2	0.0
1.939	1.830	1.884	3.1	0.2	0.0
1.830	1.728	1.778	2.9	0.2	0.0
1.728	1.631	1.679	2.7	0.2	0.0
1.631	1.540	1.585	2.5	0.2	0.0
1.540	1.454	1.496	2.2	0.3	0.0
1.454	1.372	1.413	2.0	0.3	0.0
1.372	1.296	1.334	1.8	0.2	0.0
1.296	1.223	1.259	1.6	0.1	0.0
1.223	1.155	1.189	1.6	0.1	0.0
1.155	1.090	1.122	1.5	0.0	0.0
1.090	1.029	1.059	1.5	0.1	0.0
1.029	0.972	1.000	1.4	0.1	0.0
0.972	0.917	0.944	1.1	0.2	0.0
0.917	0.866	0.891	0.9	0.3	0.0
0.866	0.818	0.841	0.6	0.3	0.0
0.818	0.772	0.794	0.3	0.3	0.0
0.772	0.729	0.750	0.1	0.2	0.0
0.729	0.688	0.708	0.0	0.1	0.0
0.688	0.649	0.668	0.0	0.0	0.0
0.649	0.613	0.631	0.0	0.0	0.0

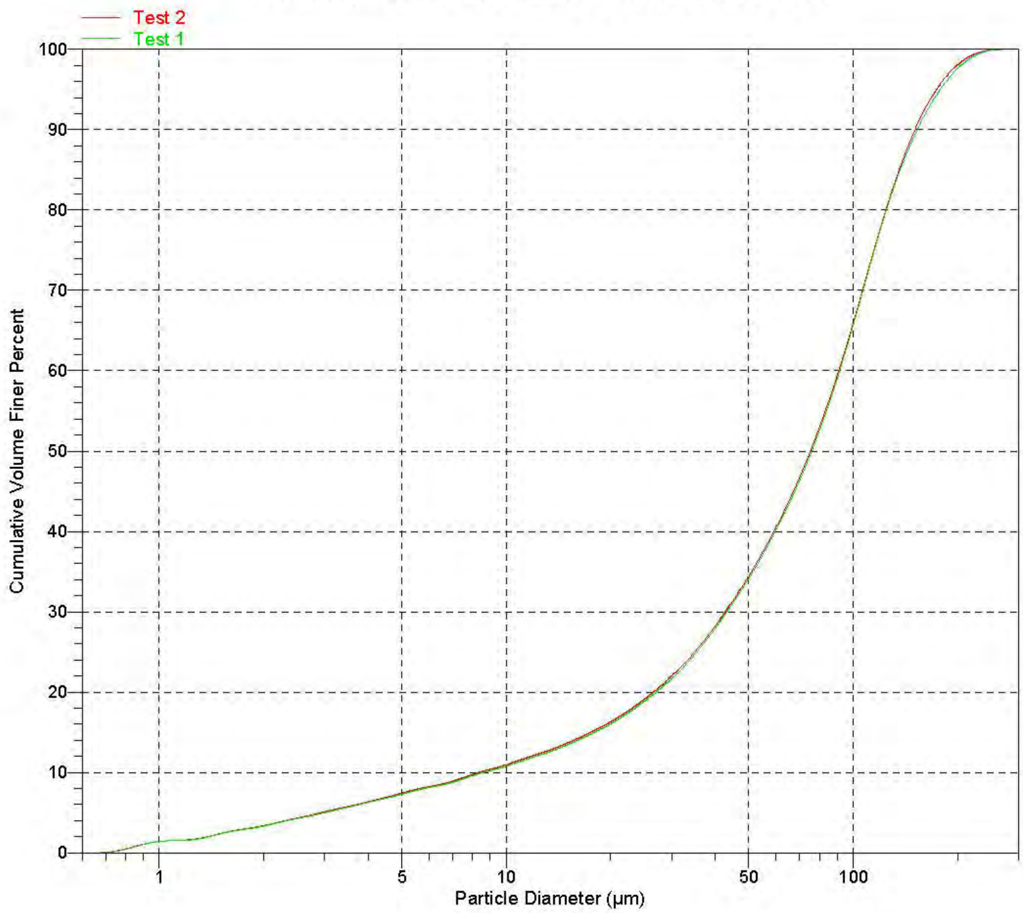
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 5

Sample: 3149
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104006.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 3:07:23PM	Material:	Sediment / Water
Reported:	6/24/2011 3:25:13PM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



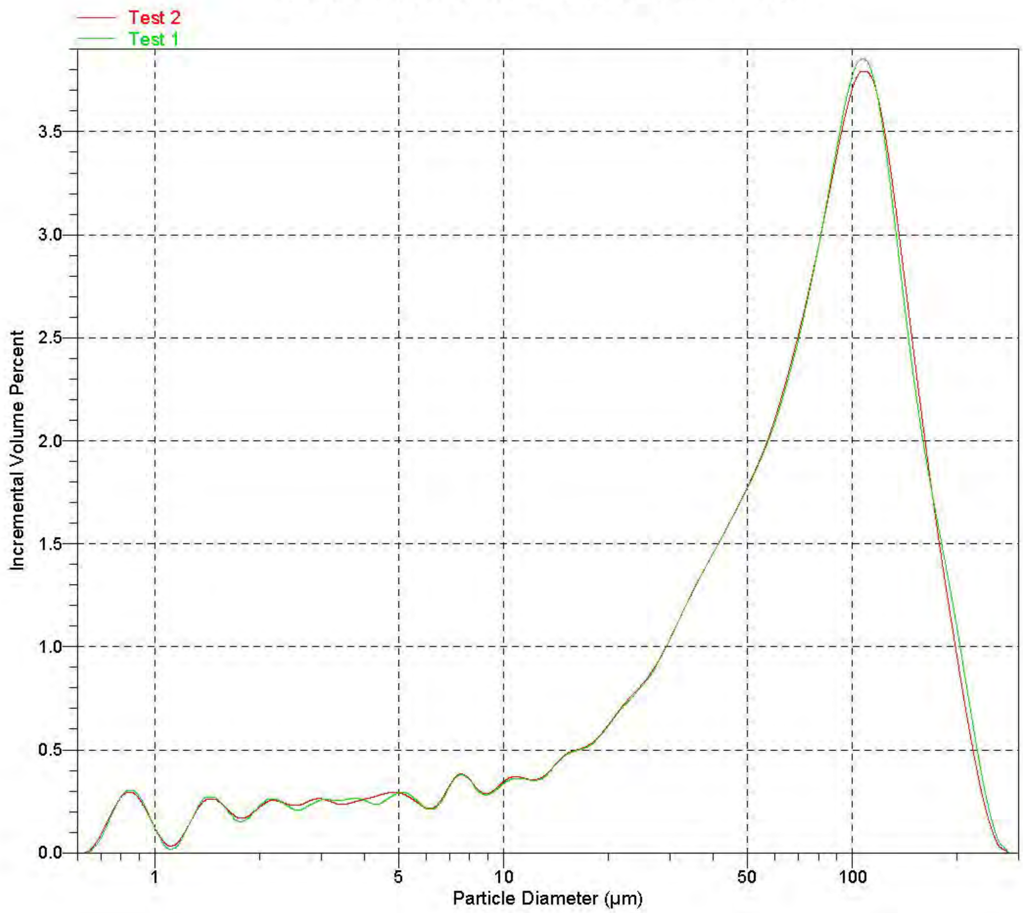
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 3149
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104006.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 3:07:23PM	Material:	Sediment / Water
Reported:	6/24/2011 3:25:13PM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Incremental Volume Percent vs. Particle Diameter Graph



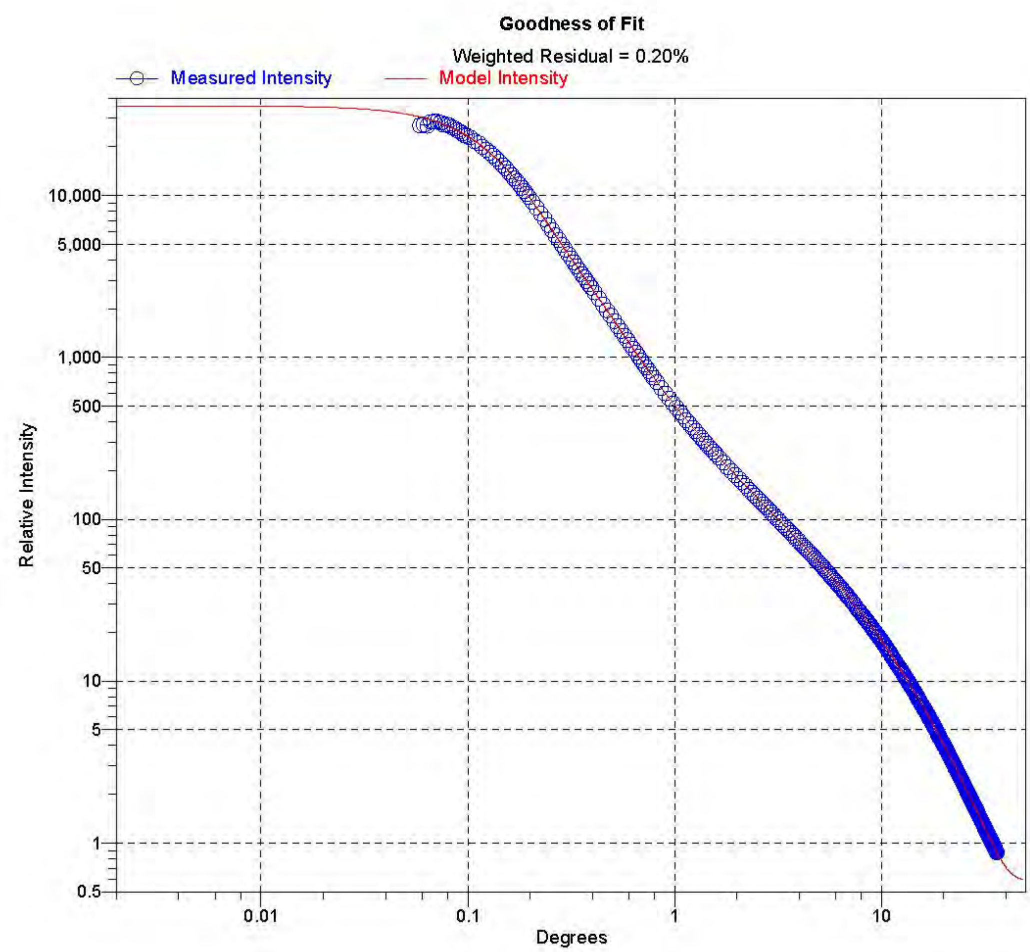
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 3149
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104006.SMP

Test Number: 2
Analyzed: 6/24/2011 3:07:23PM
Reported: 6/24/2011 3:25:13PM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#19-3150

Micromeritics Instrument Corporation

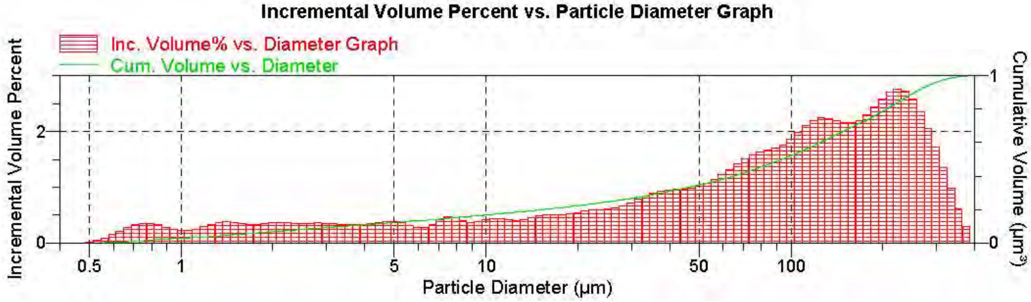
Saturn DigiSizer II 5205 V1.01 | Saturn DigiSizer II 5205 V1.01 | 5200 LSHU V3.00 S/N 127 | Page 1

Sample: 3150
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104007B.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 4:58:56PM	Material:	Sediment / Water
Reported:	6/25/2011 10:09:17AM	Background:	Water RI 1.331
Background:	6/24/2011 7:44:28AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.02151 %
Obscuration: 28.7 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	112.551	2.259	Mode	223.600	0.000
Median	93.375	1.719			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	254.455
50.0	93.375
10.0	3.465

Micromeritics Instrument Corporation

Sample: 3150
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104007B.SMP

Test Number: 2
Analyzed: 6/24/2011 4:58:56PM
Reported: 6/25/2011 10:09:17AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
386.812	365.174	375.837	99.7	0.3	0.1
365.174	344.747	354.813	99.1	0.6	0.3
344.747	325.462	334.965	98.1	1.0	0.5
325.462	307.256	316.228	96.8	1.3	0.7
307.256	290.068	298.538	95.1	1.7	0.9
290.068	273.842	281.838	93.0	2.1	1.0
273.842	258.523	266.073	90.7	2.4	1.0
258.523	244.062	251.189	88.1	2.6	0.9
244.062	230.409	237.137	85.4	2.7	0.9
230.409	217.520	223.872	82.6	2.8	0.9
217.520	205.353	211.349	79.9	2.7	0.9
205.353	193.865	199.526	77.3	2.6	0.9
193.865	183.021	188.365	74.9	2.4	1.0
183.021	172.783	177.828	72.6	2.3	1.0
172.783	163.117	167.880	70.4	2.2	1.0
163.117	153.993	158.489	68.2	2.2	0.9
153.993	145.378	149.624	66.1	2.2	0.8
145.378	137.246	141.254	63.9	2.2	0.8
137.246	129.569	133.352	61.6	2.2	0.7
129.569	122.321	125.893	59.4	2.2	0.7
122.321	115.478	118.850	57.2	2.2	0.7
115.478	109.018	112.202	55.1	2.1	0.7
109.018	102.920	105.925	53.1	2.0	0.6
102.920	97.163	100.000	51.2	1.9	0.6
97.163	91.728	94.406	49.5	1.8	0.6
91.728	86.596	89.125	47.8	1.7	0.5
86.596	81.752	84.140	46.1	1.7	0.5
81.752	77.179	79.433	44.5	1.6	0.4
77.179	72.862	74.989	42.9	1.6	0.4
72.862	68.786	70.795	41.4	1.5	0.4
68.786	64.938	66.834	40.0	1.4	0.3
64.938	61.306	63.096	38.6	1.3	0.3
61.306	57.876	59.566	37.4	1.2	0.3
57.876	54.639	56.234	36.3	1.1	0.3
54.639	51.582	53.088	35.2	1.1	0.2
51.582	48.697	50.119	34.2	1.0	0.2
48.697	45.973	47.315	33.2	1.0	0.2
45.973	43.401	44.668	32.3	1.0	0.2
43.401	40.973	42.170	31.3	1.0	0.1

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 3150
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104007B.SMP

Test Number: 2
Analyzed: 6/24/2011 4:58:56PM
Reported: 6/25/2011 10:09:17AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
40.973	38.681	39.811	30.4	1.0	0.1
38.681	36.517	37.584	29.4	0.9	0.1
36.517	34.475	35.481	28.5	0.9	0.1
34.475	32.546	33.497	27.7	0.8	0.1
32.546	30.726	31.623	26.9	0.8	0.1
30.726	29.007	29.854	26.2	0.7	0.1
29.007	27.384	28.184	25.5	0.7	0.1
27.384	25.852	26.607	24.9	0.6	0.1
25.852	24.406	25.119	24.3	0.6	0.1
24.406	23.041	23.714	23.7	0.6	0.1
23.041	21.752	22.387	23.1	0.6	0.0
21.752	20.535	21.135	22.5	0.6	0.0
20.535	19.387	19.953	22.0	0.5	0.0
19.387	18.302	18.836	21.5	0.5	0.0
18.302	17.278	17.783	21.0	0.5	0.0
17.278	16.312	16.788	20.5	0.5	0.0
16.312	15.399	15.849	20.0	0.5	0.0
15.399	14.538	14.962	19.5	0.5	0.0
14.538	13.725	14.125	19.0	0.4	0.0
13.725	12.957	13.335	18.6	0.4	0.0
12.957	12.232	12.589	18.2	0.4	0.0
12.232	11.548	11.885	17.8	0.4	0.0
11.548	10.902	11.220	17.4	0.4	0.0
10.902	10.292	10.593	16.9	0.4	0.0
10.292	9.716	10.000	16.5	0.4	0.0
9.716	9.173	9.441	16.1	0.4	0.0
9.173	8.660	8.913	15.8	0.4	0.0
8.660	8.175	8.414	15.4	0.4	0.0
8.175	7.718	7.943	14.9	0.5	0.0
7.718	7.286	7.499	14.4	0.5	0.0
7.286	6.879	7.079	14.0	0.4	0.0
6.879	6.494	6.683	13.7	0.3	0.0
6.494	6.131	6.310	13.4	0.3	0.0
6.131	5.788	5.957	13.1	0.3	0.0
5.788	5.464	5.623	12.8	0.3	0.0
5.464	5.158	5.309	12.4	0.4	0.0
5.158	4.870	5.012	12.1	0.4	0.0
4.870	4.597	4.732	11.7	0.4	0.0
4.597	4.340	4.467	11.3	0.4	0.0

Micromeritics Instrument Corporation

Sample: 3150
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104007B.SMP

Test Number: 2
Analyzed: 6/24/2011 4:58:56PM
Reported: 6/25/2011 10:09:17AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
4.340	4.097	4.217	11.0	0.3	0.0
4.097	3.868	3.981	10.6	0.3	0.0
3.868	3.652	3.758	10.3	0.3	0.0
3.652	3.447	3.548	10.0	0.3	0.0
3.447	3.255	3.350	9.6	0.3	0.0
3.255	3.073	3.162	9.3	0.3	0.0
3.073	2.901	2.985	9.0	0.4	0.0
2.901	2.738	2.818	8.6	0.4	0.0
2.738	2.585	2.661	8.2	0.4	0.0
2.585	2.441	2.512	7.9	0.3	0.0
2.441	2.304	2.371	7.6	0.4	0.0
2.304	2.175	2.239	7.2	0.4	0.0
2.175	2.054	2.113	6.8	0.4	0.0
2.054	1.939	1.995	6.5	0.4	0.0
1.939	1.830	1.884	6.1	0.3	0.0
1.830	1.728	1.778	5.8	0.3	0.0
1.728	1.631	1.679	5.4	0.3	0.0
1.631	1.540	1.585	5.1	0.4	0.0
1.540	1.454	1.496	4.7	0.4	0.0
1.454	1.372	1.413	4.3	0.4	0.0
1.372	1.296	1.334	4.0	0.4	0.0
1.296	1.223	1.259	3.6	0.3	0.0
1.223	1.155	1.189	3.4	0.3	0.0
1.155	1.090	1.122	3.1	0.2	0.0
1.090	1.029	1.059	2.9	0.2	0.0
1.029	0.972	1.000	2.7	0.2	0.0
0.972	0.917	0.944	2.4	0.2	0.0
0.917	0.866	0.891	2.1	0.3	0.0
0.866	0.818	0.841	1.8	0.3	0.0
0.818	0.772	0.794	1.5	0.3	0.0
0.772	0.729	0.750	1.1	0.3	0.0
0.729	0.688	0.708	0.8	0.3	0.0
0.688	0.649	0.668	0.5	0.3	0.0
0.649	0.613	0.631	0.3	0.2	0.0
0.613	0.579	0.596	0.2	0.2	0.0
0.579	0.546	0.562	0.1	0.1	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0
0.487	0.460	0.473	0.0	0.0	0.0

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 5

Sample: 3150
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104007B.SMP

Test Number: 2
Analyzed: 6/24/2011 4:58:56PM
Reported: 6/25/2011 10:09:17AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.460	0.434	0.447	0.0	0.0	0.0

Micromeritics Instrument Corporation

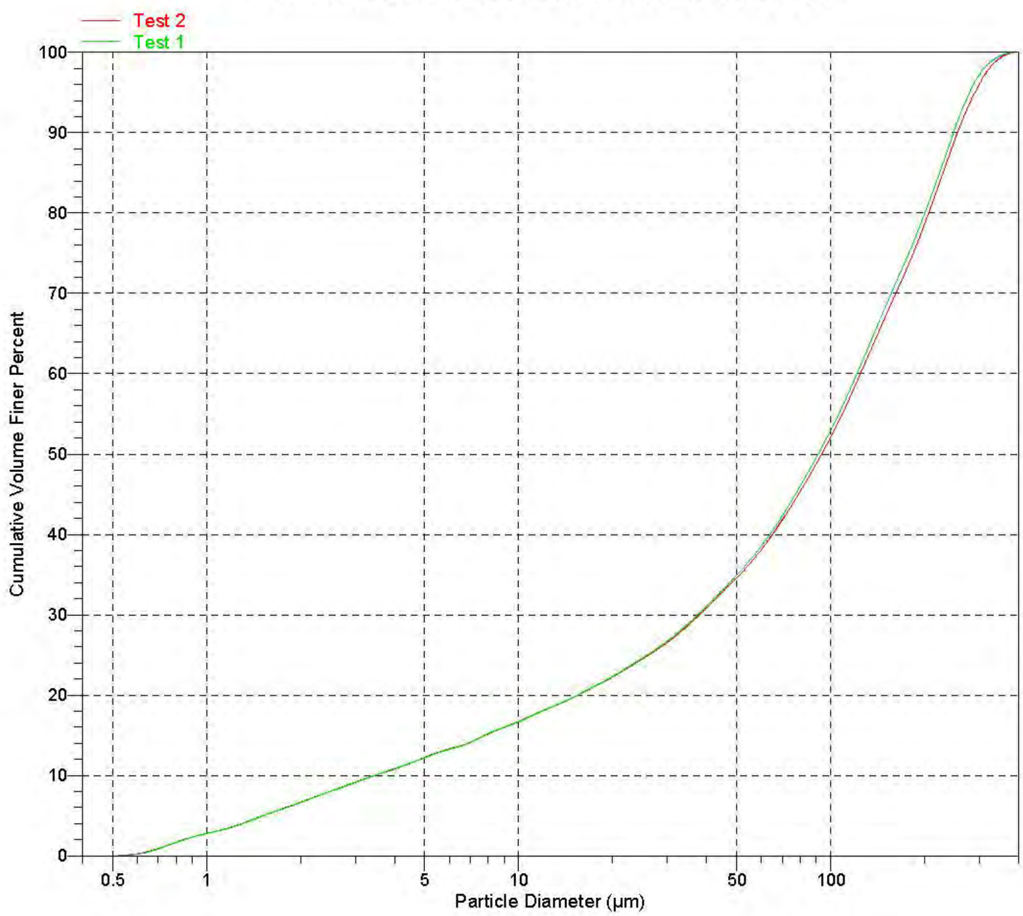
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 3150
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104007B.SMP

Test Number: 2
Analyzed: 6/24/2011 4:58:56PM
Reported: 6/25/2011 10:09:17AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

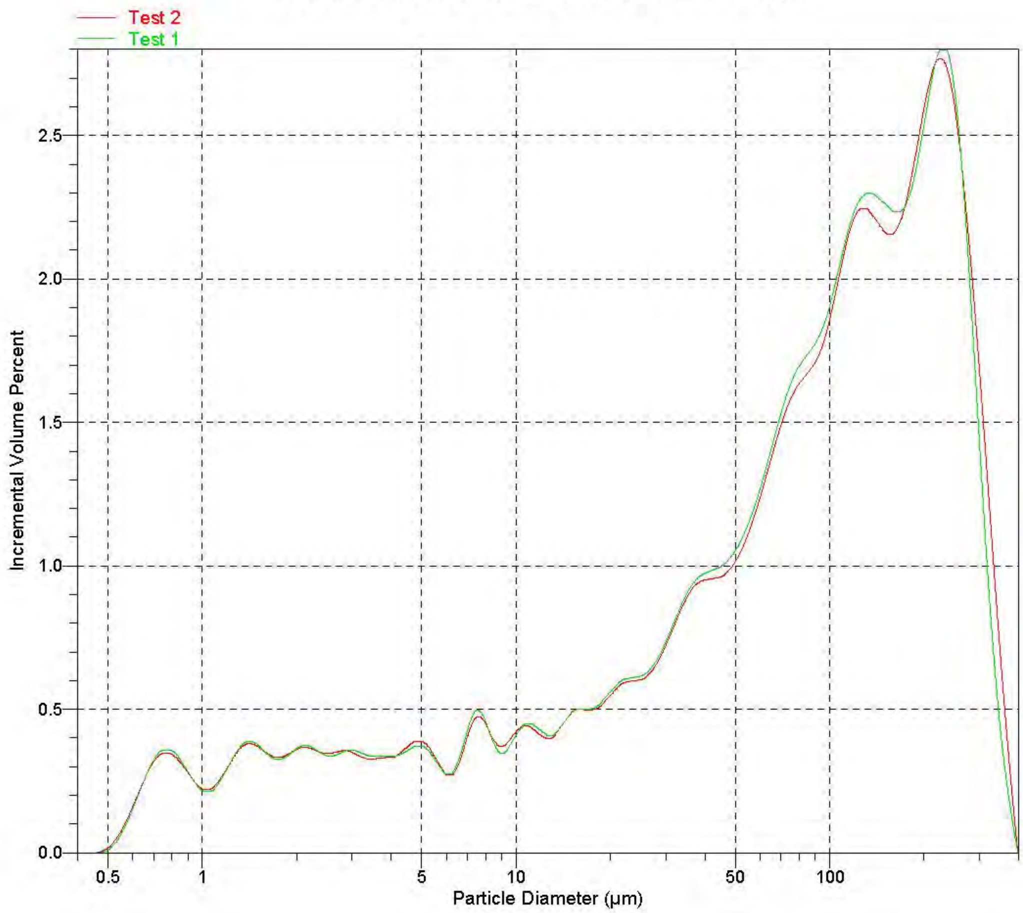
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 3150
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104007B.SMP

Test Number: 2
Analyzed: 6/24/2011 4:58:56PM
Reported: 6/25/2011 10:09:17AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

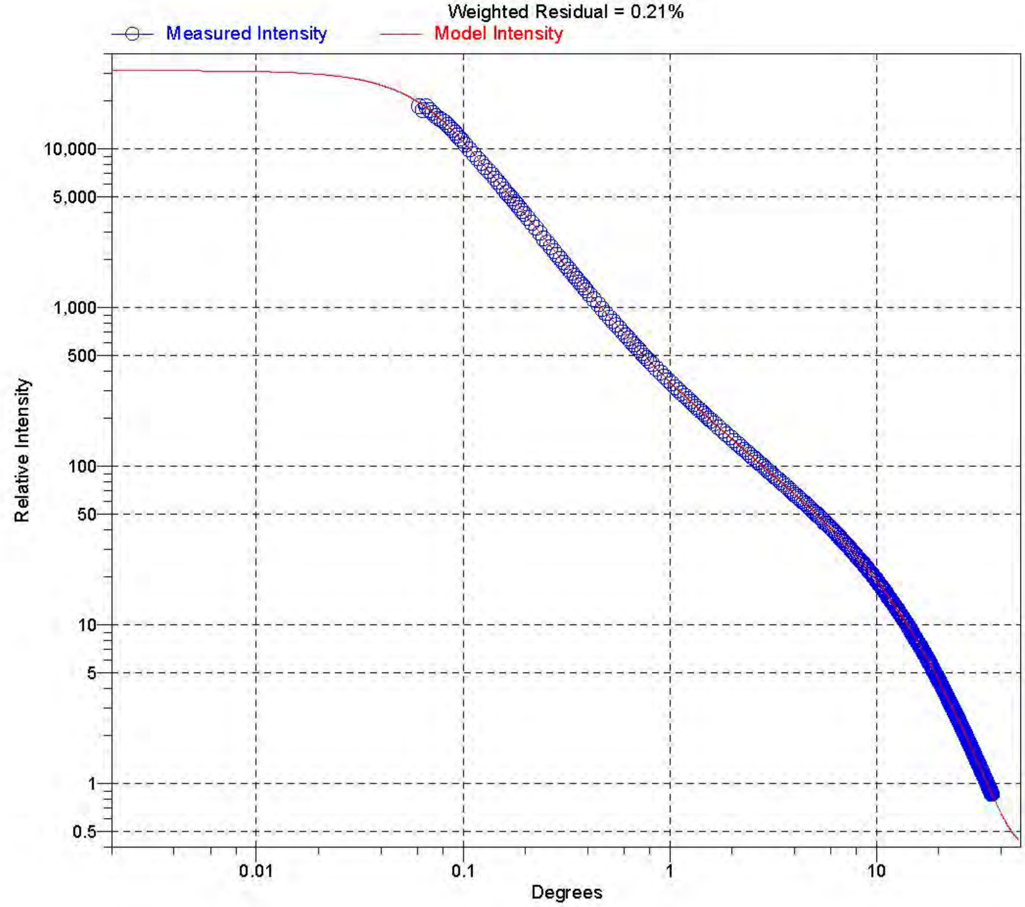
Sample: 3150
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104007B.SMP

Test Number: 2
Analyzed: 6/24/2011 4:58:56PM
Reported: 6/25/2011 10:09:17AM
Background: 6/24/2011 7:44:28AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Goodness of Fit

Weighted Residual = 0.21%



Sample#20-3355

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

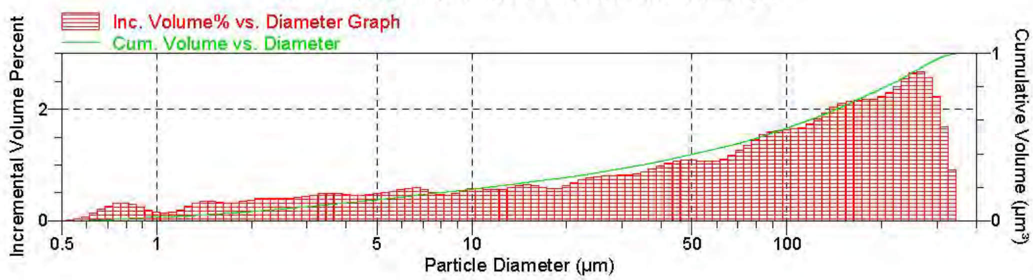
Sample: 3355
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104008.SMP

Test Number: 2
Analyzed: 6/24/2011 4:01:03PM
Reported: 6/24/2011 4:02:04PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used
Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02953 %
Obscuration: 36.1 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	107.245	0.093	Mode	265.895	0.000
Median	82.255	0.104			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	258.645
50.0	82.255
10.0	3.704

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 2

Sample: 3355
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104008.SMP

Test Number: 2
Analyzed: 6/24/2011 4:01:03PM
Reported: 6/24/2011 4:02:04PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
344.747	325.462	334.965	99.1	0.9	0.0
325.462	307.256	316.228	97.4	1.7	0.0
307.256	290.068	298.538	95.2	2.2	0.0
290.068	273.842	281.838	92.7	2.6	0.1
273.842	258.523	266.073	90.0	2.7	0.1
258.523	244.062	251.189	87.3	2.6	0.2
244.062	230.409	237.137	84.8	2.5	0.2
230.409	217.520	223.872	82.4	2.4	0.2
217.520	205.353	211.349	80.1	2.3	0.1
205.353	193.865	199.526	77.8	2.2	0.1
193.865	183.021	188.365	75.7	2.2	0.0
183.021	172.783	177.828	73.5	2.2	0.0
172.783	163.117	167.880	71.3	2.2	0.1
163.117	153.993	158.489	69.2	2.2	0.1
153.993	145.378	149.624	67.1	2.1	0.1
145.378	137.246	141.254	65.0	2.0	0.1
137.246	129.569	133.352	63.1	1.9	0.1
129.569	122.321	125.893	61.3	1.8	0.1
122.321	115.478	118.850	59.5	1.7	0.1
115.478	109.018	112.202	57.9	1.7	0.1
109.018	102.920	105.925	56.2	1.6	0.1
102.920	97.163	100.000	54.6	1.6	0.0
97.163	91.728	94.406	53.0	1.6	0.0
91.728	86.596	89.125	51.4	1.6	0.0
86.596	81.752	84.140	49.8	1.5	0.0
81.752	77.179	79.433	48.4	1.5	0.0
77.179	72.862	74.989	47.0	1.4	0.0
72.862	68.786	70.795	45.8	1.3	0.0
68.786	64.938	66.834	44.6	1.2	0.0
64.938	61.306	63.096	43.5	1.1	0.0
61.306	57.876	59.566	42.4	1.1	0.0
57.876	54.639	56.234	41.4	1.1	0.1
54.639	51.582	53.088	40.3	1.1	0.1
51.582	48.697	50.119	39.2	1.1	0.1
48.697	45.973	47.315	38.1	1.1	0.1
45.973	43.401	44.668	37.0	1.1	0.1
43.401	40.973	42.170	36.0	1.0	0.1
40.973	38.681	39.811	35.0	1.0	0.1
38.681	36.517	37.584	34.1	0.9	0.1
36.517	34.475	35.481	33.2	0.9	0.1
34.475	32.546	33.497	32.4	0.8	0.1
32.546	30.726	31.623	31.6	0.8	0.1
30.726	29.007	29.854	30.7	0.8	0.1
29.007	27.384	28.184	29.9	0.8	0.1

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 3

Sample: 3355
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104008.SMP

Test Number: 2
Analyzed: 6/24/2011 4:01:03PM
Reported: 6/24/2011 4:02:04PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
27.384	25.852	26.607	29.1	0.8	0.1
25.852	24.406	25.119	28.3	0.8	0.1
24.406	23.041	23.714	27.6	0.8	0.1
23.041	21.752	22.387	26.8	0.7	0.1
21.752	20.535	21.135	26.1	0.7	0.1
20.535	19.387	19.953	25.5	0.6	0.1
19.387	18.302	18.836	24.9	0.6	0.1
18.302	17.278	17.783	24.4	0.6	0.1
17.278	16.312	16.788	23.8	0.6	0.1
16.312	15.399	15.849	23.2	0.6	0.1
15.399	14.538	14.962	22.5	0.6	0.1
14.538	13.725	14.125	21.9	0.6	0.1
13.725	12.957	13.335	21.3	0.6	0.1
12.957	12.232	12.589	20.7	0.6	0.1
12.232	11.548	11.885	20.2	0.6	0.1
11.548	10.902	11.220	19.6	0.6	0.1
10.902	10.292	10.593	19.0	0.6	0.1
10.292	9.716	10.000	18.5	0.6	0.1
9.716	9.173	9.441	17.9	0.5	0.1
9.173	8.660	8.913	17.4	0.5	0.1
8.660	8.175	8.414	17.0	0.5	0.1
8.175	7.718	7.943	16.5	0.5	0.1
7.718	7.286	7.499	16.0	0.5	0.1
7.286	6.879	7.079	15.4	0.6	0.1
6.879	6.494	6.683	14.9	0.6	0.1
6.494	6.131	6.310	14.3	0.6	0.1
6.131	5.788	5.957	13.7	0.6	0.1
5.788	5.464	5.623	13.2	0.5	0.1
5.464	5.158	5.309	12.7	0.5	0.1
5.158	4.870	5.012	12.2	0.5	0.0
4.870	4.597	4.732	11.7	0.5	0.0
4.597	4.340	4.467	11.3	0.5	0.0
4.340	4.097	4.217	10.8	0.5	0.1
4.097	3.868	3.981	10.4	0.5	0.1
3.868	3.652	3.758	9.9	0.5	0.0
3.652	3.447	3.548	9.4	0.5	0.0
3.447	3.255	3.350	8.9	0.5	0.0
3.255	3.073	3.162	8.4	0.5	0.0
3.073	2.901	2.985	8.0	0.4	0.0
2.901	2.738	2.818	7.6	0.4	0.1
2.738	2.585	2.661	7.2	0.4	0.0
2.585	2.441	2.512	6.8	0.4	0.0
2.441	2.304	2.371	6.4	0.4	0.0
2.304	2.175	2.239	6.0	0.4	0.0

Sample: 3355
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104008.SMP

Test Number: 2
Analyzed: 6/24/2011 4:01:03PM
Reported: 6/24/2011 4:02:04PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.175	2.054	2.113	5.6	0.4	0.0
2.054	1.939	1.995	5.2	0.4	0.0
1.939	1.830	1.884	4.9	0.3	0.0
1.830	1.728	1.778	4.6	0.3	0.0
1.728	1.631	1.679	4.3	0.3	0.0
1.631	1.540	1.585	3.9	0.3	0.0
1.540	1.454	1.496	3.6	0.3	0.0
1.454	1.372	1.413	3.3	0.3	0.0
1.372	1.296	1.334	2.9	0.3	0.0
1.296	1.223	1.259	2.7	0.3	0.0
1.223	1.155	1.189	2.5	0.2	0.0
1.155	1.090	1.122	2.3	0.1	0.0
1.090	1.029	1.059	2.2	0.1	0.0
1.029	0.972	1.000	2.1	0.1	0.0
0.972	0.917	0.944	1.9	0.2	0.0
0.917	0.866	0.891	1.6	0.2	0.0
0.866	0.818	0.841	1.3	0.3	0.0
0.818	0.772	0.794	1.0	0.3	0.0
0.772	0.729	0.750	0.7	0.3	0.0
0.729	0.688	0.708	0.4	0.3	0.0
0.688	0.649	0.668	0.2	0.2	0.0
0.649	0.613	0.631	0.1	0.1	0.0
0.613	0.579	0.596	0.0	0.1	0.0
0.579	0.546	0.562	0.0	0.0	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0

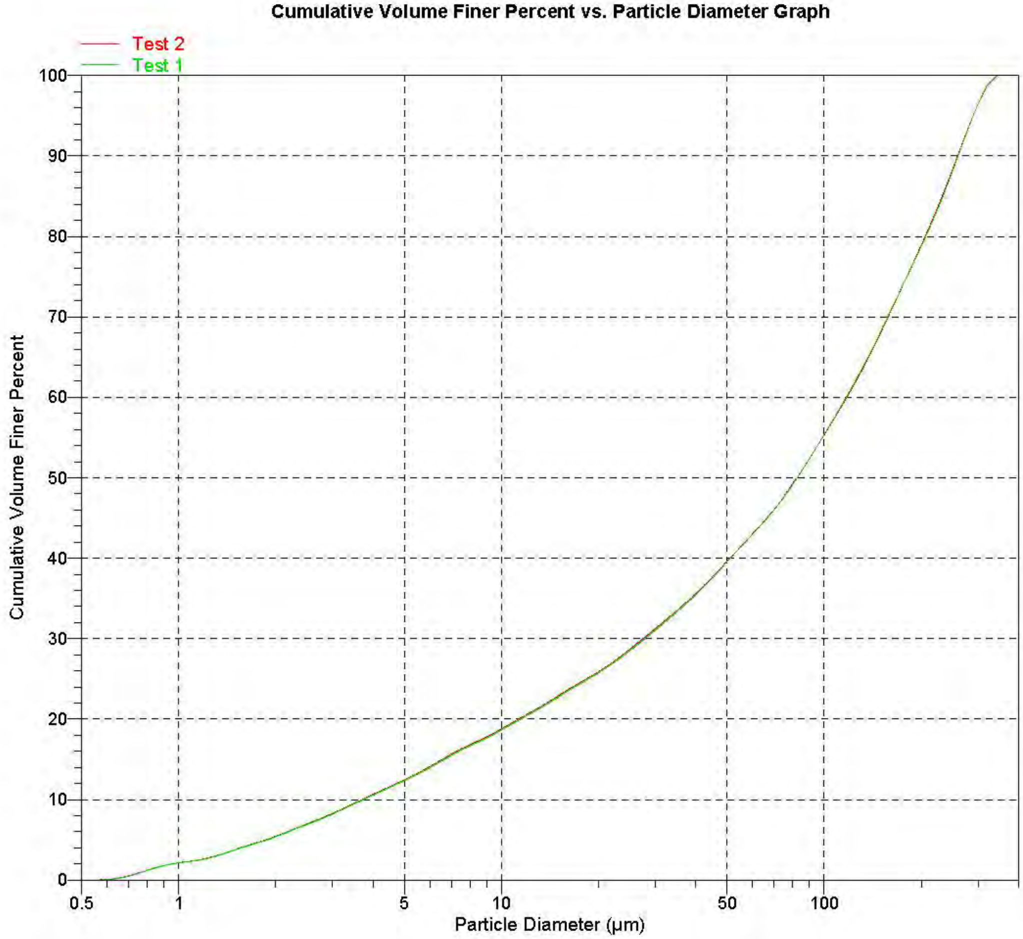
MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3355
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104008.SMP

Test Number: 2
Analyzed: 6/24/2011 4:01:03PM
Reported: 6/24/2011 4:02:04PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

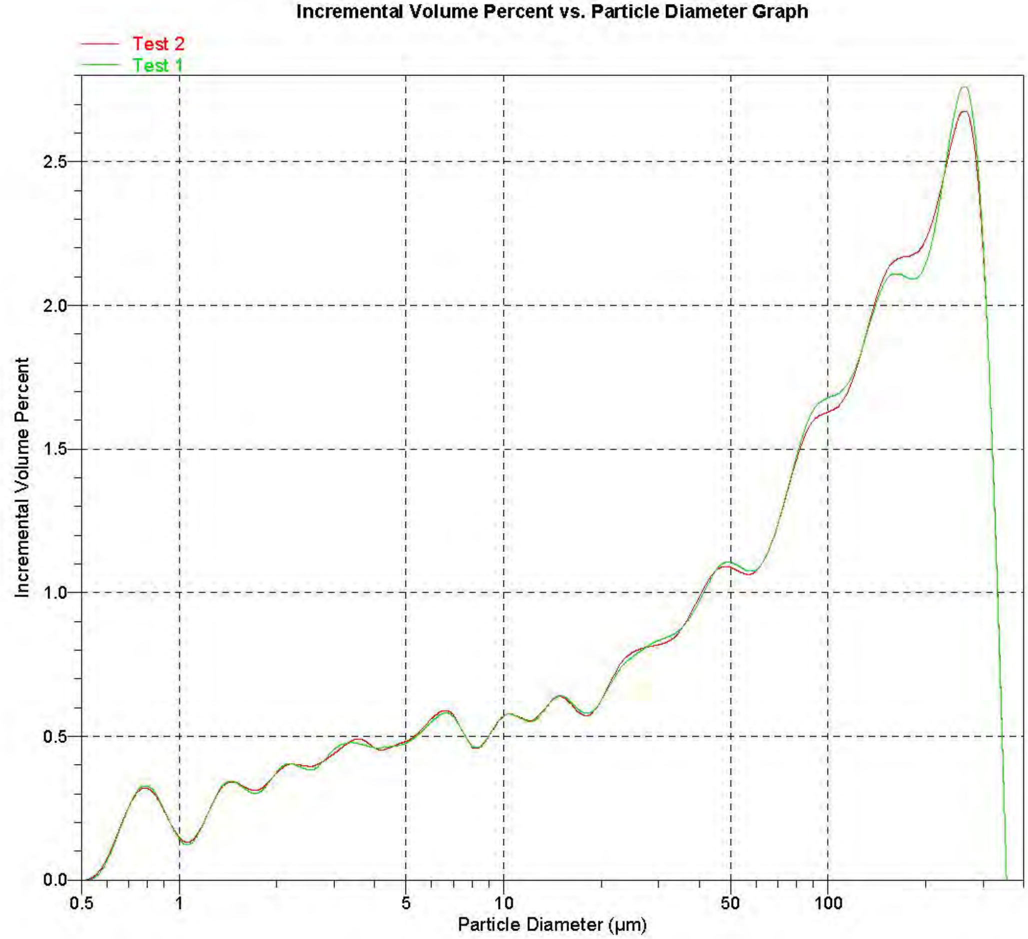


Sample: 3355
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104008.SMP

Test Number: 2
Analyzed: 6/24/2011 4:01:03PM
Reported: 6/24/2011 4:02:04PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph

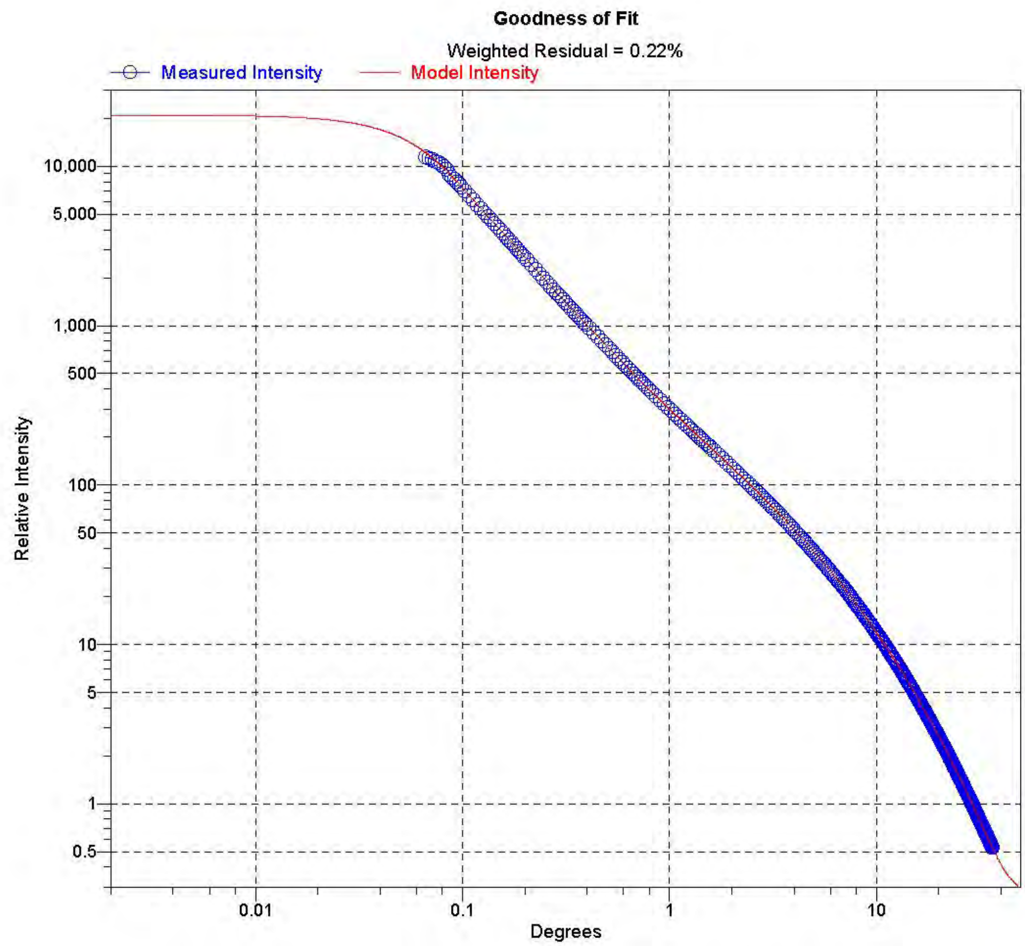


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

Sample: 3355
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104008.SMP

Test Number: 2
Analyzed: 6/24/2011 4:01:03PM
Reported: 6/24/2011 4:02:04PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#21-3780

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 1

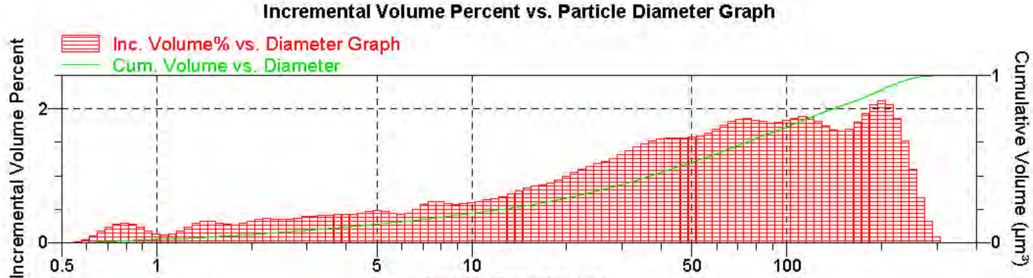
Sample: 3780
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104009.SMP

Test Number: 2
Analyzed: 6/25/2011 10:39:05AM
Reported: 6/25/2011 10:50:06AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02377 %
Obscuration: 29.0 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	76.566	0.243	Mode	199.284	0.000
Median	53.516	0.384			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	192.325
50.0	53.516
10.0	4.408

Micromeritics Instrument Corporation

Sample: 3780
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104009.SMP

Test Number: 2
Analyzed: 6/25/2011 10:39:05AM
Reported: 6/25/2011 10:50:06AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
307.256	290.068	298.538	99.9	0.1	0.0
290.068	273.842	281.838	99.6	0.3	0.0
273.842	258.523	266.073	98.9	0.7	0.0
258.523	244.062	251.189	97.9	1.1	0.0
244.062	230.409	237.137	96.3	1.5	0.0
230.409	217.520	223.872	94.5	1.9	0.0
217.520	205.353	211.349	92.4	2.1	0.1
205.353	193.865	199.526	90.3	2.1	0.1
193.865	183.021	188.365	88.2	2.1	0.1
183.021	172.783	177.828	86.3	1.9	0.0
172.783	163.117	167.880	84.5	1.8	0.0
163.117	153.993	158.489	82.8	1.7	0.0
153.993	145.378	149.624	81.1	1.7	0.0
145.378	137.246	141.254	79.4	1.7	0.0
137.246	129.569	133.352	77.7	1.7	0.0
129.569	122.321	125.893	75.9	1.8	0.1
122.321	115.478	118.850	74.0	1.9	0.2
115.478	109.018	112.202	72.1	1.9	0.2
109.018	102.920	105.925	70.3	1.9	0.3
102.920	97.163	100.000	68.4	1.8	0.3
97.163	91.728	94.406	66.6	1.8	0.3
91.728	86.596	89.125	64.9	1.8	0.3
86.596	81.752	84.140	63.0	1.8	0.3
81.752	77.179	79.433	61.2	1.8	0.3
77.179	72.862	74.989	59.4	1.9	0.2
72.862	68.786	70.795	57.5	1.9	0.2
68.786	64.938	66.834	55.7	1.8	0.2
64.938	61.306	63.096	53.9	1.8	0.2
61.306	57.876	59.566	52.2	1.7	0.2
57.876	54.639	56.234	50.6	1.6	0.2
54.639	51.582	53.088	49.0	1.6	0.2
51.582	48.697	50.119	47.4	1.6	0.2
48.697	45.973	47.315	45.8	1.6	0.2
45.973	43.401	44.668	44.3	1.6	0.2
43.401	40.973	42.170	42.7	1.6	0.2
40.973	38.681	39.811	41.1	1.6	0.2
38.681	36.517	37.584	39.6	1.5	0.2
36.517	34.475	35.481	38.1	1.5	0.2
34.475	32.546	33.497	36.7	1.4	0.2

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 3

Sample: 3780
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104009.SMP

Test Number: 2
Analyzed: 6/25/2011 10:39:05AM
Reported: 6/25/2011 10:50:06AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
32.546	30.726	31.623	35.3	1.4	0.1
30.726	29.007	29.854	34.0	1.3	0.1
29.007	27.384	28.184	32.7	1.3	0.1
27.384	25.852	26.607	31.5	1.2	0.1
25.852	24.406	25.119	30.4	1.2	0.1
24.406	23.041	23.714	29.2	1.1	0.1
23.041	21.752	22.387	28.1	1.1	0.1
21.752	20.535	21.135	27.1	1.1	0.1
20.535	19.387	19.953	26.1	1.0	0.1
19.387	18.302	18.836	25.1	0.9	0.1
18.302	17.278	17.783	24.3	0.9	0.1
17.278	16.312	16.788	23.4	0.9	0.0
16.312	15.399	15.849	22.6	0.8	0.0
15.399	14.538	14.962	21.7	0.8	0.0
14.538	13.725	14.125	21.0	0.8	0.0
13.725	12.957	13.335	20.2	0.7	0.1
12.957	12.232	12.589	19.6	0.7	0.1
12.232	11.548	11.885	18.9	0.7	0.0
11.548	10.902	11.220	18.3	0.6	0.0
10.902	10.292	10.593	17.7	0.6	0.0
10.292	9.716	10.000	17.1	0.6	0.0
9.716	9.173	9.441	16.5	0.6	0.0
9.173	8.660	8.913	15.9	0.6	0.0
8.660	8.175	8.414	15.3	0.6	0.0
8.175	7.718	7.943	14.7	0.6	0.0
7.718	7.286	7.499	14.1	0.6	0.0
7.286	6.879	7.079	13.5	0.6	0.0
6.879	6.494	6.683	13.0	0.5	0.0
6.494	6.131	6.310	12.6	0.4	0.0
6.131	5.788	5.957	12.2	0.4	0.0
5.788	5.464	5.623	11.7	0.4	0.0
5.464	5.158	5.309	11.3	0.5	0.0
5.158	4.870	5.012	10.8	0.5	0.0
4.870	4.597	4.732	10.3	0.5	0.0
4.597	4.340	4.467	9.9	0.4	0.0
4.340	4.097	4.217	9.5	0.4	0.0
4.097	3.868	3.981	9.0	0.4	0.0
3.868	3.652	3.758	8.6	0.4	0.0
3.652	3.447	3.548	8.2	0.4	0.0

Micromeritics Instrument Corporation

Sample: 3780
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104009.SMP

Test Number: 2
Analyzed: 6/25/2011 10:39:05AM
Reported: 6/25/2011 10:50:06AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.447	3.255	3.350	7.8	0.4	0.0
3.255	3.073	3.162	7.4	0.4	0.0
3.073	2.901	2.985	7.0	0.4	0.0
2.901	2.738	2.818	6.7	0.4	0.0
2.738	2.585	2.661	6.3	0.4	0.0
2.585	2.441	2.512	6.0	0.3	0.0
2.441	2.304	2.371	5.6	0.4	0.0
2.304	2.175	2.239	5.3	0.4	0.0
2.175	2.054	2.113	4.9	0.4	0.0
2.054	1.939	1.995	4.6	0.3	0.0
1.939	1.830	1.884	4.3	0.3	0.0
1.830	1.728	1.778	4.0	0.3	0.0
1.728	1.631	1.679	3.8	0.3	0.0
1.631	1.540	1.585	3.5	0.3	0.0
1.540	1.454	1.496	3.2	0.3	0.0
1.454	1.372	1.413	2.9	0.3	0.0
1.372	1.296	1.334	2.6	0.3	0.0
1.296	1.223	1.259	2.3	0.2	0.0
1.223	1.155	1.189	2.2	0.2	0.0
1.155	1.090	1.122	2.0	0.1	0.0
1.090	1.029	1.059	1.9	0.1	0.0
1.029	0.972	1.000	1.8	0.1	0.0
0.972	0.917	0.944	1.6	0.2	0.0
0.917	0.866	0.891	1.4	0.2	0.0
0.866	0.818	0.841	1.1	0.3	0.0
0.818	0.772	0.794	0.8	0.3	0.0
0.772	0.729	0.750	0.6	0.3	0.0
0.729	0.688	0.708	0.3	0.2	0.0
0.688	0.649	0.668	0.2	0.2	0.0
0.649	0.613	0.631	0.1	0.1	0.0
0.613	0.579	0.596	0.0	0.0	0.0
0.579	0.546	0.562	0.0	0.0	0.0
0.546	0.516	0.531	0.0	0.0	0.0

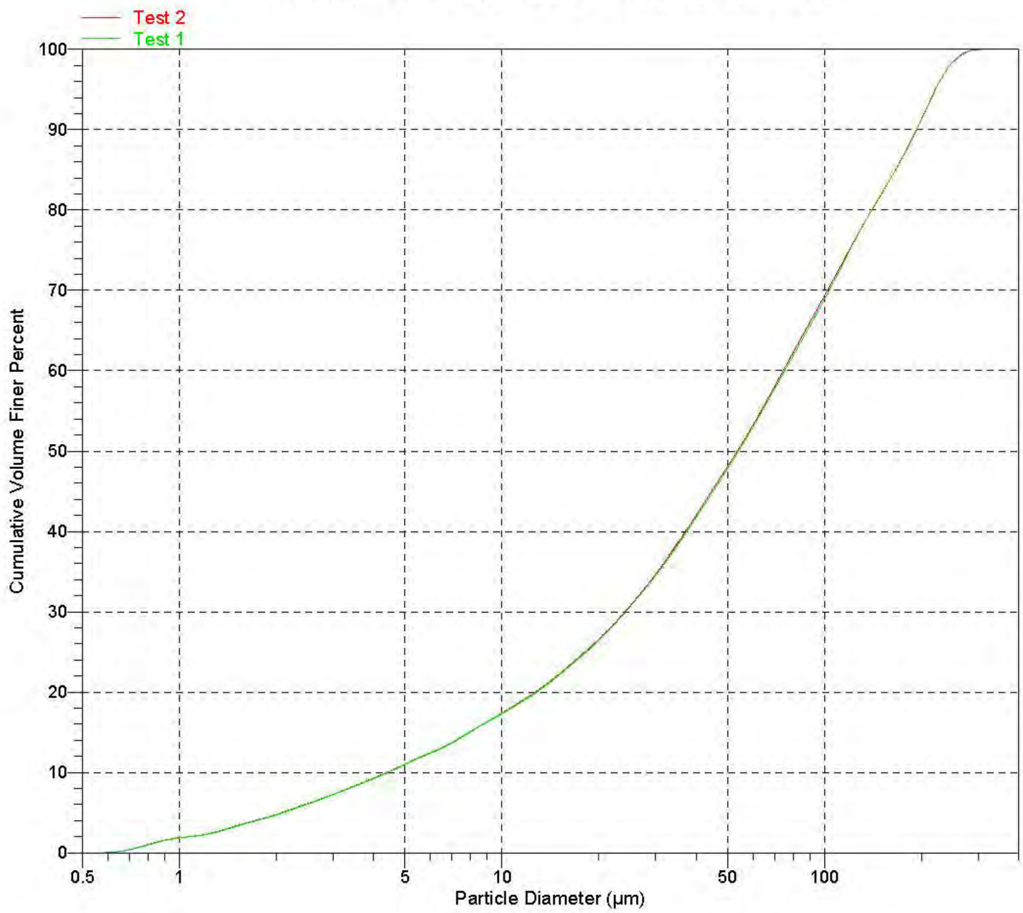
Micromeritics Instrument Corporation

Sample: 3780
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104009.SMP

Test Number: 2
Analyzed: 6/25/2011 10:39:05AM
Reported: 6/25/2011 10:50:06AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



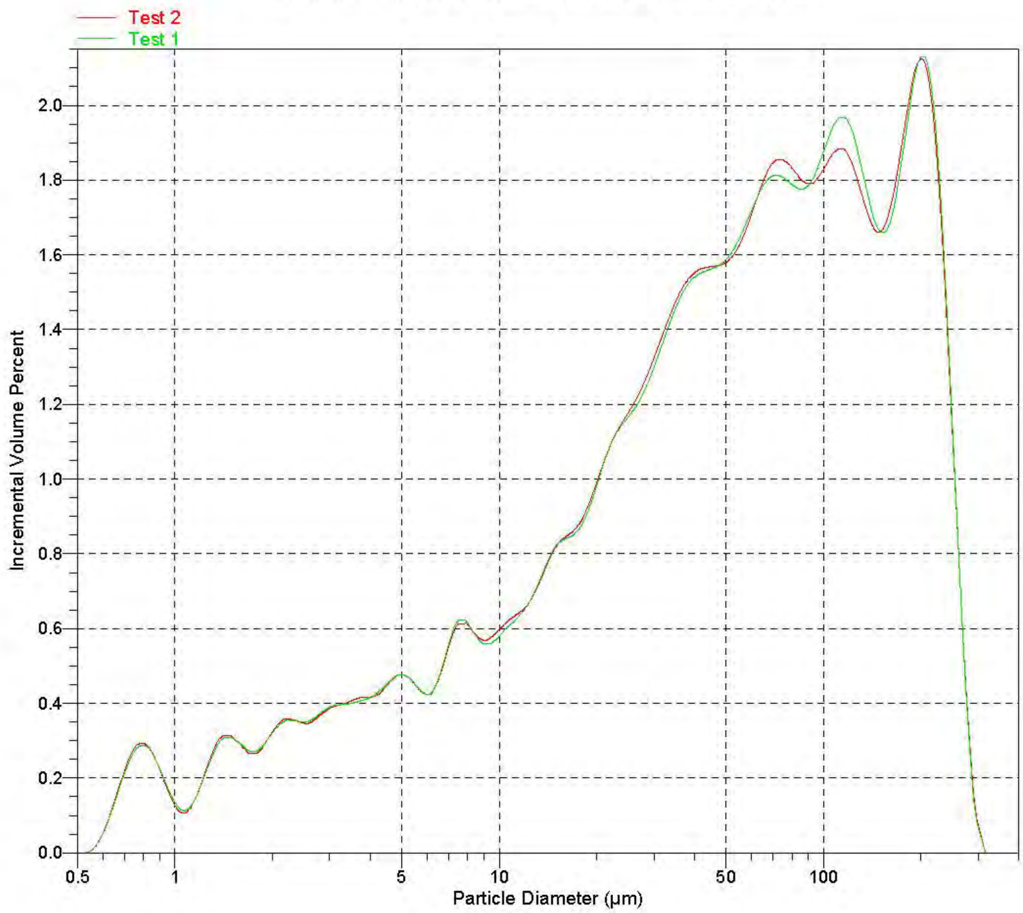
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 6

Sample: 3780
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104009.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/25/2011 10:39:05AM	Material:	Sediment / Water
Reported:	6/25/2011 10:50:06AM	Background:	Water RI 1.331
Background:	6/25/2011 10:27:50AM	Smoothing:	Medium

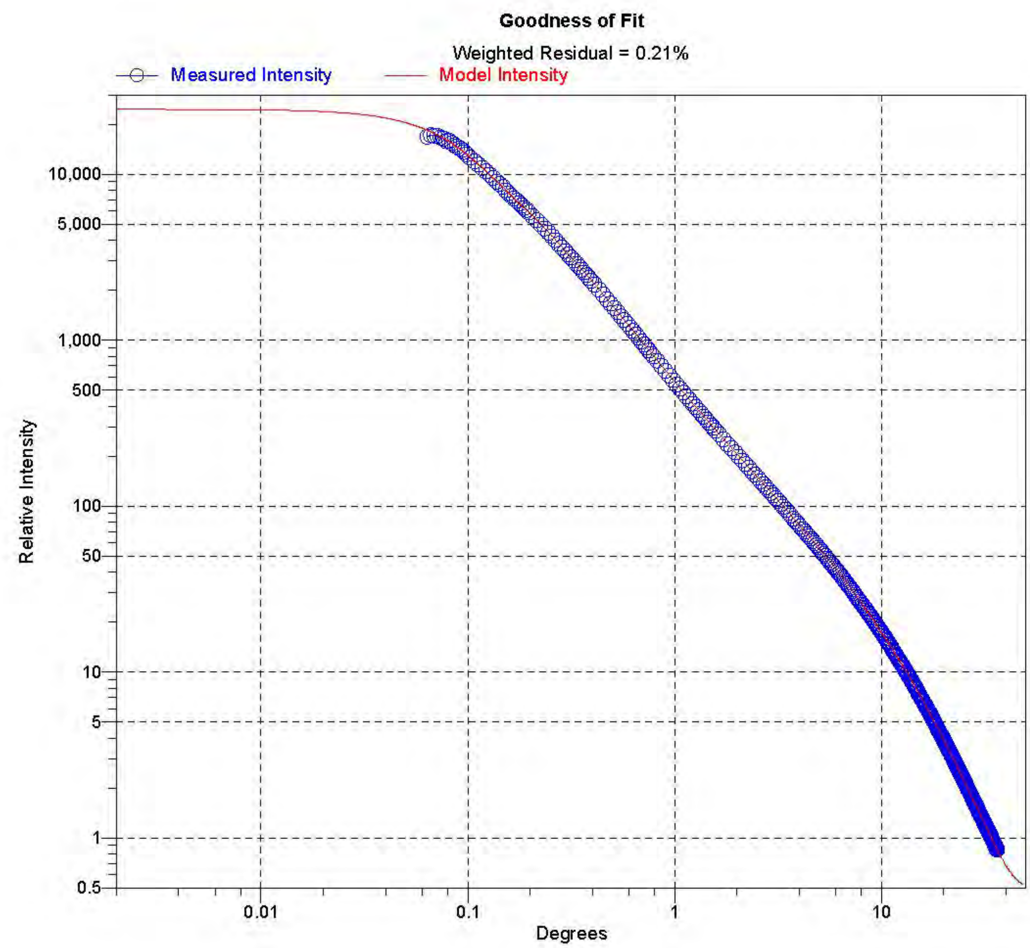
Incremental Volume Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

Sample: 3780
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104009.SMP

Test Number: 2	Model: (1.570, 0.1000000), 1.331
Analyzed: 6/25/2011 10:39:05AM	Material: Sediment / Water
Reported: 6/25/2011 10:50:06AM	Background: Water RI 1.331
Background: 6/25/2011 10:27:50AM	Smoothing: Medium



Sample#22-3952

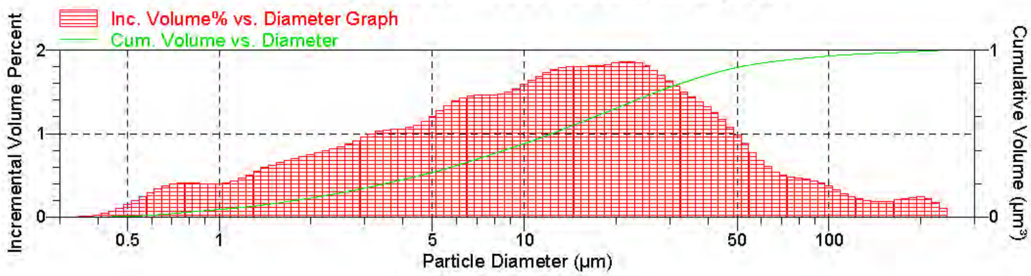
Saturn DigiSizer II 5205 V1.01	Saturn DigiSizer II 5205 V1.01	5200 LSHU V2.01 S/N 110	Page 1

Sample: 3952
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104010.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 4:27:17PM	Material:	Sediment / Water
Reported:	6/24/2011 4:36:27PM	Background:	Water RI 1.331
Background:	6/24/2011 8:21:25AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.01274 %
Obscuration: 33.6 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	22.610	0.248	Mode	22.372	0.000
Median	12.316	0.106			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	50.858
50.0	12.316
10.0	1.797

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 2

Sample: 3952
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104010.SMP

Test Number: 2
Analyzed: 6/24/2011 4:27:17PM
Reported: 6/24/2011 4:36:27PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
244.062	230.409	237.137	99.9	0.1	0.0
230.409	217.520	223.872	99.7	0.2	0.0
217.520	205.353	211.349	99.5	0.2	0.0
205.353	193.865	199.526	99.3	0.2	0.0
193.865	183.021	188.365	99.0	0.2	0.0
183.021	172.783	177.828	98.8	0.2	0.0
172.783	163.117	167.880	98.6	0.2	0.0
163.117	153.993	158.489	98.4	0.2	0.0
153.993	145.378	149.624	98.2	0.2	0.0
145.378	137.246	141.254	98.0	0.2	0.0
137.246	129.569	133.352	97.9	0.2	0.0
129.569	122.321	125.893	97.6	0.2	0.0
122.321	115.478	118.850	97.4	0.2	0.0
115.478	109.018	112.202	97.1	0.3	0.0
109.018	102.920	105.925	96.8	0.3	0.0
102.920	97.163	100.000	96.4	0.4	0.1
97.163	91.728	94.406	96.0	0.4	0.1
91.728	86.596	89.125	95.6	0.4	0.1
86.596	81.752	84.140	95.1	0.4	0.1
81.752	77.179	79.433	94.7	0.5	0.1
77.179	72.862	74.989	94.2	0.5	0.1
72.862	68.786	70.795	93.7	0.5	0.2
68.786	64.938	66.834	93.2	0.5	0.2
64.938	61.306	63.096	92.6	0.6	0.2
61.306	57.876	59.566	91.9	0.7	0.2
57.876	54.639	56.234	91.1	0.8	0.2
54.639	51.582	53.088	90.2	0.9	0.2
51.582	48.697	50.119	89.3	1.0	0.3
48.697	45.973	47.315	88.2	1.1	0.3
45.973	43.401	44.668	87.0	1.2	0.3
43.401	40.973	42.170	85.8	1.2	0.3
40.973	38.681	39.811	84.4	1.3	0.3
38.681	36.517	37.584	83.1	1.4	0.4
36.517	34.475	35.481	81.6	1.4	0.4
34.475	32.546	33.497	80.1	1.5	0.4
32.546	30.726	31.623	78.6	1.6	0.4
30.726	29.007	29.854	76.9	1.6	0.4
29.007	27.384	28.184	75.2	1.7	0.4
27.384	25.852	26.607	73.5	1.8	0.4
25.852	24.406	25.119	71.7	1.8	0.4
24.406	23.041	23.714	69.8	1.9	0.4
23.041	21.752	22.387	67.9	1.9	0.3
21.752	20.535	21.135	66.1	1.9	0.3
20.535	19.387	19.953	64.2	1.8	0.3

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3952
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104010.SMP

Test Number: 2
Analyzed: 6/24/2011 4:27:17PM
Reported: 6/24/2011 4:36:27PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
19.387	18.302	18.836	62.4	1.8	0.3
18.302	17.278	17.783	60.6	1.8	0.3
17.278	16.312	16.788	58.8	1.8	0.3
16.312	15.399	15.849	57.0	1.8	0.3
15.399	14.538	14.962	55.1	1.8	0.3
14.538	13.725	14.125	53.3	1.8	0.3
13.725	12.957	13.335	51.6	1.8	0.3
12.957	12.232	12.589	49.8	1.8	0.3
12.232	11.548	11.885	48.1	1.7	0.2
11.548	10.902	11.220	46.4	1.7	0.2
10.902	10.292	10.593	44.7	1.6	0.2
10.292	9.716	10.000	43.1	1.6	0.2
9.716	9.173	9.441	41.6	1.5	0.2
9.173	8.660	8.913	40.1	1.5	0.2
8.660	8.175	8.414	38.6	1.5	0.2
8.175	7.718	7.943	37.2	1.5	0.2
7.718	7.286	7.499	35.7	1.5	0.2
7.286	6.879	7.079	34.2	1.5	0.2
6.879	6.494	6.683	32.8	1.5	0.2
6.494	6.131	6.310	31.4	1.4	0.2
6.131	5.788	5.957	30.0	1.4	0.2
5.788	5.464	5.623	28.6	1.3	0.1
5.464	5.158	5.309	27.4	1.3	0.1
5.158	4.870	5.012	26.1	1.2	0.1
4.870	4.597	4.732	25.0	1.2	0.1
4.597	4.340	4.467	23.9	1.1	0.1
4.340	4.097	4.217	22.8	1.1	0.1
4.097	3.868	3.981	21.8	1.1	0.1
3.868	3.652	3.758	20.7	1.0	0.1
3.652	3.447	3.548	19.7	1.0	0.1
3.447	3.255	3.350	18.6	1.0	0.1
3.255	3.073	3.162	17.6	1.0	0.1
3.073	2.901	2.985	16.7	1.0	0.1
2.901	2.738	2.818	15.8	0.9	0.1
2.738	2.585	2.661	14.9	0.9	0.1
2.585	2.441	2.512	14.1	0.8	0.1
2.441	2.304	2.371	13.3	0.8	0.1
2.304	2.175	2.239	12.5	0.8	0.1
2.175	2.054	2.113	11.7	0.8	0.1
2.054	1.939	1.995	10.9	0.7	0.1
1.939	1.830	1.884	10.2	0.7	0.1
1.830	1.728	1.778	9.5	0.7	0.0
1.728	1.631	1.679	8.9	0.7	0.0
1.631	1.540	1.585	8.2	0.7	0.0

Sample: 3952
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104010.SMP

Test Number: 2
Analyzed: 6/24/2011 4:27:17PM
Reported: 6/24/2011 4:36:27PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

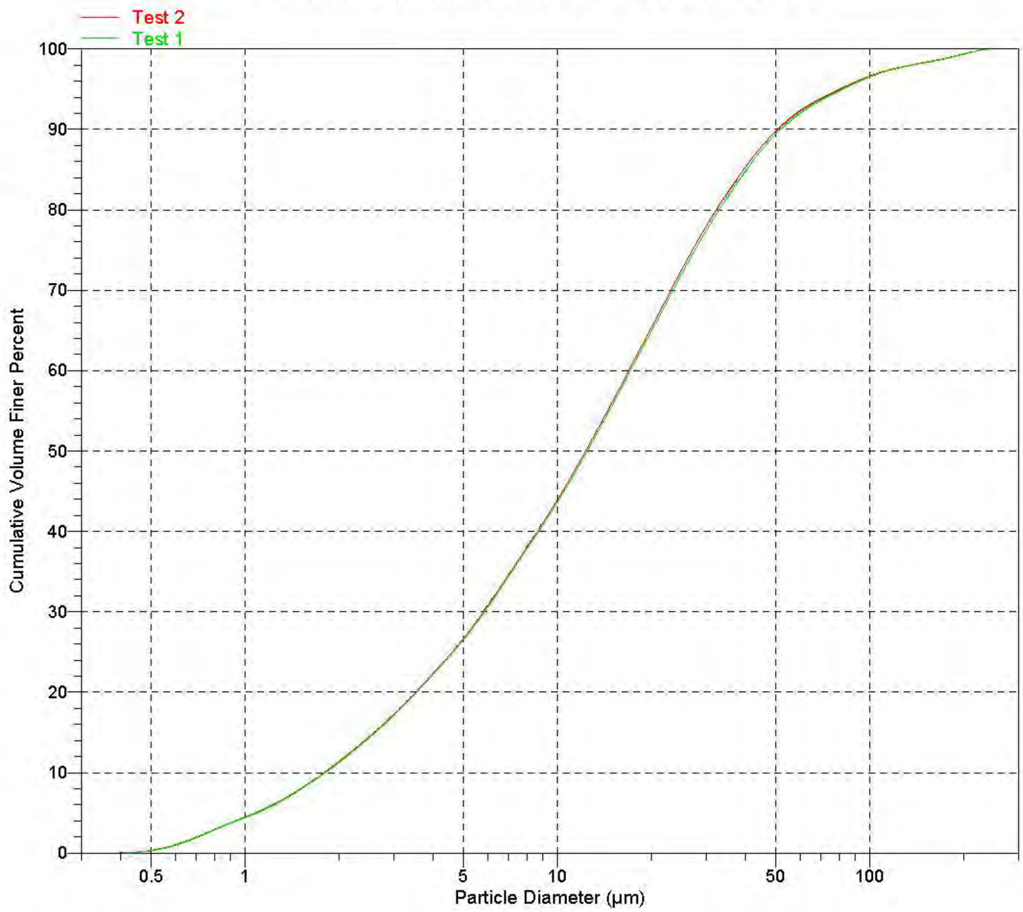
High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
1.540	1.454	1.496	7.6	0.6	0.0
1.454	1.372	1.413	7.0	0.6	0.0
1.372	1.296	1.334	6.4	0.5	0.1
1.296	1.223	1.259	5.9	0.5	0.1
1.223	1.155	1.189	5.5	0.5	0.1
1.155	1.090	1.122	5.0	0.4	0.0
1.090	1.029	1.059	4.6	0.4	0.0
1.029	0.972	1.000	4.3	0.4	0.0
0.972	0.917	0.944	3.9	0.4	0.0
0.917	0.866	0.891	3.5	0.4	0.0
0.866	0.818	0.841	3.1	0.4	0.0
0.818	0.772	0.794	2.6	0.4	0.0
0.772	0.729	0.750	2.2	0.4	0.0
0.729	0.688	0.708	1.8	0.4	0.0
0.688	0.649	0.668	1.5	0.4	0.0
0.649	0.613	0.631	1.1	0.3	0.0
0.613	0.579	0.596	0.8	0.3	0.0
0.579	0.546	0.562	0.6	0.2	0.0
0.546	0.516	0.531	0.4	0.2	0.0
0.516	0.487	0.501	0.3	0.1	0.0
0.487	0.460	0.473	0.1	0.1	0.0
0.460	0.434	0.447	0.1	0.1	0.0
0.434	0.410	0.422	0.0	0.0	0.0
0.410	0.387	0.398	0.0	0.0	0.0
0.387	0.365	0.376	0.0	0.0	0.0
0.365	0.345	0.355	0.0	0.0	0.0
0.345	0.325	0.335	0.0	0.0	0.0

Sample: 3952
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104010.SMP

Test Number: 2
Analyzed: 6/24/2011 4:27:17PM
Reported: 6/24/2011 4:36:27PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

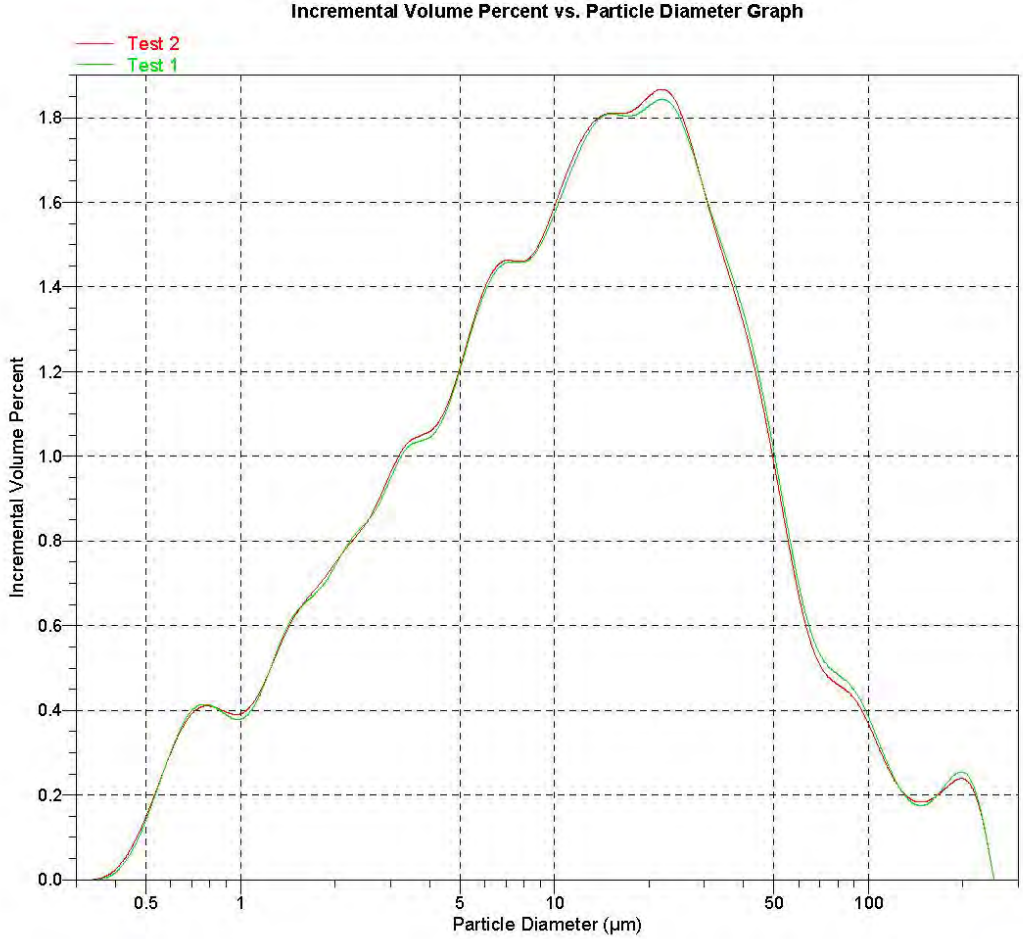


Sample: 3952
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104010.SMP

Test Number: 2
Analyzed: 6/24/2011 4:27:17PM
Reported: 6/24/2011 4:36:27PM
Background: 6/24/2011 8:21:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

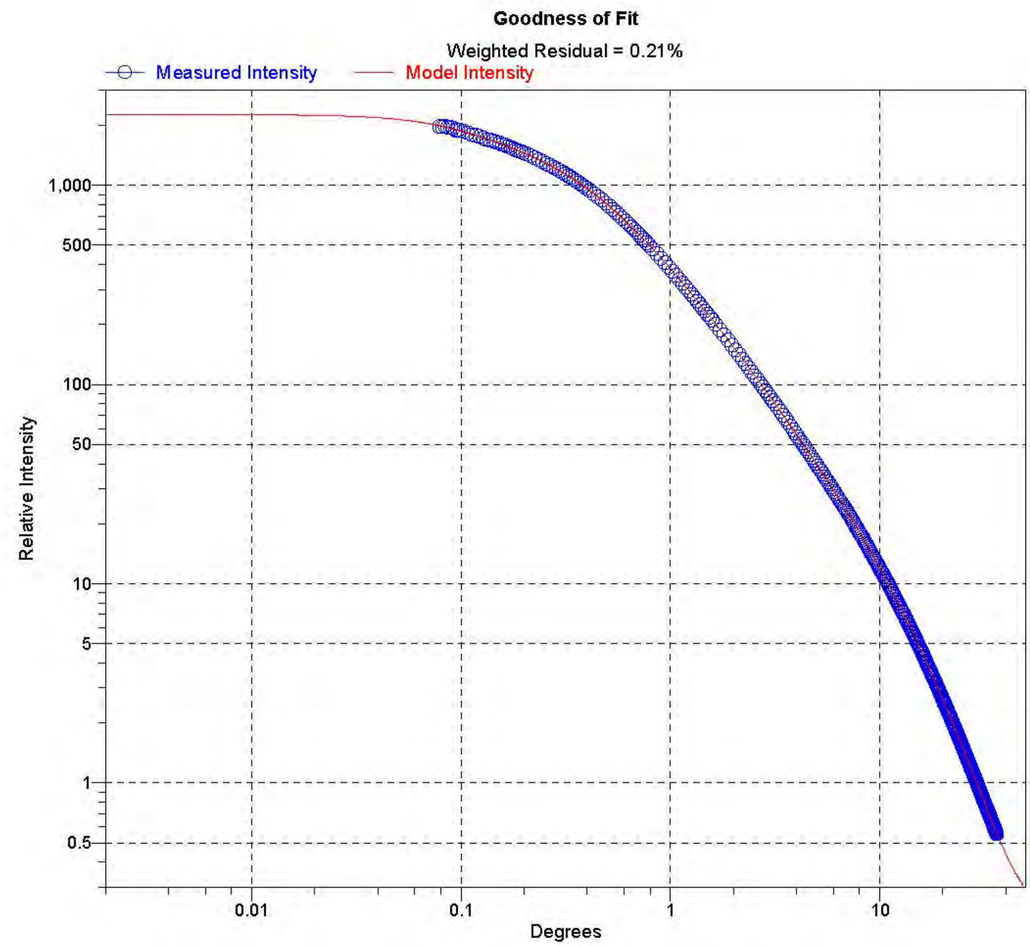
Incremental Volume Percent vs. Particle Diameter Graph



MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 3952
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104010.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/24/2011 4:27:17PM	Material:	Sediment / Water
Reported:	6/24/2011 4:36:27PM	Background:	Water RI 1.331
Background:	6/24/2011 8:21:25AM	Smoothing:	Medium



Sample#23-3979

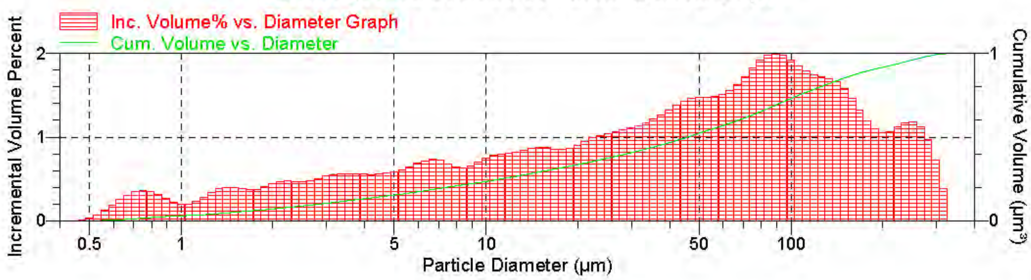
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

Sample: 3979
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104011.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/25/2011 10:43:04AM	Material:	Sediment / Water
Reported:	6/25/2011 10:52:34AM	Background:	Water RI 1.331
Background:	6/25/2011 10:17:25AM	Smoothing:	Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate:	12.0 l/m	Ultrasonic intensity:	100 %
Circulation time:	Not Used	Ultrasonic time:	60 sec

Sample

Sample Concentration: 0.02048 %
Obscuration: 32.5 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	70.757	0.699	Mode	89.065	0.000
Median	45.724	0.332			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	182.080
50.0	45.724
10.0	2.883

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 2

Sample: 3979
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104011.SMP

Test Number: 2
Analyzed: 6/25/2011 10:43:04AM
Reported: 6/25/2011 10:52:34AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
325.462	307.256	316.228	99.6	0.4	0.0
307.256	290.068	298.538	98.9	0.7	0.1
290.068	273.842	281.838	97.9	1.0	0.1
273.842	258.523	266.073	96.8	1.1	0.1
258.523	244.062	251.189	95.6	1.2	0.1
244.062	230.409	237.137	94.4	1.2	0.0
230.409	217.520	223.872	93.3	1.1	0.1
217.520	205.353	211.349	92.2	1.1	0.2
205.353	193.865	199.526	91.2	1.1	0.3
193.865	183.021	188.365	90.1	1.1	0.4
183.021	172.783	177.828	88.9	1.2	0.5
172.783	163.117	167.880	87.6	1.3	0.6
163.117	153.993	158.489	86.1	1.5	0.6
153.993	145.378	149.624	84.5	1.6	0.6
145.378	137.246	141.254	82.9	1.7	0.5
137.246	129.569	133.352	81.2	1.7	0.5
129.569	122.321	125.893	79.5	1.7	0.5
122.321	115.478	118.850	77.7	1.7	0.5
115.478	109.018	112.202	75.9	1.8	0.4
109.018	102.920	105.925	74.1	1.9	0.4
102.920	97.163	100.000	72.2	1.9	0.4
97.163	91.728	94.406	70.2	2.0	0.4
91.728	86.596	89.125	68.2	2.0	0.4
86.596	81.752	84.140	66.2	2.0	0.4
81.752	77.179	79.433	64.3	1.9	0.3
77.179	72.862	74.989	62.5	1.8	0.3
72.862	68.786	70.795	60.7	1.7	0.3
68.786	64.938	66.834	59.1	1.6	0.3
64.938	61.306	63.096	57.5	1.6	0.2
61.306	57.876	59.566	56.0	1.5	0.2
57.876	54.639	56.234	54.6	1.5	0.2
54.639	51.582	53.088	53.1	1.5	0.2
51.582	48.697	50.119	51.6	1.5	0.2
48.697	45.973	47.315	50.1	1.5	0.2
45.973	43.401	44.668	48.7	1.4	0.2
43.401	40.973	42.170	47.3	1.4	0.2
40.973	38.681	39.811	46.0	1.3	0.2
38.681	36.517	37.584	44.7	1.3	0.2
36.517	34.475	35.481	43.5	1.2	0.2
34.475	32.546	33.497	42.3	1.2	0.2
32.546	30.726	31.623	41.2	1.1	0.2
30.726	29.007	29.854	40.1	1.1	0.2
29.007	27.384	28.184	39.0	1.1	0.2
27.384	25.852	26.607	37.9	1.1	0.2

Sample: 3979
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104011.SMP

Test Number: 2
Analyzed: 6/25/2011 10:43:04AM
Reported: 6/25/2011 10:52:34AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
25.852	24.406	25.119	36.9	1.0	0.2
24.406	23.041	23.714	35.9	1.0	0.2
23.041	21.752	22.387	34.9	1.0	0.2
21.752	20.535	21.135	33.9	0.9	0.2
20.535	19.387	19.953	33.0	0.9	0.1
19.387	18.302	18.836	32.2	0.9	0.1
18.302	17.278	17.783	31.3	0.9	0.1
17.278	16.312	16.788	30.5	0.9	0.1
16.312	15.399	15.849	29.6	0.9	0.1
15.399	14.538	14.962	28.7	0.9	0.1
14.538	13.725	14.125	27.8	0.9	0.1
13.725	12.957	13.335	27.0	0.8	0.1
12.957	12.232	12.589	26.2	0.8	0.1
12.232	11.548	11.885	25.4	0.8	0.1
11.548	10.902	11.220	24.6	0.8	0.1
10.902	10.292	10.593	23.8	0.8	0.1
10.292	9.716	10.000	23.1	0.7	0.1
9.716	9.173	9.441	22.4	0.7	0.1
9.173	8.660	8.913	21.7	0.7	0.1
8.660	8.175	8.414	21.1	0.6	0.1
8.175	7.718	7.943	20.4	0.6	0.1
7.718	7.286	7.499	19.7	0.7	0.1
7.286	6.879	7.079	19.0	0.7	0.1
6.879	6.494	6.683	18.3	0.7	0.1
6.494	6.131	6.310	17.6	0.7	0.1
6.131	5.788	5.957	16.9	0.7	0.1
5.788	5.464	5.623	16.2	0.6	0.1
5.464	5.158	5.309	15.6	0.6	0.1
5.158	4.870	5.012	15.0	0.6	0.1
4.870	4.597	4.732	14.5	0.6	0.1
4.597	4.340	4.467	13.9	0.6	0.1
4.340	4.097	4.217	13.4	0.6	0.1
4.097	3.868	3.981	12.8	0.6	0.1
3.868	3.652	3.758	12.3	0.6	0.1
3.652	3.447	3.548	11.7	0.6	0.1
3.447	3.255	3.350	11.1	0.6	0.1
3.255	3.073	3.162	10.6	0.6	0.1
3.073	2.901	2.985	10.1	0.5	0.1
2.901	2.738	2.818	9.6	0.5	0.0
2.738	2.585	2.661	9.1	0.5	0.0
2.585	2.441	2.512	8.6	0.5	0.0
2.441	2.304	2.371	8.1	0.5	0.0
2.304	2.175	2.239	7.7	0.5	0.0
2.175	2.054	2.113	7.2	0.5	0.0

Sample: 3979
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104011.SMP

Test Number: 2
Analyzed: 6/25/2011 10:43:04AM
Reported: 6/25/2011 10:52:34AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.054	1.939	1.995	6.8	0.4	0.0
1.939	1.830	1.884	6.4	0.4	0.0
1.830	1.728	1.778	6.0	0.4	0.0
1.728	1.631	1.679	5.6	0.4	0.0
1.631	1.540	1.585	5.2	0.4	0.0
1.540	1.454	1.496	4.8	0.4	0.0
1.454	1.372	1.413	4.4	0.4	0.0
1.372	1.296	1.334	4.1	0.4	0.0
1.296	1.223	1.259	3.7	0.3	0.0
1.223	1.155	1.189	3.4	0.3	0.0
1.155	1.090	1.122	3.2	0.2	0.0
1.090	1.029	1.059	3.0	0.2	0.0
1.029	0.972	1.000	2.8	0.2	0.0
0.972	0.917	0.944	2.6	0.2	0.0
0.917	0.866	0.891	2.3	0.3	0.0
0.866	0.818	0.841	2.0	0.3	0.0
0.818	0.772	0.794	1.7	0.3	0.0
0.772	0.729	0.750	1.3	0.4	0.0
0.729	0.688	0.708	1.0	0.3	0.0
0.688	0.649	0.668	0.7	0.3	0.0
0.649	0.613	0.631	0.4	0.2	0.0
0.613	0.579	0.596	0.2	0.2	0.0
0.579	0.546	0.562	0.1	0.1	0.0
0.546	0.516	0.531	0.0	0.1	0.0
0.516	0.487	0.501	0.0	0.0	0.0
0.487	0.460	0.473	0.0	0.0	0.0
0.460	0.434	0.447	0.0	0.0	0.0

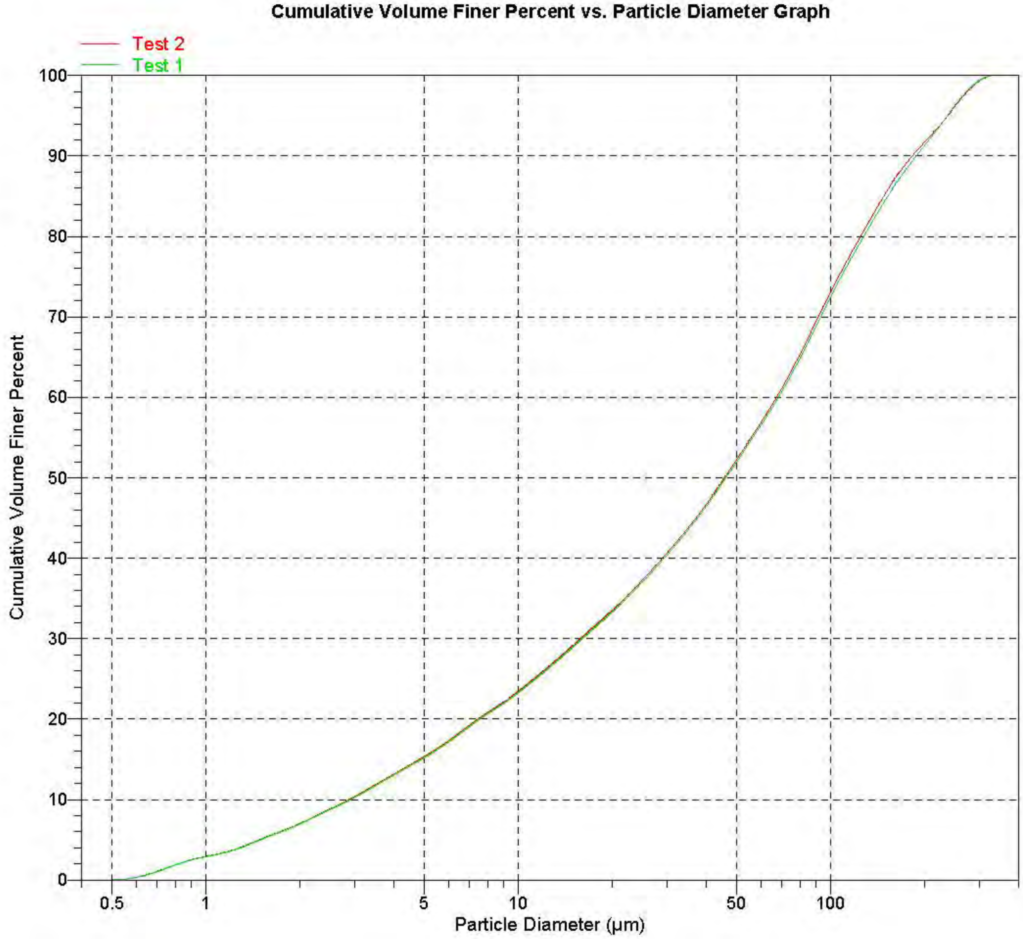
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 5

Sample: 3979
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104011.SMP

Test Number: 2
Analyzed: 6/25/2011 10:43:04AM
Reported: 6/25/2011 10:52:34AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

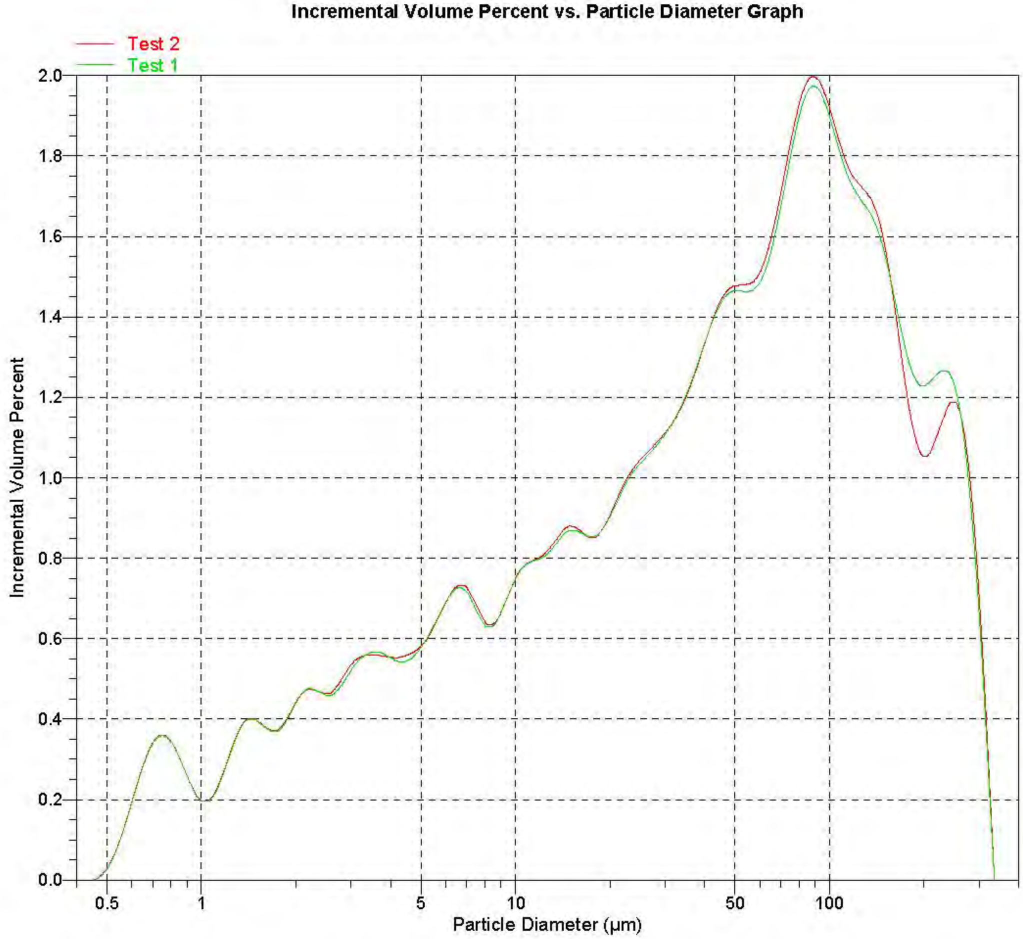


Sample: 3979
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104011.SMP

Test Number: 2
Analyzed: 6/25/2011 10:43:04AM
Reported: 6/25/2011 10:52:34AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

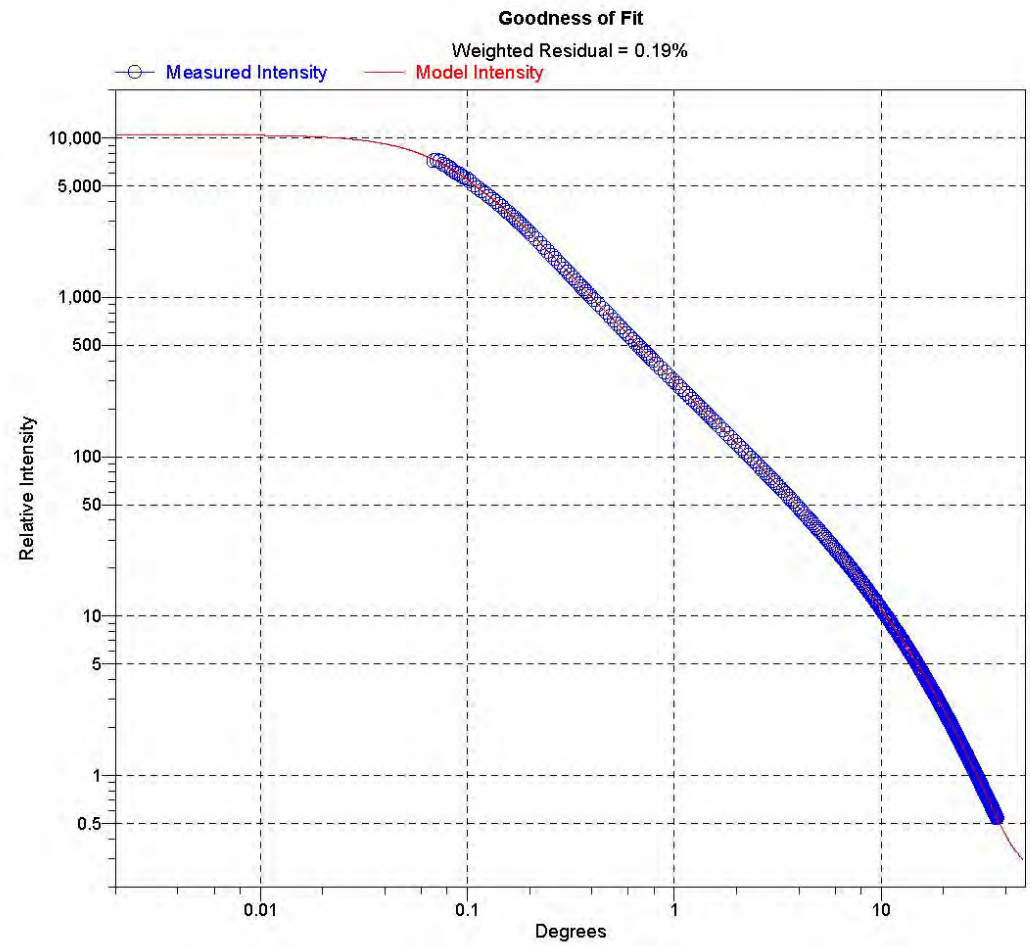
Incremental Volume Percent vs. Particle Diameter Graph



Sample: 3979
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104011.SMP

Test Number: 2
Analyzed: 6/25/2011 10:43:04AM
Reported: 6/25/2011 10:52:34AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#24-4157

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

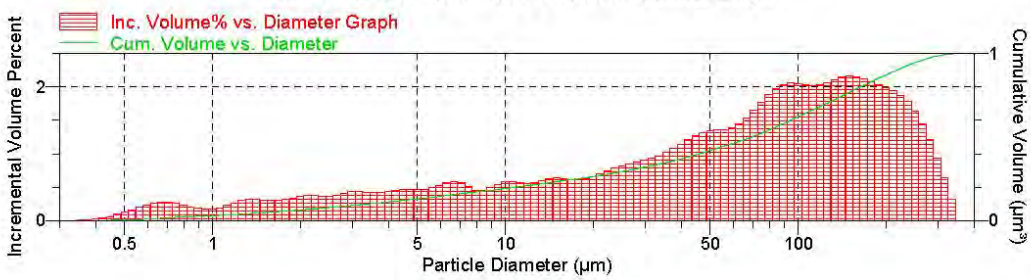
Sample: 4157
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104012.SMP

Test Number: 2
Analyzed: 6/25/2011 11:21:29AM
Reported: 6/25/2011 11:33:23AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used
Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02666 %
Obscuration: 35.7 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	90.077	2.120	Mode	149.524	0.000
Median	69.283	1.443			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	216.483
50.0	69.283
10.0	3.418

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 4157
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104012.SMP

Test Number: 2
Analyzed: 6/25/2011 11:21:29AM
Reported: 6/25/2011 11:33:23AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
344.747	325.462	334.965	99.7	0.3	0.1
325.462	307.256	316.228	99.0	0.6	0.3
307.256	290.068	298.538	98.1	0.9	0.4
290.068	273.842	281.838	96.9	1.2	0.6
273.842	258.523	266.073	95.4	1.4	0.8
258.523	244.062	251.189	93.8	1.6	0.8
244.062	230.409	237.137	92.0	1.8	0.9
230.409	217.520	223.872	90.2	1.9	0.9
217.520	205.353	211.349	88.2	1.9	0.9
205.353	193.865	199.526	86.2	2.0	0.8
193.865	183.021	188.365	84.2	2.0	0.8
183.021	172.783	177.828	82.1	2.1	0.8
172.783	163.117	167.880	80.0	2.1	0.8
163.117	153.993	158.489	77.8	2.2	0.8
153.993	145.378	149.624	75.7	2.2	0.8
145.378	137.246	141.254	73.5	2.1	0.8
137.246	129.569	133.352	71.4	2.1	0.8
129.569	122.321	125.893	69.3	2.1	0.8
122.321	115.478	118.850	67.3	2.0	0.8
115.478	109.018	112.202	65.3	2.0	0.8
109.018	102.920	105.925	63.2	2.0	0.8
102.920	97.163	100.000	61.2	2.1	0.7
97.163	91.728	94.406	59.1	2.1	0.7
91.728	86.596	89.125	57.1	2.0	0.7
86.596	81.752	84.140	55.1	2.0	0.6
81.752	77.179	79.433	53.2	1.9	0.6
77.179	72.862	74.989	51.5	1.8	0.6
72.862	68.786	70.795	49.8	1.7	0.6
68.786	64.938	66.834	48.3	1.5	0.6
64.938	61.306	63.096	46.8	1.5	0.5
61.306	57.876	59.566	45.4	1.4	0.5
57.876	54.639	56.234	44.0	1.4	0.5
54.639	51.582	53.088	42.7	1.4	0.5
51.582	48.697	50.119	41.3	1.3	0.5
48.697	45.973	47.315	40.0	1.3	0.5
45.973	43.401	44.668	38.7	1.3	0.5
43.401	40.973	42.170	37.5	1.2	0.5
40.973	38.681	39.811	36.4	1.1	0.5
38.681	36.517	37.584	35.3	1.1	0.5
36.517	34.475	35.481	34.3	1.0	0.5
34.475	32.546	33.497	33.3	1.0	0.5
32.546	30.726	31.623	32.4	0.9	0.5
30.726	29.007	29.854	31.5	0.9	0.5
29.007	27.384	28.184	30.6	0.9	0.5

Sample: 4157
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104012.SMP

Test Number: 2
Analyzed: 6/25/2011 11:21:29AM
Reported: 6/25/2011 11:33:23AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
27.384	25.852	26.607	29.8	0.8	0.4
25.852	24.406	25.119	28.9	0.8	0.4
24.406	23.041	23.714	28.2	0.8	0.4
23.041	21.752	22.387	27.4	0.8	0.4
21.752	20.535	21.135	26.7	0.7	0.4
20.535	19.387	19.953	26.0	0.7	0.4
19.387	18.302	18.836	25.4	0.6	0.4
18.302	17.278	17.783	24.8	0.6	0.4
17.278	16.312	16.788	24.2	0.6	0.4
16.312	15.399	15.849	23.6	0.6	0.4
15.399	14.538	14.962	22.9	0.6	0.4
14.538	13.725	14.125	22.3	0.6	0.4
13.725	12.957	13.335	21.7	0.6	0.4
12.957	12.232	12.589	21.1	0.6	0.4
12.232	11.548	11.885	20.6	0.6	0.4
11.548	10.902	11.220	20.0	0.6	0.4
10.902	10.292	10.593	19.4	0.6	0.3
10.292	9.716	10.000	18.8	0.6	0.3
9.716	9.173	9.441	18.3	0.5	0.3
9.173	8.660	8.913	17.8	0.5	0.3
8.660	8.175	8.414	17.4	0.5	0.3
8.175	7.718	7.943	16.9	0.5	0.3
7.718	7.286	7.499	16.4	0.5	0.3
7.286	6.879	7.079	15.8	0.6	0.3
6.879	6.494	6.683	15.2	0.6	0.3
6.494	6.131	6.310	14.7	0.6	0.3
6.131	5.788	5.957	14.1	0.5	0.3
5.788	5.464	5.623	13.7	0.5	0.2
5.464	5.158	5.309	13.2	0.5	0.3
5.158	4.870	5.012	12.7	0.5	0.3
4.870	4.597	4.732	12.3	0.5	0.3
4.597	4.340	4.467	11.8	0.5	0.2
4.340	4.097	4.217	11.3	0.5	0.2
4.097	3.868	3.981	10.9	0.4	0.2
3.868	3.652	3.758	10.5	0.4	0.2
3.652	3.447	3.548	10.1	0.4	0.2
3.447	3.255	3.350	9.6	0.4	0.2
3.255	3.073	3.162	9.2	0.4	0.2
3.073	2.901	2.985	8.8	0.4	0.2
2.901	2.738	2.818	8.4	0.4	0.2
2.738	2.585	2.661	8.0	0.4	0.2
2.585	2.441	2.512	7.6	0.4	0.1
2.441	2.304	2.371	7.2	0.4	0.1
2.304	2.175	2.239	6.9	0.4	0.1

Sample: 4157
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104012.SMP

Test Number: 2
Analyzed: 6/25/2011 11:21:29AM
Reported: 6/25/2011 11:33:23AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

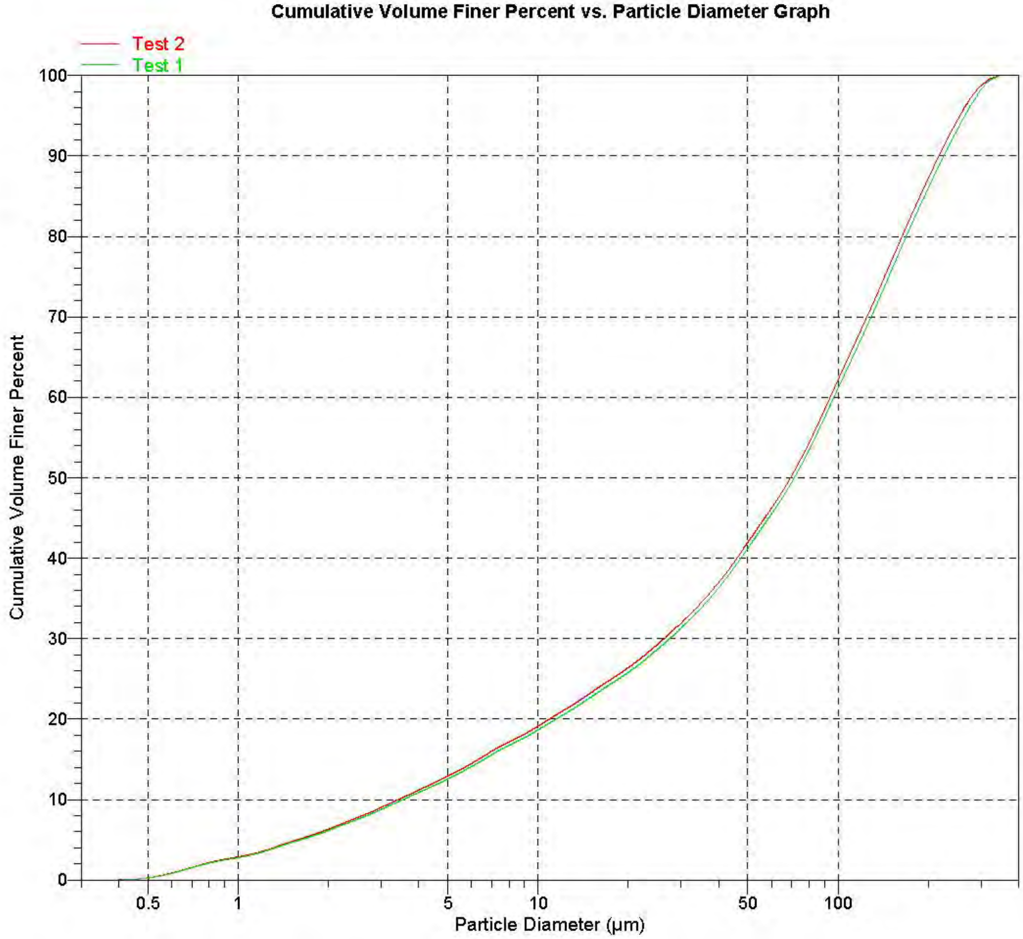
High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.175	2.054	2.113	6.5	0.4	0.1
2.054	1.939	1.995	6.1	0.4	0.1
1.939	1.830	1.884	5.8	0.3	0.1
1.830	1.728	1.778	5.5	0.3	0.1
1.728	1.631	1.679	5.2	0.3	0.1
1.631	1.540	1.585	4.9	0.3	0.1
1.540	1.454	1.496	4.6	0.3	0.1
1.454	1.372	1.413	4.3	0.3	0.1
1.372	1.296	1.334	3.9	0.3	0.1
1.296	1.223	1.259	3.7	0.3	0.1
1.223	1.155	1.189	3.4	0.3	0.1
1.155	1.090	1.122	3.2	0.2	0.1
1.090	1.029	1.059	3.0	0.2	0.1
1.029	0.972	1.000	2.8	0.2	0.1
0.972	0.917	0.944	2.6	0.2	0.1
0.917	0.866	0.891	2.4	0.2	0.1
0.866	0.818	0.841	2.2	0.2	0.0
0.818	0.772	0.794	2.0	0.2	0.0
0.772	0.729	0.750	1.8	0.3	0.0
0.729	0.688	0.708	1.5	0.3	0.0
0.688	0.649	0.668	1.2	0.3	0.0
0.649	0.613	0.631	1.0	0.3	0.0
0.613	0.579	0.596	0.7	0.2	0.0
0.579	0.546	0.562	0.5	0.2	0.0
0.546	0.516	0.531	0.4	0.2	0.0
0.516	0.487	0.501	0.2	0.1	0.0
0.487	0.460	0.473	0.1	0.1	0.0
0.460	0.434	0.447	0.1	0.1	0.0
0.434	0.410	0.422	0.0	0.0	0.0
0.410	0.387	0.398	0.0	0.0	0.0
0.387	0.365	0.376	0.0	0.0	0.0
0.365	0.345	0.355	0.0	0.0	0.0
0.345	0.325	0.335	0.0	0.0	0.0

Sample: 4157
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104012.SMP

Test Number: 2
Analyzed: 6/25/2011 11:21:29AM
Reported: 6/25/2011 11:33:23AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

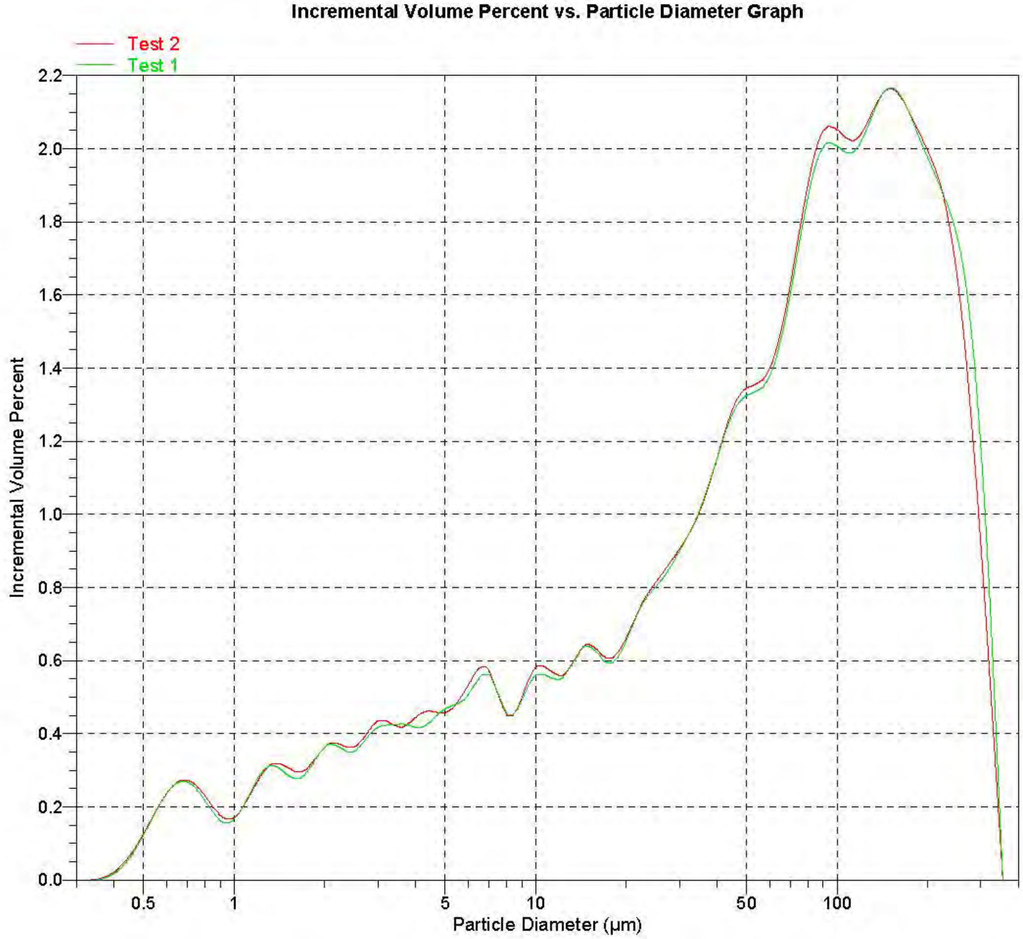


MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Sample: 4157
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104012.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/25/2011 11:21:29AM	Material:	Sediment / Water
Reported:	6/25/2011 11:33:23AM	Background:	Water RI 1.331
Background:	6/25/2011 10:17:25AM	Smoothing:	Medium

Incremental Volume Percent vs. Particle Diameter Graph

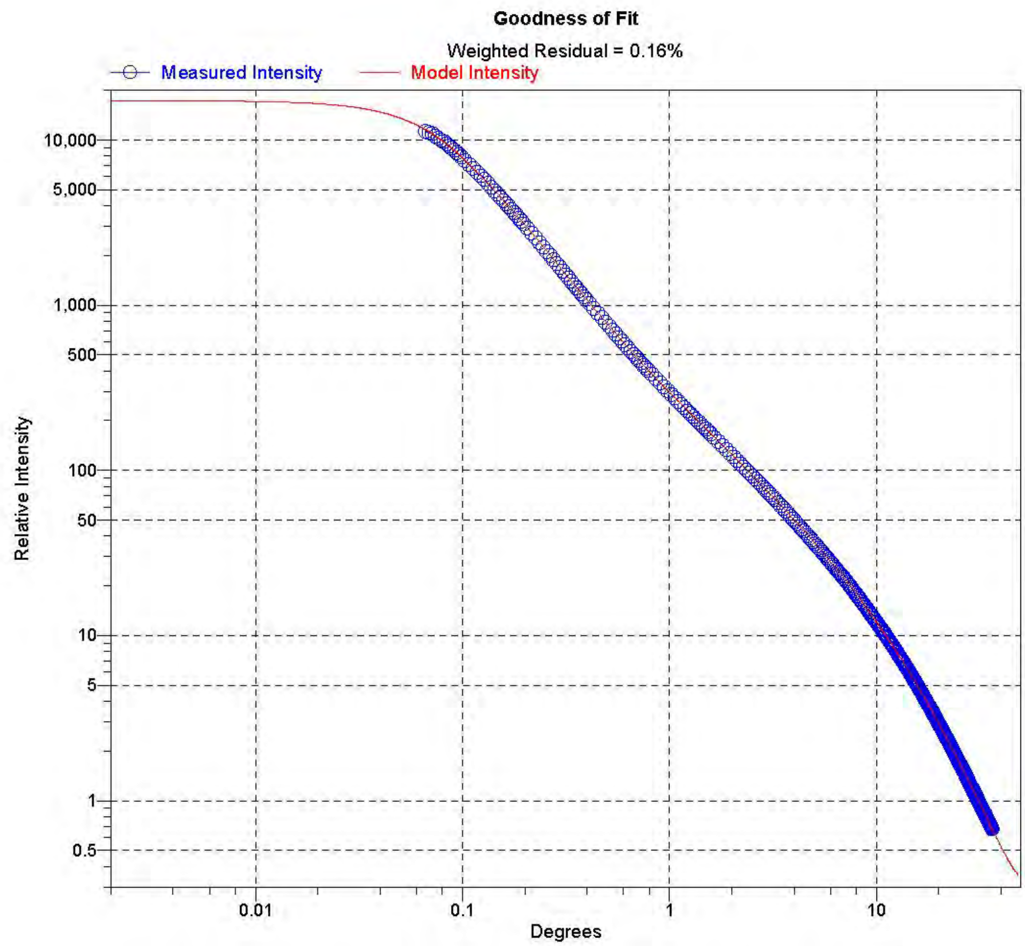


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

Sample: 4157
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104012.SMP

Test Number: 2
Analyzed: 6/25/2011 11:21:29AM
Reported: 6/25/2011 11:33:23AM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#25-4164

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 | Saturn DigiSizer II 5205 V1.01 | 5200 LSHU V3.00 S/N 127 | Page 1

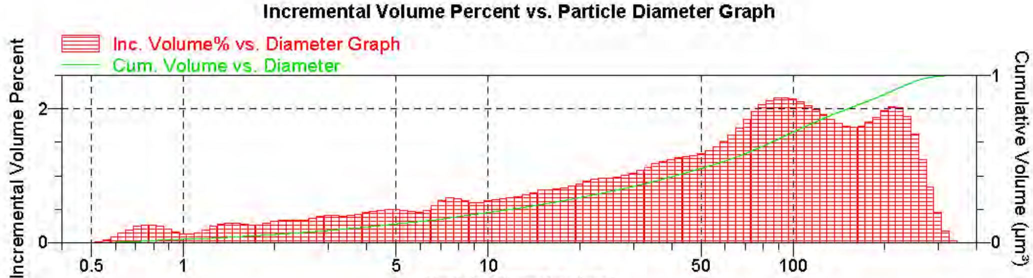
Sample: 4164
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104013.SMP

Test Number: 2
Analyzed: 6/25/2011 11:09:37AM
Reported: 6/25/2011 11:10:50AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02633 %
Obscuration: 31.6 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	83.381	0.455	Mode	94.291	0.000
Median	62.610	0.337			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	206.730
50.0	62.610
10.0	4.371

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 4164
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104013.SMP

Test Number: 2
Analyzed: 6/25/2011 11:09:37AM
Reported: 6/25/2011 11:10:50AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
344.747	325.462	334.965	100.0	0.0	0.0
325.462	307.256	316.228	99.8	0.2	0.1
307.256	290.068	298.538	99.4	0.4	0.1
290.068	273.842	281.838	98.6	0.8	0.1
273.842	258.523	266.073	97.3	1.2	0.1
258.523	244.062	251.189	95.7	1.6	0.0
244.062	230.409	237.137	93.8	1.9	0.1
230.409	217.520	223.872	91.8	2.0	0.1
217.520	205.353	211.349	89.8	2.0	0.2
205.353	193.865	199.526	87.8	2.0	0.3
193.865	183.021	188.365	85.9	1.9	0.3
183.021	172.783	177.828	84.1	1.8	0.3
172.783	163.117	167.880	82.4	1.7	0.4
163.117	153.993	158.489	80.6	1.7	0.4
153.993	145.378	149.624	78.9	1.7	0.4
145.378	137.246	141.254	77.1	1.8	0.4
137.246	129.569	133.352	75.3	1.8	0.4
129.569	122.321	125.893	73.4	1.9	0.3
122.321	115.478	118.850	71.4	2.0	0.3
115.478	109.018	112.202	69.3	2.1	0.3
109.018	102.920	105.925	67.2	2.1	0.3
102.920	97.163	100.000	65.1	2.1	0.3
97.163	91.728	94.406	62.9	2.2	0.3
91.728	86.596	89.125	60.7	2.2	0.2
86.596	81.752	84.140	58.6	2.1	0.2
81.752	77.179	79.433	56.6	2.1	0.2
77.179	72.862	74.989	54.6	2.0	0.2
72.862	68.786	70.795	52.8	1.8	0.2
68.786	64.938	66.834	51.0	1.7	0.2
64.938	61.306	63.096	49.4	1.6	0.1
61.306	57.876	59.566	47.9	1.5	0.1
57.876	54.639	56.234	46.5	1.4	0.1
54.639	51.582	53.088	45.1	1.4	0.1
51.582	48.697	50.119	43.8	1.3	0.1
48.697	45.973	47.315	42.5	1.3	0.1
45.973	43.401	44.668	41.2	1.3	0.1
43.401	40.973	42.170	39.9	1.3	0.1
40.973	38.681	39.811	38.7	1.2	0.1
38.681	36.517	37.584	37.5	1.2	0.1

Micromeritics Instrument Corporation

Sample: 4164
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104013.SMP

Test Number: 2
Analyzed: 6/25/2011 11:09:37AM
Reported: 6/25/2011 11:10:50AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
36.517	34.475	35.481	36.3	1.2	0.1
34.475	32.546	33.497	35.2	1.1	0.1
32.546	30.726	31.623	34.1	1.1	0.1
30.726	29.007	29.854	33.0	1.0	0.1
29.007	27.384	28.184	32.0	1.0	0.1
27.384	25.852	26.607	31.1	1.0	0.1
25.852	24.406	25.119	30.1	1.0	0.1
24.406	23.041	23.714	29.1	1.0	0.0
23.041	21.752	22.387	28.2	1.0	0.0
21.752	20.535	21.135	27.3	0.9	0.0
20.535	19.387	19.953	26.4	0.9	0.1
19.387	18.302	18.836	25.5	0.8	0.0
18.302	17.278	17.783	24.7	0.8	0.0
17.278	16.312	16.788	23.9	0.8	0.0
16.312	15.399	15.849	23.1	0.8	0.0
15.399	14.538	14.962	22.3	0.8	0.0
14.538	13.725	14.125	21.6	0.8	0.0
13.725	12.957	13.335	20.9	0.7	0.0
12.957	12.232	12.589	20.2	0.7	0.0
12.232	11.548	11.885	19.5	0.7	0.0
11.548	10.902	11.220	18.9	0.7	0.0
10.902	10.292	10.593	18.2	0.6	0.0
10.292	9.716	10.000	17.6	0.6	0.0
9.716	9.173	9.441	17.0	0.6	0.0
9.173	8.660	8.913	16.4	0.6	0.0
8.660	8.175	8.414	15.8	0.6	0.0
8.175	7.718	7.943	15.1	0.7	0.0
7.718	7.286	7.499	14.5	0.7	0.0
7.286	6.879	7.079	13.8	0.6	0.0
6.879	6.494	6.683	13.3	0.6	0.0
6.494	6.131	6.310	12.8	0.5	0.0
6.131	5.788	5.957	12.3	0.5	0.0
5.788	5.464	5.623	11.9	0.5	0.0
5.464	5.158	5.309	11.4	0.5	0.0
5.158	4.870	5.012	10.9	0.5	0.0
4.870	4.597	4.732	10.4	0.5	0.0
4.597	4.340	4.467	9.9	0.5	0.0
4.340	4.097	4.217	9.5	0.5	0.0
4.097	3.868	3.981	9.0	0.4	0.0

Micromeritics Instrument Corporation

Sample: 4164
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104013.SMP

Test Number: 2
Analyzed: 6/25/2011 11:09:37AM
Reported: 6/25/2011 11:10:50AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
3.868	3.652	3.758	8.6	0.4	0.0
3.652	3.447	3.548	8.2	0.4	0.0
3.447	3.255	3.350	7.8	0.4	0.0
3.255	3.073	3.162	7.4	0.4	0.0
3.073	2.901	2.985	7.0	0.4	0.0
2.901	2.738	2.818	6.6	0.4	0.0
2.738	2.585	2.661	6.3	0.4	0.0
2.585	2.441	2.512	5.9	0.3	0.0
2.441	2.304	2.371	5.6	0.3	0.0
2.304	2.175	2.239	5.3	0.3	0.0
2.175	2.054	2.113	4.9	0.3	0.0
2.054	1.939	1.995	4.6	0.3	0.0
1.939	1.830	1.884	4.3	0.3	0.0
1.830	1.728	1.778	4.1	0.3	0.0
1.728	1.631	1.679	3.8	0.3	0.0
1.631	1.540	1.585	3.5	0.3	0.0
1.540	1.454	1.496	3.2	0.3	0.0
1.454	1.372	1.413	2.9	0.3	0.0
1.372	1.296	1.334	2.7	0.3	0.0
1.296	1.223	1.259	2.4	0.2	0.0
1.223	1.155	1.189	2.2	0.2	0.0
1.155	1.090	1.122	2.1	0.1	0.0
1.090	1.029	1.059	2.0	0.1	0.0
1.029	0.972	1.000	1.8	0.1	0.0
0.972	0.917	0.944	1.7	0.2	0.0
0.917	0.866	0.891	1.5	0.2	0.0
0.866	0.818	0.841	1.2	0.2	0.0
0.818	0.772	0.794	1.0	0.3	0.0
0.772	0.729	0.750	0.7	0.3	0.0
0.729	0.688	0.708	0.5	0.2	0.0
0.688	0.649	0.668	0.3	0.2	0.0
0.649	0.613	0.631	0.1	0.1	0.0
0.613	0.579	0.596	0.1	0.1	0.0
0.579	0.546	0.562	0.0	0.0	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0
0.487	0.460	0.473	0.0	0.0	0.0

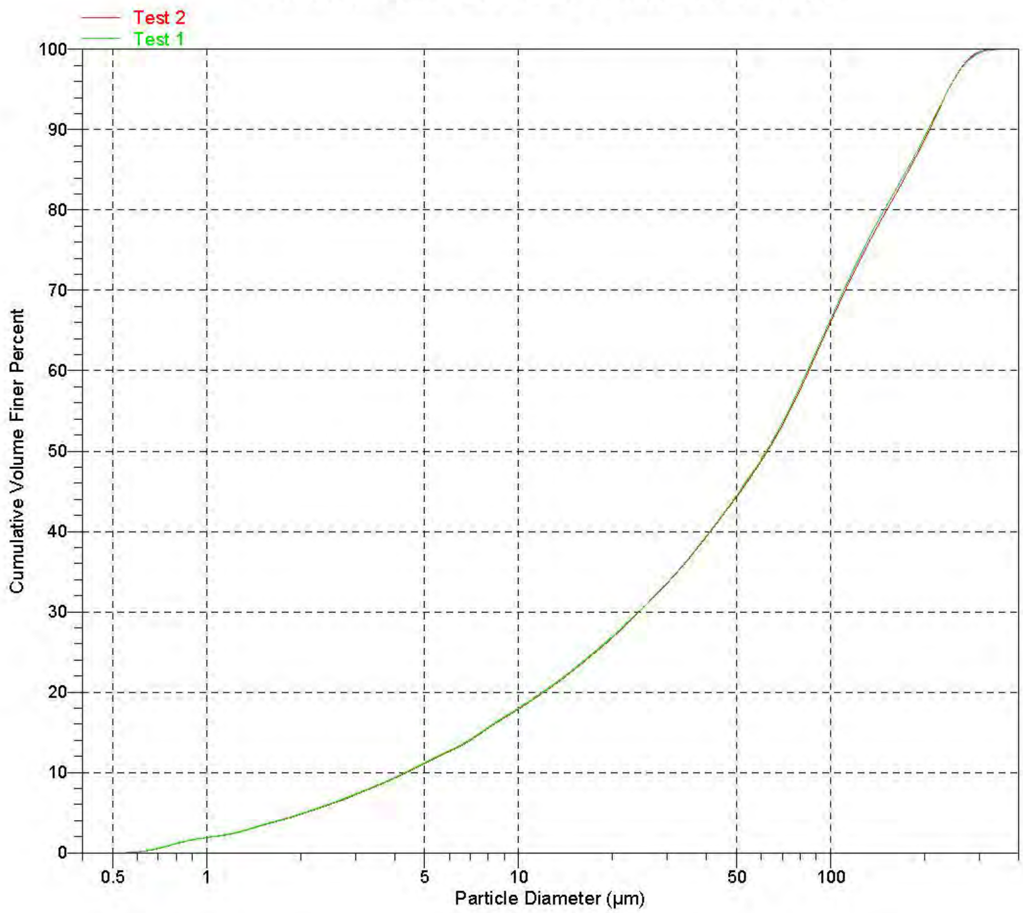
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 5

Sample: 4164
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104013.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/25/2011 11:09:37AM	Material:	Sediment / Water
Reported:	6/25/2011 11:10:50AM	Background:	Water RI 1.331
Background:	6/25/2011 10:27:50AM	Smoothing:	Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

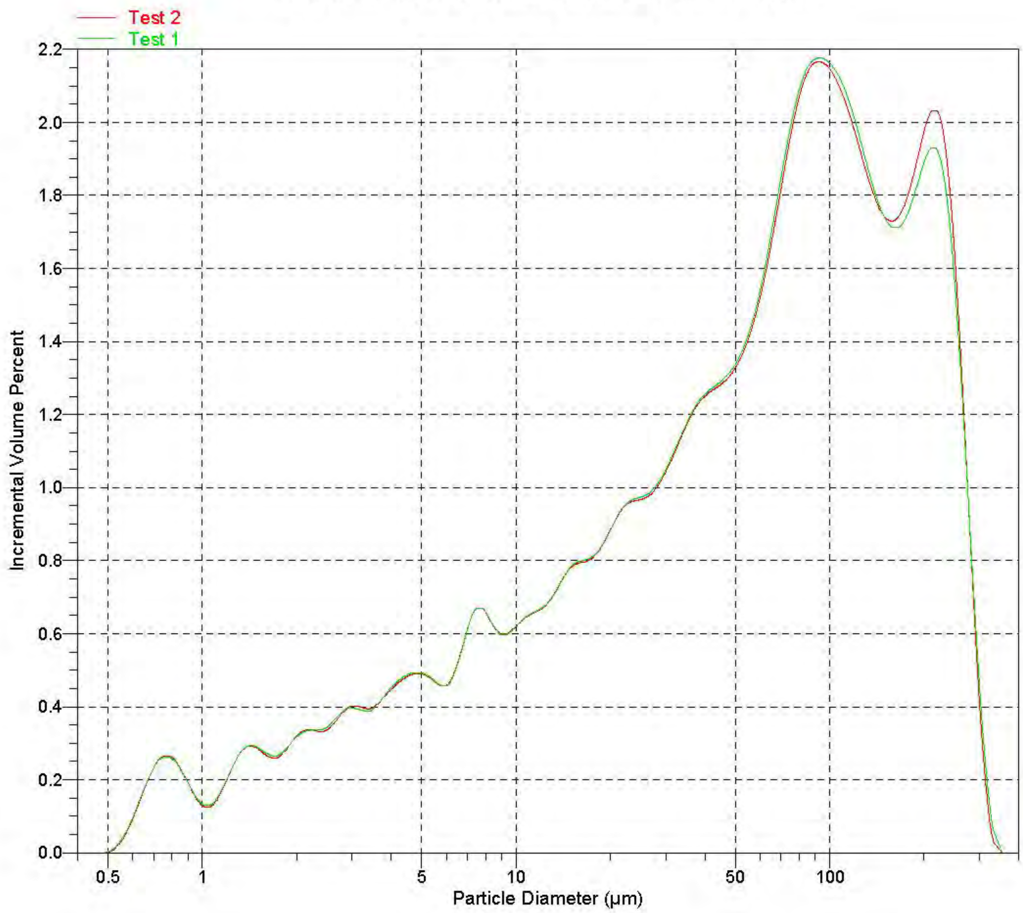


Micromeritics Instrument Corporation

Sample: 4164
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104013.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/25/2011 11:09:37AM	Material:	Sediment / Water
Reported:	6/25/2011 11:10:50AM	Background:	Water RI 1.331
Background:	6/25/2011 10:27:50AM	Smoothing:	Medium

Incremental Volume Percent vs. Particle Diameter Graph

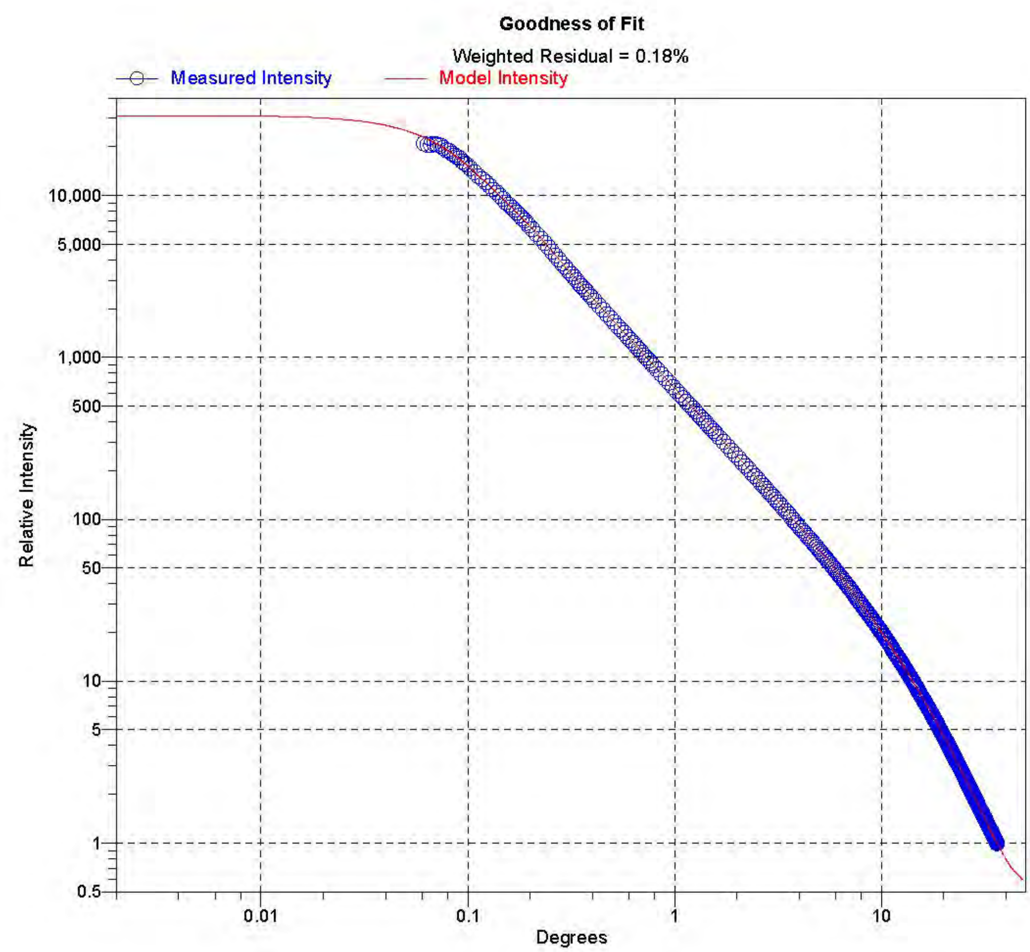


Micromeritics Instrument Corporation

Sample: 4164
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104013.SMP

Test Number: 2
Analyzed: 6/25/2011 11:09:37AM
Reported: 6/25/2011 11:10:50AM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#26-4211

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

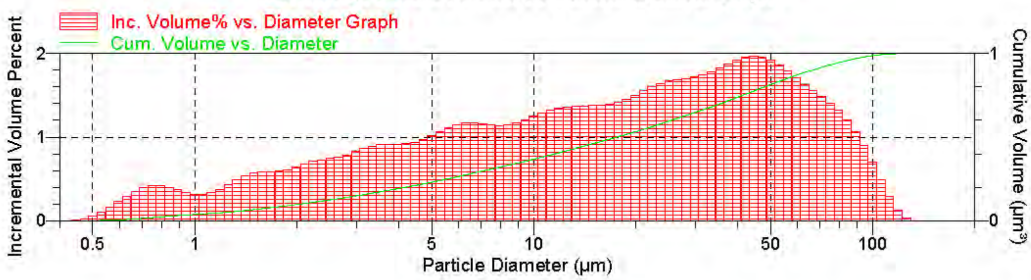
Sample: 4211
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104014.SMP

Test Number: 2
Analyzed: 6/25/2011 11:57:09AM
Reported: 6/25/2011 12:04:39PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.01782 %
Obscuration: 38.9 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	26.665	0.097	Mode	44.638	0.000
Median	17.606	0.041			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	66.263
50.0	17.606
10.0	2.066

Sample: 4211
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104014.SMP

Test Number: 2
Analyzed: 6/25/2011 11:57:09AM
Reported: 6/25/2011 12:04:39PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
129.569	122.321	125.893	100.0	0.0	0.0
122.321	115.478	118.850	99.8	0.1	0.0
115.478	109.018	112.202	99.6	0.3	0.0
109.018	102.920	105.925	99.1	0.5	0.0
102.920	97.163	100.000	98.4	0.7	0.1
97.163	91.728	94.406	97.5	0.9	0.1
91.728	86.596	89.125	96.4	1.1	0.1
86.596	81.752	84.140	95.2	1.2	0.1
81.752	77.179	79.433	93.9	1.3	0.1
77.179	72.862	74.989	92.5	1.4	0.1
72.862	68.786	70.795	91.0	1.5	0.1
68.786	64.938	66.834	89.4	1.6	0.1
64.938	61.306	63.096	87.8	1.6	0.1
61.306	57.876	59.566	86.1	1.7	0.1
57.876	54.639	56.234	84.3	1.8	0.1
54.639	51.582	53.088	82.5	1.9	0.1
51.582	48.697	50.119	80.5	1.9	0.1
48.697	45.973	47.315	78.6	2.0	0.1
45.973	43.401	44.668	76.6	2.0	0.1
43.401	40.973	42.170	74.7	2.0	0.1
40.973	38.681	39.811	72.7	1.9	0.1
38.681	36.517	37.584	70.9	1.9	0.1
36.517	34.475	35.481	69.0	1.8	0.1
34.475	32.546	33.497	67.2	1.8	0.1
32.546	30.726	31.623	65.5	1.7	0.1
30.726	29.007	29.854	63.8	1.7	0.1
29.007	27.384	28.184	62.1	1.7	0.1
27.384	25.852	26.607	60.4	1.7	0.1
25.852	24.406	25.119	58.7	1.7	0.1
24.406	23.041	23.714	57.1	1.6	0.1
23.041	21.752	22.387	55.5	1.6	0.1
21.752	20.535	21.135	53.9	1.6	0.1
20.535	19.387	19.953	52.4	1.5	0.1
19.387	18.302	18.836	51.0	1.5	0.1
18.302	17.278	17.783	49.5	1.4	0.1
17.278	16.312	16.788	48.2	1.4	0.1
16.312	15.399	15.849	46.8	1.4	0.1
15.399	14.538	14.962	45.4	1.4	0.1
14.538	13.725	14.125	44.0	1.4	0.1
13.725	12.957	13.335	42.7	1.4	0.1
12.957	12.232	12.589	41.3	1.4	0.1
12.232	11.548	11.885	40.0	1.3	0.1
11.548	10.902	11.220	38.6	1.3	0.1
10.902	10.292	10.593	37.3	1.3	0.1

Sample: 4211
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104014.SMP

Test Number: 2
Analyzed: 6/25/2011 11:57:09AM
Reported: 6/25/2011 12:04:39PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
10.292	9.716	10.000	36.1	1.2	0.1
9.716	9.173	9.441	34.9	1.2	0.1
9.173	8.660	8.913	33.7	1.2	0.1
8.660	8.175	8.414	32.6	1.1	0.1
8.175	7.718	7.943	31.4	1.1	0.1
7.718	7.286	7.499	30.3	1.1	0.1
7.286	6.879	7.079	29.1	1.2	0.1
6.879	6.494	6.683	28.0	1.2	0.0
6.494	6.131	6.310	26.8	1.2	0.0
6.131	5.788	5.957	25.7	1.1	0.1
5.788	5.464	5.623	24.6	1.1	0.1
5.464	5.158	5.309	23.5	1.1	0.1
5.158	4.870	5.012	22.5	1.0	0.1
4.870	4.597	4.732	21.5	1.0	0.1
4.597	4.340	4.467	20.6	0.9	0.1
4.340	4.097	4.217	19.6	0.9	0.1
4.097	3.868	3.981	18.7	0.9	0.0
3.868	3.652	3.758	17.8	0.9	0.0
3.652	3.447	3.548	16.9	0.9	0.0
3.447	3.255	3.350	16.0	0.9	0.0
3.255	3.073	3.162	15.2	0.9	0.0
3.073	2.901	2.985	14.3	0.8	0.0
2.901	2.738	2.818	13.5	0.8	0.0
2.738	2.585	2.661	12.8	0.8	0.0
2.585	2.441	2.512	12.0	0.7	0.0
2.441	2.304	2.371	11.3	0.7	0.0
2.304	2.175	2.239	10.6	0.7	0.0
2.175	2.054	2.113	9.9	0.7	0.0
2.054	1.939	1.995	9.3	0.6	0.0
1.939	1.830	1.884	8.7	0.6	0.0
1.830	1.728	1.778	8.1	0.6	0.0
1.728	1.631	1.679	7.5	0.6	0.0
1.631	1.540	1.585	6.9	0.6	0.0
1.540	1.454	1.496	6.4	0.6	0.0
1.454	1.372	1.413	5.8	0.5	0.0
1.372	1.296	1.334	5.3	0.5	0.0
1.296	1.223	1.259	4.9	0.4	0.0
1.223	1.155	1.189	4.5	0.4	0.0
1.155	1.090	1.122	4.2	0.3	0.0
1.090	1.029	1.059	3.9	0.3	0.0
1.029	0.972	1.000	3.6	0.3	0.0
0.972	0.917	0.944	3.2	0.3	0.0
0.917	0.866	0.891	2.9	0.4	0.0
0.866	0.818	0.841	2.5	0.4	0.0

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 4

Sample: 4211
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104014.SMP

Test Number: 2
Analyzed: 6/25/2011 11:57:09AM
Reported: 6/25/2011 12:04:39PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
0.818	0.772	0.794	2.0	0.4	0.0
0.772	0.729	0.750	1.6	0.4	0.0
0.729	0.688	0.708	1.2	0.4	0.0
0.688	0.649	0.668	0.9	0.4	0.0
0.649	0.613	0.631	0.6	0.3	0.0
0.613	0.579	0.596	0.3	0.2	0.0
0.579	0.546	0.562	0.2	0.2	0.0
0.546	0.516	0.531	0.1	0.1	0.0
0.516	0.487	0.501	0.0	0.1	0.0
0.487	0.460	0.473	0.0	0.0	0.0
0.460	0.434	0.447	0.0	0.0	0.0
0.434	0.410	0.422	0.0	0.0	0.0

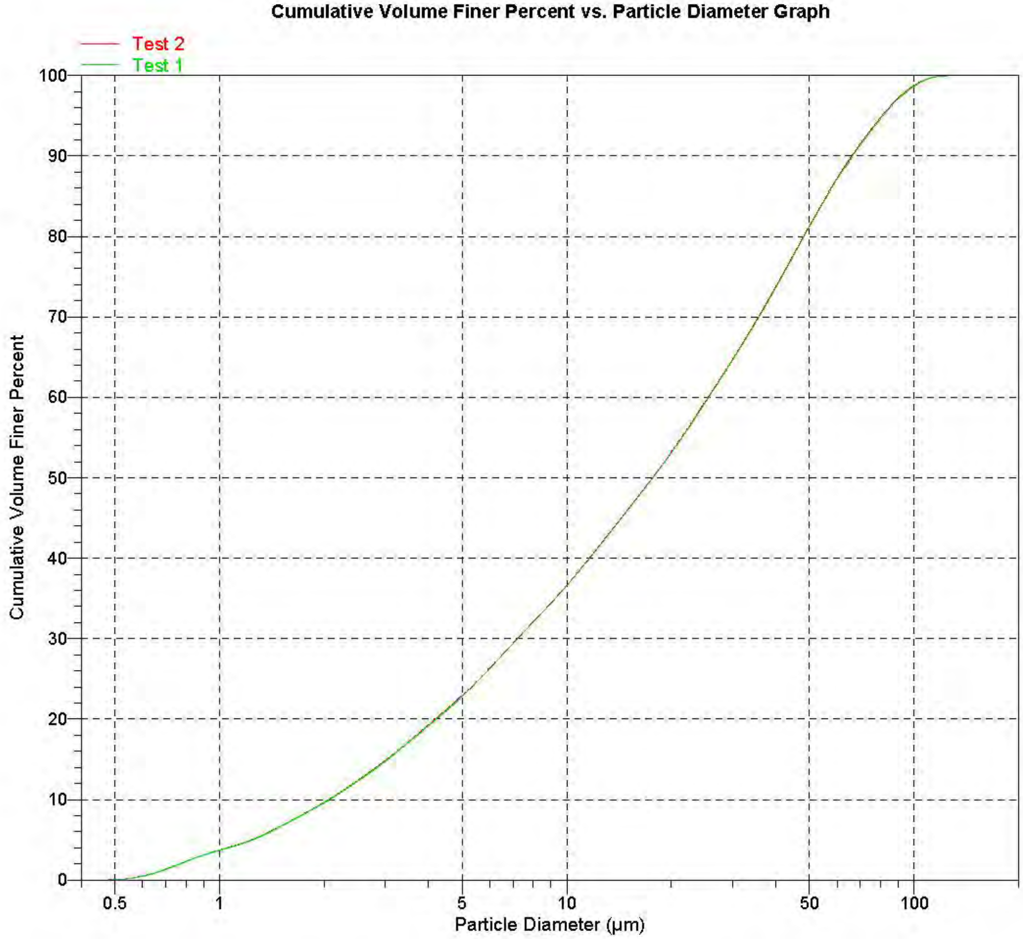
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 5

Sample: 4211
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104014.SMP

Test Number: 2
Analyzed: 6/25/2011 11:57:09AM
Reported: 6/25/2011 12:04:39PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



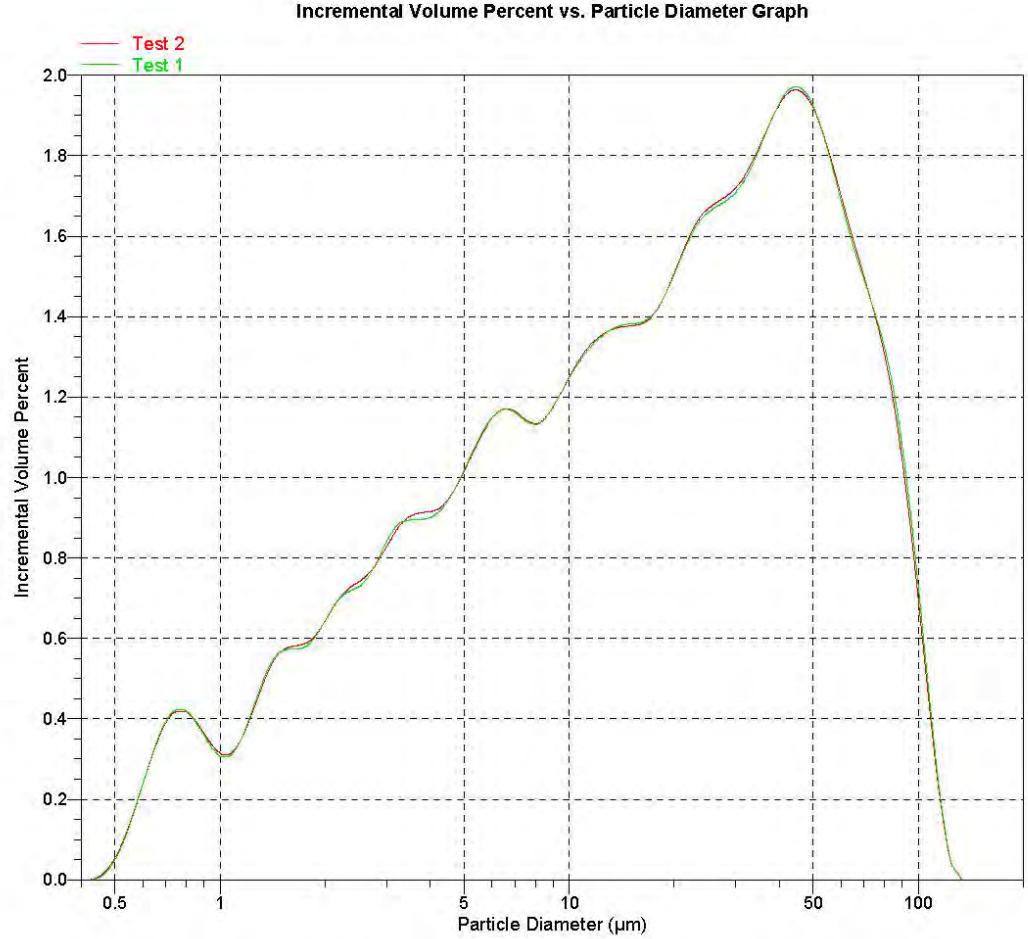
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 6

Sample: 4211
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104014.SMP

Test Number: 2
Analyzed: 6/25/2011 11:57:09AM
Reported: 6/25/2011 12:04:39PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

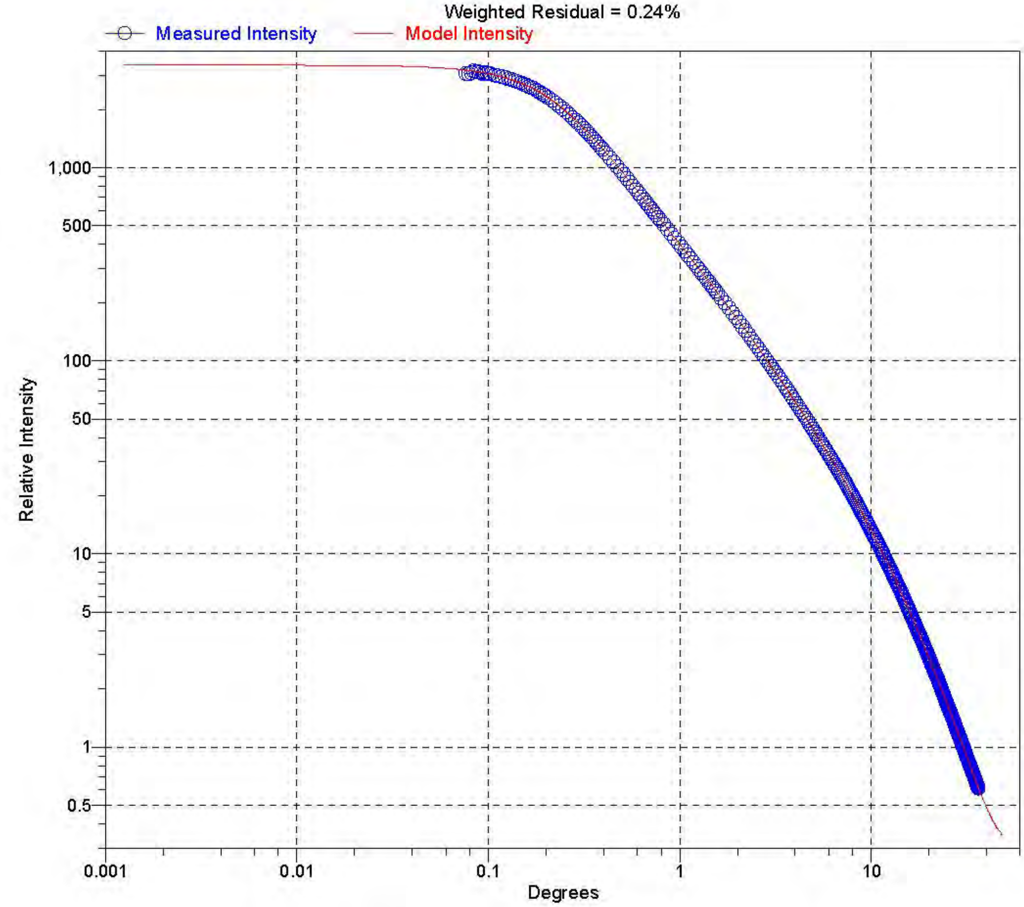
Sample: 4211
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104014.SMP

Test Number: 2
Analyzed: 6/25/2011 11:57:09AM
Reported: 6/25/2011 12:04:39PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Goodness of Fit

Weighted Residual = 0.24%



Sample#27-4224

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 1

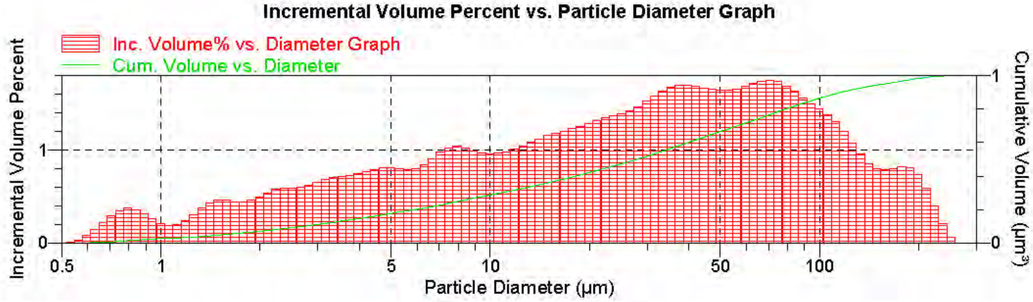
Sample: 4224
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104015.SMP

Test Number: 2
Analyzed: 6/25/2011 11:45:42AM
Reported: 6/25/2011 12:02:01PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used
Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02422 %
Obscuration: 40.3 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	45.584	0.322	Mode	70.709	0.000
Median	27.859	0.281			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	115.828
50.0	27.859
10.0	2.725

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 4224
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104015.SMP

Test Number: 2
Analyzed: 6/25/2011 11:45:42AM
Reported: 6/25/2011 12:02:01PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
258.523	244.062	251.189	99.9	0.1	0.0
244.062	230.409	237.137	99.7	0.2	0.0
230.409	217.520	223.872	99.3	0.4	0.0
217.520	205.353	211.349	98.8	0.6	0.0
205.353	193.865	199.526	98.0	0.7	0.0
193.865	183.021	188.365	97.2	0.8	0.1
183.021	172.783	177.828	96.4	0.8	0.1
172.783	163.117	167.880	95.6	0.8	0.1
163.117	153.993	158.489	94.8	0.8	0.2
153.993	145.378	149.624	94.0	0.8	0.2
145.378	137.246	141.254	93.2	0.9	0.2
137.246	129.569	133.352	92.2	1.0	0.1
129.569	122.321	125.893	91.1	1.1	0.1
122.321	115.478	118.850	89.9	1.2	0.1
115.478	109.018	112.202	88.6	1.3	0.1
109.018	102.920	105.925	87.3	1.4	0.1
102.920	97.163	100.000	85.8	1.4	0.1
97.163	91.728	94.406	84.3	1.5	0.1
91.728	86.596	89.125	82.7	1.6	0.2
86.596	81.752	84.140	81.1	1.6	0.2
81.752	77.179	79.433	79.4	1.7	0.2
77.179	72.862	74.989	77.7	1.7	0.2
72.862	68.786	70.795	75.9	1.8	0.2
68.786	64.938	66.834	74.2	1.7	0.2
64.938	61.306	63.096	72.5	1.7	0.2
61.306	57.876	59.566	70.8	1.7	0.2
57.876	54.639	56.234	69.1	1.7	0.2
54.639	51.582	53.088	67.5	1.6	0.2
51.582	48.697	50.119	65.9	1.6	0.2
48.697	45.973	47.315	64.2	1.7	0.2
45.973	43.401	44.668	62.5	1.7	0.2
43.401	40.973	42.170	60.8	1.7	0.2
40.973	38.681	39.811	59.1	1.7	0.2
38.681	36.517	37.584	57.5	1.7	0.3
36.517	34.475	35.481	55.8	1.7	0.3
34.475	32.546	33.497	54.1	1.6	0.3
32.546	30.726	31.623	52.6	1.6	0.3
30.726	29.007	29.854	51.0	1.5	0.3
29.007	27.384	28.184	49.6	1.5	0.3

Micromeritics Instrument Corporation

Sample: 4224
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104015.SMP

Test Number: 2
Analyzed: 6/25/2011 11:45:42AM
Reported: 6/25/2011 12:02:01PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
27.384	25.852	26.607	48.1	1.4	0.3
25.852	24.406	25.119	46.8	1.4	0.3
24.406	23.041	23.714	45.4	1.4	0.3
23.041	21.752	22.387	44.0	1.3	0.3
21.752	20.535	21.135	42.7	1.3	0.3
20.535	19.387	19.953	41.4	1.3	0.3
19.387	18.302	18.836	40.2	1.3	0.3
18.302	17.278	17.783	38.9	1.2	0.3
17.278	16.312	16.788	37.7	1.2	0.2
16.312	15.399	15.849	36.6	1.2	0.2
15.399	14.538	14.962	35.4	1.2	0.2
14.538	13.725	14.125	34.3	1.1	0.2
13.725	12.957	13.335	33.2	1.1	0.2
12.957	12.232	12.589	32.1	1.0	0.2
12.232	11.548	11.885	31.1	1.0	0.2
11.548	10.902	11.220	30.1	1.0	0.2
10.902	10.292	10.593	29.2	1.0	0.2
10.292	9.716	10.000	28.2	1.0	0.2
9.716	9.173	9.441	27.3	1.0	0.2
9.173	8.660	8.913	26.3	1.0	0.2
8.660	8.175	8.414	25.3	1.0	0.2
8.175	7.718	7.943	24.2	1.0	0.2
7.718	7.286	7.499	23.2	1.0	0.2
7.286	6.879	7.079	22.2	1.0	0.2
6.879	6.494	6.683	21.3	0.9	0.2
6.494	6.131	6.310	20.5	0.8	0.2
6.131	5.788	5.957	19.7	0.8	0.2
5.788	5.464	5.623	18.9	0.8	0.2
5.464	5.158	5.309	18.1	0.8	0.1
5.158	4.870	5.012	17.3	0.8	0.1
4.870	4.597	4.732	16.5	0.8	0.1
4.597	4.340	4.467	15.7	0.8	0.1
4.340	4.097	4.217	14.9	0.8	0.1
4.097	3.868	3.981	14.2	0.7	0.1
3.868	3.652	3.758	13.4	0.7	0.1
3.652	3.447	3.548	12.7	0.7	0.1
3.447	3.255	3.350	12.0	0.7	0.1
3.255	3.073	3.162	11.3	0.7	0.1
3.073	2.901	2.985	10.7	0.7	0.1

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 4224
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104015.SMP

Test Number: 2
Analyzed: 6/25/2011 11:45:42AM
Reported: 6/25/2011 12:02:01PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.901	2.738	2.818	10.1	0.6	0.1
2.738	2.585	2.661	9.5	0.6	0.1
2.585	2.441	2.512	8.9	0.6	0.1
2.441	2.304	2.371	8.3	0.6	0.1
2.304	2.175	2.239	7.7	0.6	0.1
2.175	2.054	2.113	7.2	0.5	0.1
2.054	1.939	1.995	6.7	0.5	0.1
1.939	1.830	1.884	6.2	0.5	0.1
1.830	1.728	1.778	5.8	0.4	0.1
1.728	1.631	1.679	5.3	0.4	0.1
1.631	1.540	1.585	4.9	0.5	0.1
1.540	1.454	1.496	4.4	0.5	0.1
1.454	1.372	1.413	4.0	0.4	0.1
1.372	1.296	1.334	3.6	0.4	0.1
1.296	1.223	1.259	3.3	0.3	0.1
1.223	1.155	1.189	3.0	0.2	0.1
1.155	1.090	1.122	2.8	0.2	0.0
1.090	1.029	1.059	2.7	0.2	0.0
1.029	0.972	1.000	2.4	0.2	0.0
0.972	0.917	0.944	2.2	0.3	0.0
0.917	0.866	0.891	1.9	0.3	0.0
0.866	0.818	0.841	1.5	0.4	0.0
0.818	0.772	0.794	1.1	0.4	0.1
0.772	0.729	0.750	0.8	0.4	0.1
0.729	0.688	0.708	0.5	0.3	0.1
0.688	0.649	0.668	0.3	0.2	0.0
0.649	0.613	0.631	0.1	0.1	0.0
0.613	0.579	0.596	0.0	0.1	0.0
0.579	0.546	0.562	0.0	0.0	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0

Micromeritics Instrument Corporation

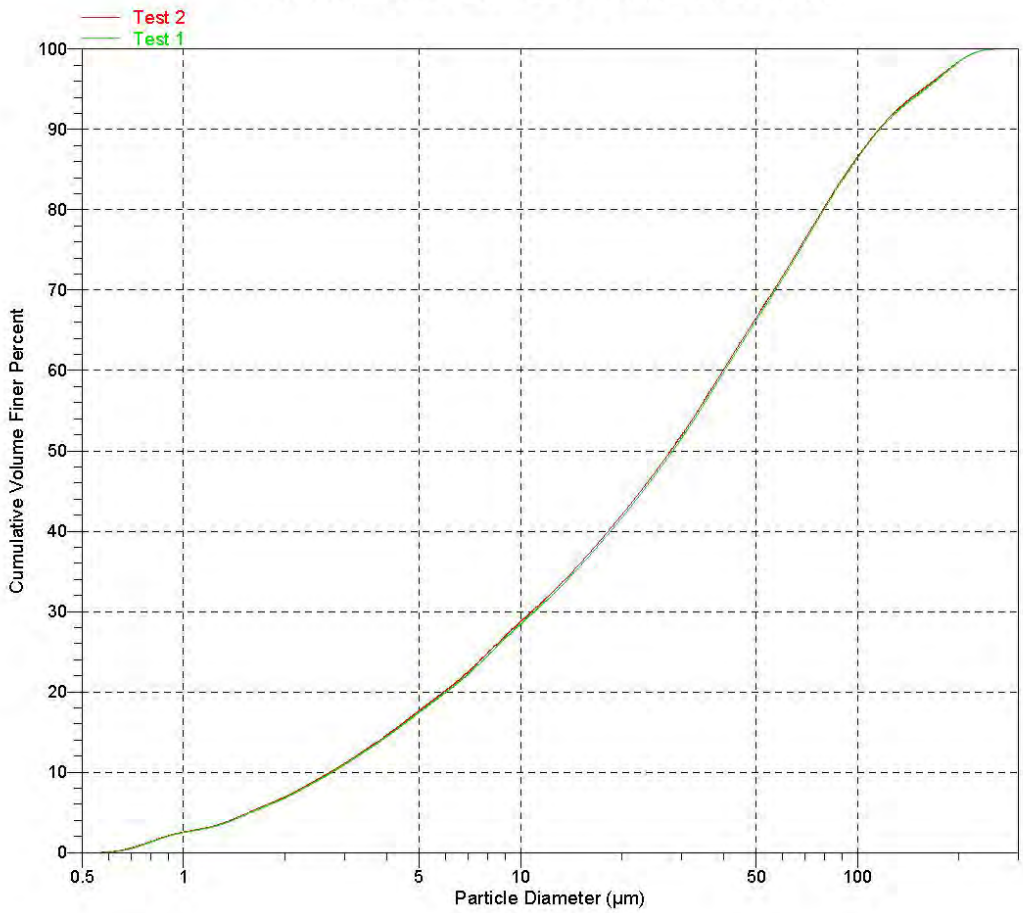
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 5

Sample: 4224
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104015.SMP

Test Number: 2
Analyzed: 6/25/2011 11:45:42AM
Reported: 6/25/2011 12:02:01PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

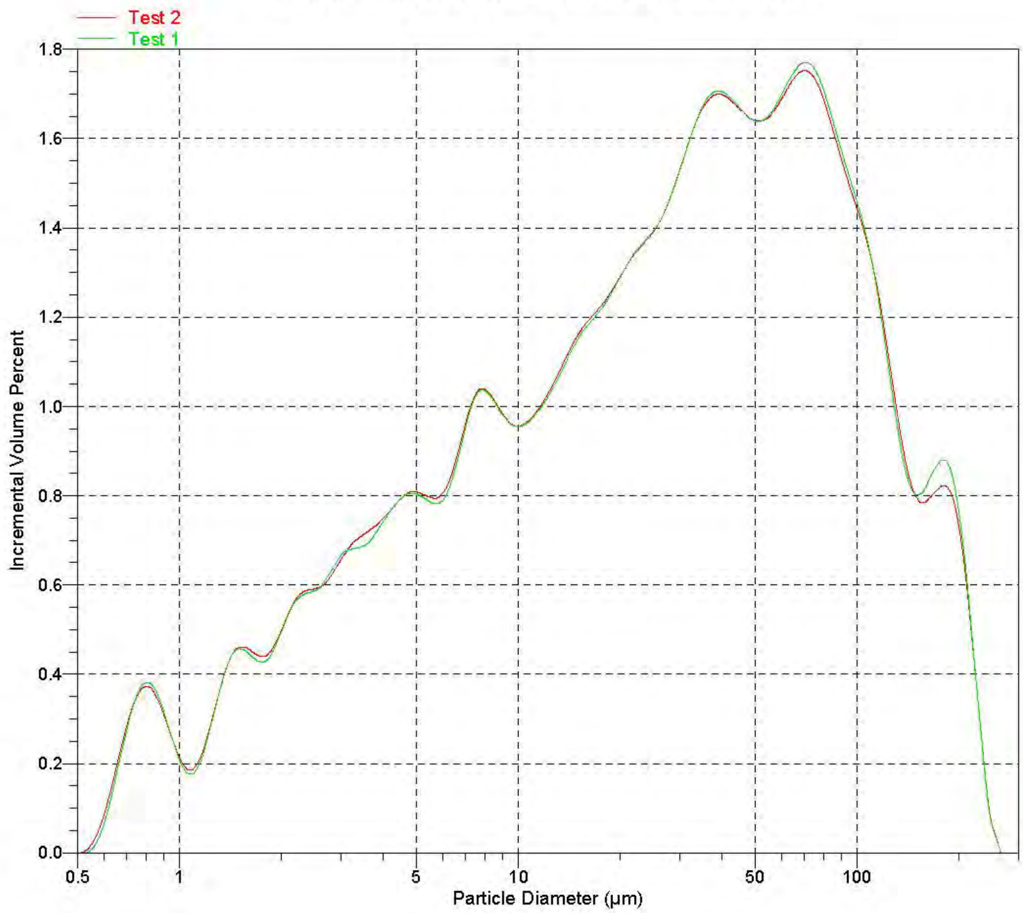
Saturn DigiSizer II 5205 V1.01 | Saturn DigiSizer II 5205 V1.01 | 5200 LSHU V3.00 S/N 127 | Page 6

Sample: 4224
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104015.SMP

Test Number: 2
Analyzed: 6/25/2011 11:45:42AM
Reported: 6/25/2011 12:02:01PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



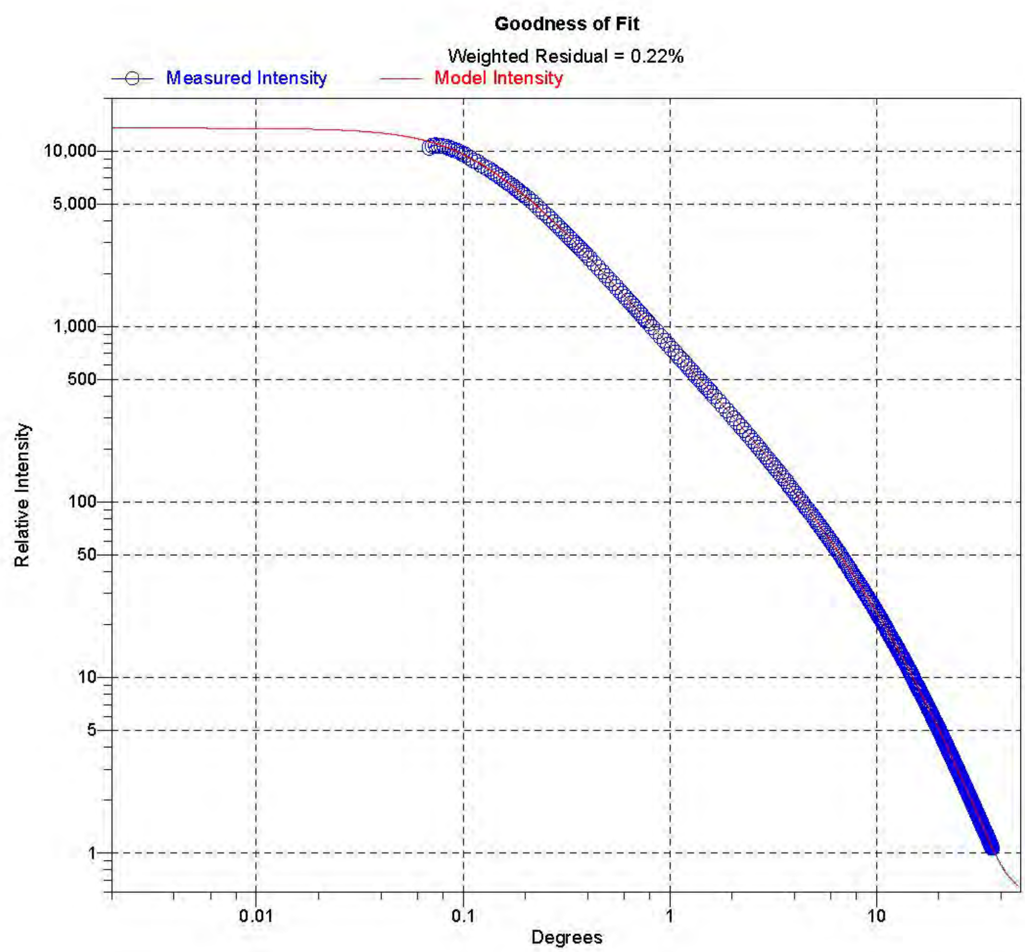
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 4224
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104015.SMP

Test Number: 2
Analyzed: 6/25/2011 11:45:42AM
Reported: 6/25/2011 12:02:01PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#28-4226

Saturn DigiSizer II 5205 V1.01	Saturn DigiSizer II 5205 V1.01	5200 LSHU V2.01 S/N 110	Page 1

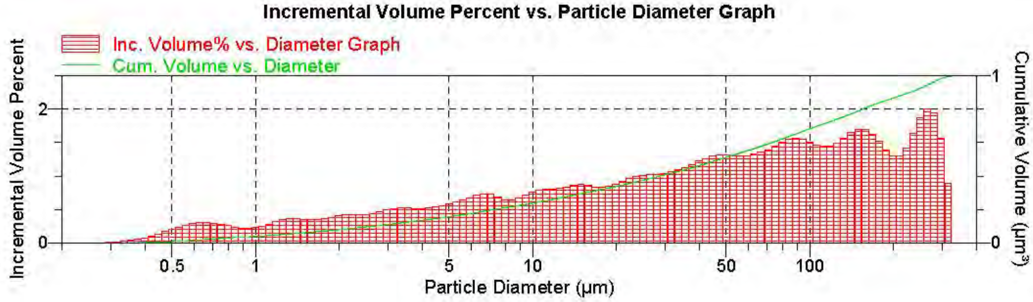
Sample: 4226
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104016.SMP

Test Number: 2
Analyzed: 6/25/2011 12:33:50PM
Reported: 6/25/2011 12:49:01PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02094 %
Obscuration: 34.3 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	81.384	0.734	Mode	265.895	0.000
Median	47.335	0.719			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	229.469
50.0	47.335
10.0	2.693

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 2

Sample: 4226
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104016.SMP

Test Number: 2
Analyzed: 6/25/2011 12:33:50PM
Reported: 6/25/2011 12:49:01PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
325.462	307.256	316.228	99.1	0.9	0.0
307.256	290.068	298.538	97.6	1.6	0.0
290.068	273.842	281.838	95.6	1.9	0.1
273.842	258.523	266.073	93.6	2.0	0.1
258.523	244.062	251.189	91.7	1.9	0.2
244.062	230.409	237.137	90.1	1.6	0.2
230.409	217.520	223.872	88.7	1.4	0.2
217.520	205.353	211.349	87.4	1.3	0.2
205.353	193.865	199.526	86.1	1.3	0.2
193.865	183.021	188.365	84.7	1.4	0.2
183.021	172.783	177.828	83.2	1.5	0.2
172.783	163.117	167.880	81.5	1.6	0.2
163.117	153.993	158.489	79.8	1.7	0.2
153.993	145.378	149.624	78.1	1.7	0.3
145.378	137.246	141.254	76.5	1.6	0.3
137.246	129.569	133.352	74.9	1.6	0.3
129.569	122.321	125.893	73.4	1.5	0.3
122.321	115.478	118.850	72.0	1.4	0.3
115.478	109.018	112.202	70.5	1.4	0.3
109.018	102.920	105.925	69.1	1.5	0.3
102.920	97.163	100.000	67.6	1.5	0.3
97.163	91.728	94.406	66.0	1.5	0.3
91.728	86.596	89.125	64.5	1.6	0.4
86.596	81.752	84.140	62.9	1.5	0.4
81.752	77.179	79.433	61.4	1.5	0.4
77.179	72.862	74.989	60.0	1.5	0.4
72.862	68.786	70.795	58.6	1.4	0.4
68.786	64.938	66.834	57.2	1.4	0.4
64.938	61.306	63.096	55.9	1.3	0.4
61.306	57.876	59.566	54.6	1.3	0.4
57.876	54.639	56.234	53.3	1.3	0.4
54.639	51.582	53.088	52.0	1.3	0.3
51.582	48.697	50.119	50.6	1.3	0.3
48.697	45.973	47.315	49.3	1.3	0.3
45.973	43.401	44.668	48.0	1.3	0.3
43.401	40.973	42.170	46.8	1.3	0.3
40.973	38.681	39.811	45.6	1.2	0.3
38.681	36.517	37.584	44.4	1.2	0.3
36.517	34.475	35.481	43.2	1.1	0.3
34.475	32.546	33.497	42.2	1.1	0.3
32.546	30.726	31.623	41.1	1.1	0.3
30.726	29.007	29.854	40.1	1.0	0.3
29.007	27.384	28.184	39.0	1.0	0.3
27.384	25.852	26.607	38.0	1.0	0.3

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 3

Sample: 4226
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104016.SMP

Test Number: 2
Analyzed: 6/25/2011 12:33:50PM
Reported: 6/25/2011 12:49:01PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
25.852	24.406	25.119	37.0	1.0	0.3
24.406	23.041	23.714	36.0	1.0	0.3
23.041	21.752	22.387	35.0	1.0	0.3
21.752	20.535	21.135	34.1	0.9	0.3
20.535	19.387	19.953	33.2	0.9	0.3
19.387	18.302	18.836	32.4	0.8	0.3
18.302	17.278	17.783	31.6	0.8	0.3
17.278	16.312	16.788	30.7	0.8	0.3
16.312	15.399	15.849	29.9	0.9	0.3
15.399	14.538	14.962	29.0	0.9	0.3
14.538	13.725	14.125	28.1	0.9	0.3
13.725	12.957	13.335	27.3	0.8	0.3
12.957	12.232	12.589	26.5	0.8	0.3
12.232	11.548	11.885	25.7	0.8	0.3
11.548	10.902	11.220	24.9	0.8	0.3
10.902	10.292	10.593	24.1	0.8	0.2
10.292	9.716	10.000	23.3	0.8	0.2
9.716	9.173	9.441	22.6	0.7	0.2
9.173	8.660	8.913	21.9	0.7	0.2
8.660	8.175	8.414	21.3	0.6	0.2
8.175	7.718	7.943	20.7	0.6	0.2
7.718	7.286	7.499	20.0	0.7	0.2
7.286	6.879	7.079	19.3	0.7	0.2
6.879	6.494	6.683	18.5	0.7	0.2
6.494	6.131	6.310	17.8	0.7	0.2
6.131	5.788	5.957	17.1	0.7	0.2
5.788	5.464	5.623	16.5	0.6	0.2
5.464	5.158	5.309	15.9	0.6	0.2
5.158	4.870	5.012	15.3	0.6	0.1
4.870	4.597	4.732	14.7	0.6	0.1
4.597	4.340	4.467	14.2	0.5	0.1
4.340	4.097	4.217	13.7	0.5	0.1
4.097	3.868	3.981	13.2	0.5	0.1
3.868	3.652	3.758	12.6	0.5	0.1
3.652	3.447	3.548	12.1	0.5	0.1
3.447	3.255	3.350	11.6	0.5	0.1
3.255	3.073	3.162	11.1	0.5	0.1
3.073	2.901	2.985	10.6	0.5	0.1
2.901	2.738	2.818	10.1	0.5	0.1
2.738	2.585	2.661	9.7	0.4	0.1
2.585	2.441	2.512	9.3	0.4	0.1
2.441	2.304	2.371	8.9	0.4	0.1
2.304	2.175	2.239	8.4	0.4	0.1
2.175	2.054	2.113	8.0	0.4	0.1

Sample: 4226
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104016.SMP

Test Number: 2
Analyzed: 6/25/2011 12:33:50PM
Reported: 6/25/2011 12:49:01PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.054	1.939	1.995	7.6	0.4	0.1
1.939	1.830	1.884	7.2	0.4	0.1
1.830	1.728	1.778	6.9	0.4	0.1
1.728	1.631	1.679	6.5	0.3	0.1
1.631	1.540	1.585	6.2	0.3	0.1
1.540	1.454	1.496	5.8	0.3	0.1
1.454	1.372	1.413	5.5	0.4	0.1
1.372	1.296	1.334	5.1	0.4	0.0
1.296	1.223	1.259	4.8	0.3	0.0
1.223	1.155	1.189	4.5	0.3	0.0
1.155	1.090	1.122	4.2	0.3	0.0
1.090	1.029	1.059	3.9	0.2	0.0
1.029	0.972	1.000	3.7	0.2	0.0
0.972	0.917	0.944	3.5	0.2	0.0
0.917	0.866	0.891	3.3	0.2	0.0
0.866	0.818	0.841	3.0	0.2	0.0
0.818	0.772	0.794	2.8	0.3	0.0
0.772	0.729	0.750	2.5	0.3	0.0
0.729	0.688	0.708	2.2	0.3	0.0
0.688	0.649	0.668	1.9	0.3	0.0
0.649	0.613	0.631	1.6	0.3	0.0
0.613	0.579	0.596	1.3	0.3	0.0
0.579	0.546	0.562	1.0	0.3	0.0
0.546	0.516	0.531	0.8	0.2	0.0
0.516	0.487	0.501	0.6	0.2	0.0
0.487	0.460	0.473	0.4	0.2	0.0
0.460	0.434	0.447	0.3	0.1	0.0
0.434	0.410	0.422	0.2	0.1	0.0
0.410	0.387	0.398	0.1	0.1	0.0
0.387	0.365	0.376	0.1	0.1	0.0
0.365	0.345	0.355	0.0	0.0	0.0
0.345	0.325	0.335	0.0	0.0	0.0
0.325	0.307	0.316	0.0	0.0	0.0
0.307	0.290	0.299	0.0	0.0	0.0
0.290	0.274	0.282	0.0	0.0	0.0
0.274	0.259	0.266	0.0	0.0	0.0
0.259	0.244	0.251	0.0	0.0	0.0

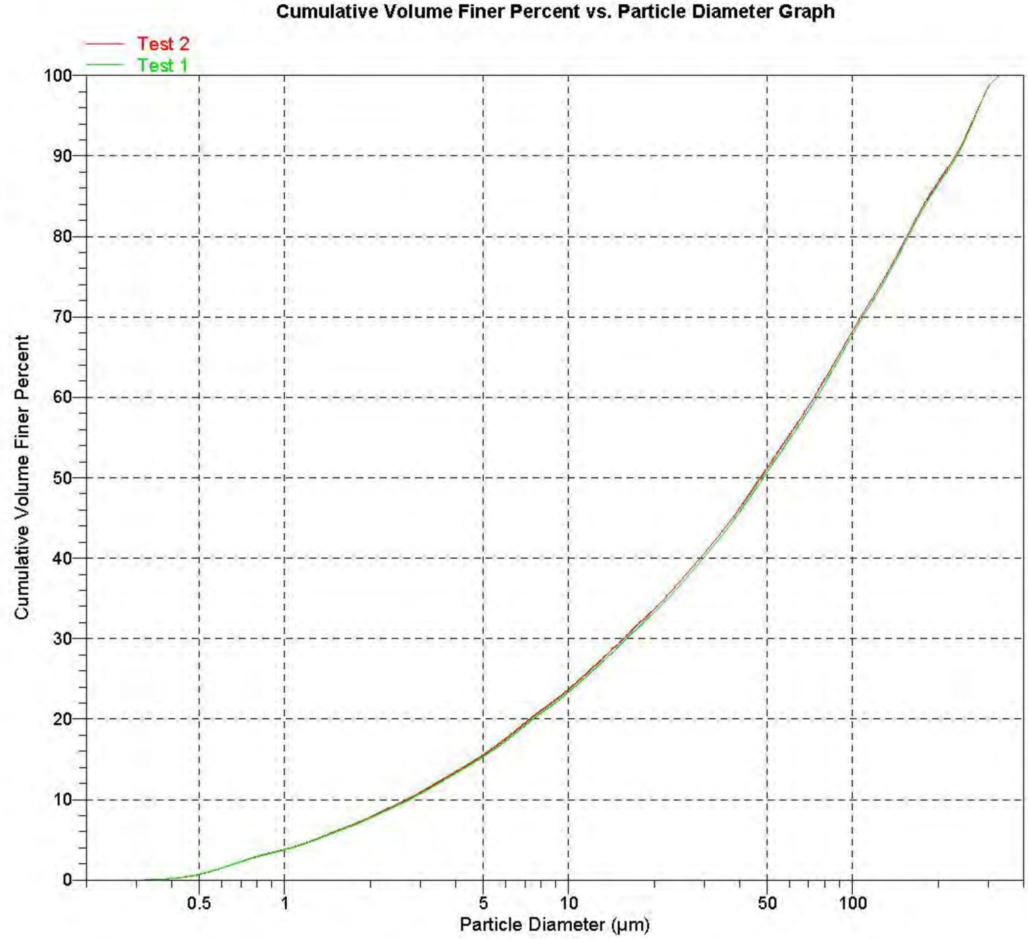
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 5

Sample: 4226
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104016.SMP

Test Number: 2
Analyzed: 6/25/2011 12:33:50PM
Reported: 6/25/2011 12:49:01PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

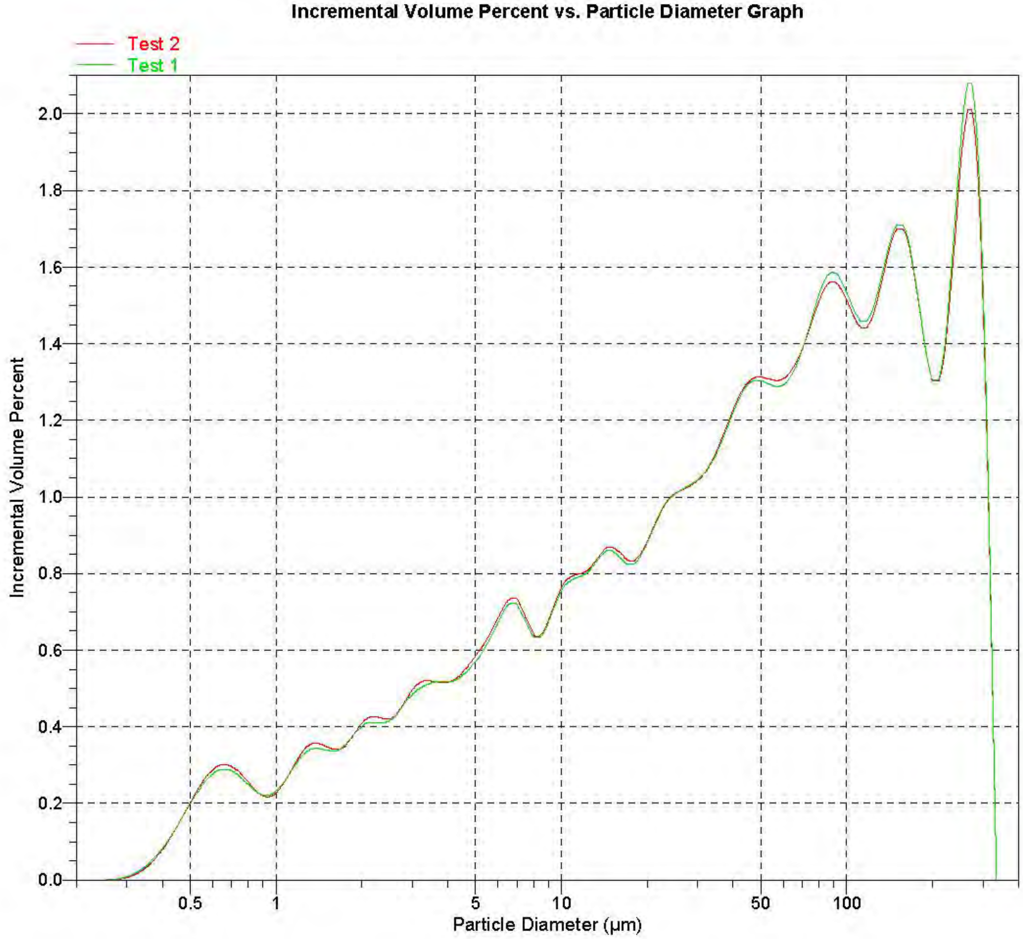


Sample: 4226
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104016.SMP

Test Number: 2
Analyzed: 6/25/2011 12:33:50PM
Reported: 6/25/2011 12:49:01PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

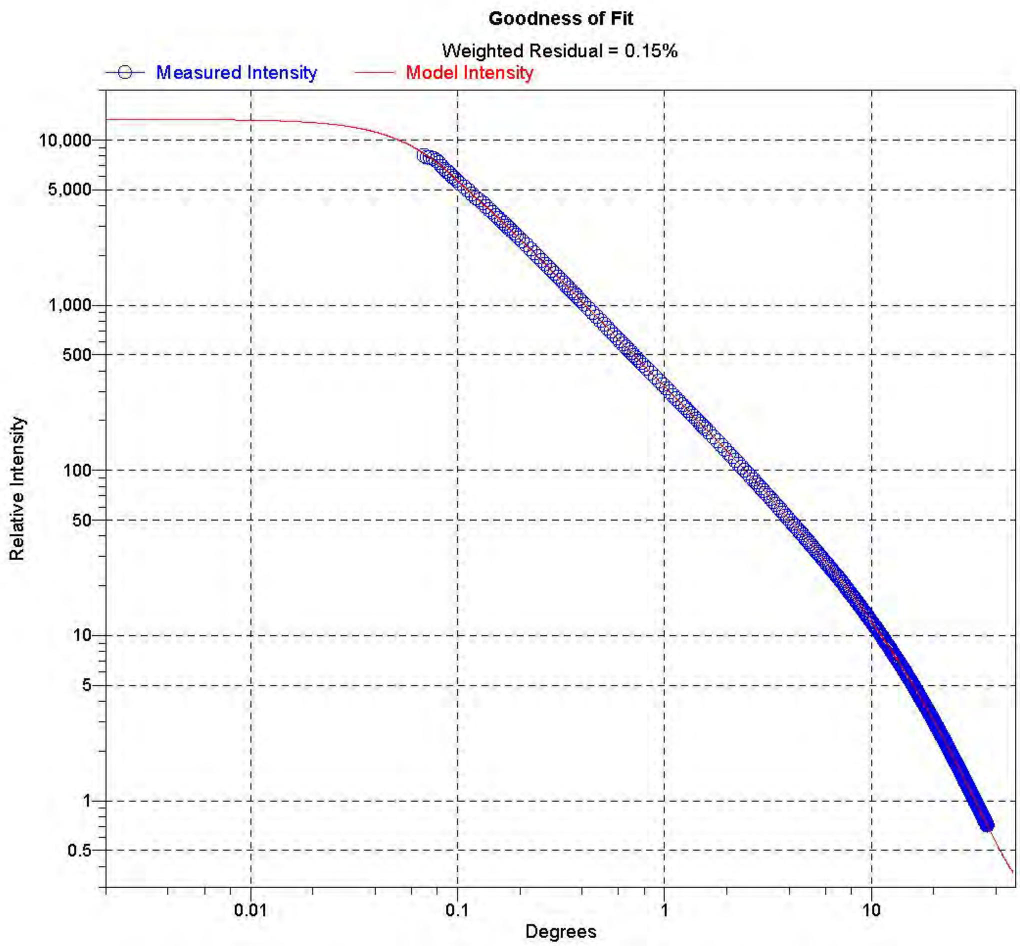
Incremental Volume Percent vs. Particle Diameter Graph



Sample: 4226
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104016.SMP

Test Number: 2
Analyzed: 6/25/2011 12:33:50PM
Reported: 6/25/2011 12:49:01PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium



Sample#29-4458

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 | Saturn DigiSizer II 5205 V1.01 | 5200 LSHU V3.00 S/N 127 | Page 1

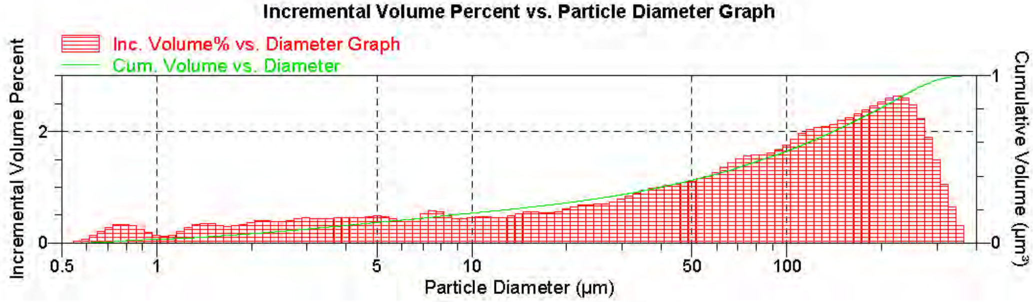
Sample: 4458
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104017A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:04:16PM
Reported: 6/25/2011 1:16:29PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02821 %
Obscuration: 34.2 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	105.644	0.476	Mode	223.600	0.000
Median	84.271	0.516			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	244.325
50.0	84.271
10.0	3.770

Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127

Sample: 4458
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104017A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:04:16PM
Reported: 6/25/2011 1:16:29PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
365.174	344.747	354.813	99.7	0.3	0.0
344.747	325.462	334.965	99.1	0.6	0.1
325.462	307.256	316.228	98.0	1.0	0.1
307.256	290.068	298.538	96.5	1.5	0.0
290.068	273.842	281.838	94.7	1.9	0.1
273.842	258.523	266.073	92.4	2.2	0.2
258.523	244.062	251.189	90.0	2.5	0.2
244.062	230.409	237.137	87.4	2.6	0.3
230.409	217.520	223.872	84.7	2.6	0.4
217.520	205.353	211.349	82.1	2.6	0.4
205.353	193.865	199.526	79.6	2.5	0.4
193.865	183.021	188.365	77.1	2.5	0.4
183.021	172.783	177.828	74.7	2.4	0.4
172.783	163.117	167.880	72.4	2.3	0.3
163.117	153.993	158.489	70.2	2.3	0.3
153.993	145.378	149.624	68.0	2.2	0.2
145.378	137.246	141.254	65.8	2.1	0.1
137.246	129.569	133.352	63.7	2.1	0.1
129.569	122.321	125.893	61.7	2.1	0.0
122.321	115.478	118.850	59.6	2.0	0.0
115.478	109.018	112.202	57.7	2.0	0.0
109.018	102.920	105.925	55.8	1.9	0.0
102.920	97.163	100.000	54.0	1.8	0.1
97.163	91.728	94.406	52.4	1.7	0.1
91.728	86.596	89.125	50.7	1.6	0.2
86.596	81.752	84.140	49.2	1.6	0.2
81.752	77.179	79.433	47.6	1.6	0.2
77.179	72.862	74.989	46.0	1.6	0.2
72.862	68.786	70.795	44.5	1.5	0.1
68.786	64.938	66.834	43.1	1.4	0.1
64.938	61.306	63.096	41.7	1.4	0.1
61.306	57.876	59.566	40.5	1.3	0.1
57.876	54.639	56.234	39.3	1.2	0.1
54.639	51.582	53.088	38.1	1.1	0.1
51.582	48.697	50.119	37.0	1.1	0.1
48.697	45.973	47.315	35.9	1.1	0.1
45.973	43.401	44.668	34.9	1.1	0.1
43.401	40.973	42.170	33.8	1.0	0.1
40.973	38.681	39.811	32.8	1.0	0.1

Micromeritics Instrument Corporation

Sample: 4458
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104017A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:04:16PM
Reported: 6/25/2011 1:16:29PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
38.681	36.517	37.584	31.9	1.0	0.1
36.517	34.475	35.481	30.9	0.9	0.1
34.475	32.546	33.497	30.0	0.9	0.1
32.546	30.726	31.623	29.2	0.8	0.1
30.726	29.007	29.854	28.4	0.8	0.1
29.007	27.384	28.184	27.6	0.7	0.1
27.384	25.852	26.607	26.9	0.7	0.1
25.852	24.406	25.119	26.2	0.7	0.1
24.406	23.041	23.714	25.6	0.7	0.0
23.041	21.752	22.387	24.9	0.7	0.0
21.752	20.535	21.135	24.2	0.6	0.0
20.535	19.387	19.953	23.6	0.6	0.0
19.387	18.302	18.836	23.1	0.6	0.0
18.302	17.278	17.783	22.5	0.5	0.0
17.278	16.312	16.788	22.0	0.5	0.0
16.312	15.399	15.849	21.4	0.5	0.0
15.399	14.538	14.962	20.9	0.5	0.0
14.538	13.725	14.125	20.4	0.5	0.0
13.725	12.957	13.335	19.9	0.5	0.0
12.957	12.232	12.589	19.4	0.5	0.0
12.232	11.548	11.885	19.0	0.5	0.0
11.548	10.902	11.220	18.5	0.5	0.0
10.902	10.292	10.593	18.0	0.5	0.0
10.292	9.716	10.000	17.6	0.4	0.0
9.716	9.173	9.441	17.2	0.4	0.0
9.173	8.660	8.913	16.7	0.4	0.0
8.660	8.175	8.414	16.2	0.5	0.0
8.175	7.718	7.943	15.7	0.5	0.0
7.718	7.286	7.499	15.1	0.6	0.0
7.286	6.879	7.079	14.6	0.5	0.0
6.879	6.494	6.683	14.2	0.4	0.0
6.494	6.131	6.310	13.8	0.4	0.0
6.131	5.788	5.957	13.4	0.4	0.0
5.788	5.464	5.623	13.0	0.4	0.0
5.464	5.158	5.309	12.5	0.5	0.0
5.158	4.870	5.012	12.0	0.5	0.0
4.870	4.597	4.732	11.5	0.5	0.0
4.597	4.340	4.467	11.1	0.5	0.0
4.340	4.097	4.217	10.6	0.4	0.0

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Micromeritics Instrument Corporation

Sample: 4458
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104017A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:04:16PM
Reported: 6/25/2011 1:16:29PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
4.097	3.868	3.981	10.2	0.4	0.0
3.868	3.652	3.758	9.8	0.4	0.0
3.652	3.447	3.548	9.3	0.4	0.0
3.447	3.255	3.350	8.9	0.4	0.0
3.255	3.073	3.162	8.4	0.4	0.0
3.073	2.901	2.985	8.0	0.4	0.0
2.901	2.738	2.818	7.6	0.4	0.0
2.738	2.585	2.661	7.2	0.4	0.0
2.585	2.441	2.512	6.8	0.4	0.0
2.441	2.304	2.371	6.4	0.4	0.0
2.304	2.175	2.239	6.0	0.4	0.0
2.175	2.054	2.113	5.6	0.4	0.0
2.054	1.939	1.995	5.2	0.4	0.0
1.939	1.830	1.884	4.9	0.3	0.0
1.830	1.728	1.778	4.6	0.3	0.0
1.728	1.631	1.679	4.3	0.3	0.0
1.631	1.540	1.585	4.0	0.3	0.0
1.540	1.454	1.496	3.6	0.3	0.0
1.454	1.372	1.413	3.3	0.4	0.0
1.372	1.296	1.334	3.0	0.3	0.0
1.296	1.223	1.259	2.7	0.3	0.0
1.223	1.155	1.189	2.5	0.2	0.0
1.155	1.090	1.122	2.4	0.1	0.0
1.090	1.029	1.059	2.2	0.1	0.0
1.029	0.972	1.000	2.1	0.1	0.0
0.972	0.917	0.944	1.9	0.2	0.0
0.917	0.866	0.891	1.7	0.2	0.0
0.866	0.818	0.841	1.4	0.3	0.0
0.818	0.772	0.794	1.0	0.3	0.0
0.772	0.729	0.750	0.7	0.3	0.0
0.729	0.688	0.708	0.4	0.3	0.0
0.688	0.649	0.668	0.2	0.2	0.0
0.649	0.613	0.631	0.1	0.1	0.0
0.613	0.579	0.596	0.0	0.1	0.0
0.579	0.546	0.562	0.0	0.0	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0

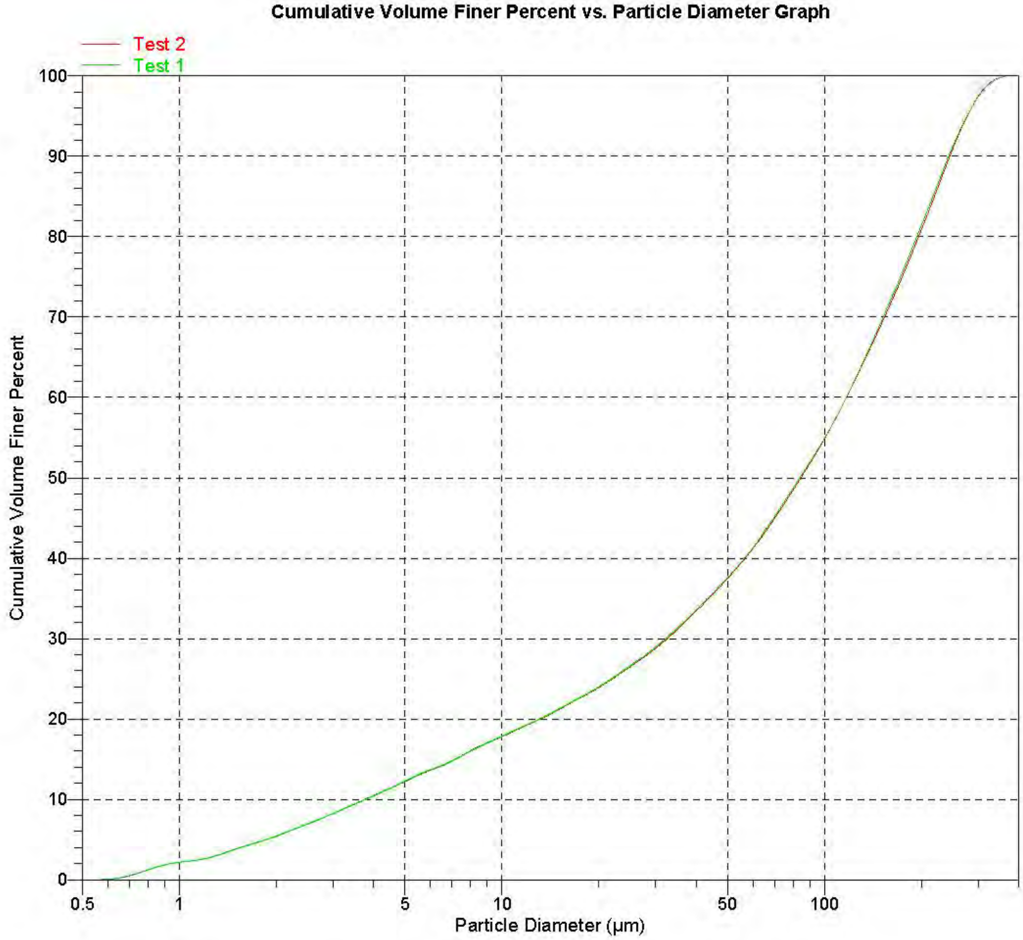
Micromeritics Instrument Corporation

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 5

Sample: 4458
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104017A.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/25/2011 1:04:16PM	Material:	Sediment / Water
Reported:	6/25/2011 1:16:29PM	Background:	Water RI 1.331
Background:	6/25/2011 10:27:50AM	Smoothing:	Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph



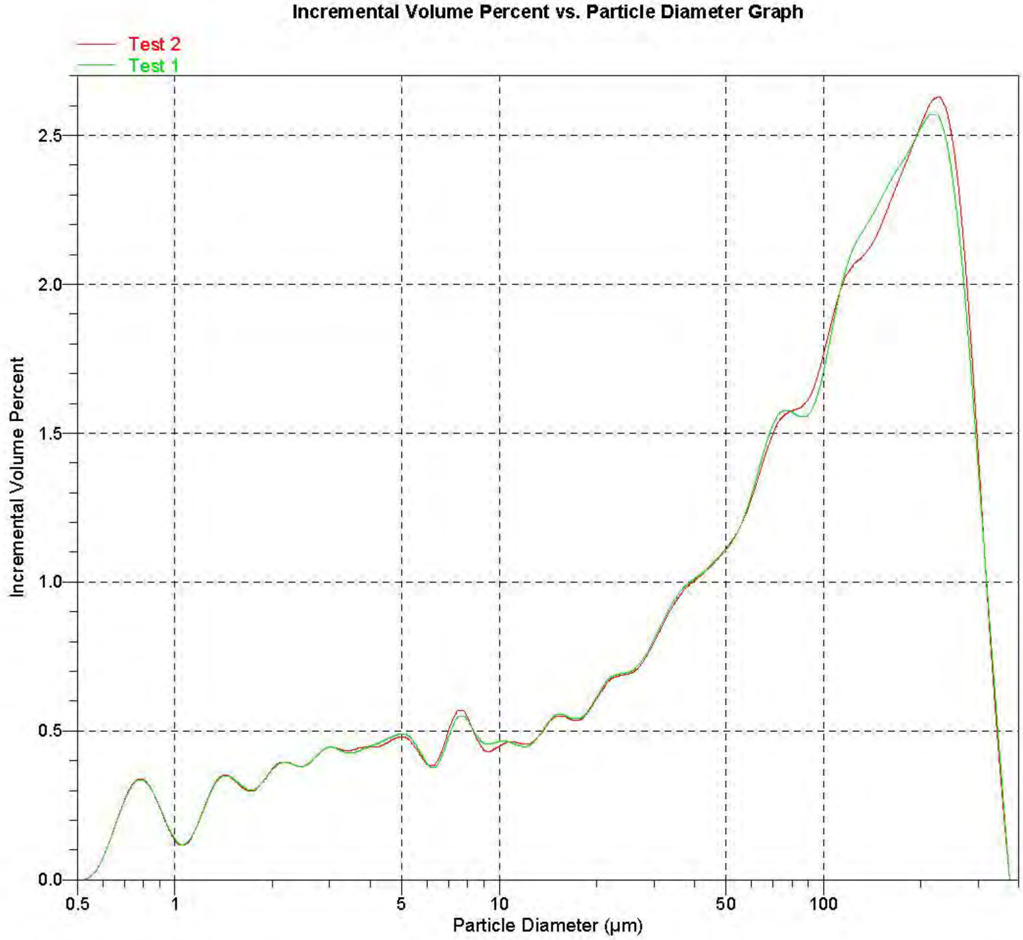
Micromeritics Instrument Corporation

Sample: 4458
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104017A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:04:16PM
Reported: 6/25/2011 1:16:29PM
Background: 6/25/2011 10:27:50AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Incremental Volume Percent vs. Particle Diameter Graph



Micromeritics Instrument Corporation

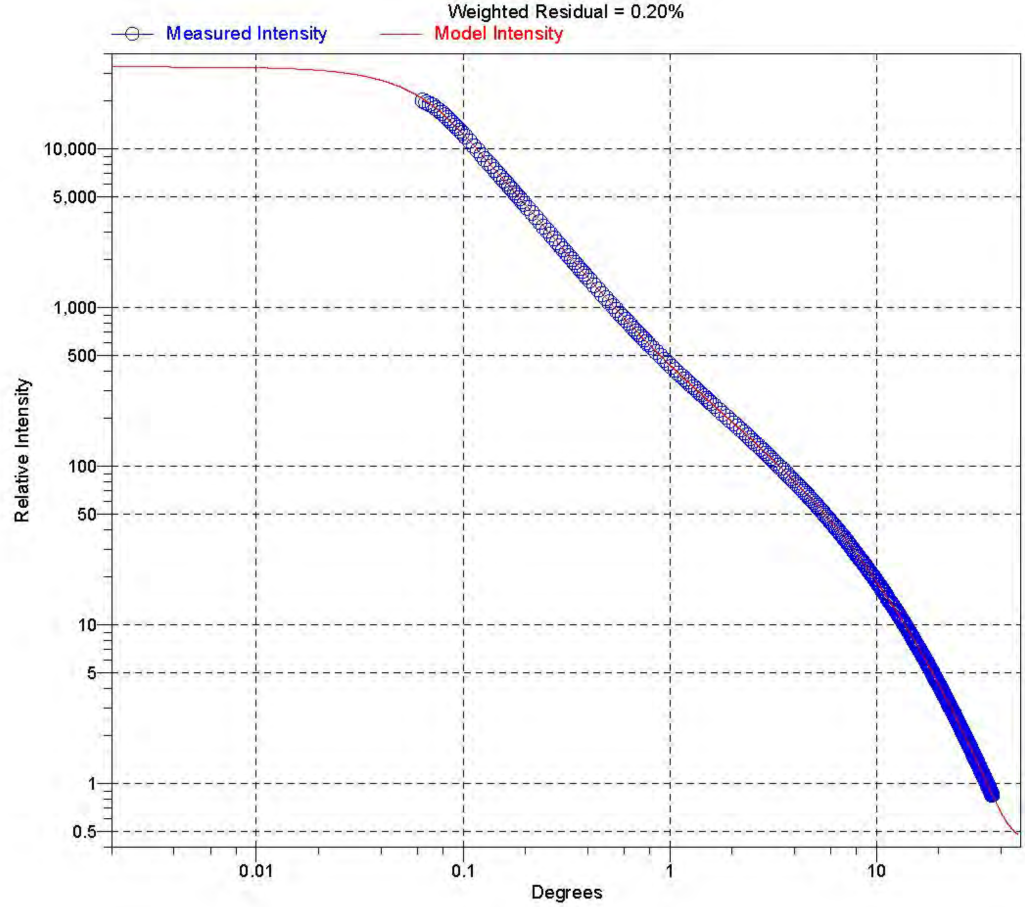
Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V3.00 S/N 127 Page 7

Sample: 4458
Operator: TN/NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104017A.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/25/2011 1:04:16PM	Material:	Sediment / Water
Reported:	6/25/2011 1:16:29PM	Background:	Water RI 1.331
Background:	6/25/2011 10:27:50AM	Smoothing:	Medium

Goodness of Fit

Weighted Residual = 0.20%



Sample#30-4515

MICROMERITICS ANALYTICAL SERVICES The Particle Testing Authority

Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 1

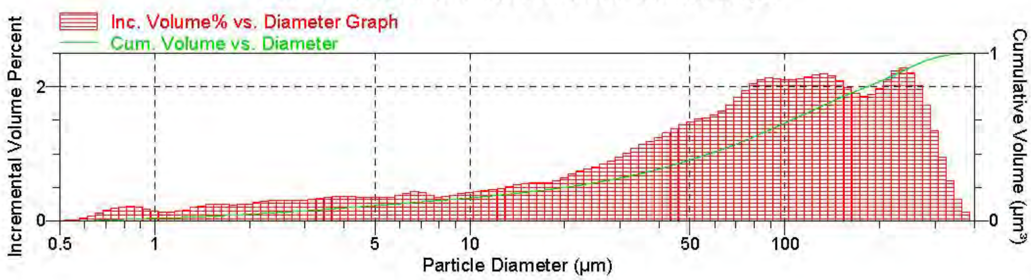
Sample: 4515
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104018A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:44:19PM
Reported: 6/25/2011 2:00:16PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Combined Report

Incremental Volume Percent vs. Particle Diameter Graph



Summary Report

Analysis Conditions

FlowRate: 12.0 l/m
Circulation time: Not Used

Ultrasonic intensity: 100 %
Ultrasonic time: 60 sec

Sample

Sample Concentration: 0.02875 %
Obscuration: 28.3 %

Weighted Statistics (Volume Distribution)

		Std Dev of 2			Std Dev of 2
Mean	102.051	1.512	Mode	236.979	0.000
Median	79.570	1.360			

Selected Percentiles by Volume

Percent Finer	Diameter (µm)
90.0	239.624
50.0	79.570
10.0	5.947

Sample: 4515
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104018A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:44:19PM
Reported: 6/25/2011 2:00:16PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
386.812	365.174	375.837	99.9	0.1	0.0
365.174	344.747	354.813	99.6	0.3	0.1
344.747	325.462	334.965	99.0	0.6	0.1
325.462	307.256	316.228	98.0	0.9	0.2
307.256	290.068	298.538	96.7	1.3	0.3
290.068	273.842	281.838	95.0	1.7	0.3
273.842	258.523	266.073	92.9	2.0	0.3
258.523	244.062	251.189	90.7	2.2	0.3
244.062	230.409	237.137	88.4	2.3	0.3
230.409	217.520	223.872	86.2	2.2	0.3
217.520	205.353	211.349	84.1	2.1	0.4
205.353	193.865	199.526	82.1	2.0	0.4
193.865	183.021	188.365	80.2	1.9	0.5
183.021	172.783	177.828	78.4	1.9	0.6
172.783	163.117	167.880	76.5	1.9	0.7
163.117	153.993	158.489	74.5	2.0	0.8
153.993	145.378	149.624	72.4	2.1	0.9
145.378	137.246	141.254	70.2	2.2	0.9
137.246	129.569	133.352	68.0	2.2	0.9
129.569	122.321	125.893	65.8	2.2	0.9
122.321	115.478	118.850	63.7	2.1	0.8
115.478	109.018	112.202	61.6	2.1	0.8
109.018	102.920	105.925	59.5	2.1	0.8
102.920	97.163	100.000	57.3	2.1	0.8
97.163	91.728	94.406	55.2	2.1	0.7
91.728	86.596	89.125	53.1	2.1	0.7
86.596	81.752	84.140	51.0	2.1	0.6
81.752	77.179	79.433	48.9	2.0	0.6
77.179	72.862	74.989	47.0	2.0	0.5
72.862	68.786	70.795	45.1	1.8	0.5
68.786	64.938	66.834	43.4	1.7	0.4
64.938	61.306	63.096	41.8	1.6	0.4
61.306	57.876	59.566	40.2	1.6	0.4
57.876	54.639	56.234	38.6	1.5	0.4
54.639	51.582	53.088	37.1	1.5	0.4
51.582	48.697	50.119	35.6	1.5	0.3
48.697	45.973	47.315	34.2	1.4	0.3
45.973	43.401	44.668	32.8	1.4	0.3
43.401	40.973	42.170	31.5	1.3	0.3
40.973	38.681	39.811	30.3	1.2	0.3
38.681	36.517	37.584	29.1	1.2	0.3
36.517	34.475	35.481	27.9	1.1	0.3
34.475	32.546	33.497	26.9	1.1	0.2
32.546	30.726	31.623	25.9	1.0	0.2

Sample: 4515
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104018A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:44:19PM
Reported: 6/25/2011 2:00:16PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

High Particle Diameter (µm)	Low Particle Diameter (µm)	Average Particle Diameter (µm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
30.726	29.007	29.854	24.9	1.0	0.2
29.007	27.384	28.184	24.0	0.9	0.2
27.384	25.852	26.607	23.2	0.8	0.2
25.852	24.406	25.119	22.4	0.8	0.2
24.406	23.041	23.714	21.6	0.8	0.2
23.041	21.752	22.387	20.8	0.7	0.2
21.752	20.535	21.135	20.1	0.7	0.2
20.535	19.387	19.953	19.5	0.6	0.2
19.387	18.302	18.836	18.9	0.6	0.2
18.302	17.278	17.783	18.3	0.6	0.2
17.278	16.312	16.788	17.7	0.6	0.2
16.312	15.399	15.849	17.2	0.6	0.2
15.399	14.538	14.962	16.6	0.6	0.2
14.538	13.725	14.125	16.1	0.5	0.2
13.725	12.957	13.335	15.6	0.5	0.2
12.957	12.232	12.589	15.1	0.5	0.1
12.232	11.548	11.885	14.6	0.5	0.1
11.548	10.902	11.220	14.2	0.5	0.1
10.902	10.292	10.593	13.8	0.4	0.1
10.292	9.716	10.000	13.3	0.4	0.1
9.716	9.173	9.441	12.9	0.4	0.1
9.173	8.660	8.913	12.6	0.4	0.1
8.660	8.175	8.414	12.2	0.4	0.1
8.175	7.718	7.943	11.8	0.4	0.1
7.718	7.286	7.499	11.5	0.4	0.1
7.286	6.879	7.079	11.0	0.4	0.1
6.879	6.494	6.683	10.6	0.4	0.1
6.494	6.131	6.310	10.2	0.4	0.1
6.131	5.788	5.957	9.8	0.4	0.1
5.788	5.464	5.623	9.5	0.4	0.1
5.464	5.158	5.309	9.1	0.3	0.1
5.158	4.870	5.012	8.8	0.3	0.1
4.870	4.597	4.732	8.4	0.3	0.1
4.597	4.340	4.467	8.1	0.3	0.1
4.340	4.097	4.217	7.7	0.4	0.1
4.097	3.868	3.981	7.4	0.4	0.1
3.868	3.652	3.758	7.0	0.4	0.1
3.652	3.447	3.548	6.7	0.4	0.1
3.447	3.255	3.350	6.3	0.3	0.1
3.255	3.073	3.162	6.0	0.3	0.1
3.073	2.901	2.985	5.7	0.3	0.1
2.901	2.738	2.818	5.4	0.3	0.1
2.738	2.585	2.661	5.1	0.3	0.1
2.585	2.441	2.512	4.8	0.3	0.1

Sample: 4515
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104018A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:44:19PM
Reported: 6/25/2011 2:00:16PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Report by Size Class

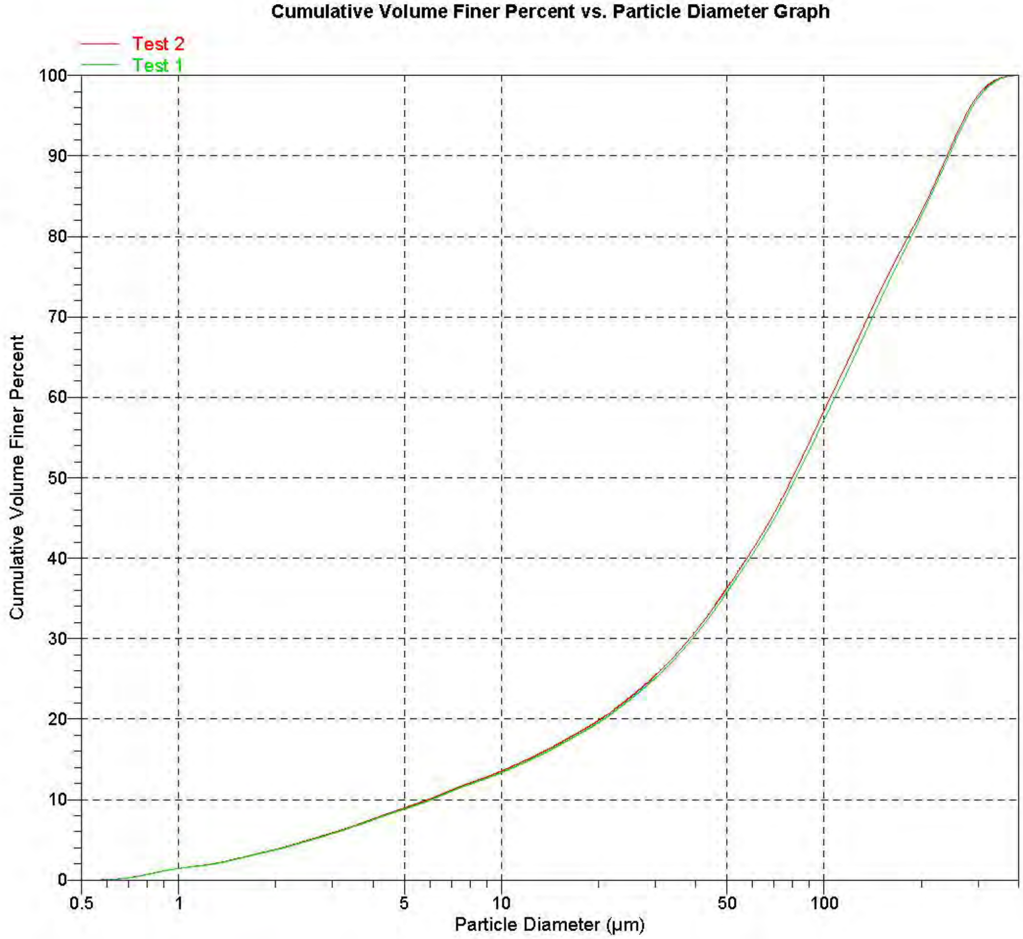
High Particle Diameter (μm)	Low Particle Diameter (μm)	Average Particle Diameter (μm)	Cumulative Volume Finer Percent	Incremental Volume Percent	Cumulative Volume Percent (StdDev)
2.441	2.304	2.371	4.5	0.3	0.0
2.304	2.175	2.239	4.2	0.3	0.0
2.175	2.054	2.113	3.9	0.3	0.0
2.054	1.939	1.995	3.7	0.3	0.0
1.939	1.830	1.884	3.4	0.2	0.0
1.830	1.728	1.778	3.2	0.2	0.0
1.728	1.631	1.679	3.0	0.2	0.0
1.631	1.540	1.585	2.7	0.2	0.0
1.540	1.454	1.496	2.5	0.2	0.0
1.454	1.372	1.413	2.3	0.2	0.0
1.372	1.296	1.334	2.1	0.2	0.0
1.296	1.223	1.259	1.9	0.2	0.0
1.223	1.155	1.189	1.8	0.1	0.0
1.155	1.090	1.122	1.6	0.1	0.0
1.090	1.029	1.059	1.5	0.1	0.0
1.029	0.972	1.000	1.4	0.1	0.0
0.972	0.917	0.944	1.2	0.2	0.0
0.917	0.866	0.891	1.0	0.2	0.0
0.866	0.818	0.841	0.8	0.2	0.0
0.818	0.772	0.794	0.6	0.2	0.0
0.772	0.729	0.750	0.4	0.2	0.0
0.729	0.688	0.708	0.2	0.2	0.0
0.688	0.649	0.668	0.1	0.1	0.0
0.649	0.613	0.631	0.1	0.1	0.0
0.613	0.579	0.596	0.0	0.0	0.0
0.579	0.546	0.562	0.0	0.0	0.0
0.546	0.516	0.531	0.0	0.0	0.0
0.516	0.487	0.501	0.0	0.0	0.0

Sample: 4515
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104018A.SMP

Test Number: 2
Analyzed: 6/25/2011 1:44:19PM
Reported: 6/25/2011 2:00:16PM
Background: 6/25/2011 10:17:25AM

Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

Cumulative Volume Finer Percent vs. Particle Diameter Graph

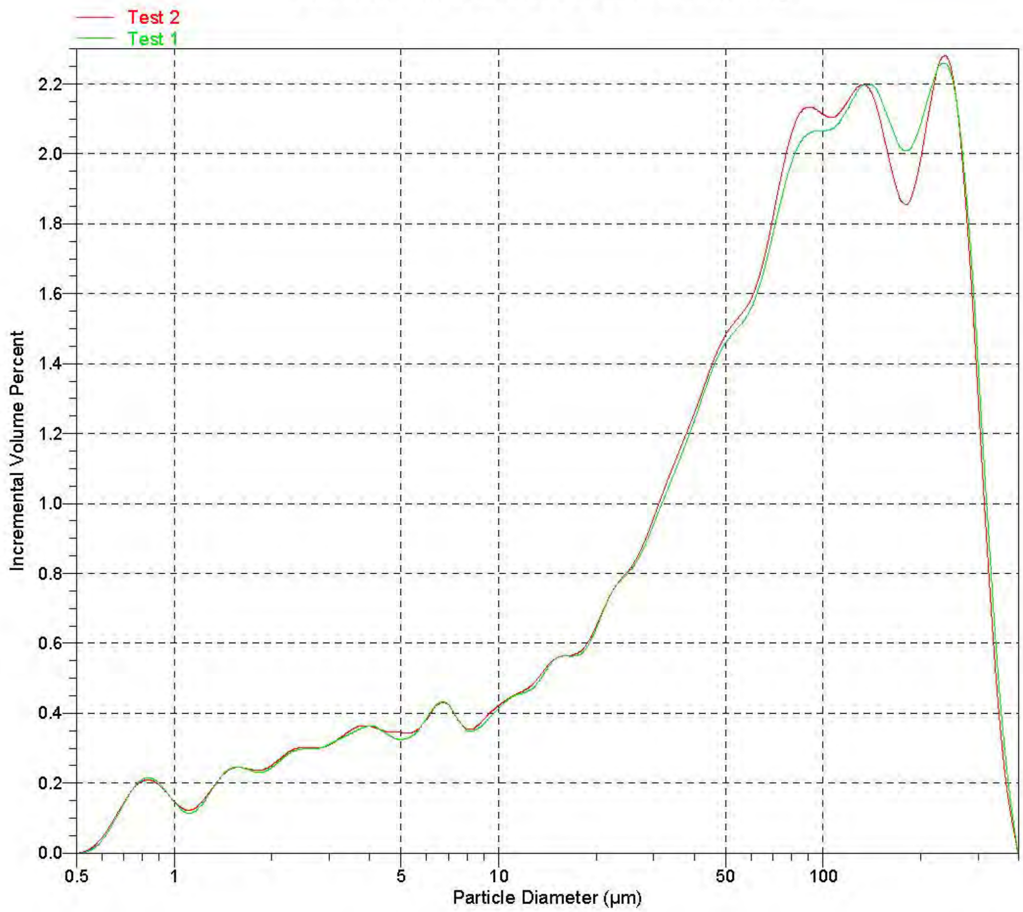


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 6

Sample: 4515
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104018A.SMP

Test Number:	2	Model:	(1.570, 0.1000000), 1.331
Analyzed:	6/25/2011 1:44:19PM	Material:	Sediment / Water
Reported:	6/25/2011 2:00:16PM	Background:	Water RI 1.331
Background:	6/25/2011 10:17:25AM	Smoothing:	Medium

Incremental Volume Percent vs. Particle Diameter Graph

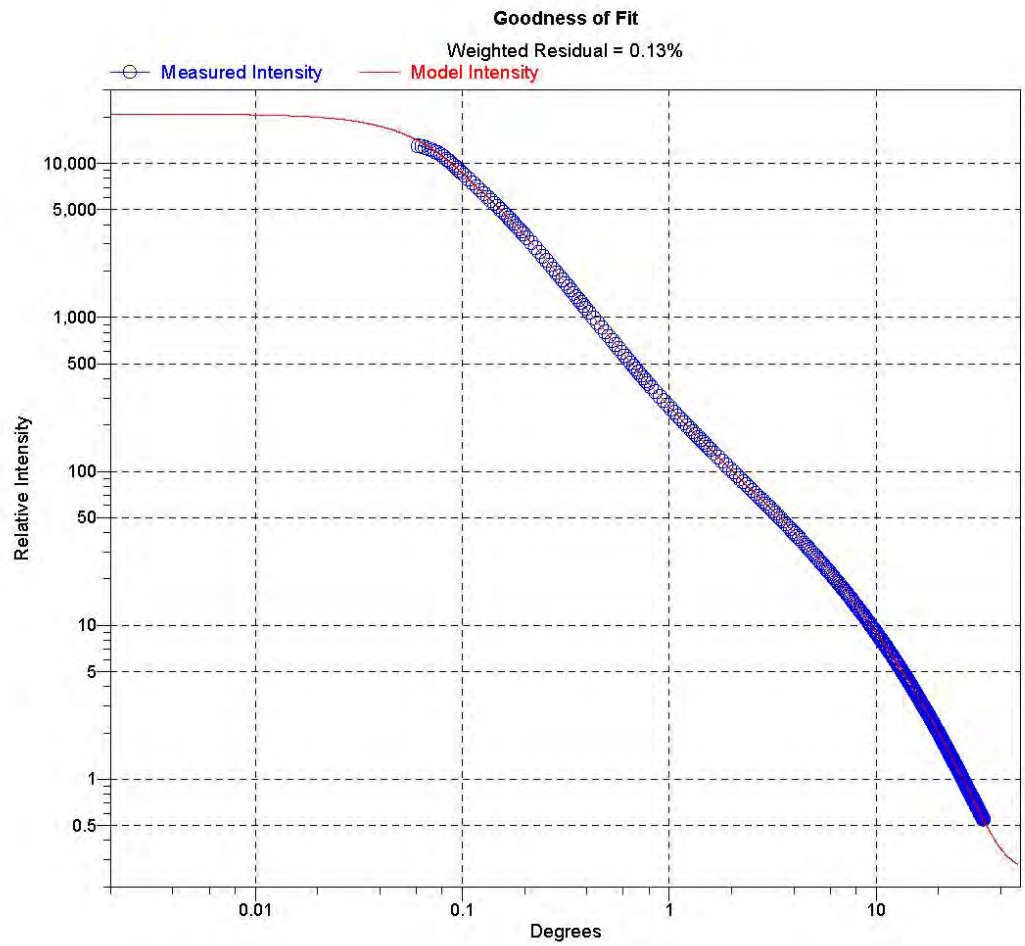


Saturn DigiSizer II 5205 V1.01 Saturn DigiSizer II 5205 V1.01 5200 LSHU V2.01 S/N 110 Page 7

Sample: 4515
Operator: NMT
Submitter: Brooklyn College of CUNY
File: C:\...\06JUN\1104018A.SMP

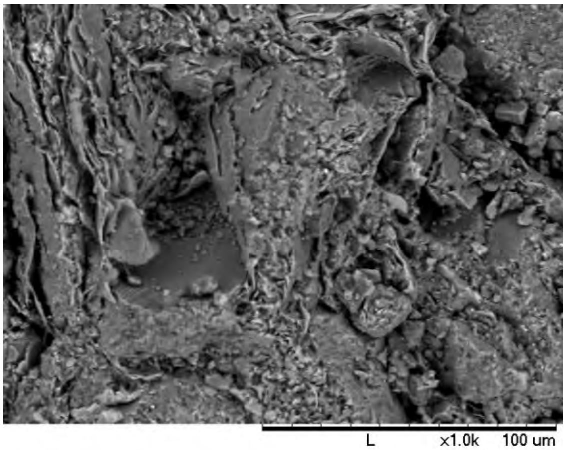
Test Number: 2
Analyzed: 6/25/2011 1:44:19PM
Reported: 6/25/2011 2:00:16PM
Background: 6/25/2011 10:17:25AM

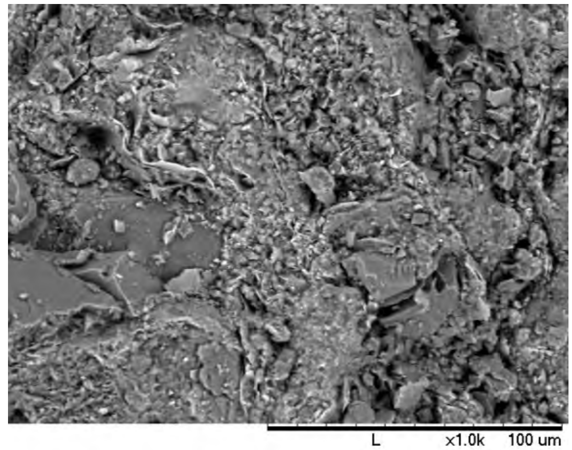
Model: (1.570, 0.1000000), 1.331
Material: Sediment / Water
Background: Water RI 1.331
Smoothing: Medium

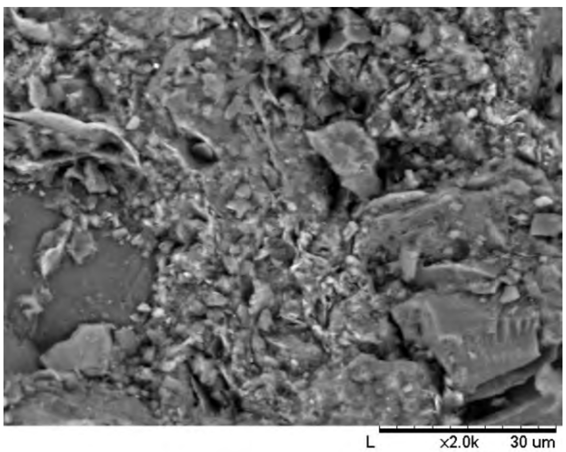


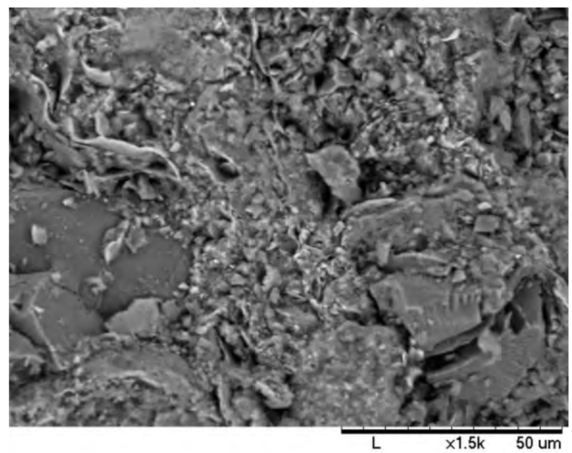
APPENDIX F: SEM MEASUREMENTS

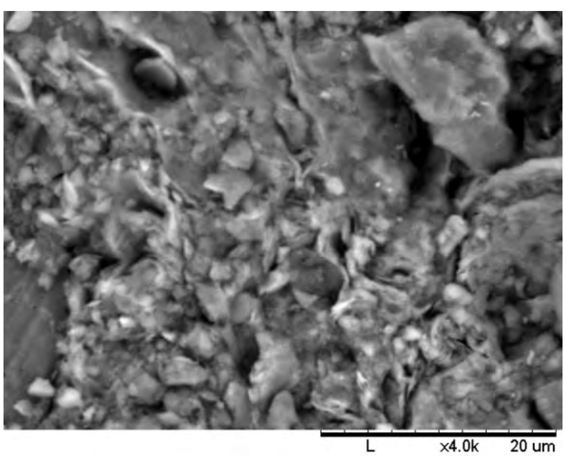
Sample #1 -120

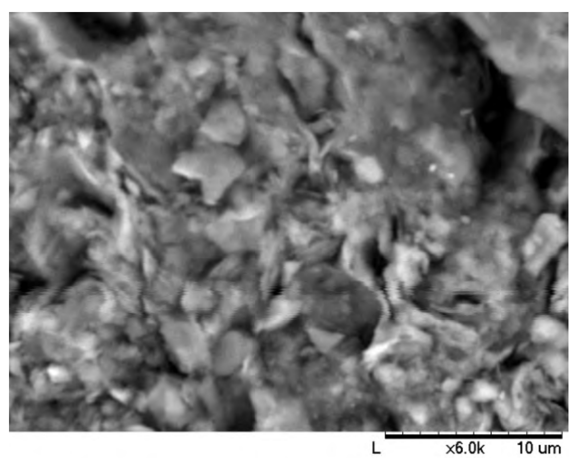

L x1.0k 100 um


L x1.0k 100 um

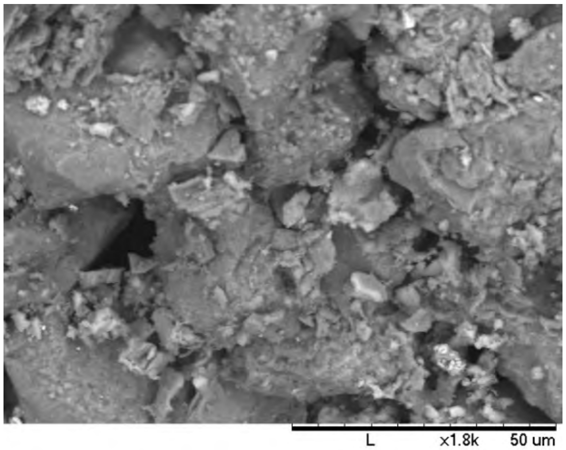

L x2.0k 30 um

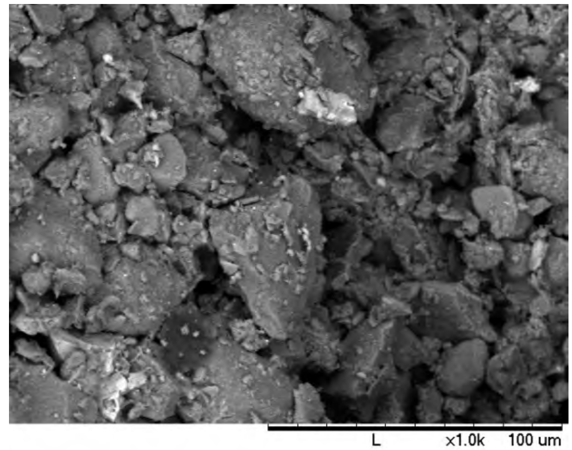

L x1.5k 50 um

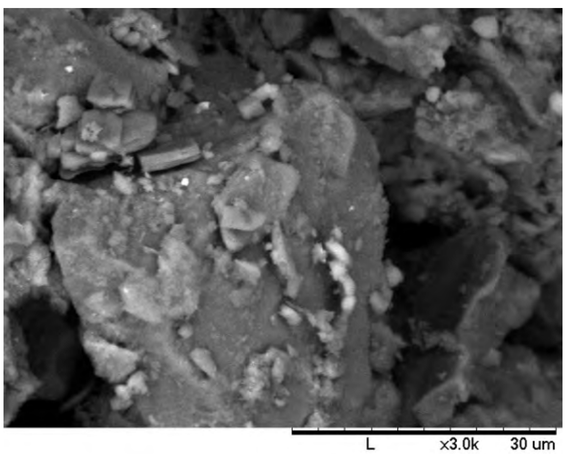

L x4.0k 20 um

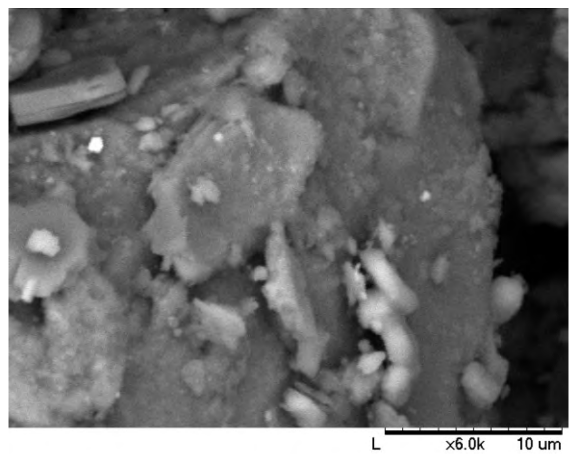

L x6.0k 10 um

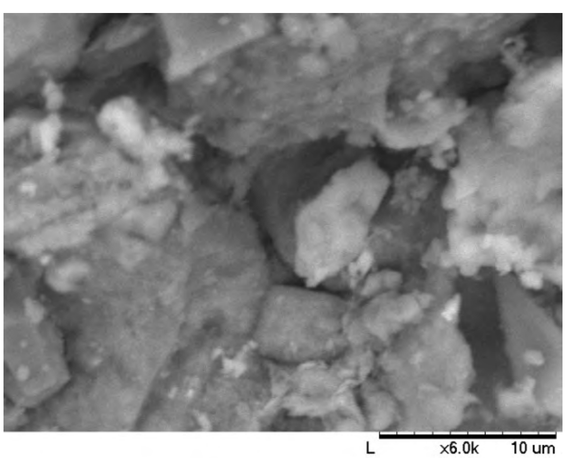
Sample#2 – 277



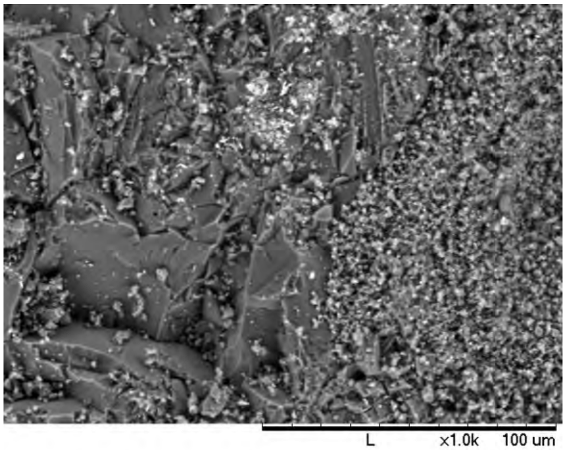


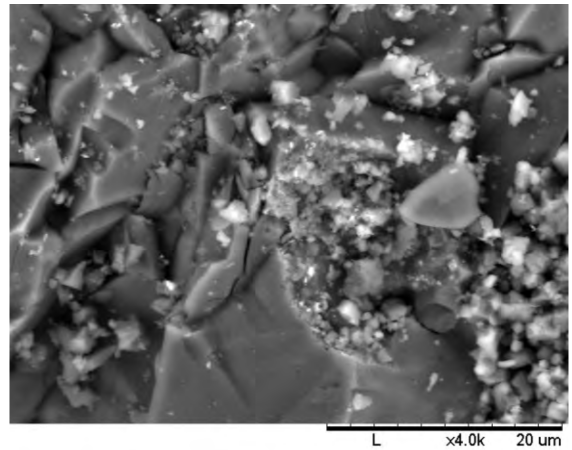


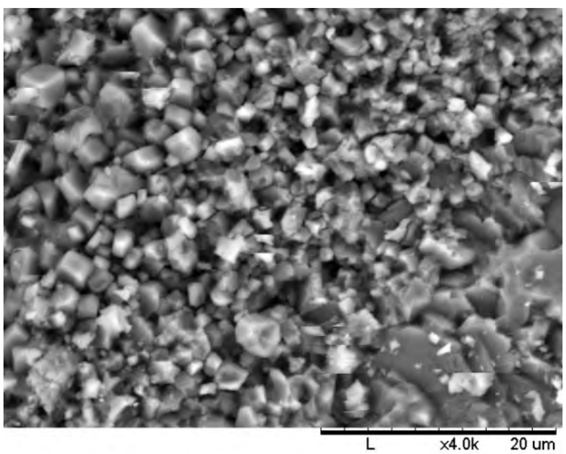


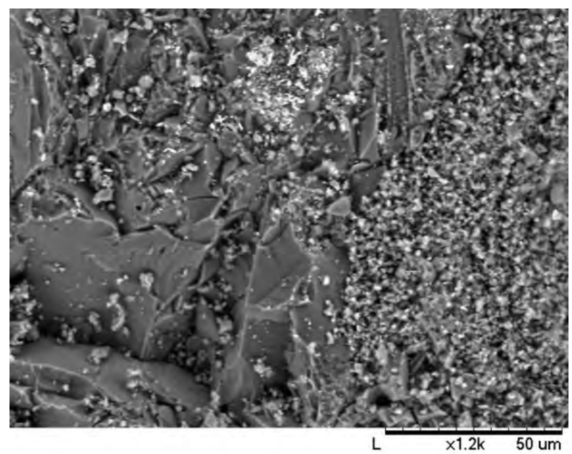


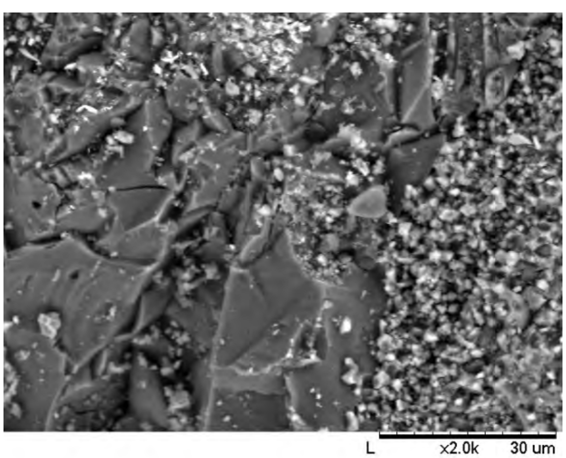
Sample #3 – 601



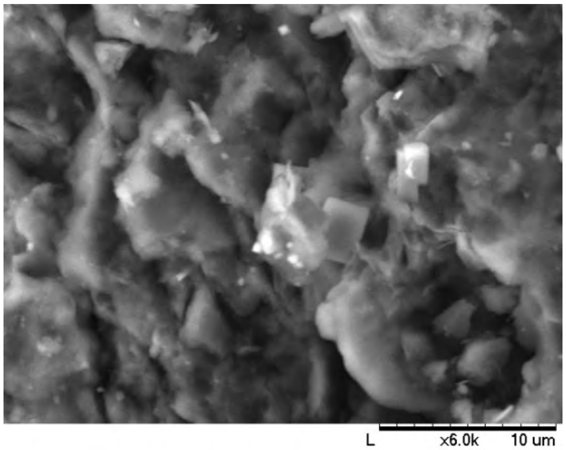


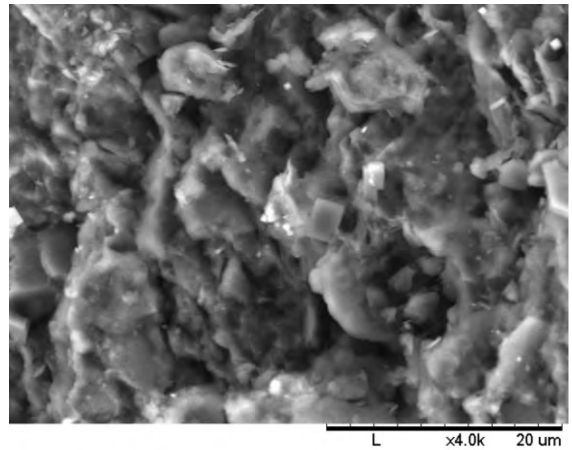


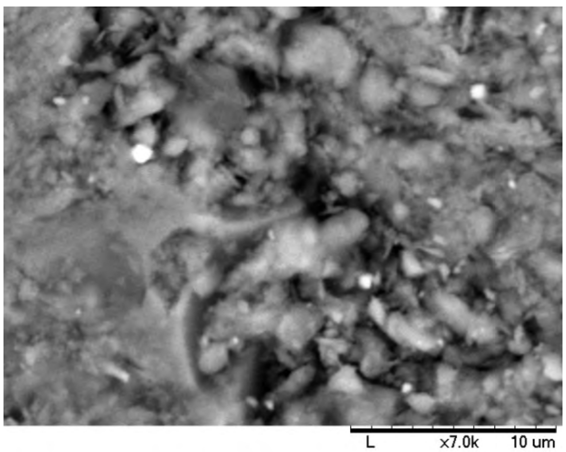


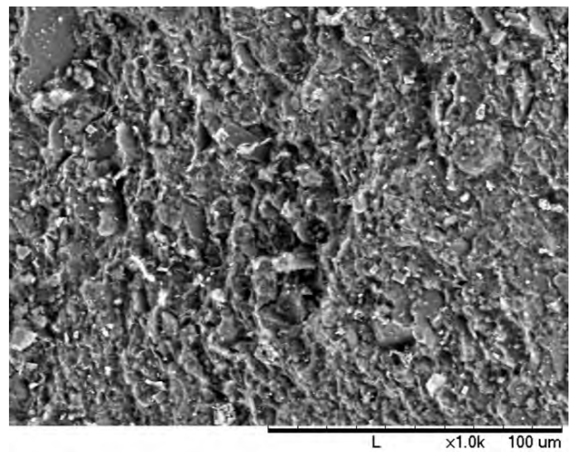


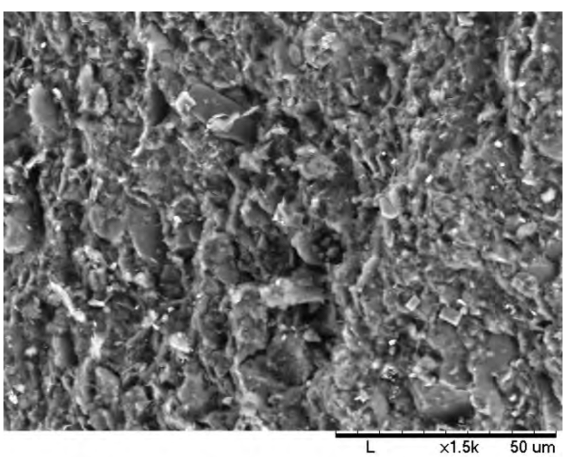
Sample#4 – 868

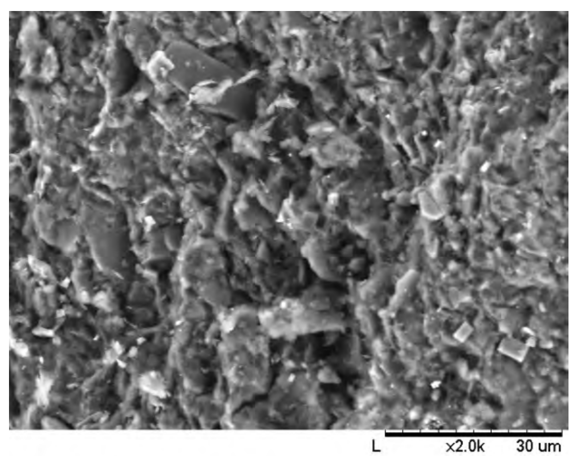

L x6.0k 10 um


L x4.0k 20 um

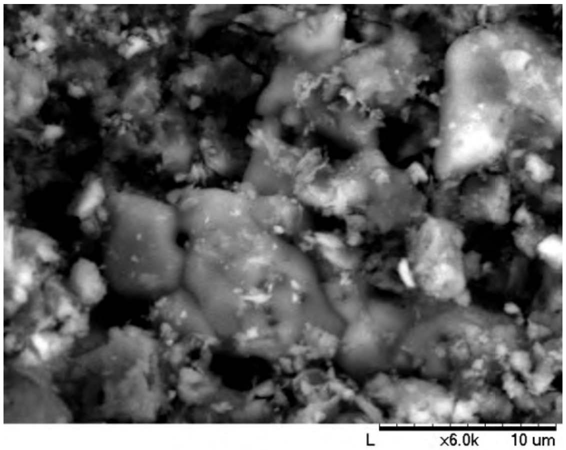

L x7.0k 10 um

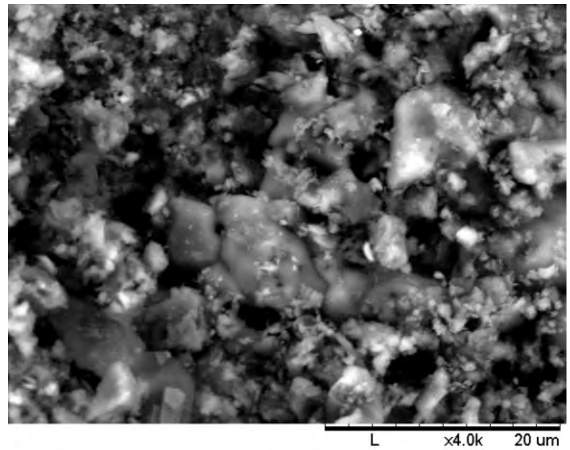

L x1.0k 100 um

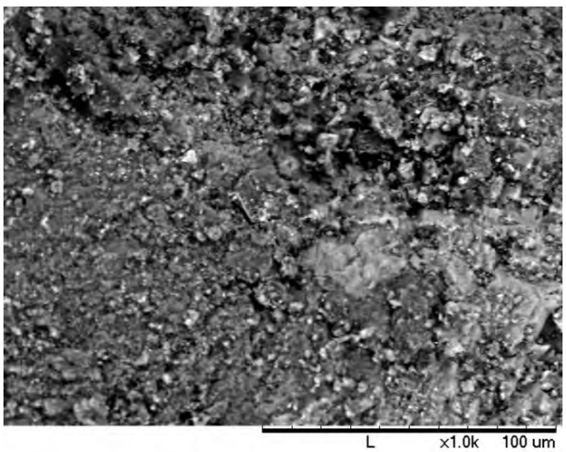

L x1.5k 50 um

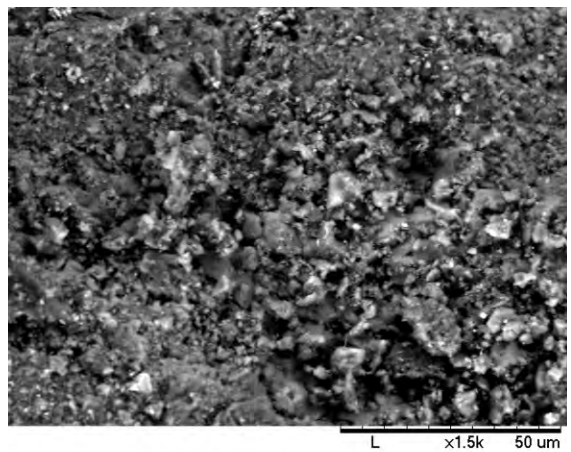

L x2.0k 30 um

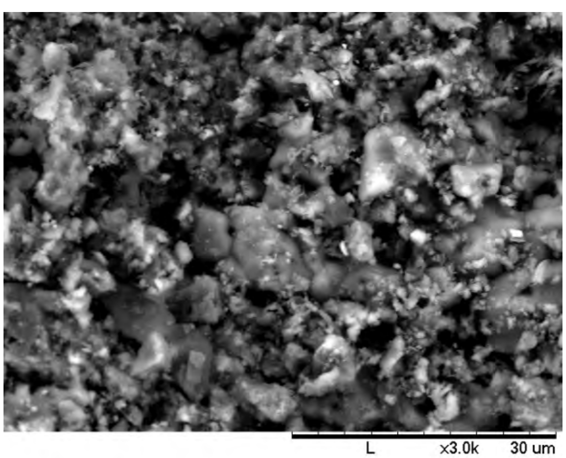
Sample#5 -878



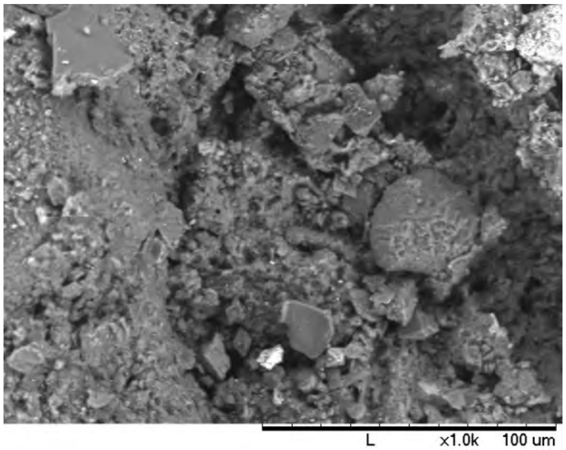


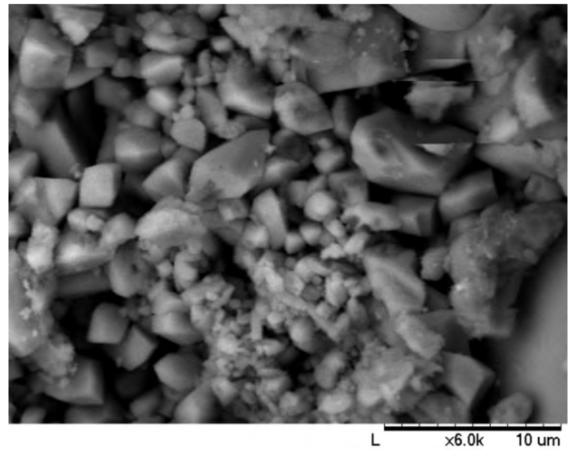


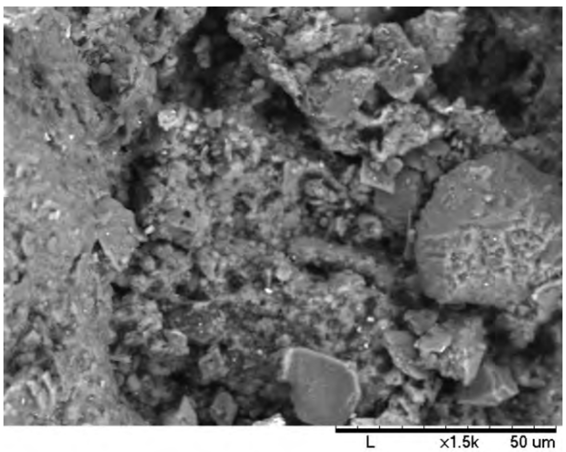


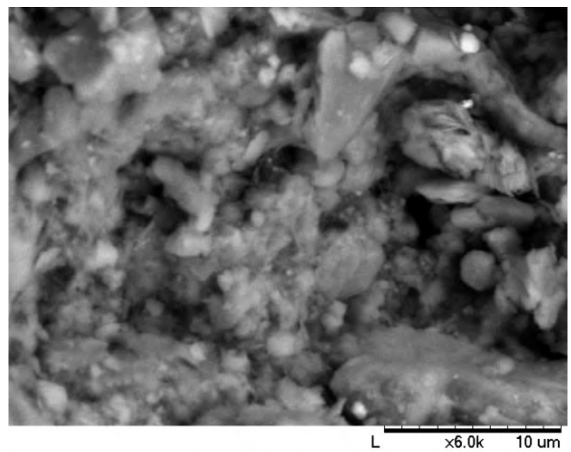


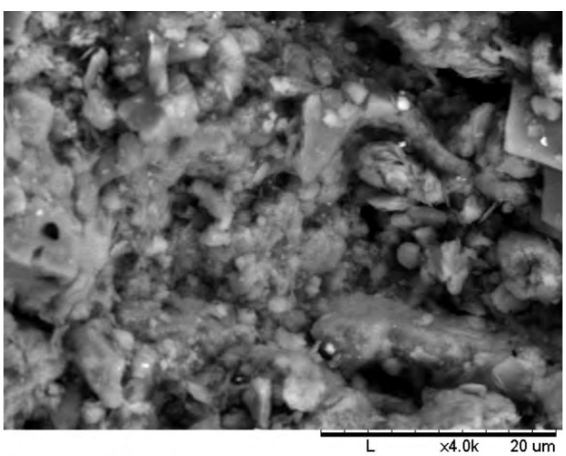
Sample#6 – 900

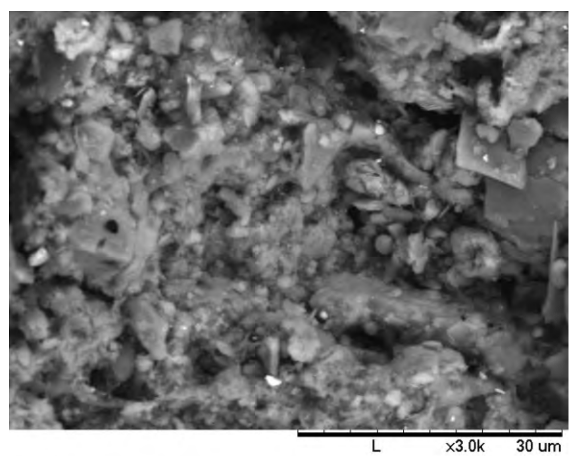

L x1.0k 100 um


L x6.0k 10 um

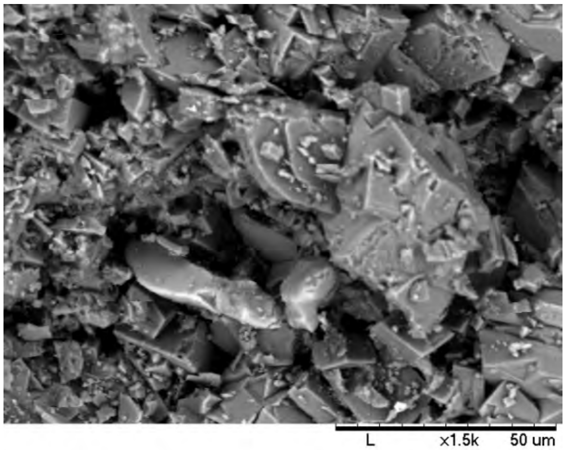

L x1.5k 50 um

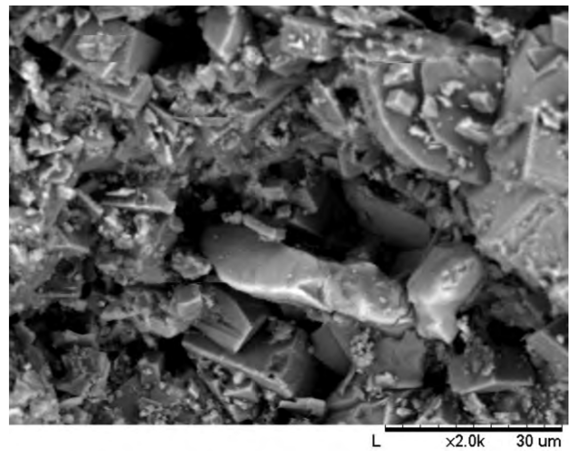

L x6.0k 10 um

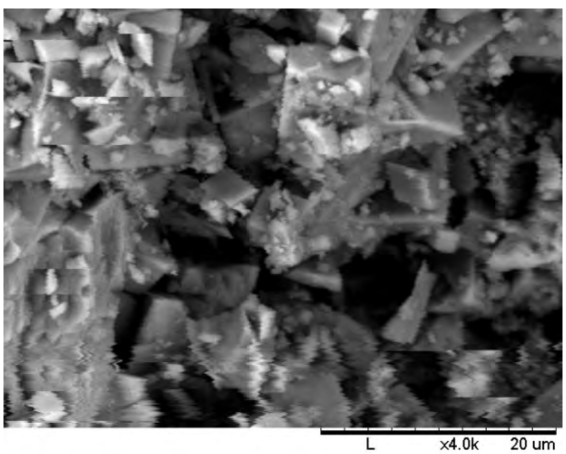

L x4.0k 20 um


L x3.0k 30 um

Sample#7 – 1081



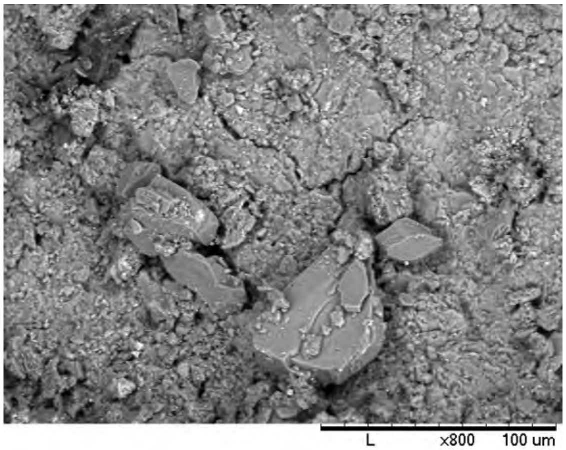


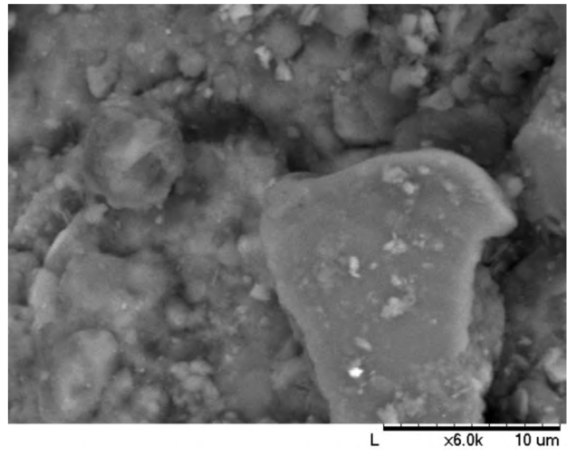


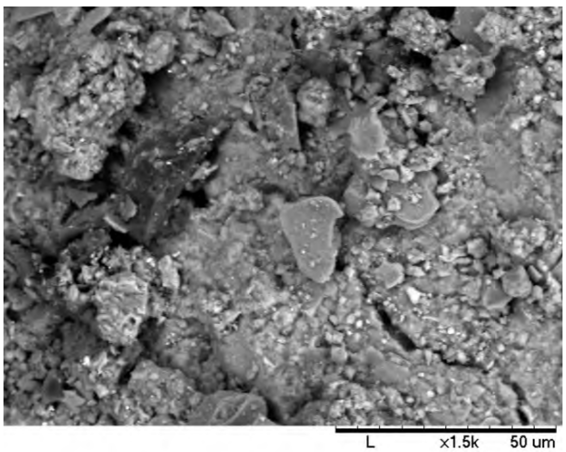
Sample#8 – 1461

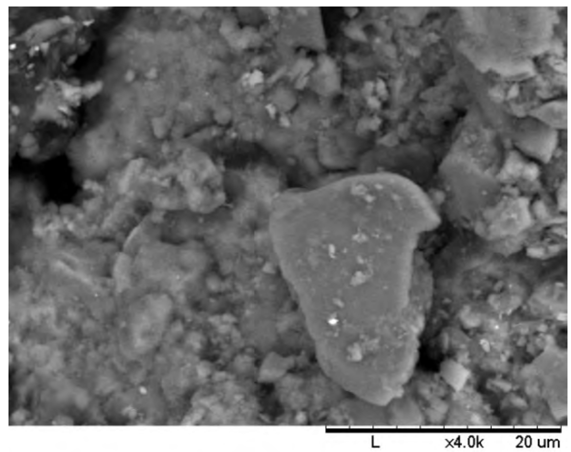
n/a

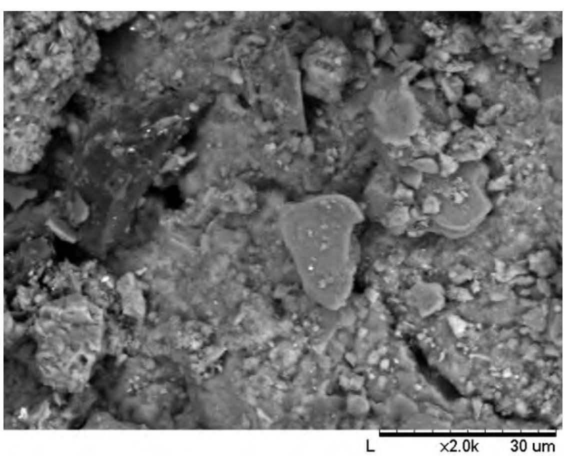
Sample#9 – 1712



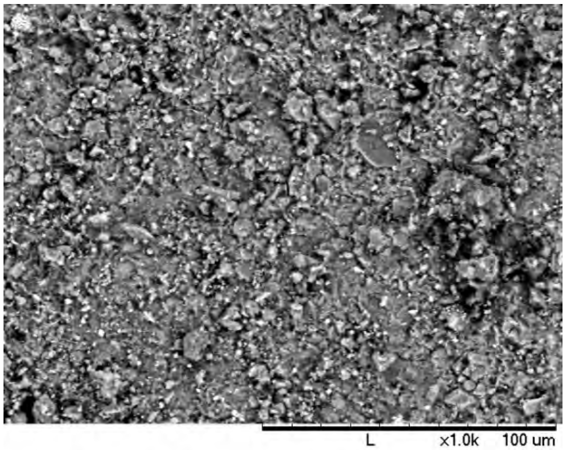


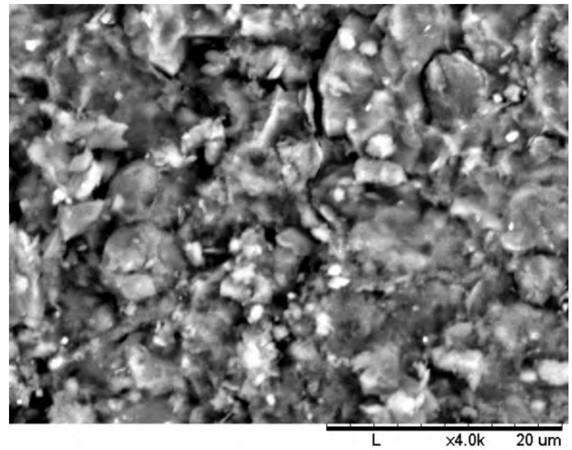


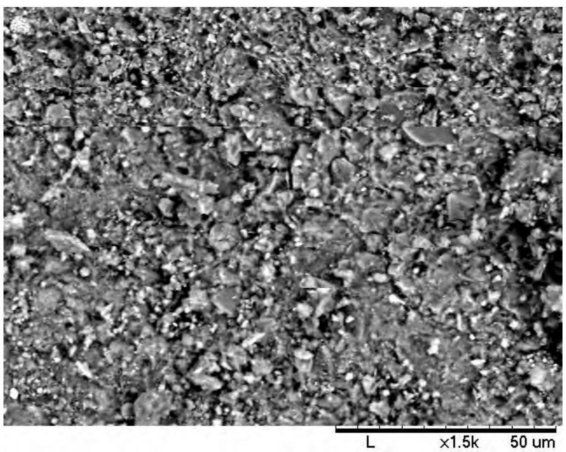


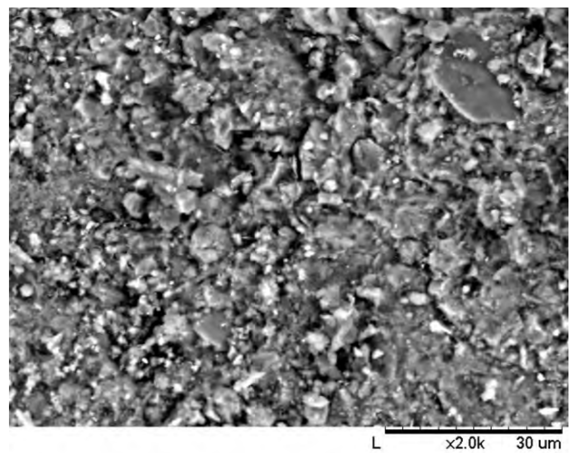


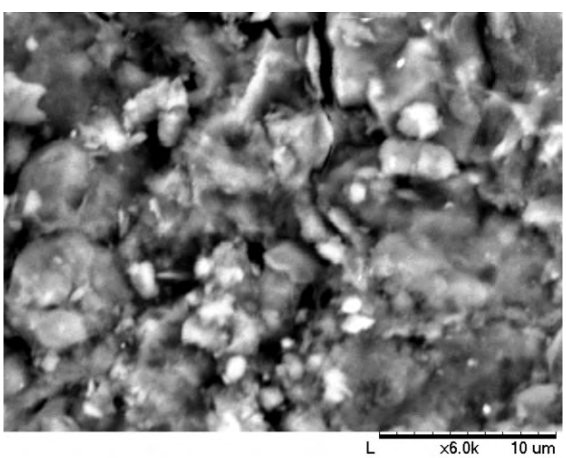
Sample#10 – 2177



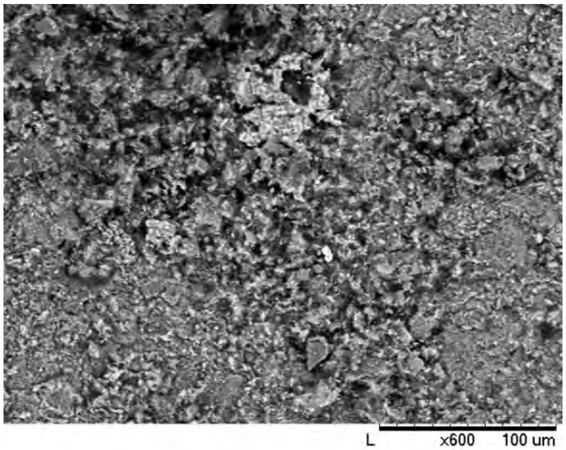


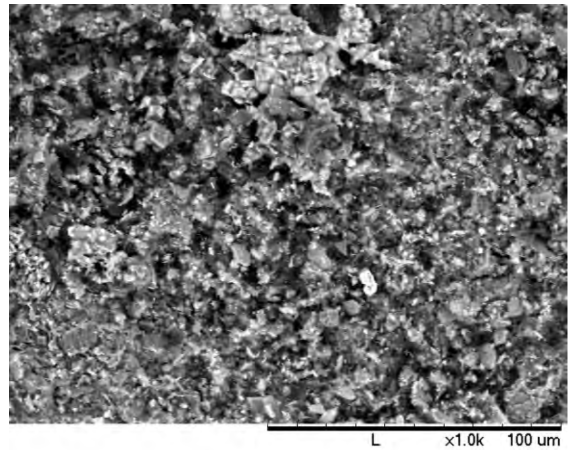


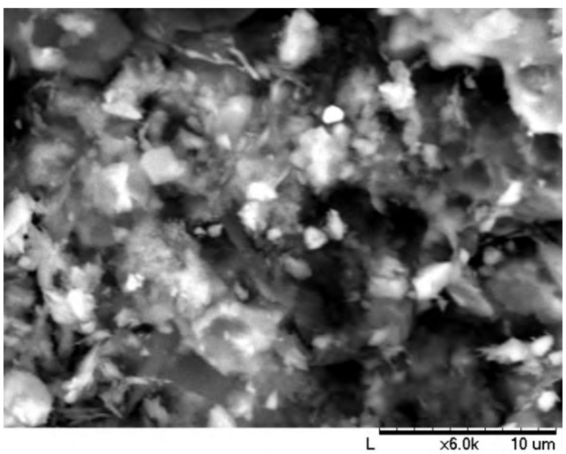


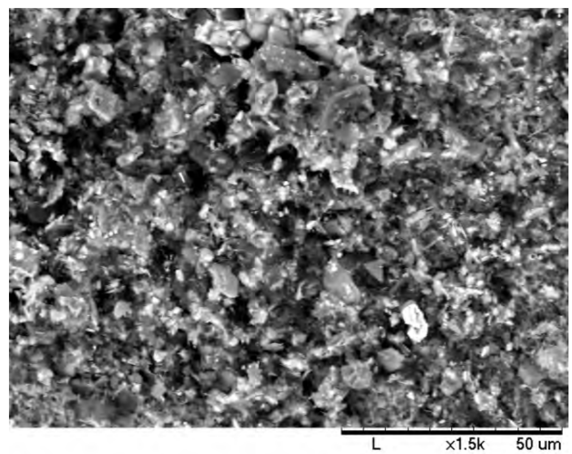


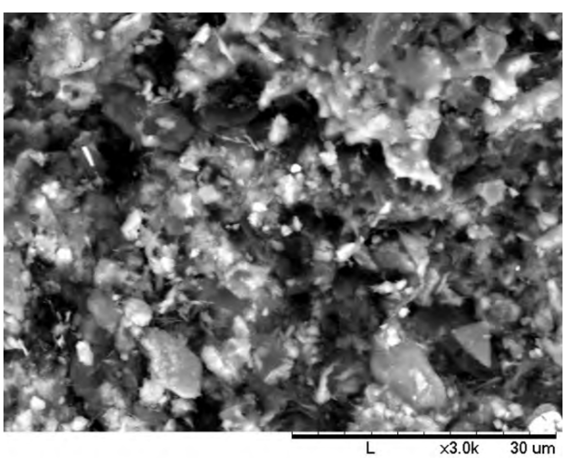
Sample#11 -2472

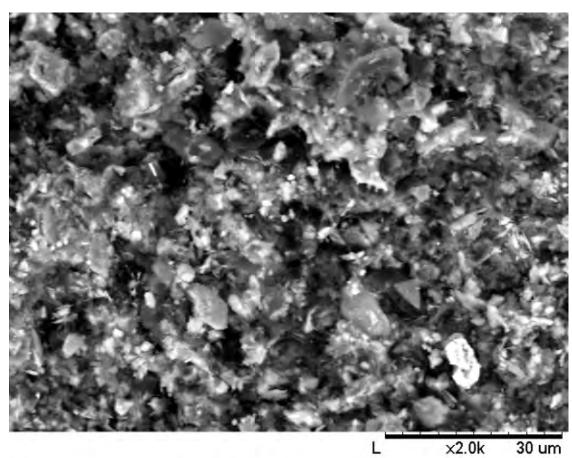




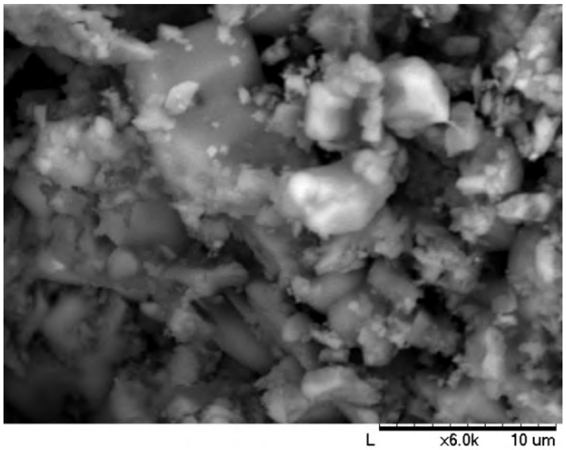


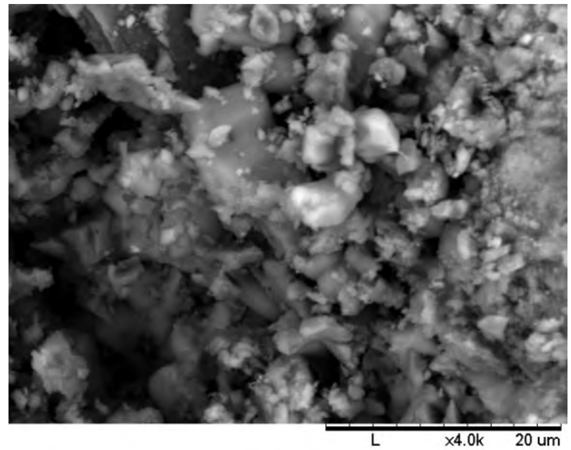


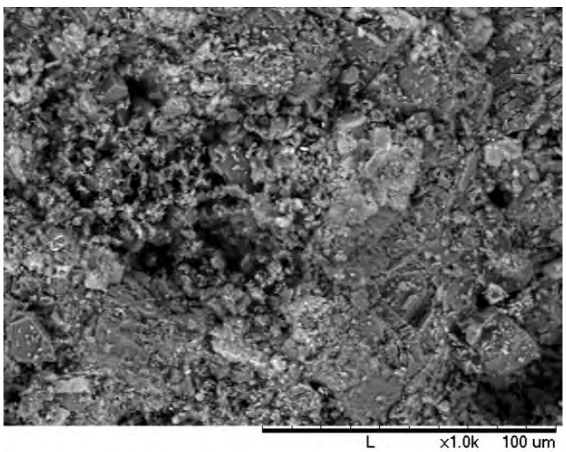


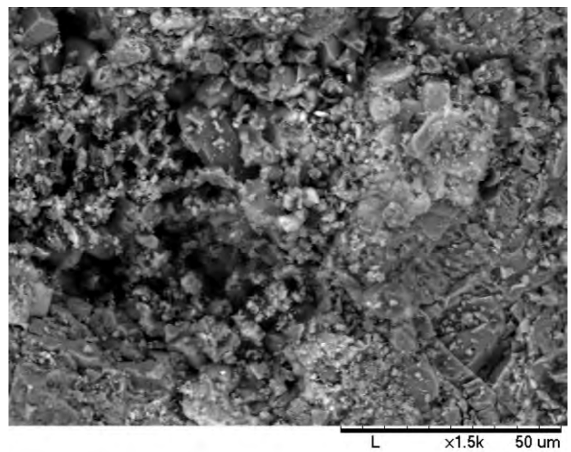


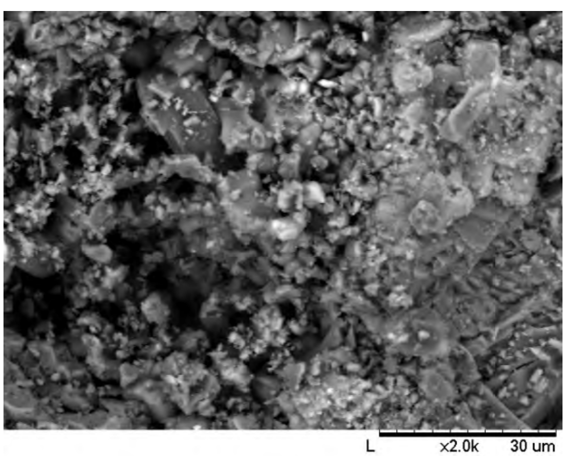
Sample#12 – 2609



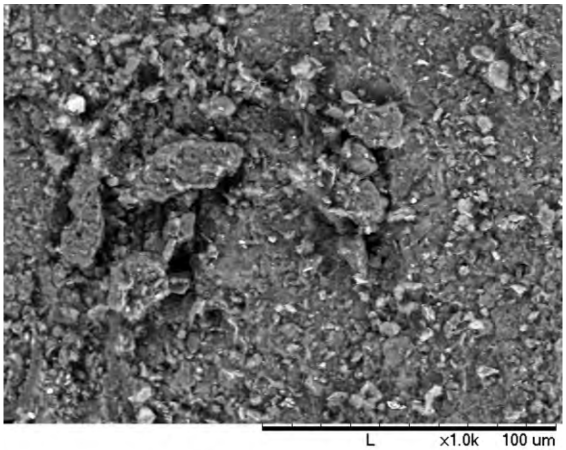


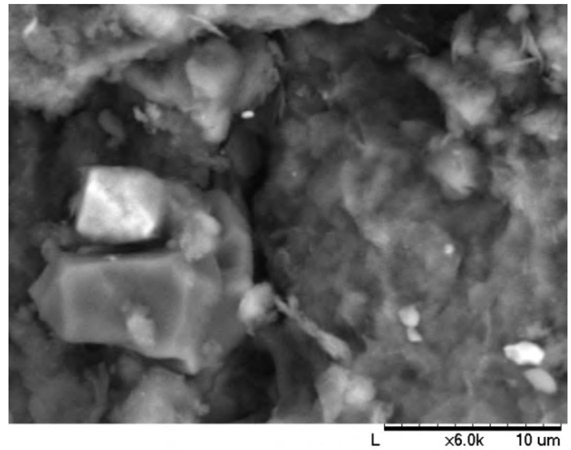


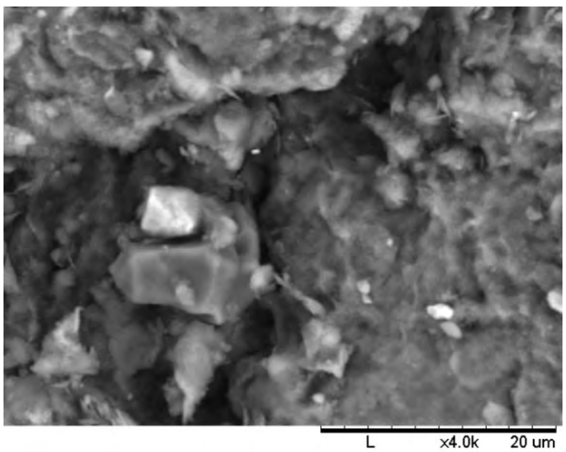


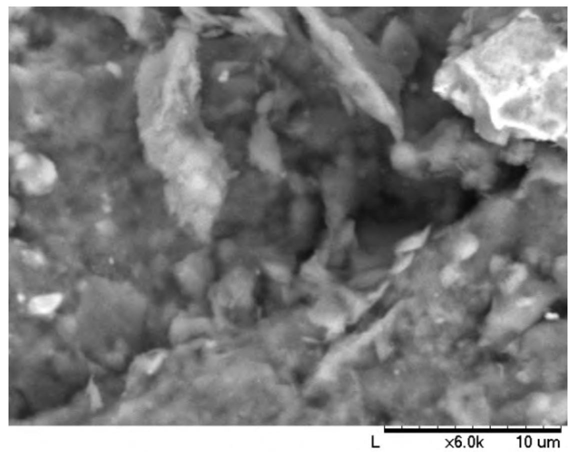


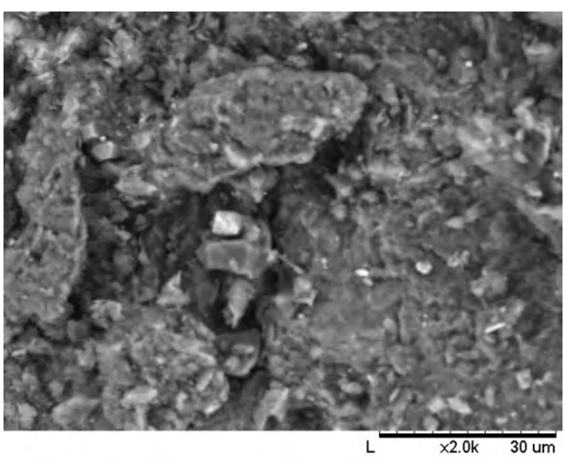
Sample#13 – 3088

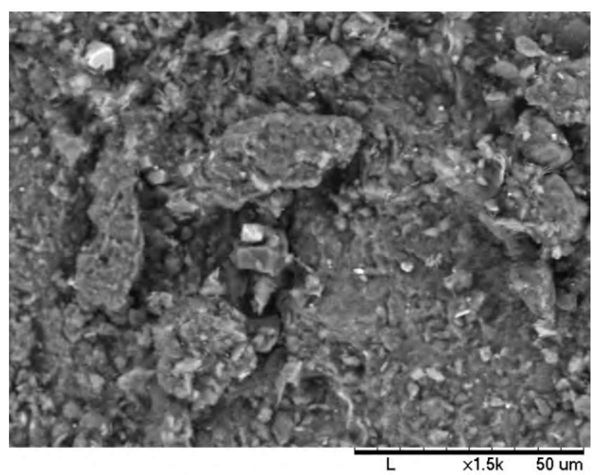




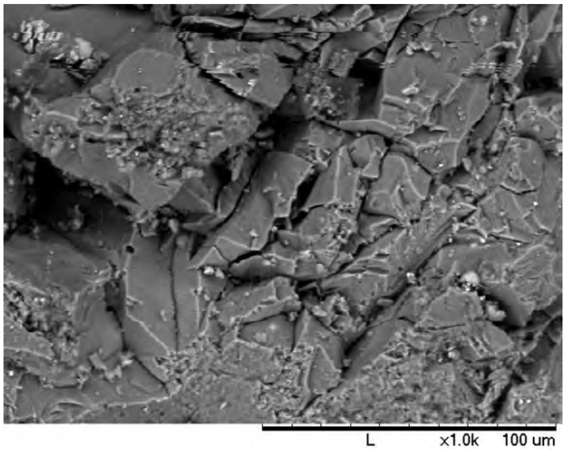


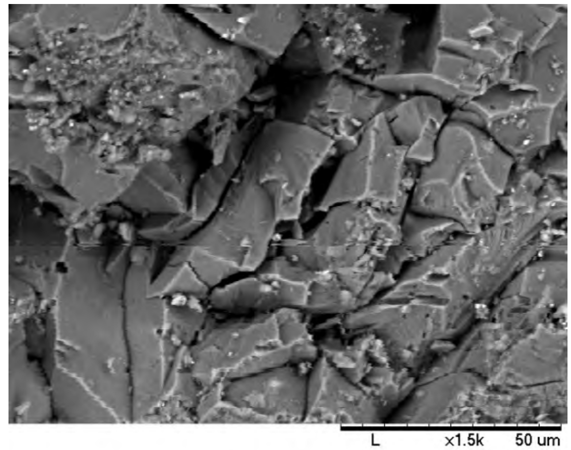


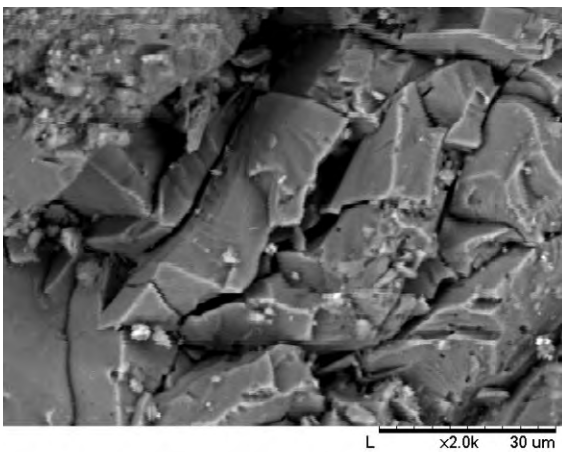


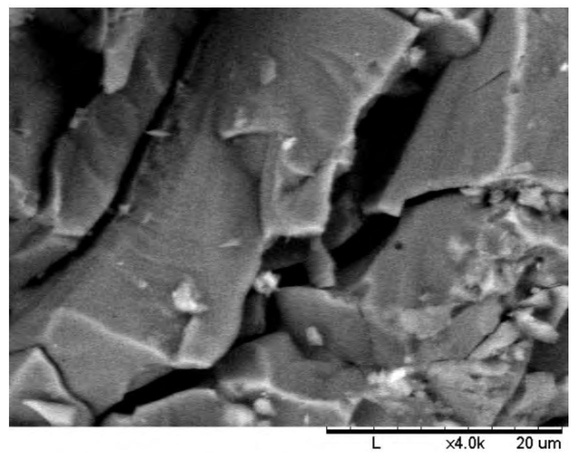


Sample#14 – 3115

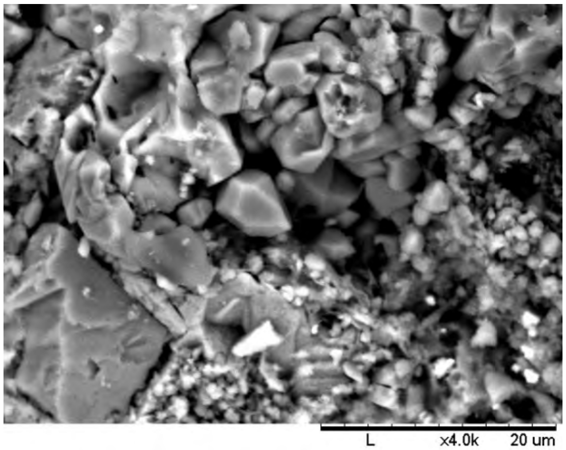


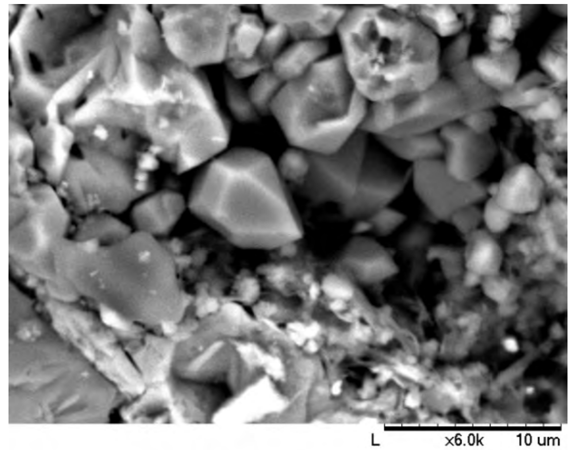


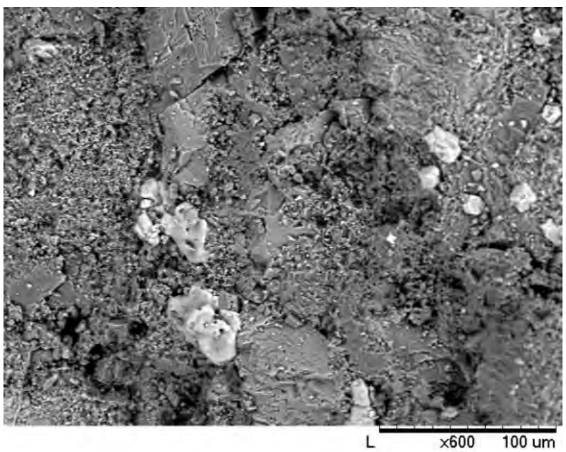


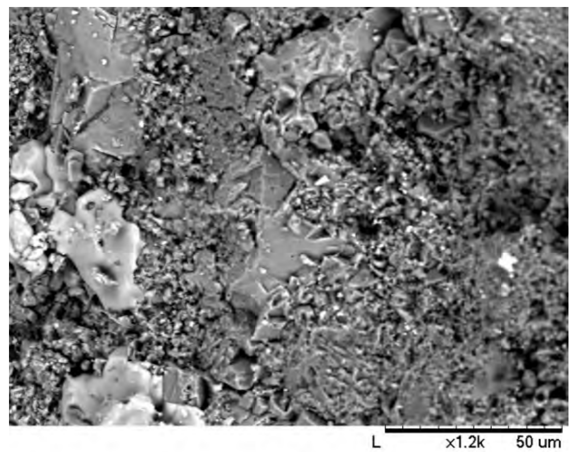


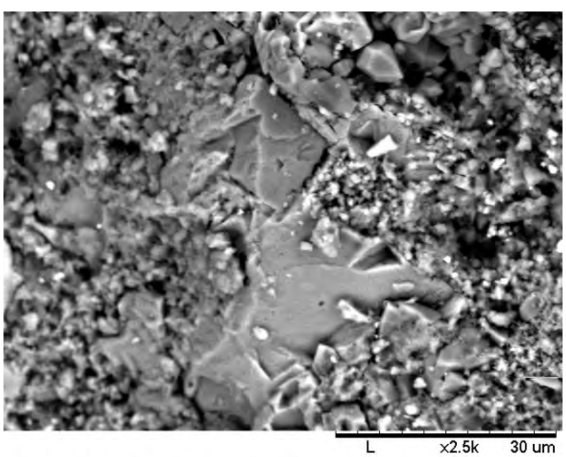
Sample#15 – 3138



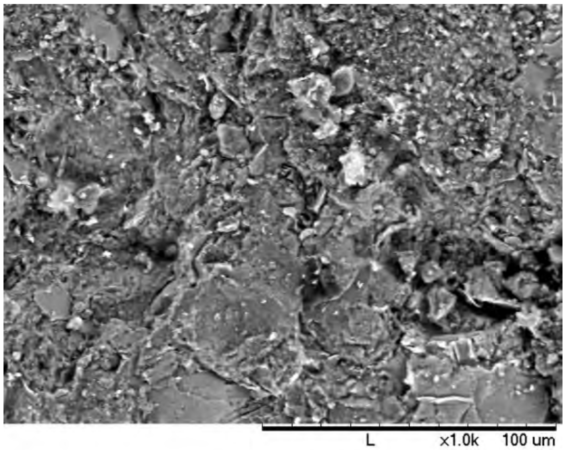


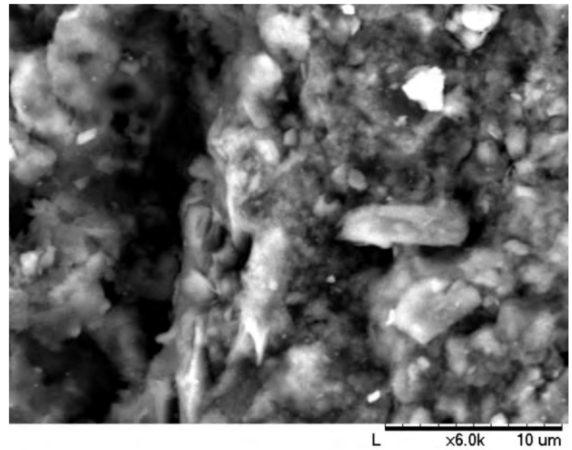


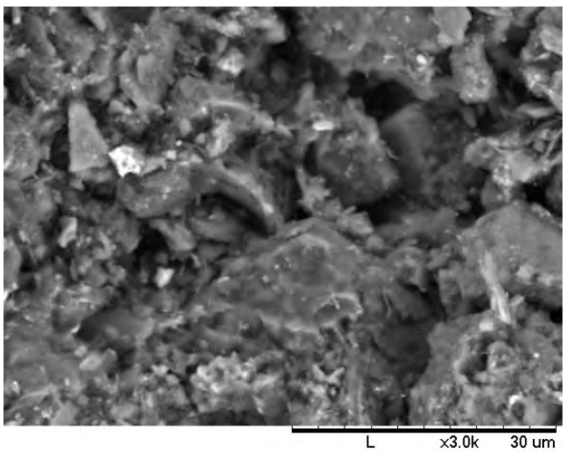


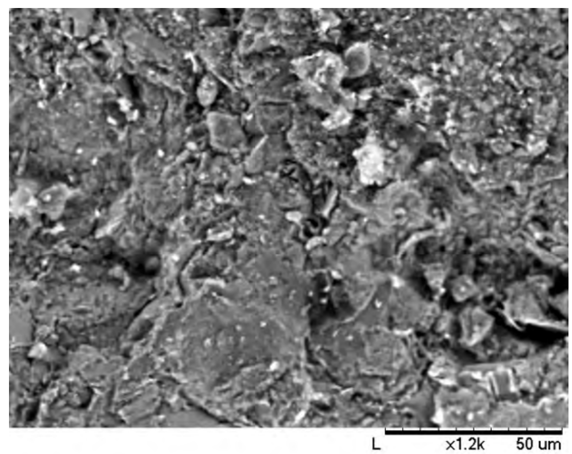


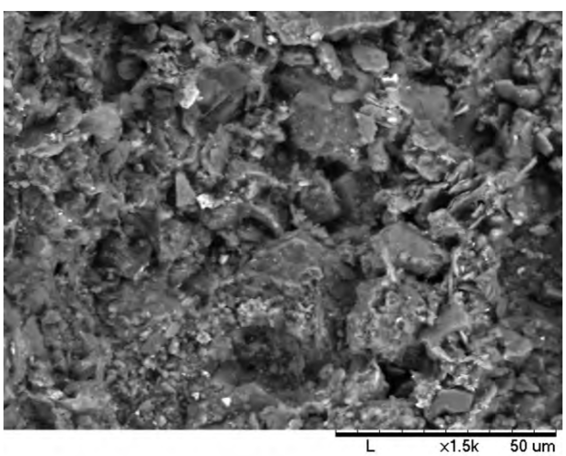
Sample#16 – 3141

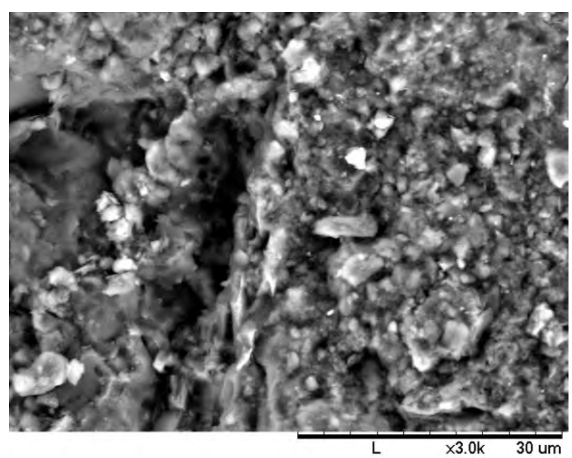




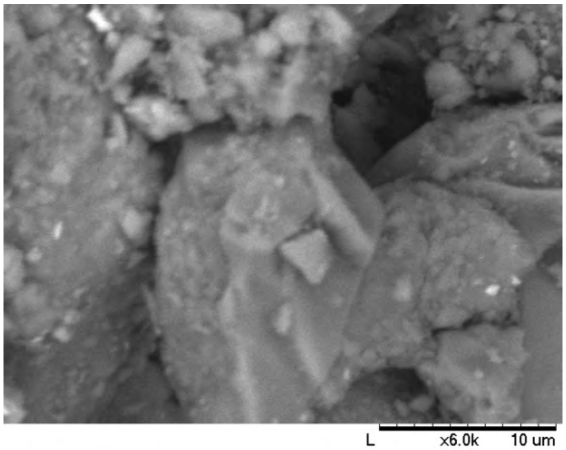


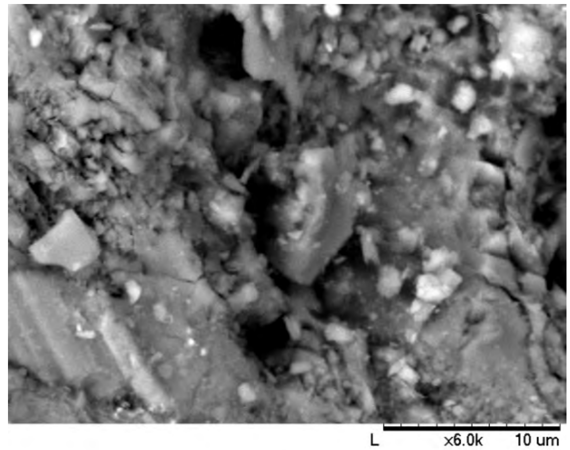


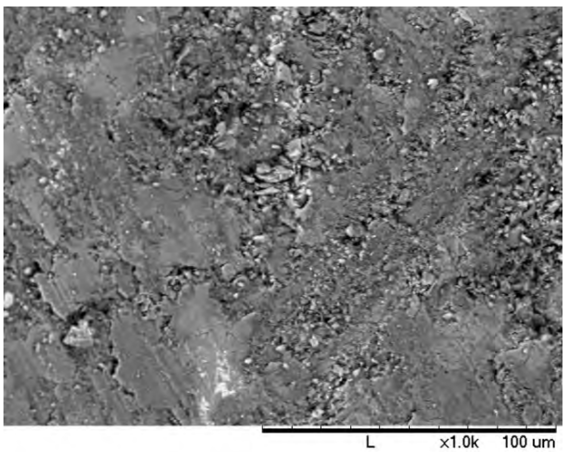


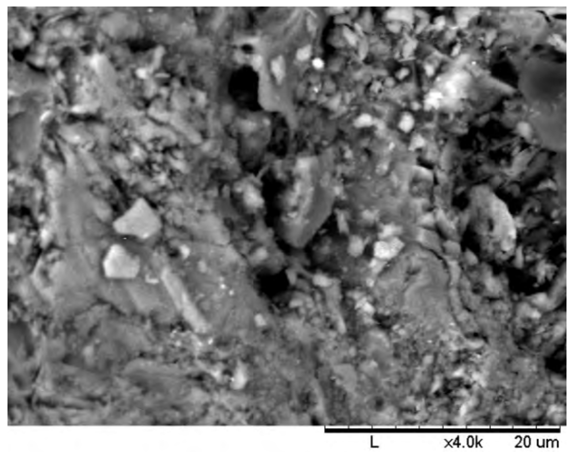


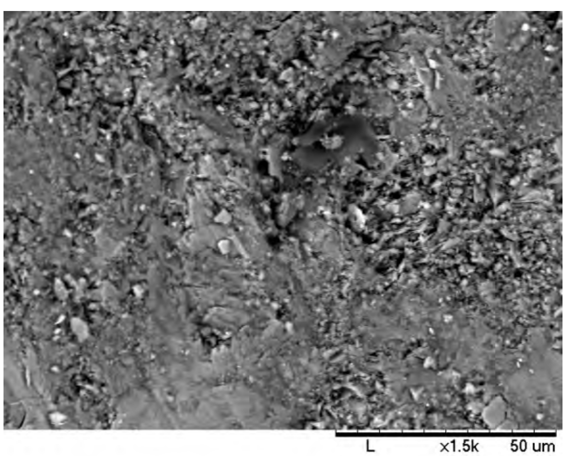
Sample#17 – 3146

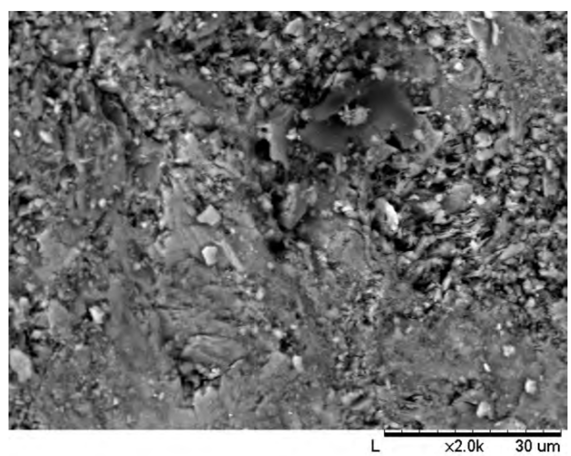




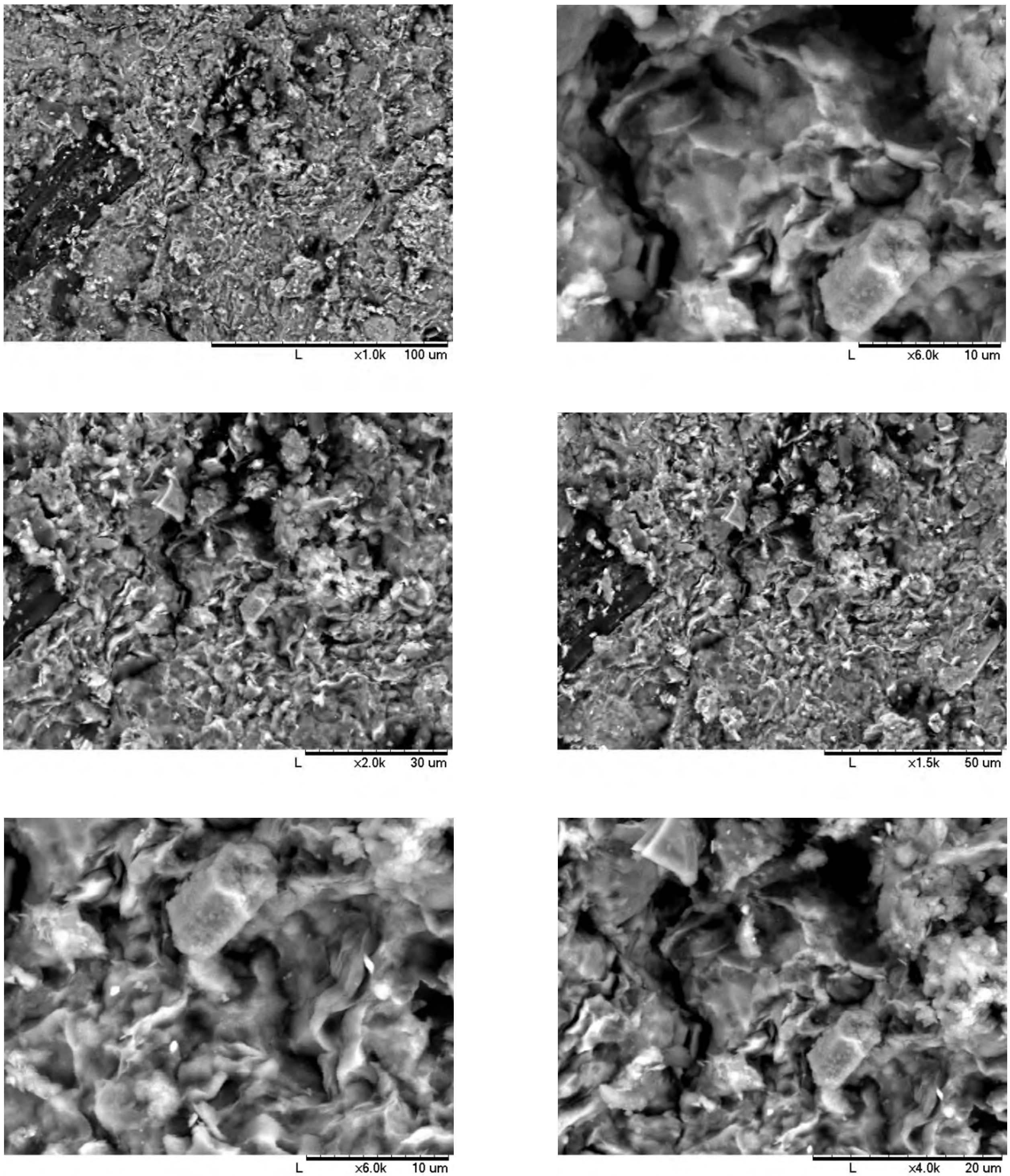




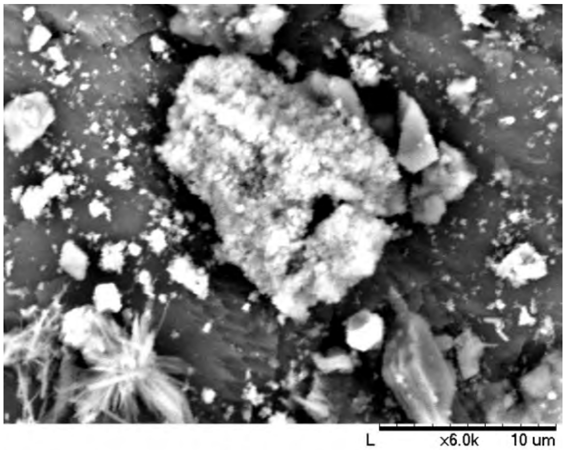


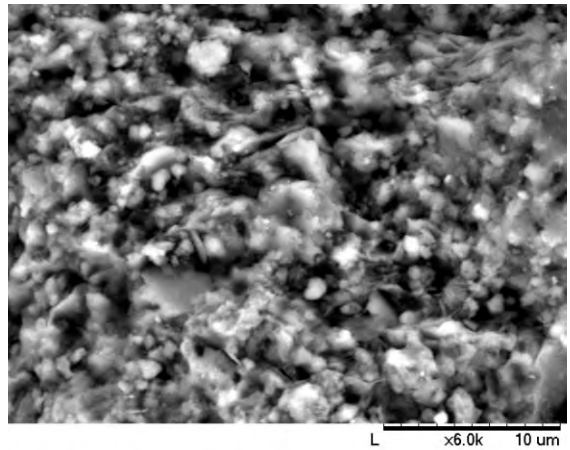


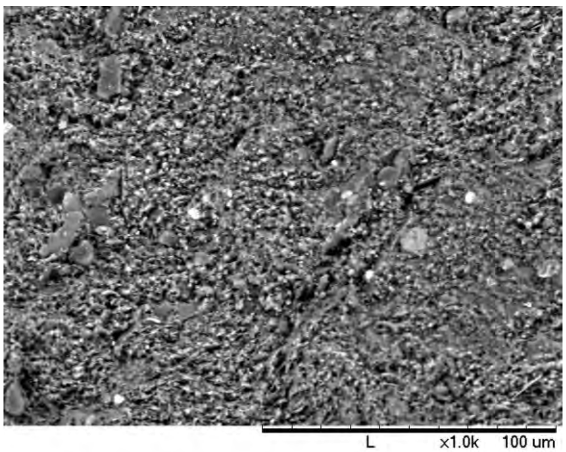
Sample#18 – 3149

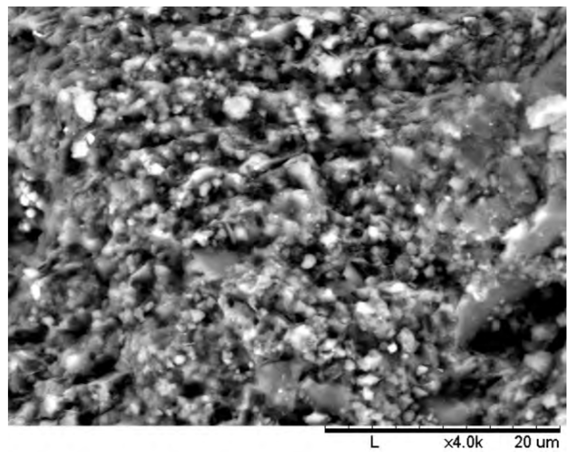


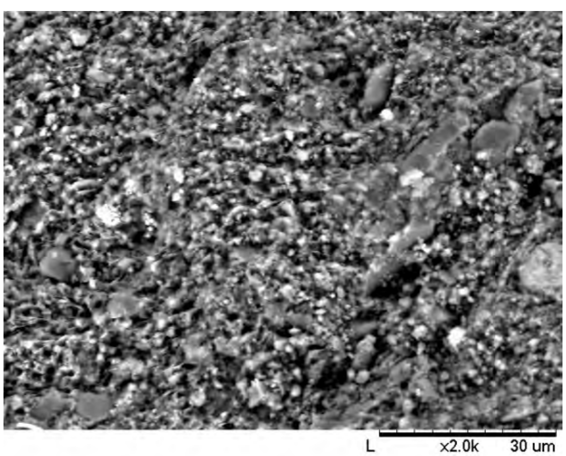
Sample#19 – 3150

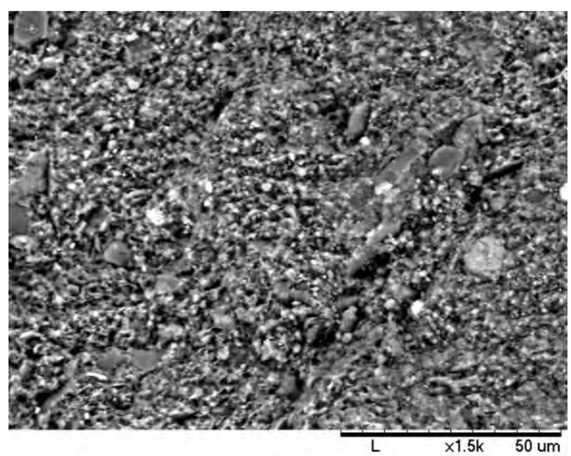




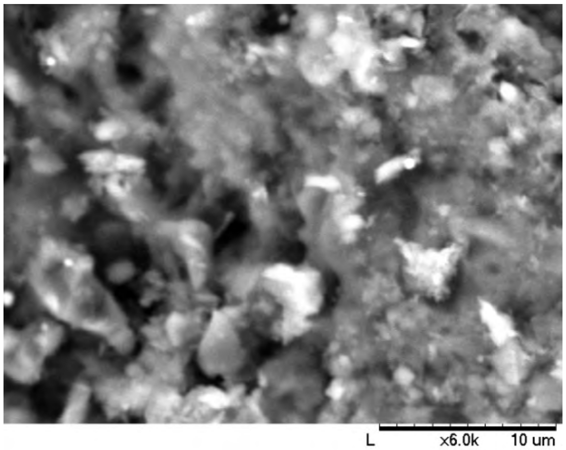


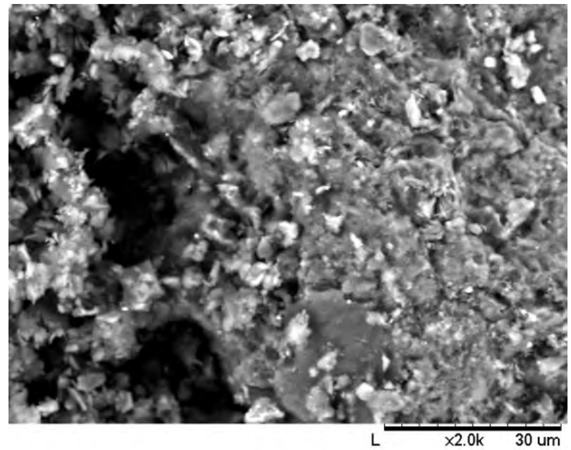


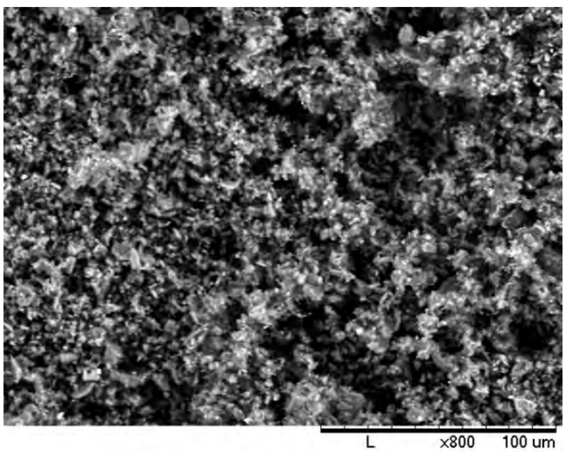


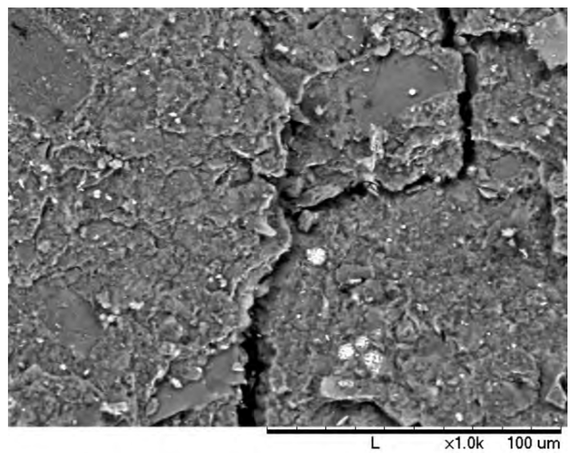


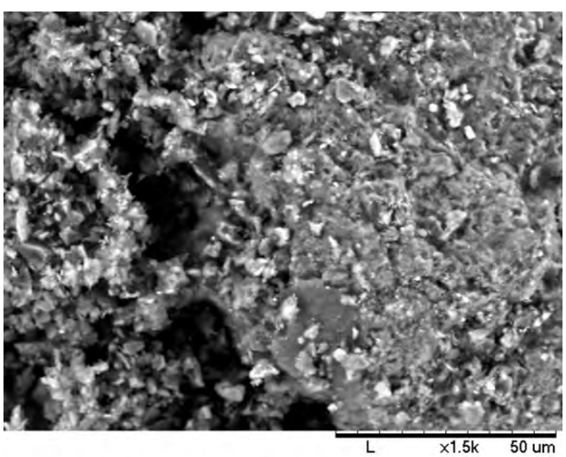
Sample#21 – 3780



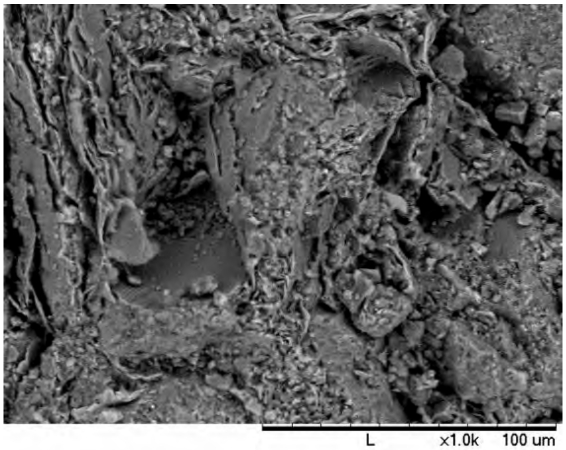


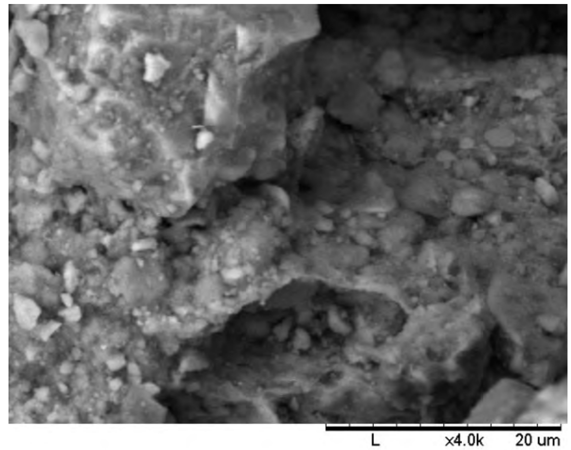


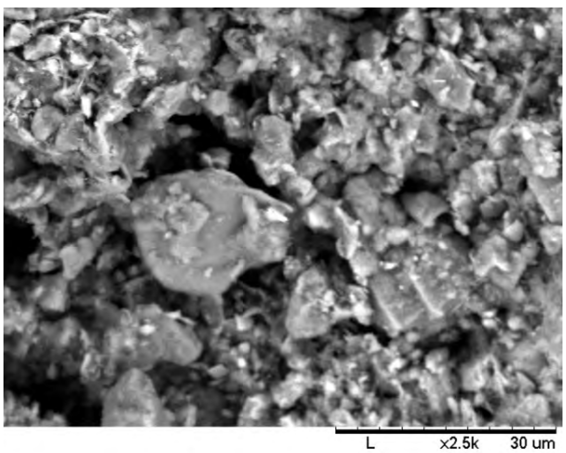


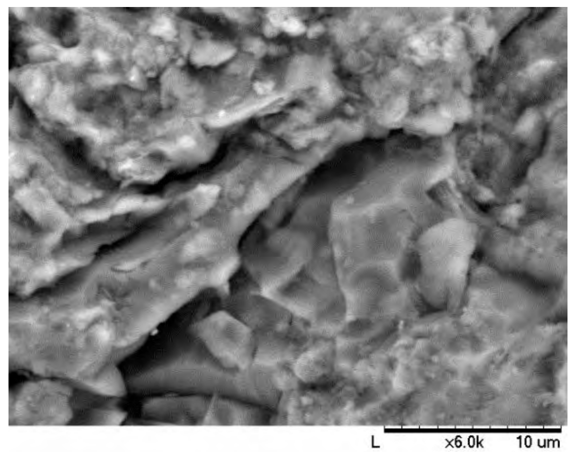


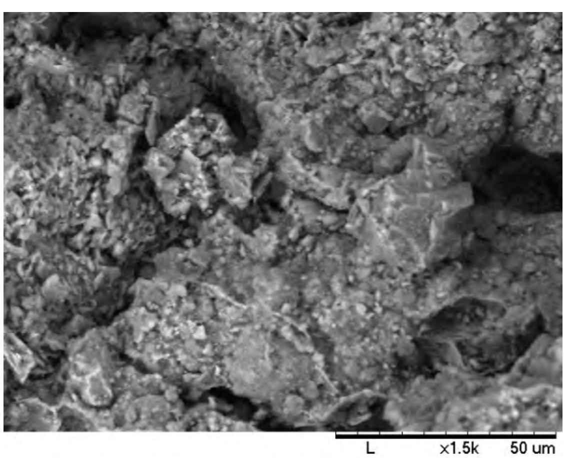
Sample#22 – 3952

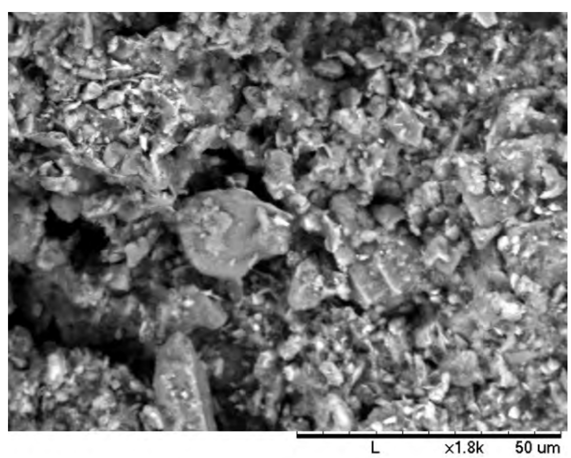












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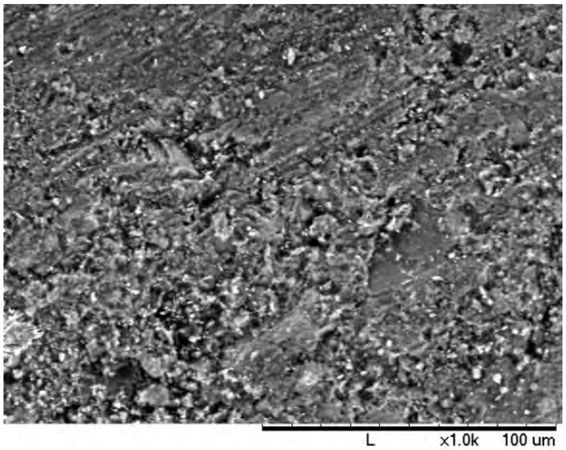
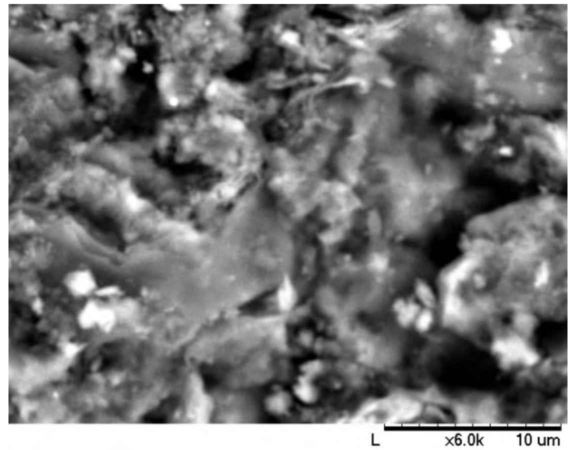
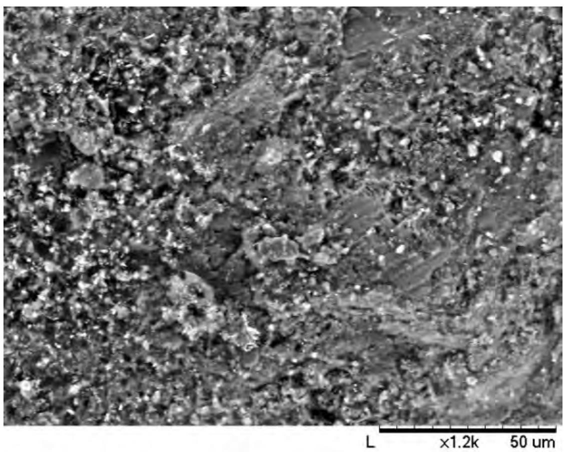
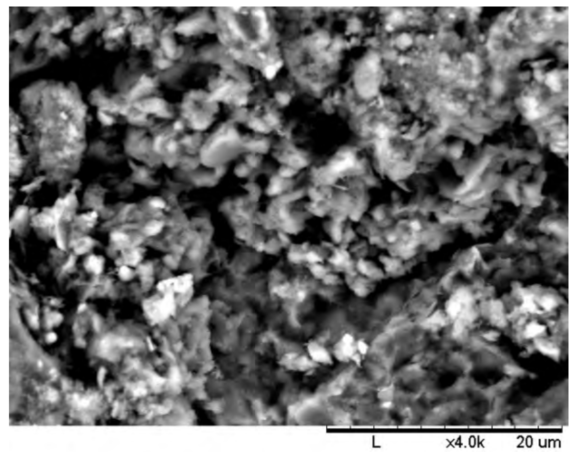
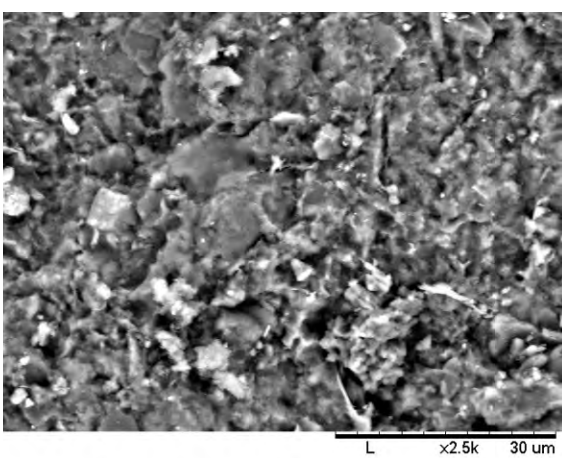
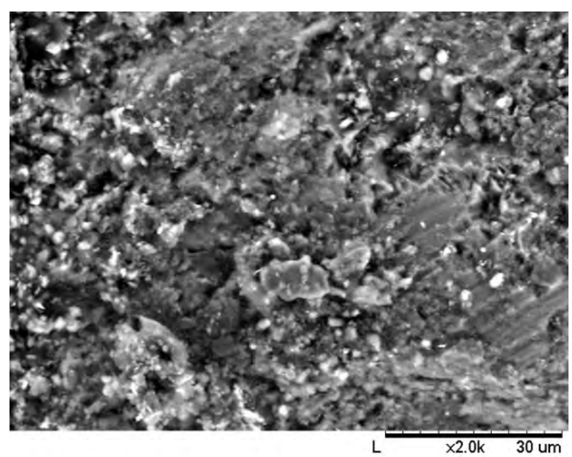




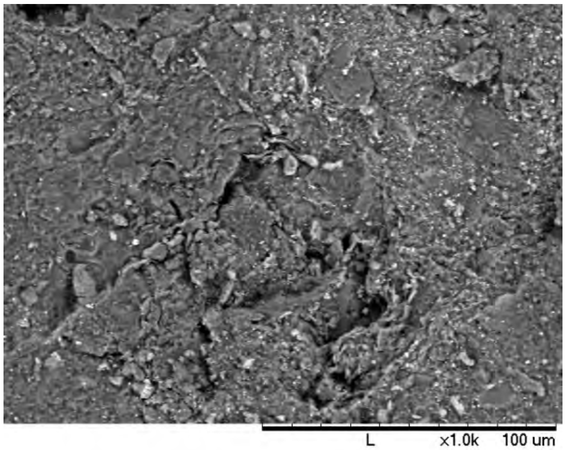


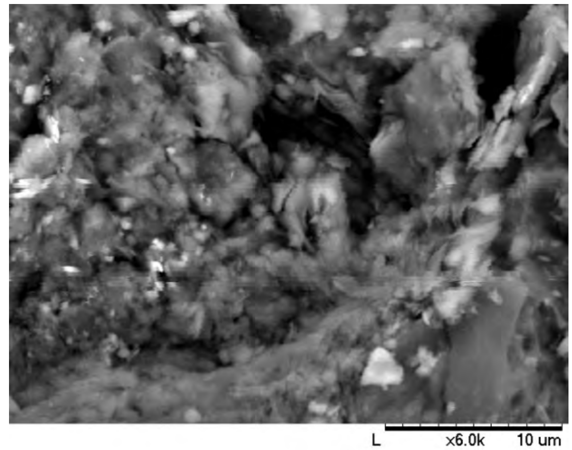


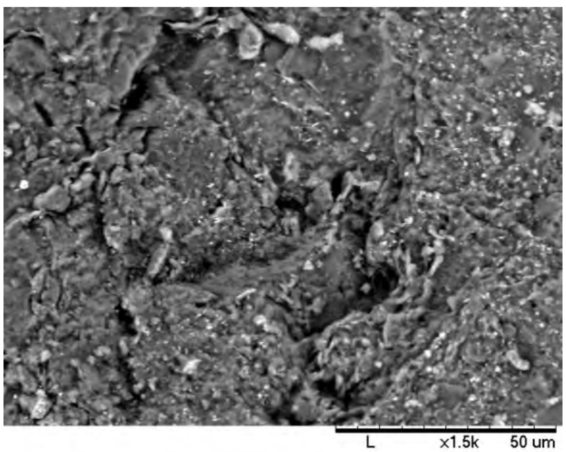


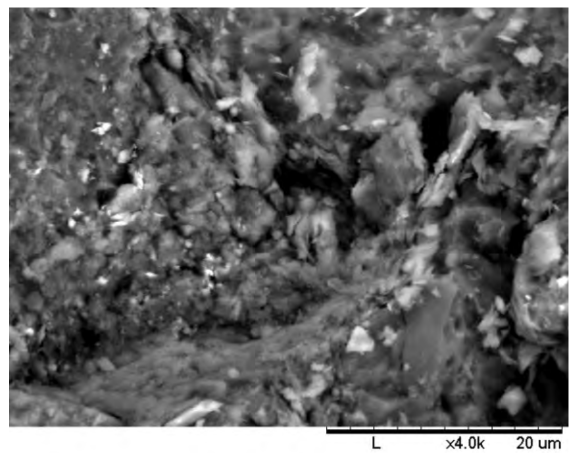


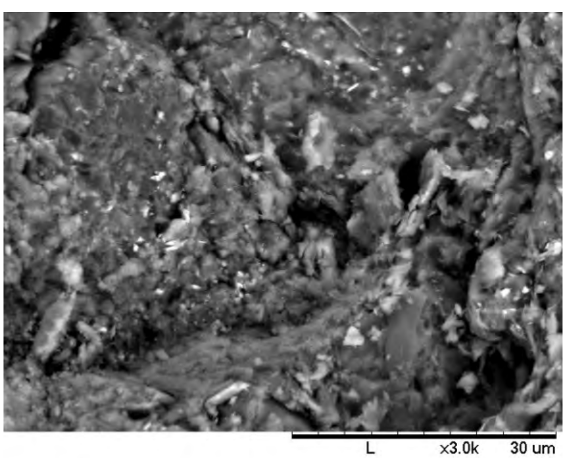
Sample#24 – 4157



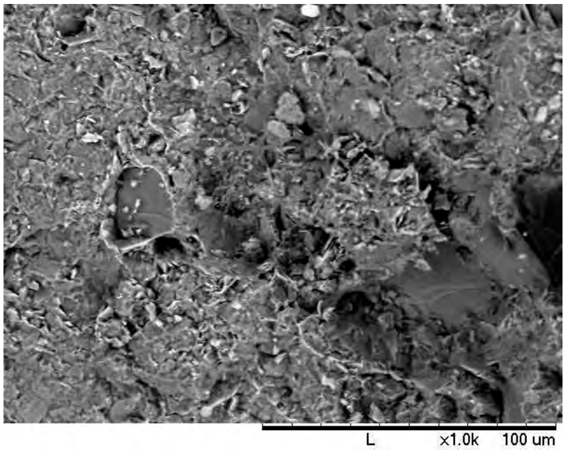


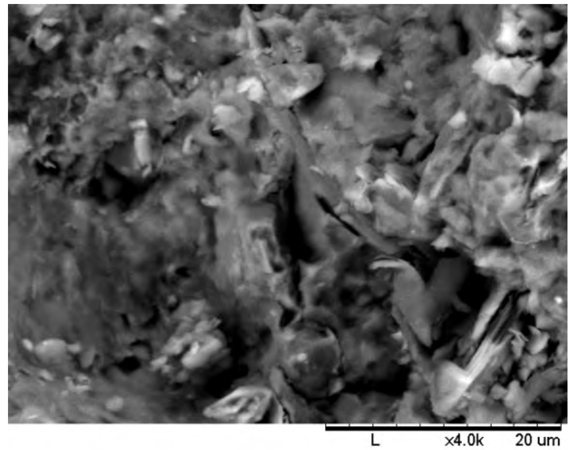


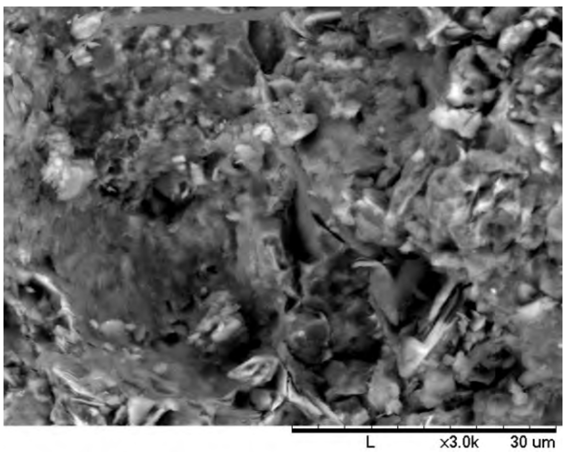


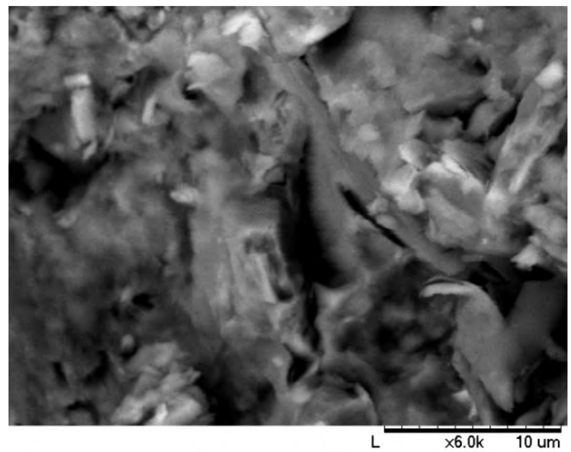


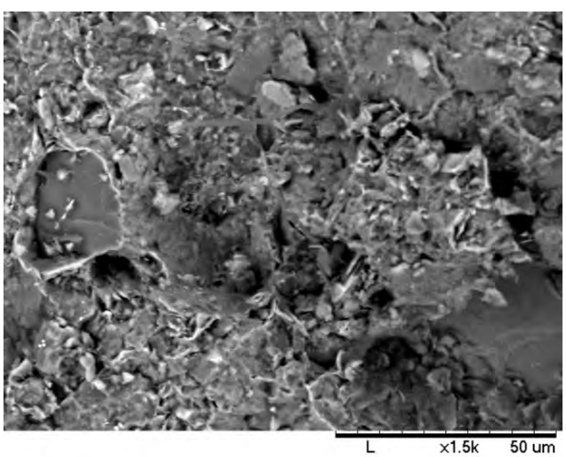
Sample#25 – 4164



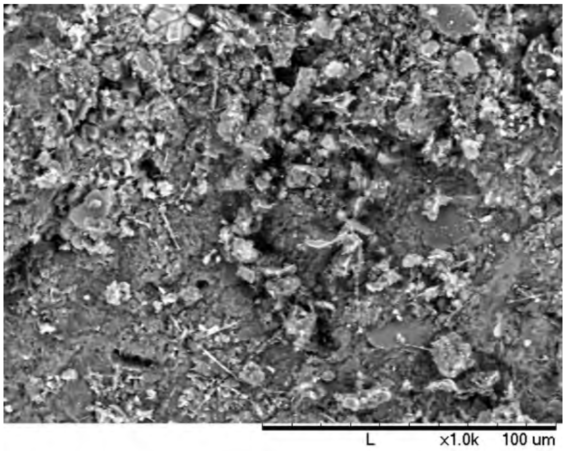


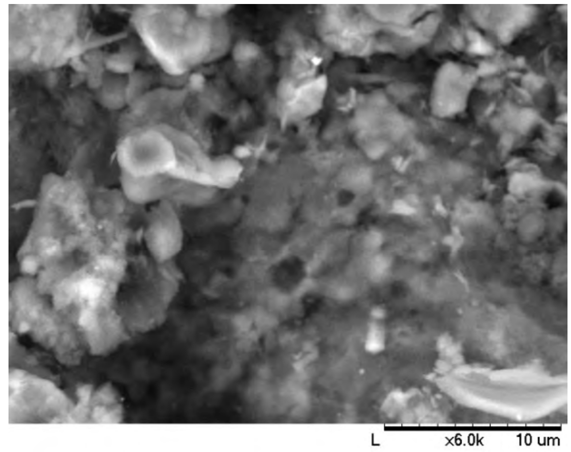


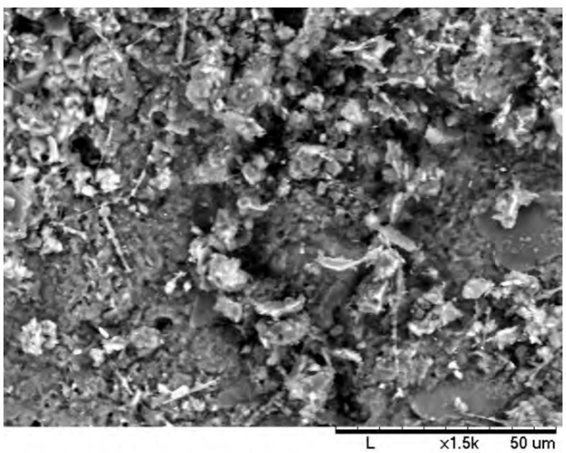


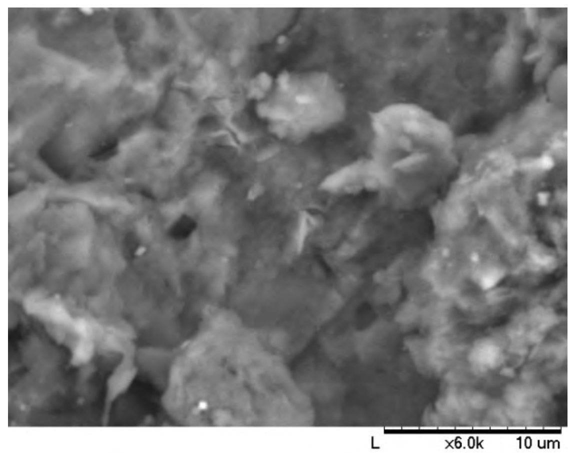


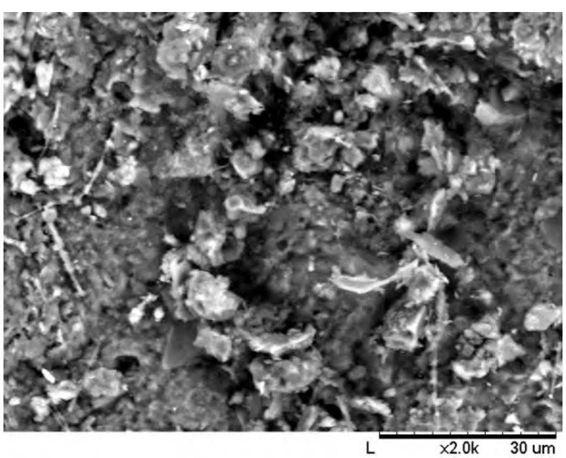
Sample#26 – 4211

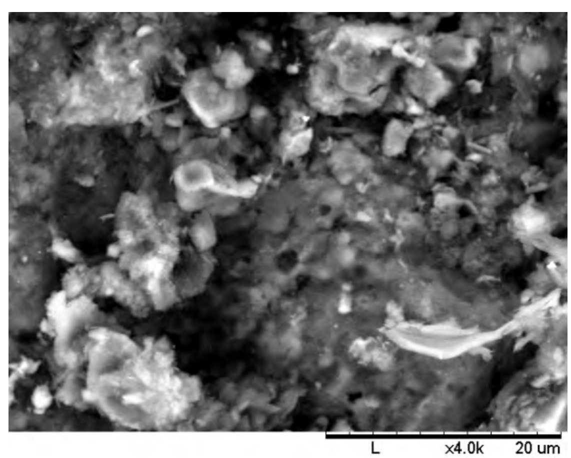




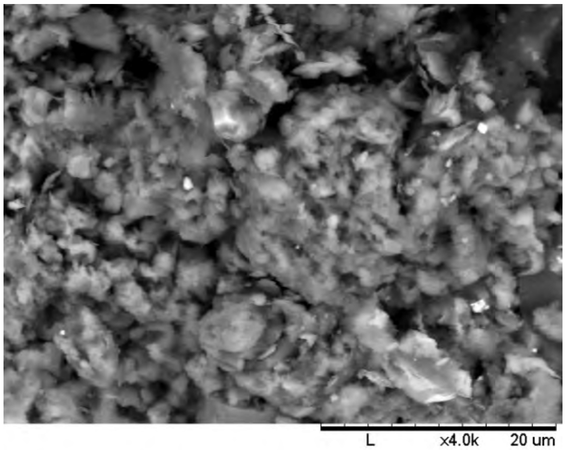


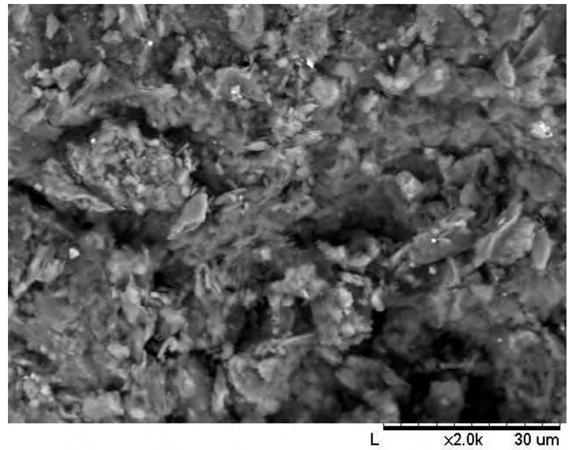


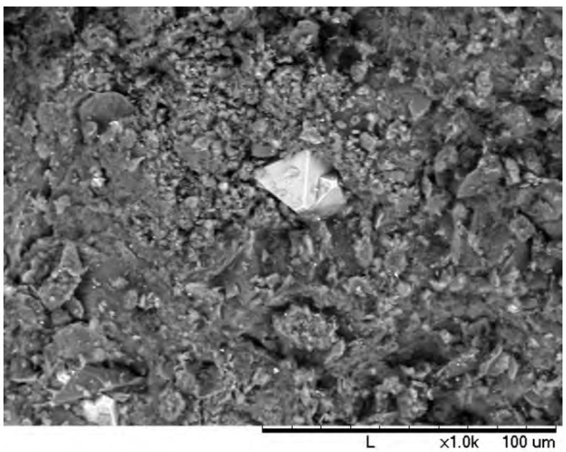


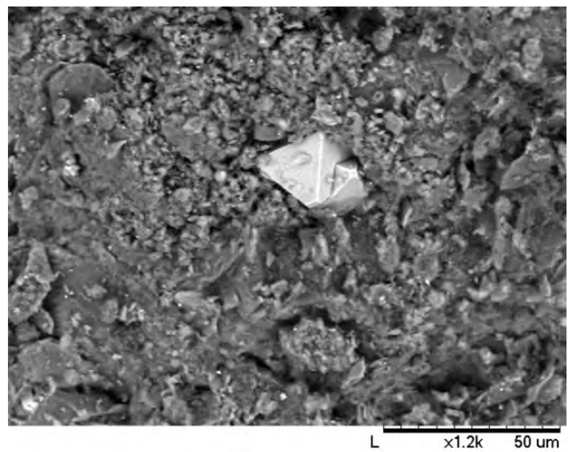


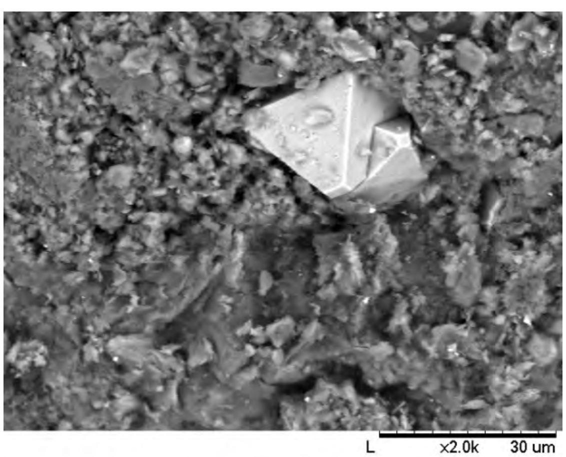
Sample#27 – 4224

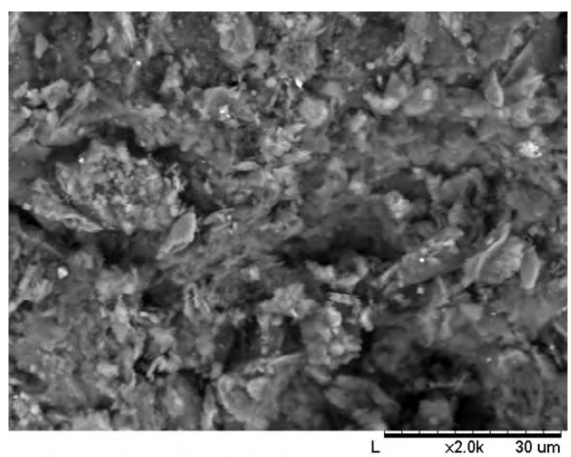




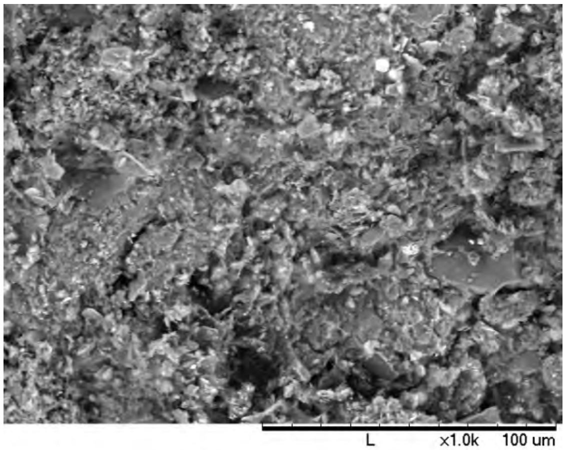


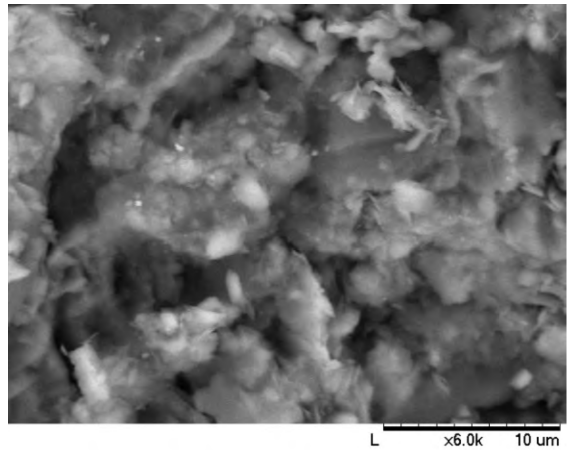


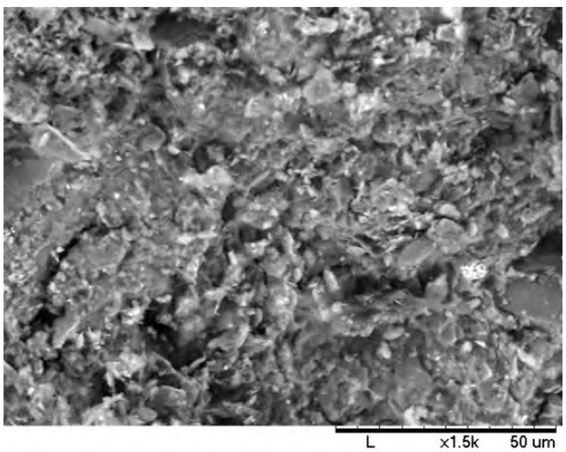


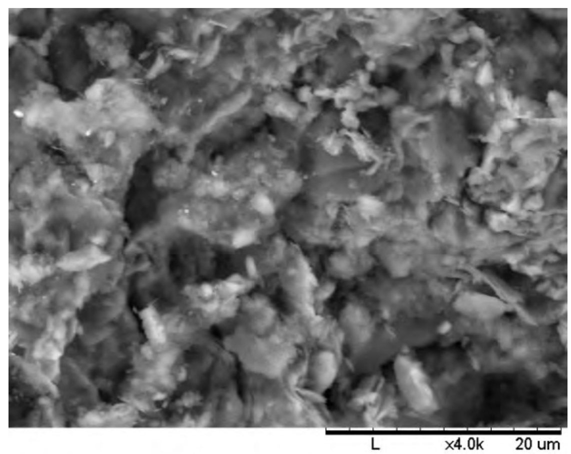


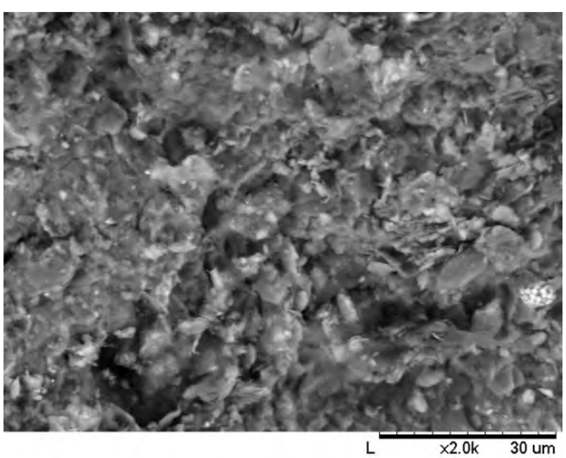
Sample#28 – 4226



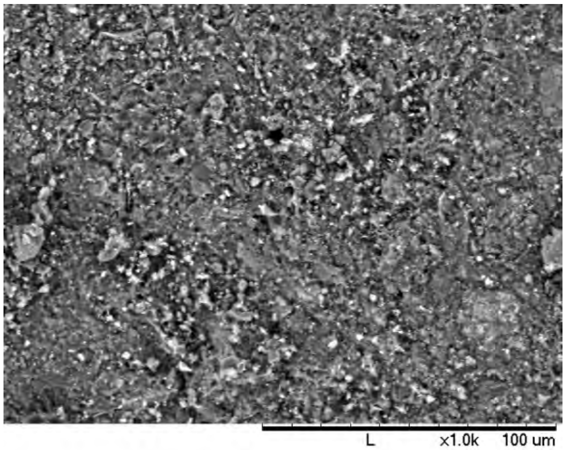


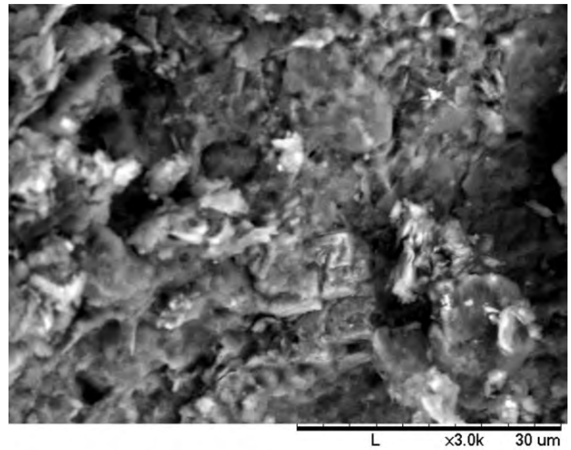


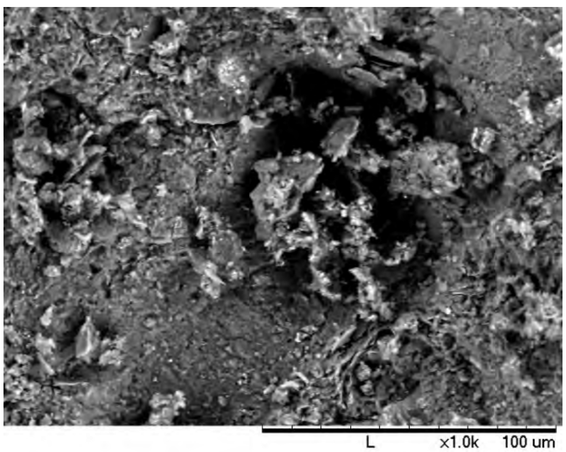


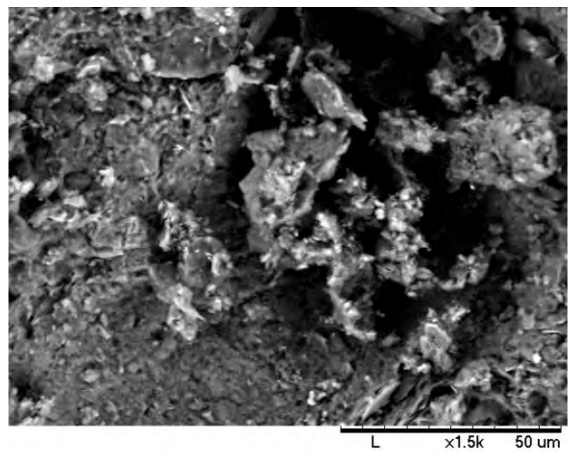


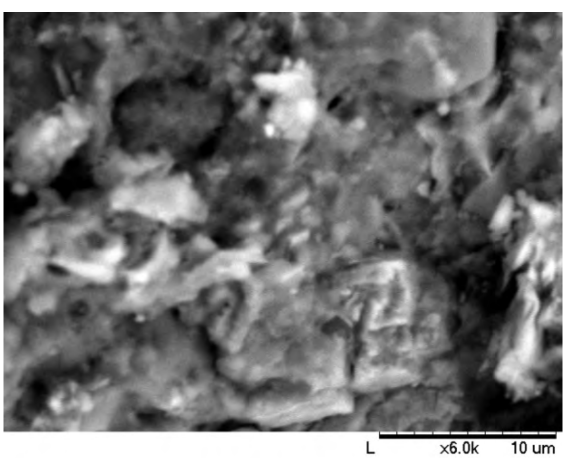
Sample#29 – 4458



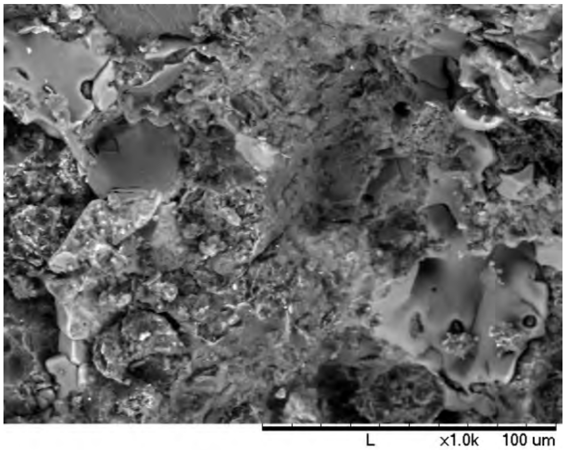


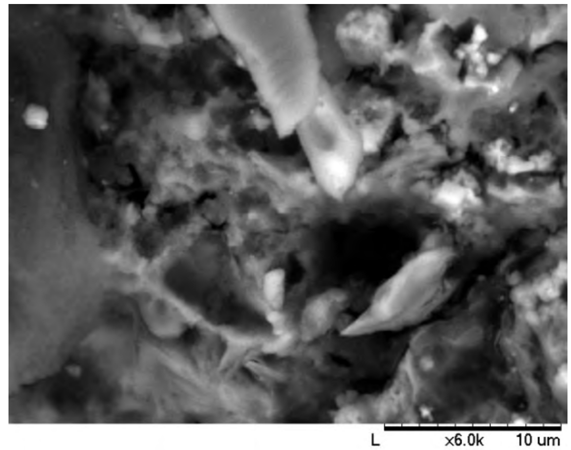


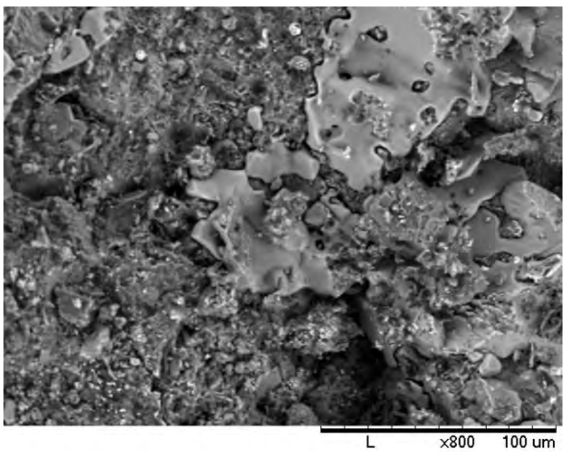


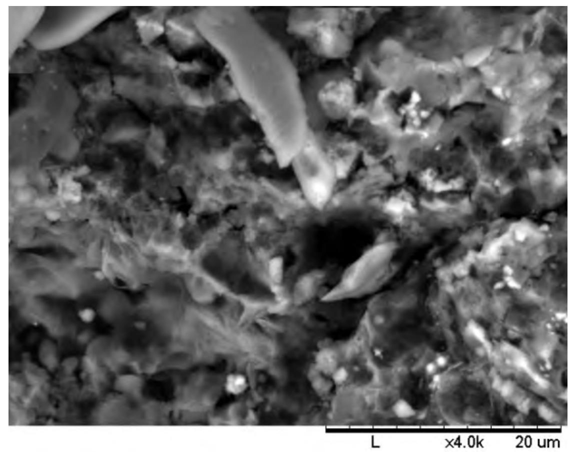


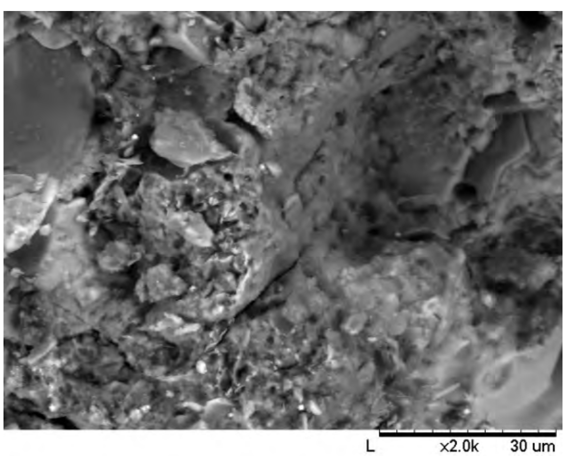
Sample#30 – 4515

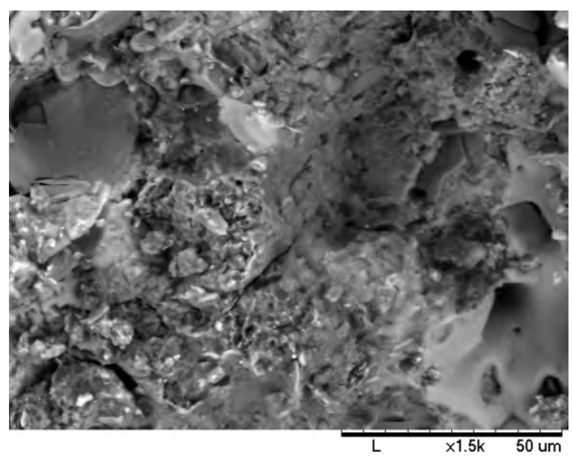






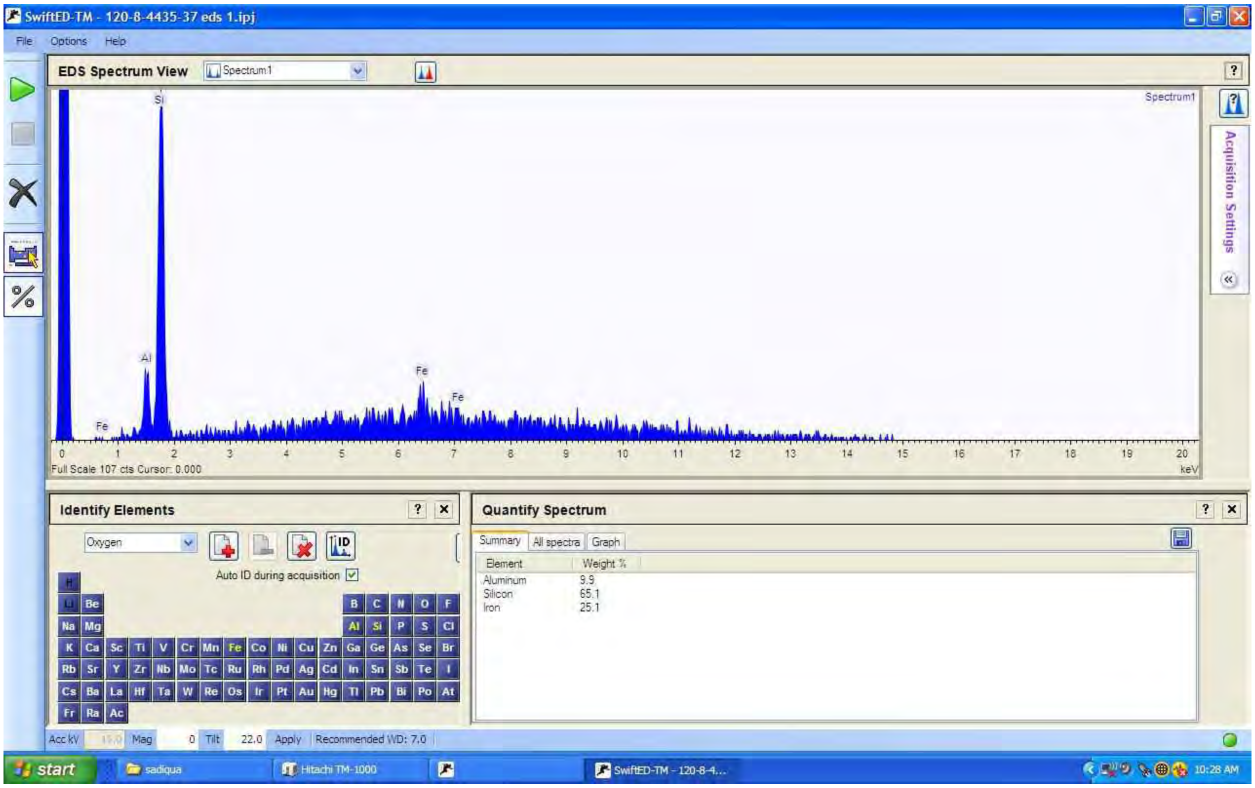




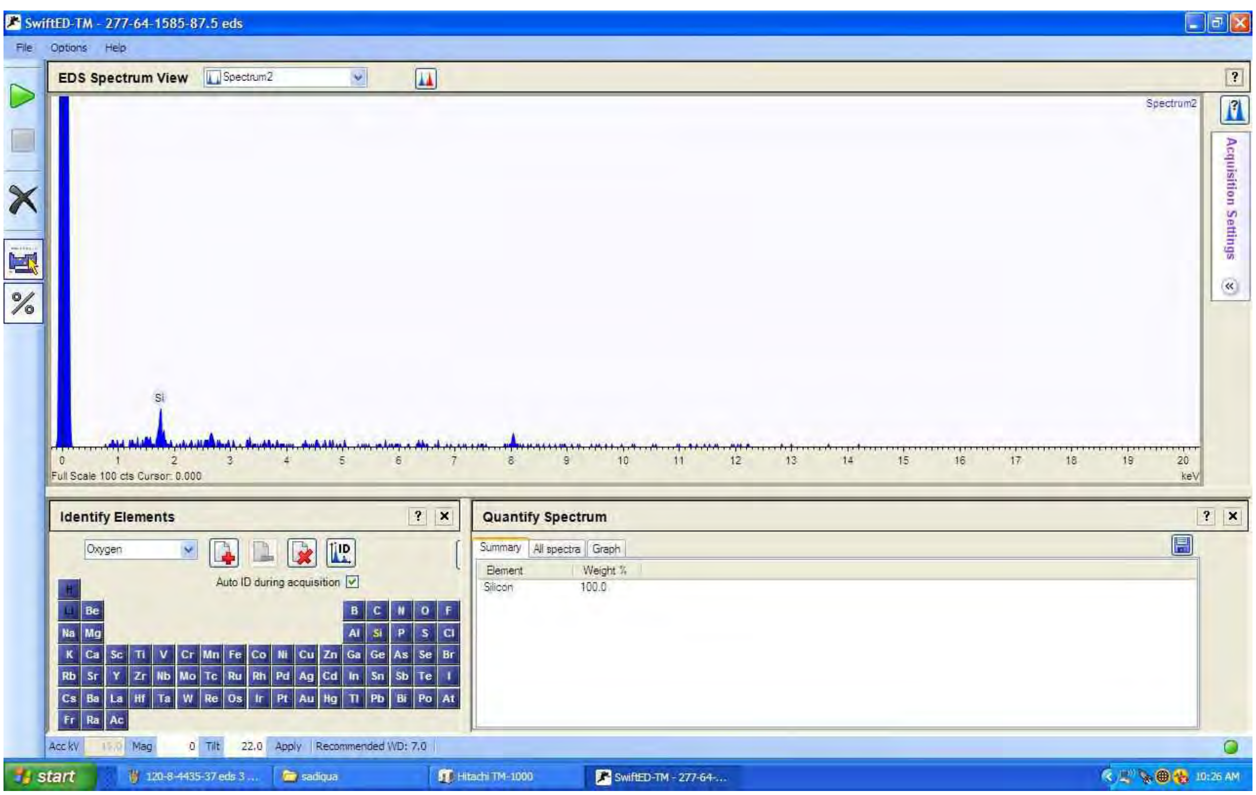


APPENDIX G – EDS MEASUREMENTS

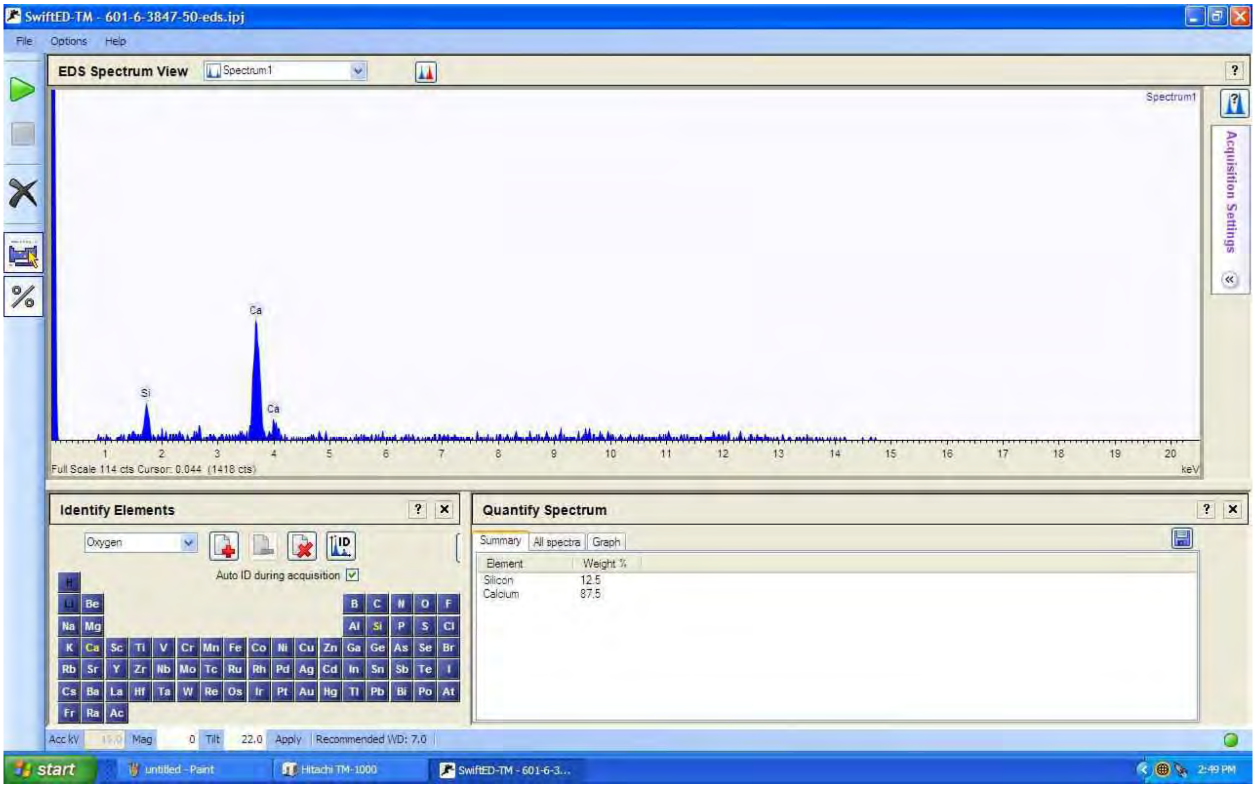
Sample#1 – 120



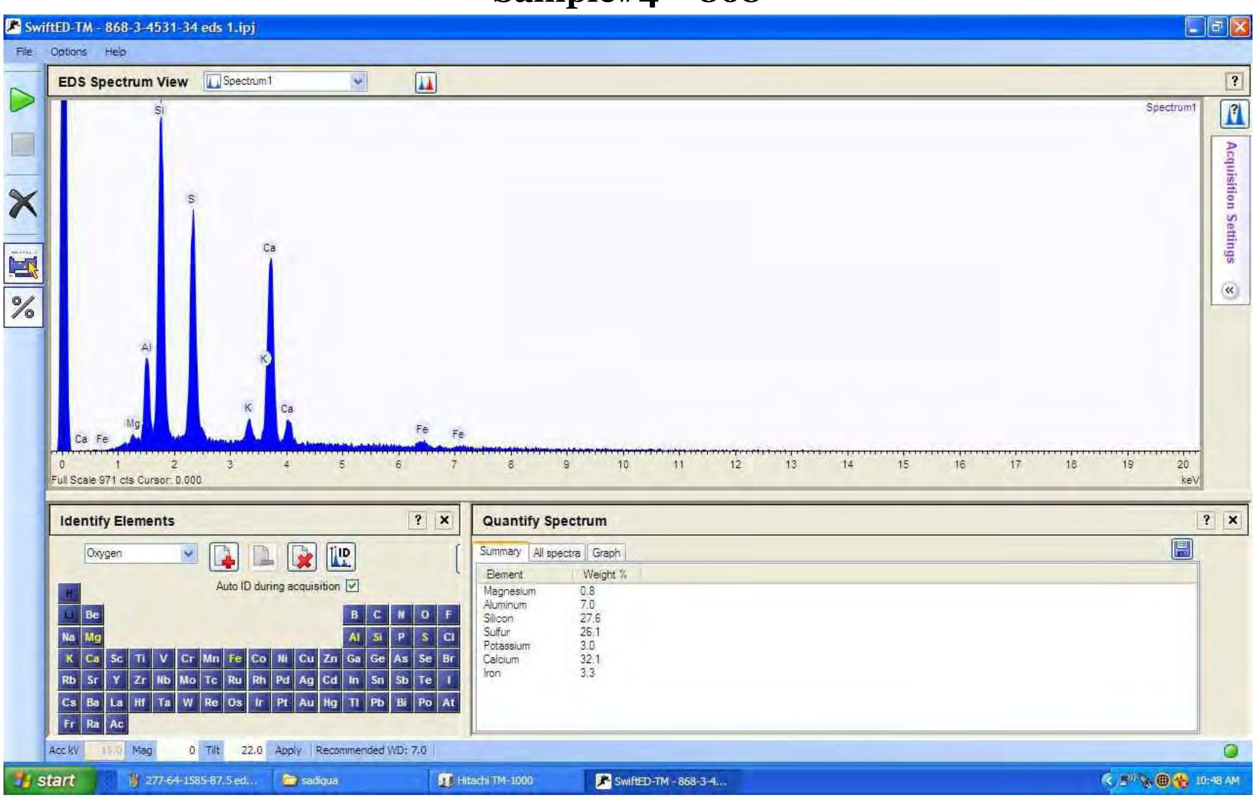
Sample#2 – 277



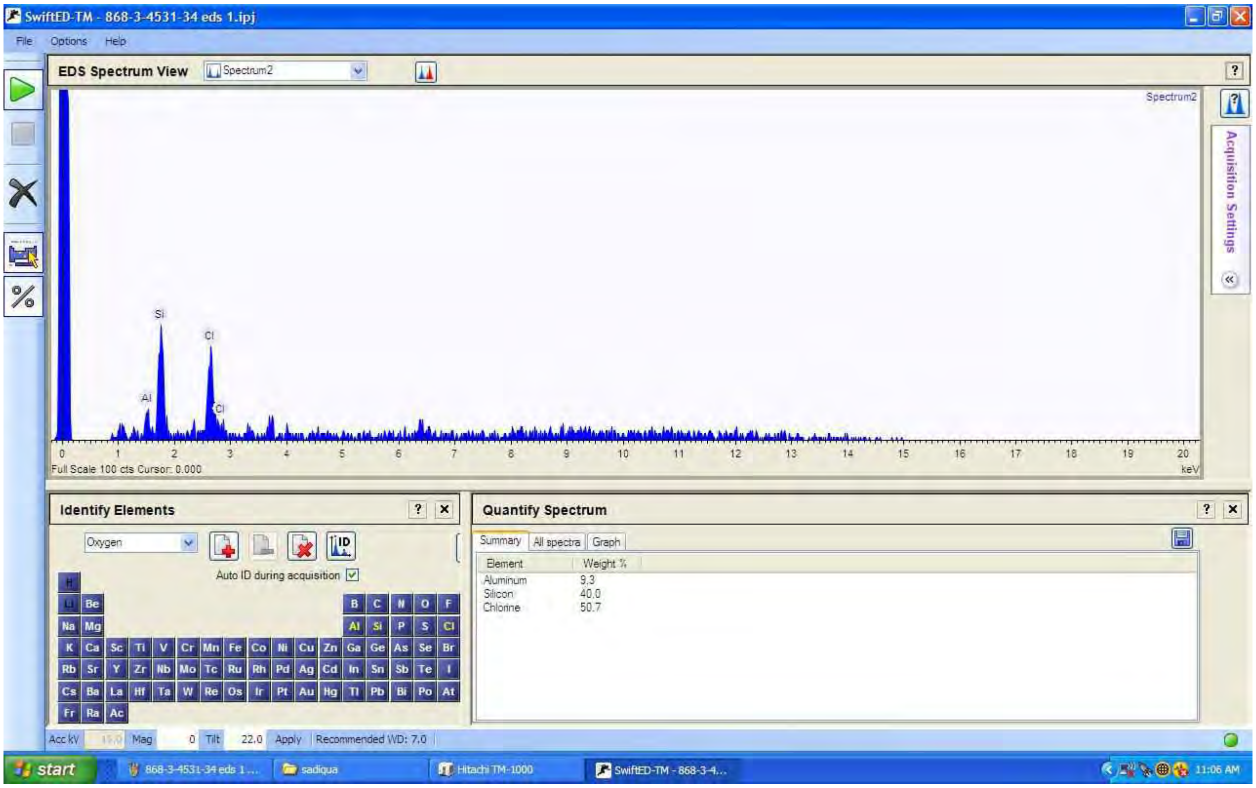
Sample#3 – 601



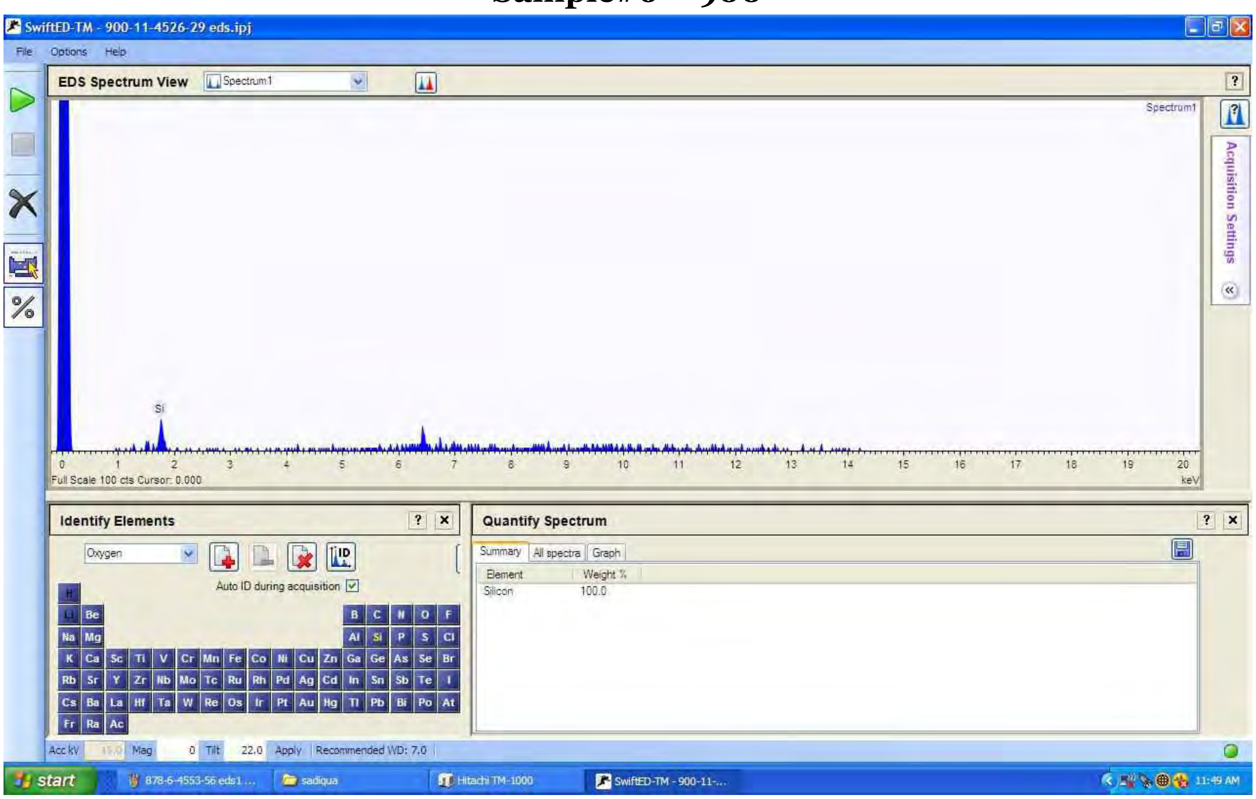
Sample#4 – 868



Sample#5 – 878



Sample#6 – 900



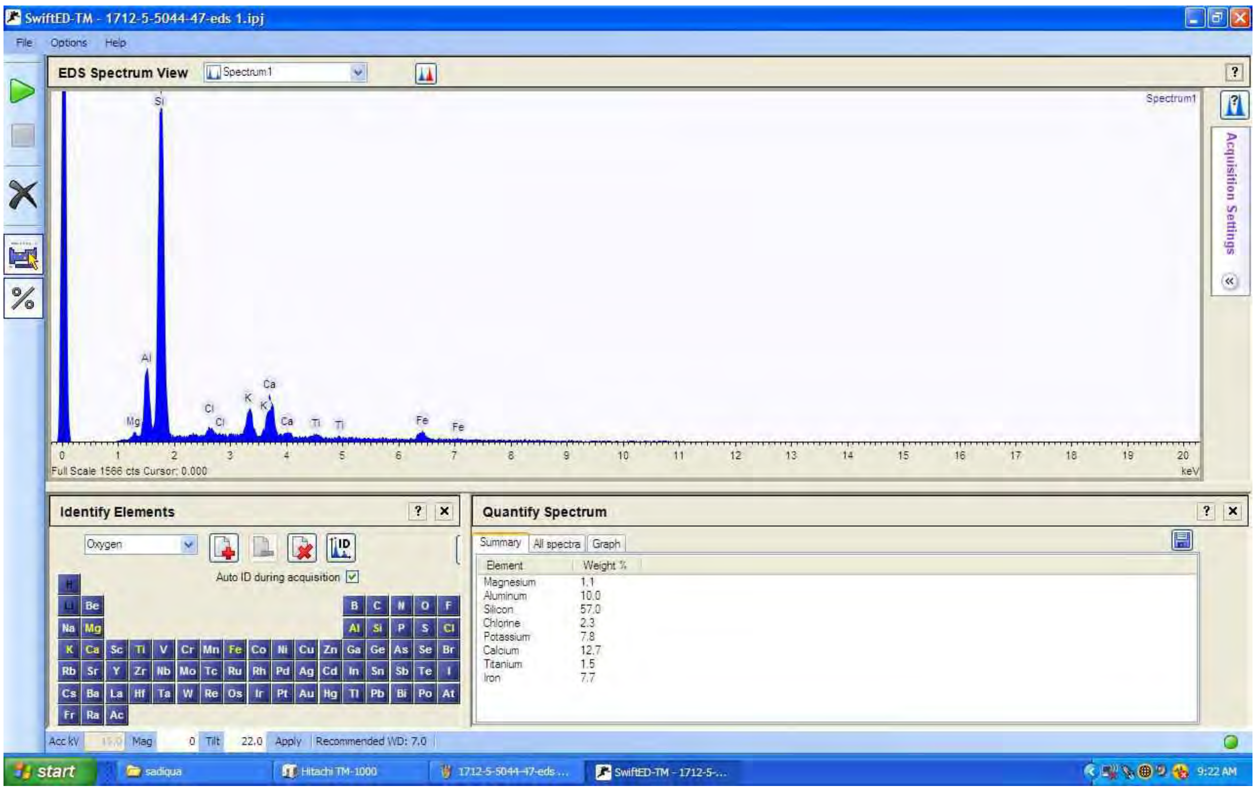
Sample#7 – 1081

n/a

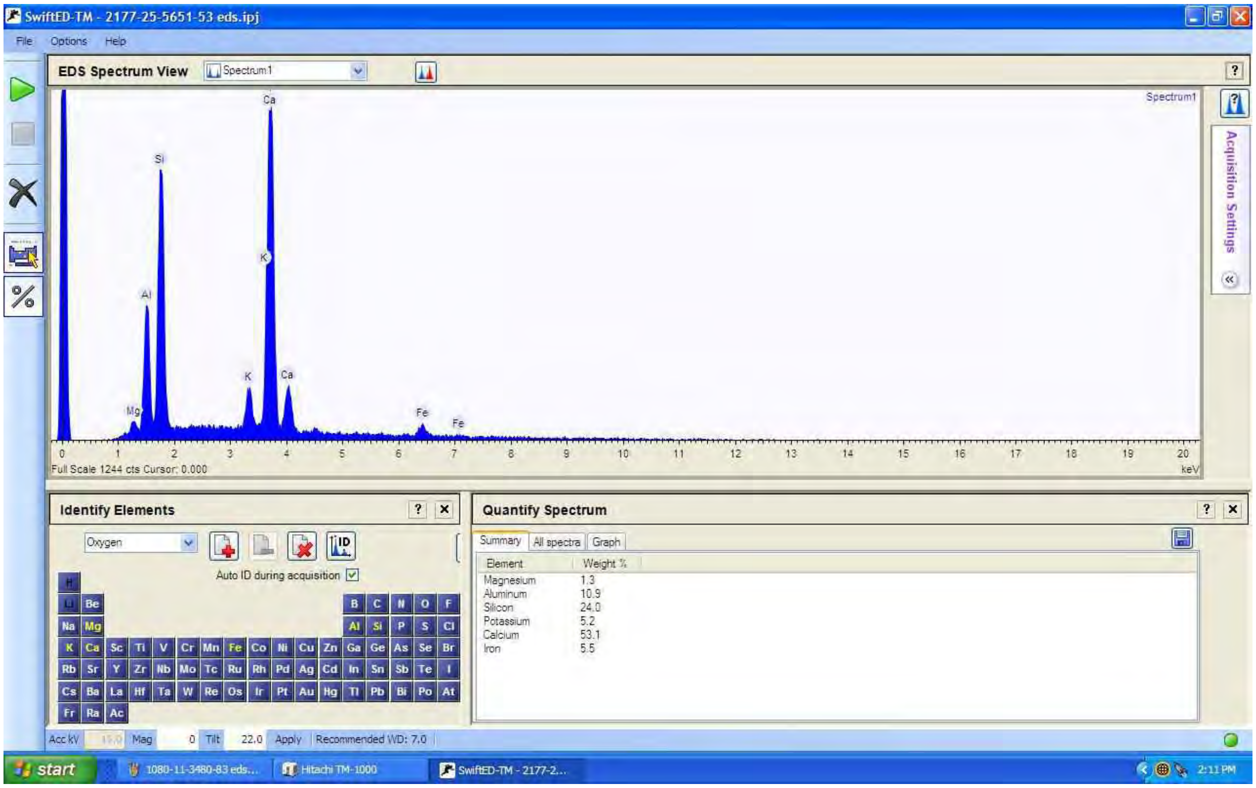
Sample#8 – 1461

n/a

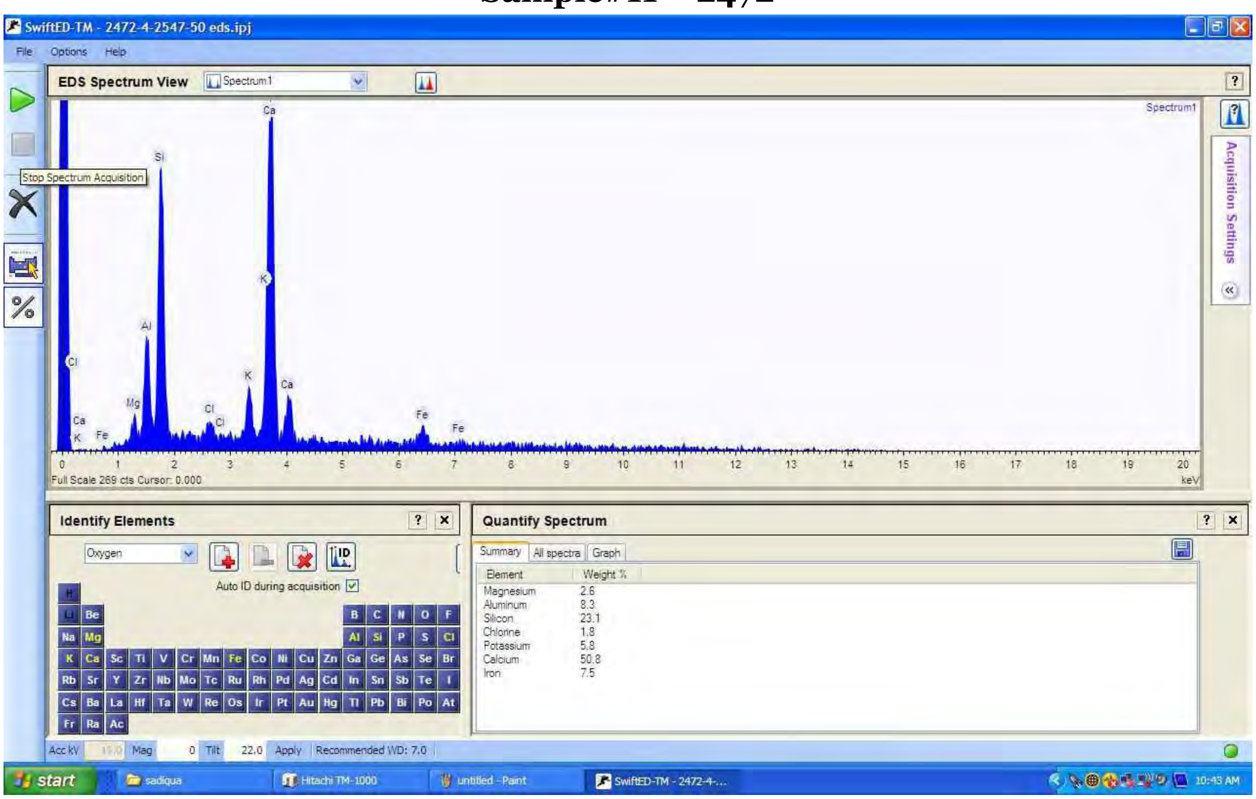
Sample#9 – 1712



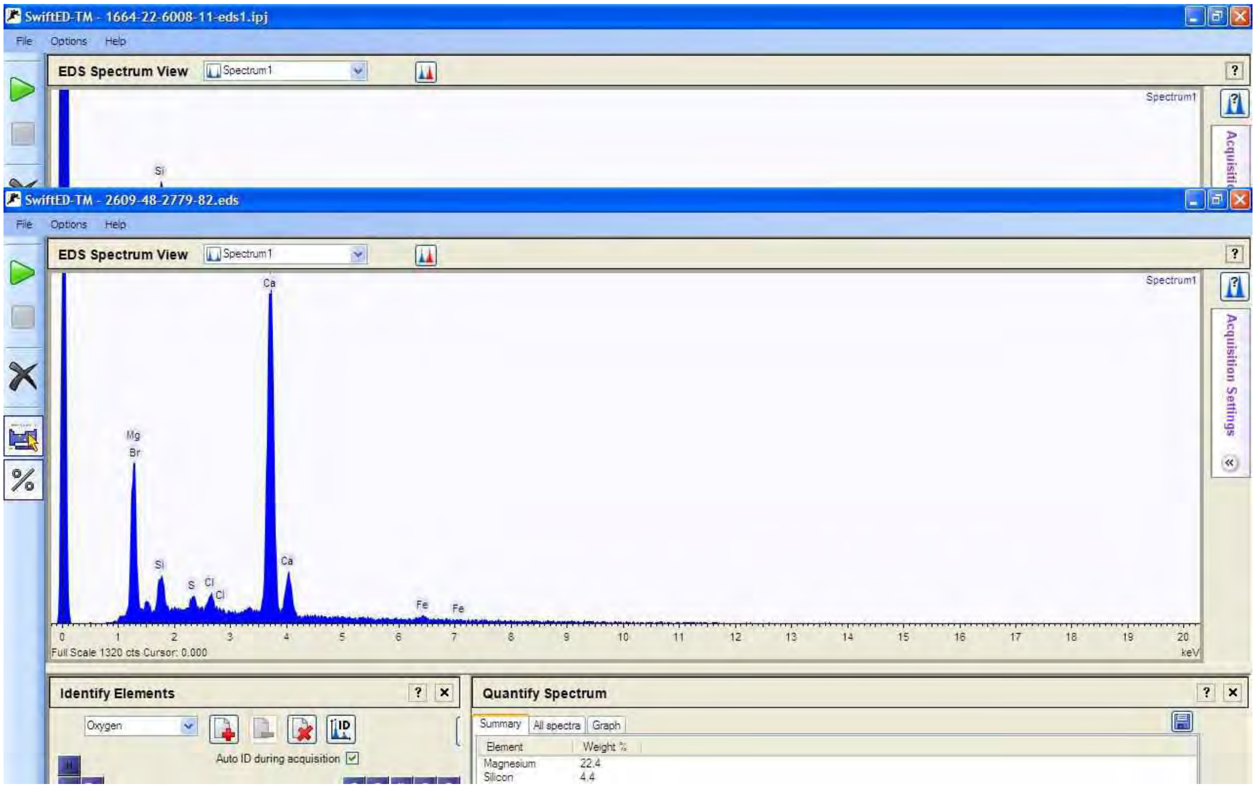
Sample#10 – 2177



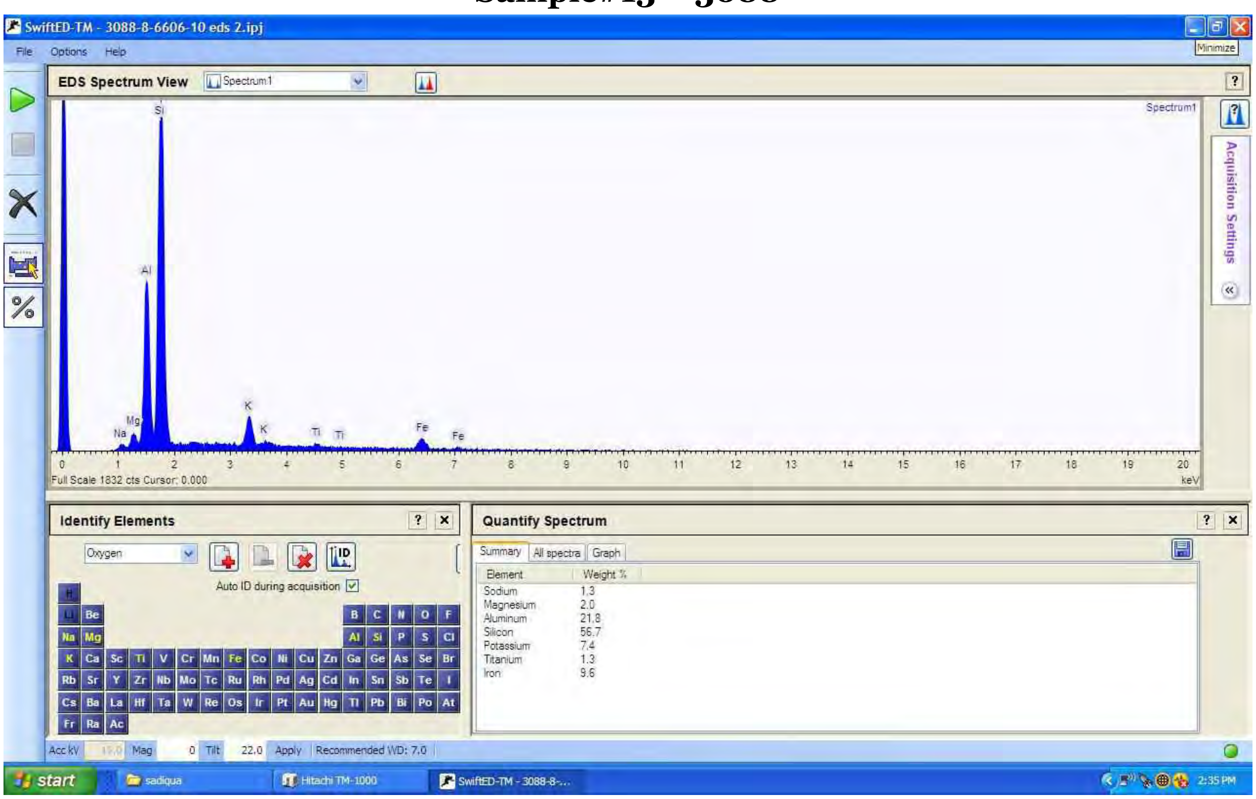
Sample#11 – 2472



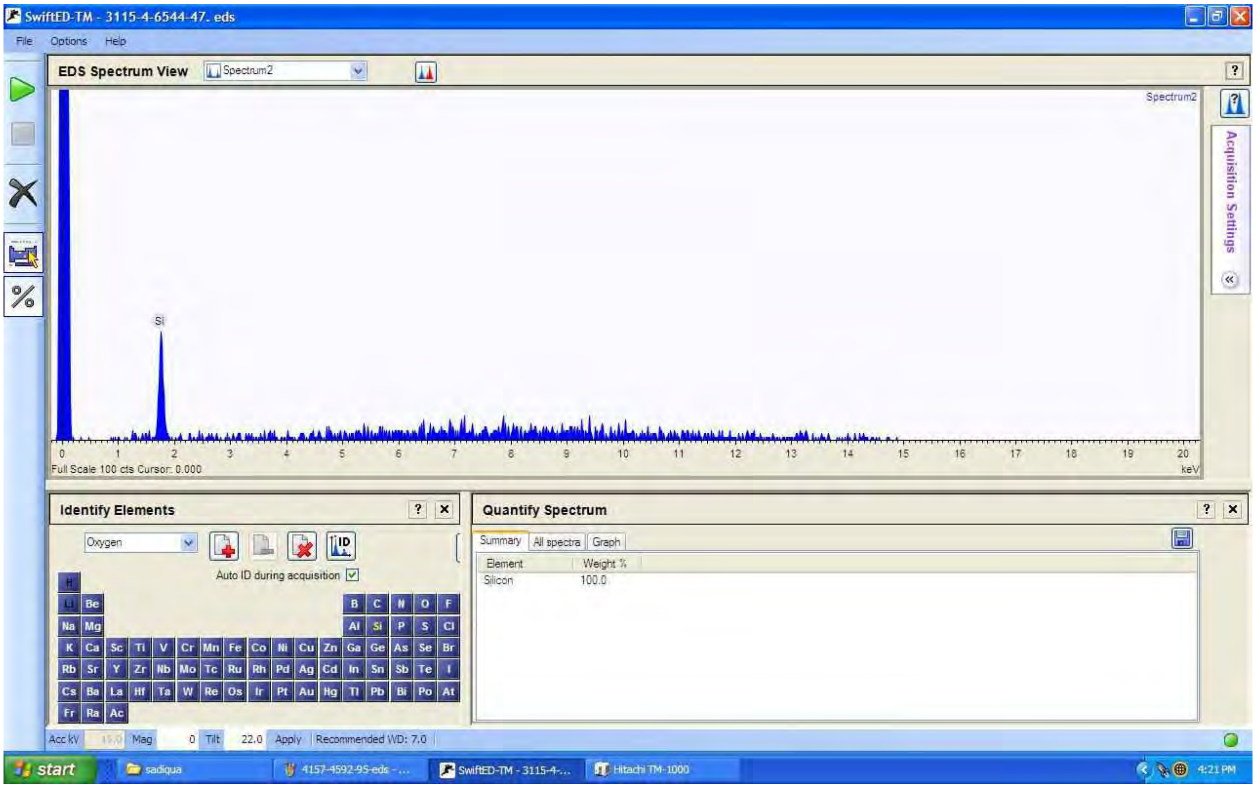
Sample#12 – 2609



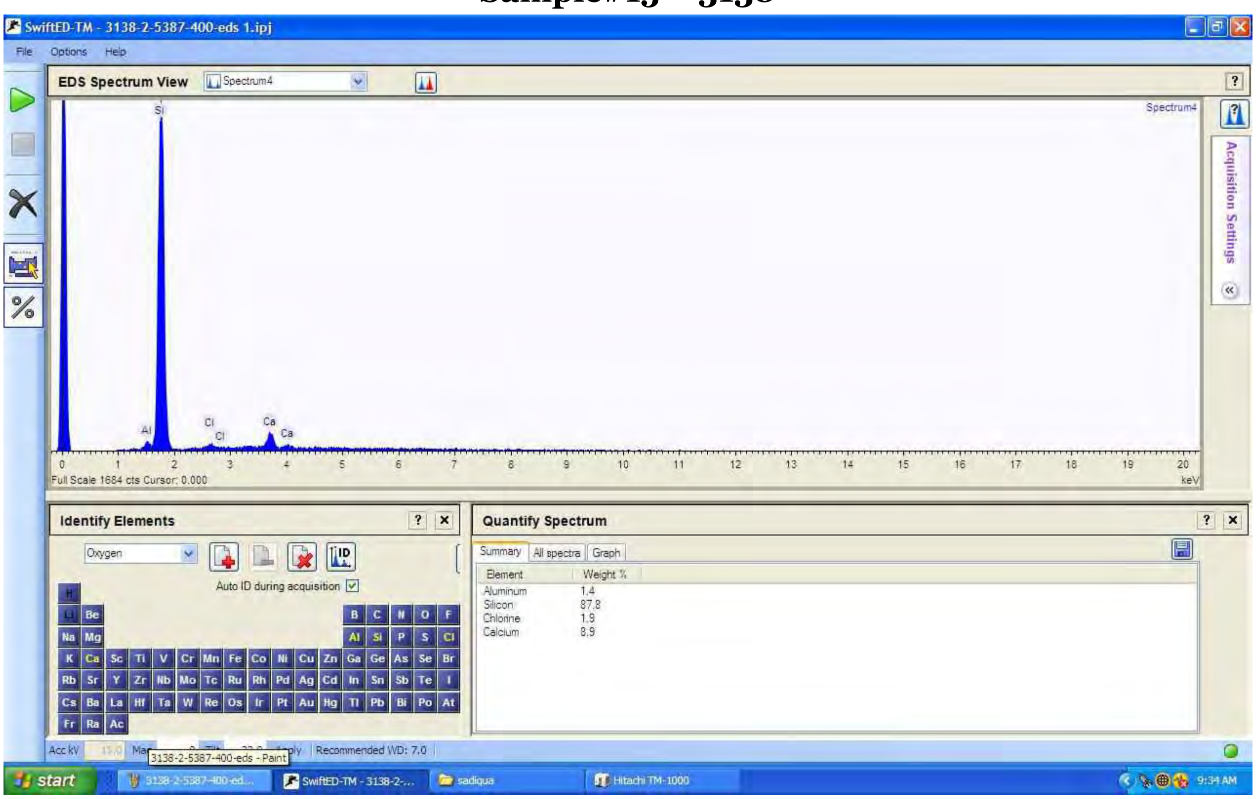
Sample#13 – 3088



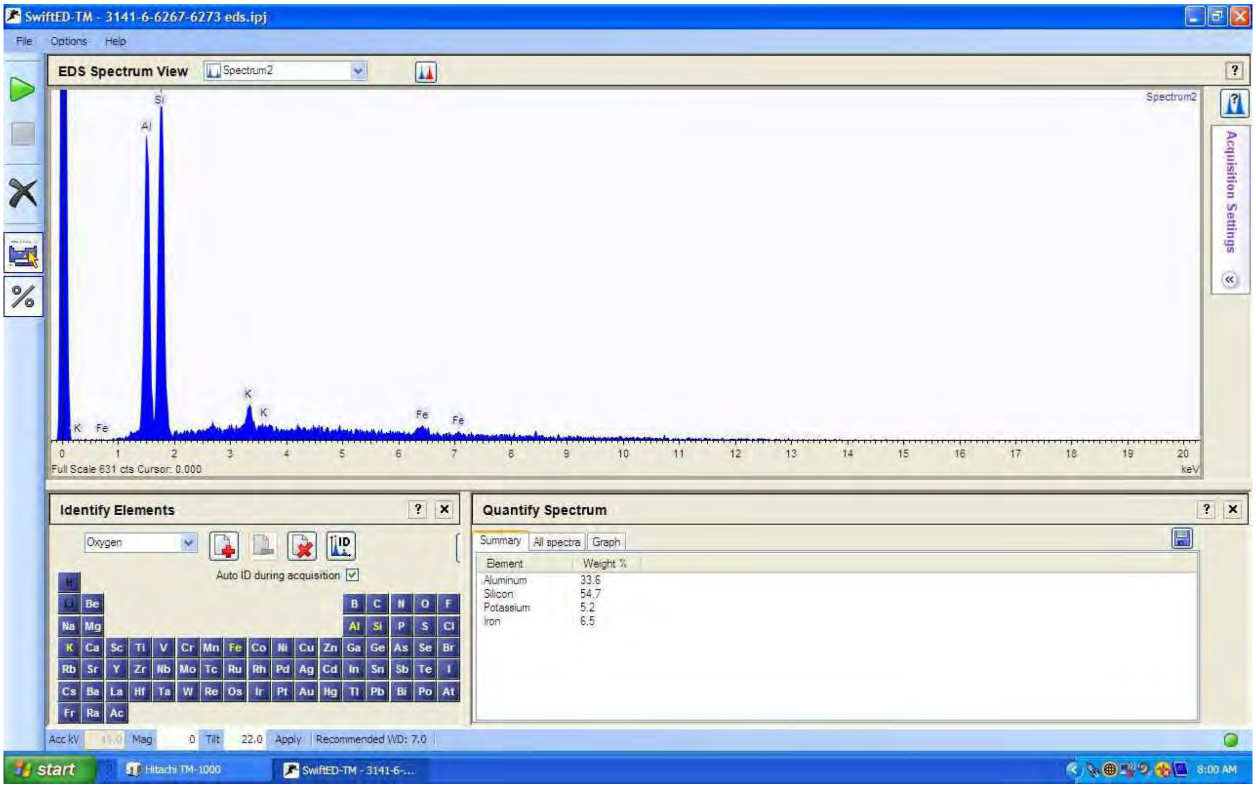
Sample#14 – 3115



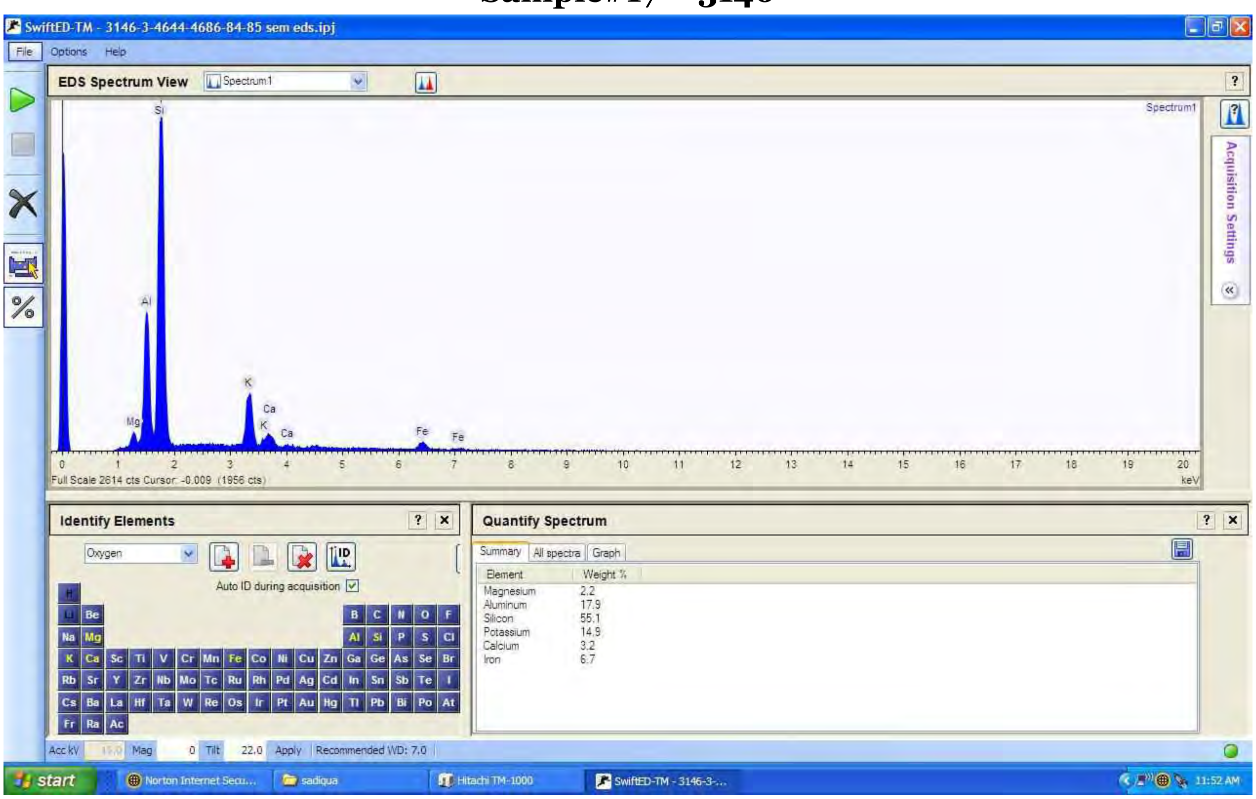
Sample#15 – 3138



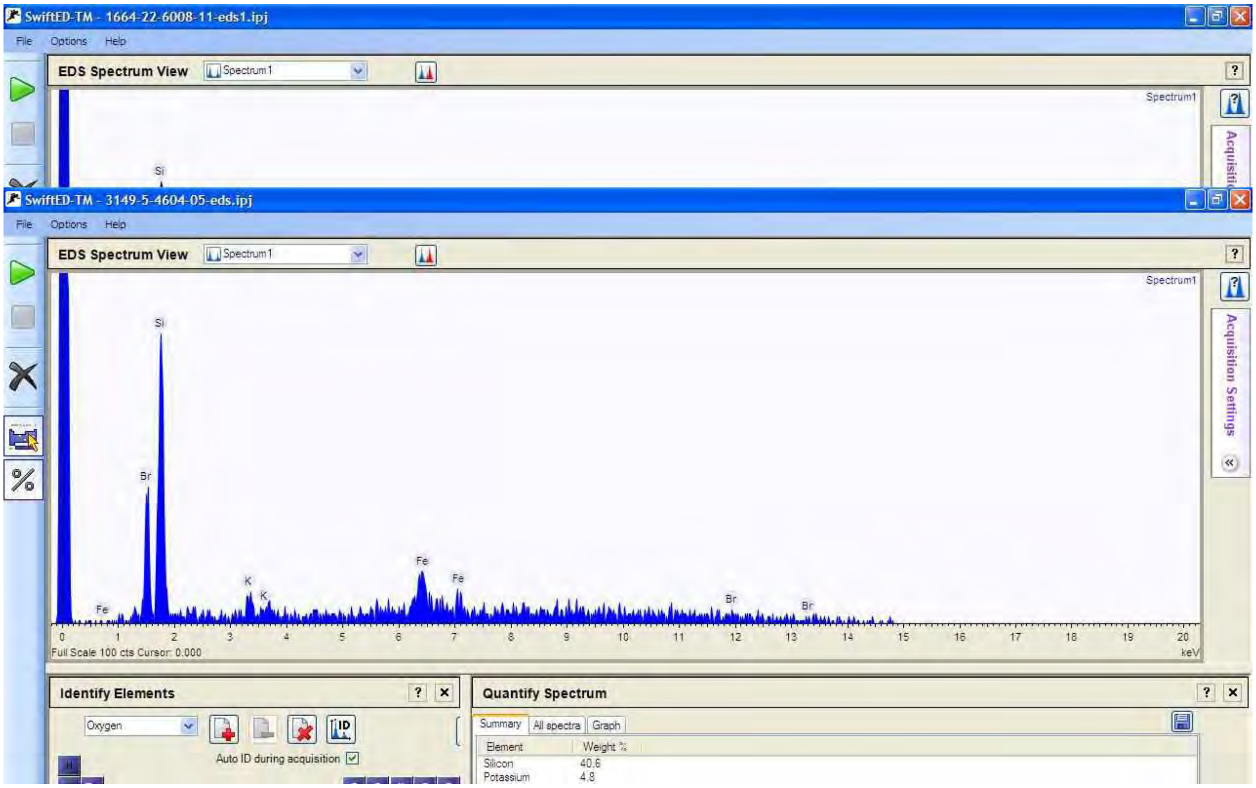
Sample#16 – 3141



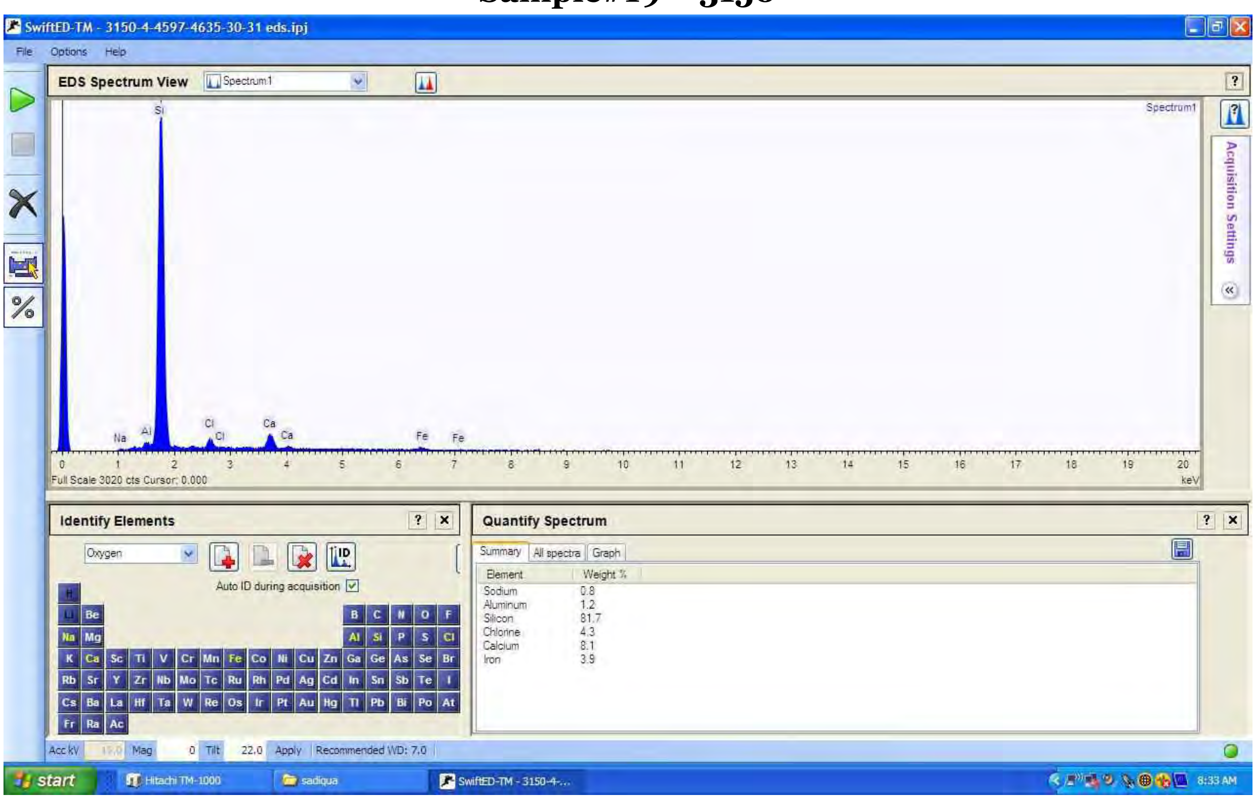
Sample#17 – 3146



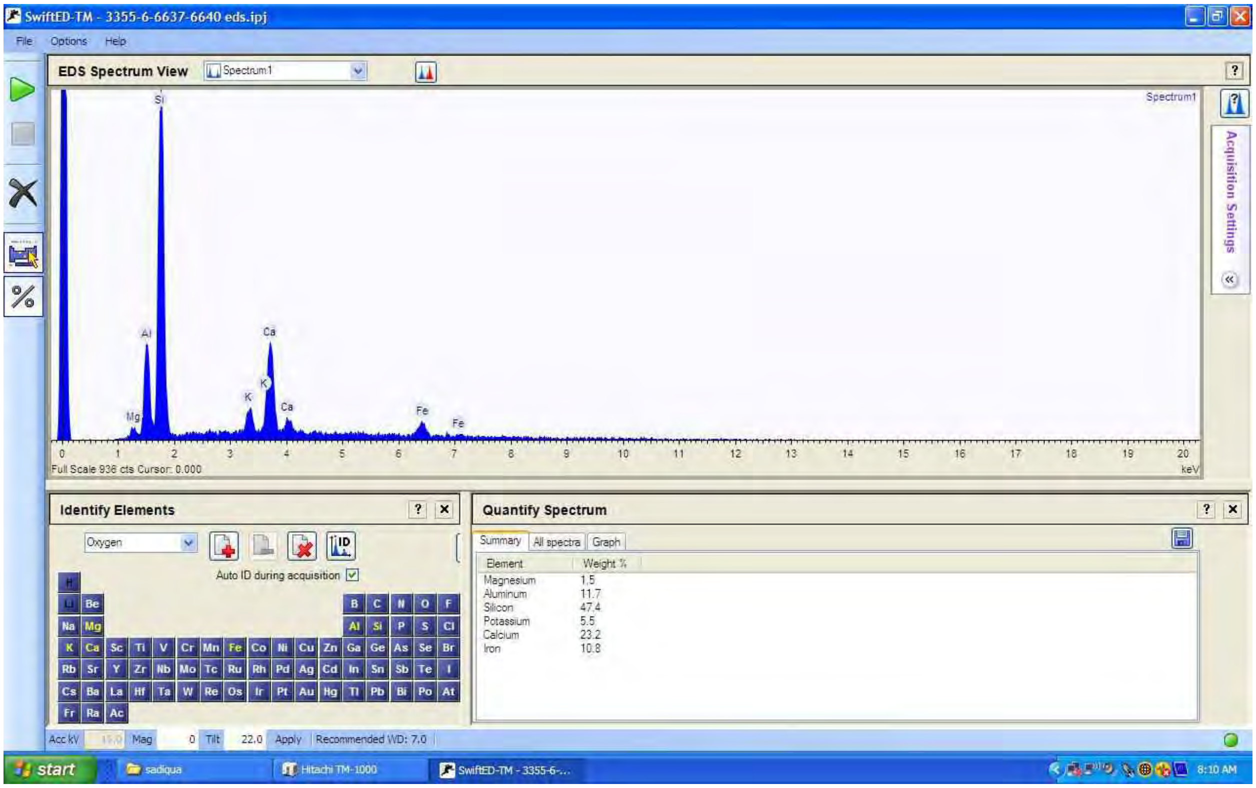
Sample#18 – 3149



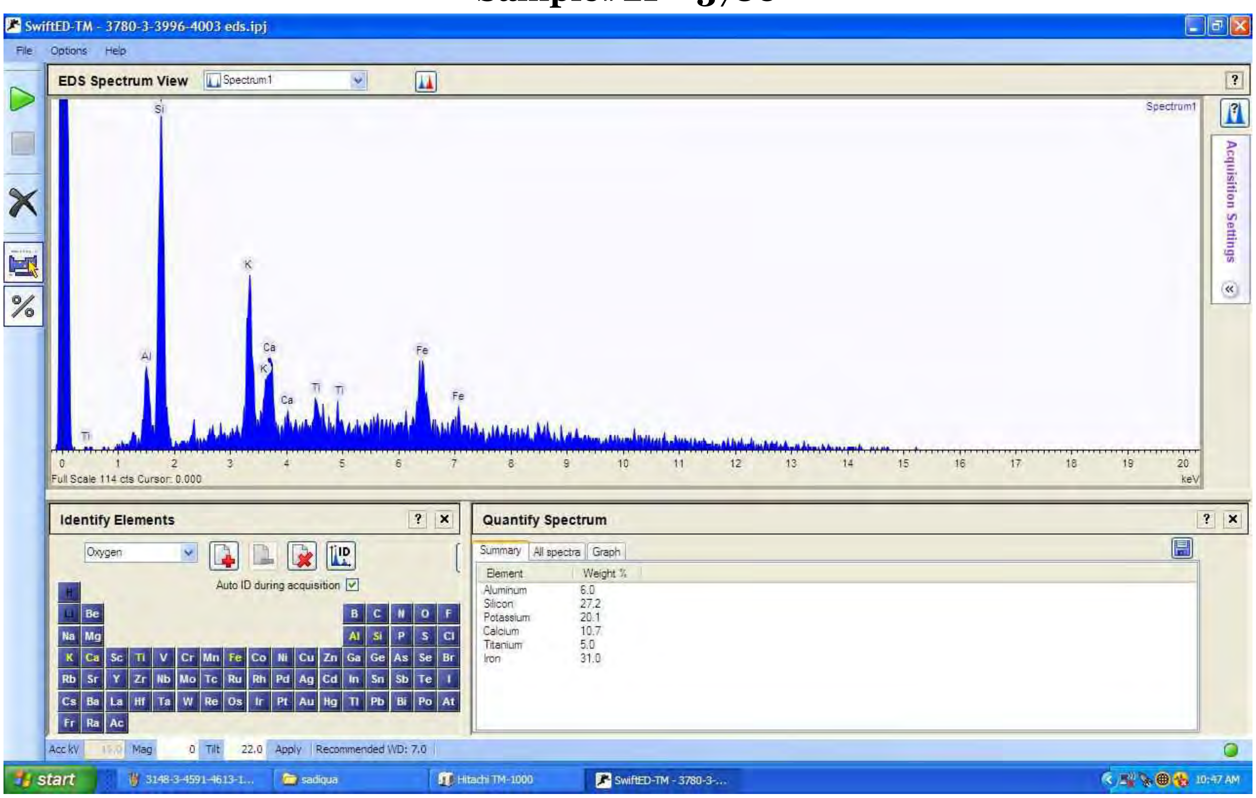
Sample#19 – 3150



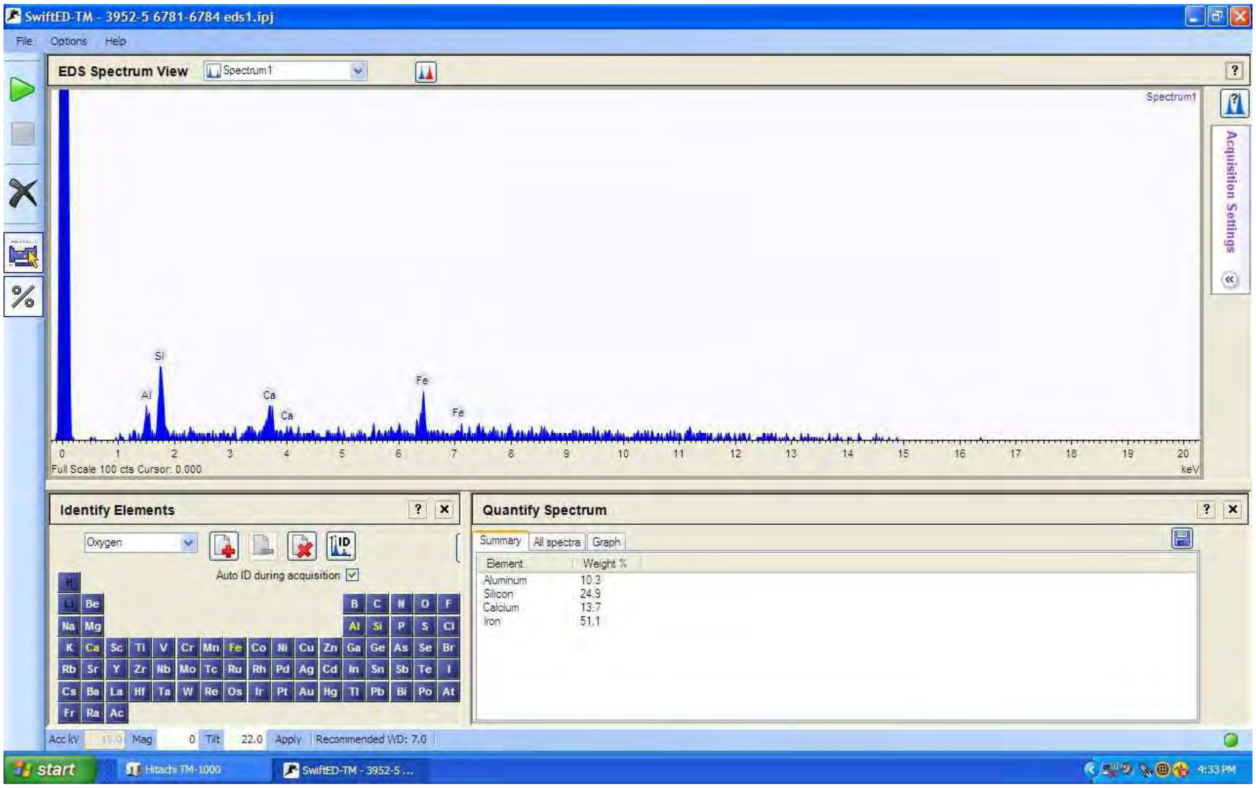
Sample#20 – 3355



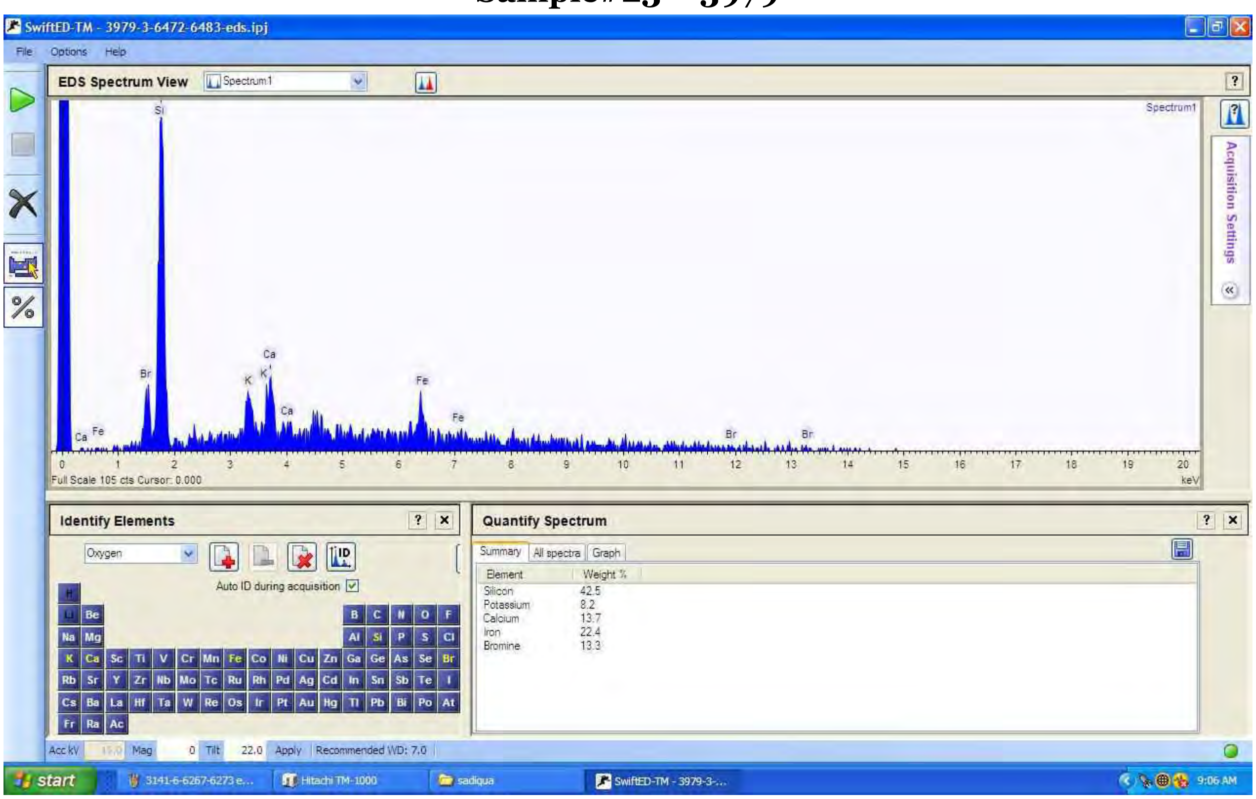
Sample#21 – 3780



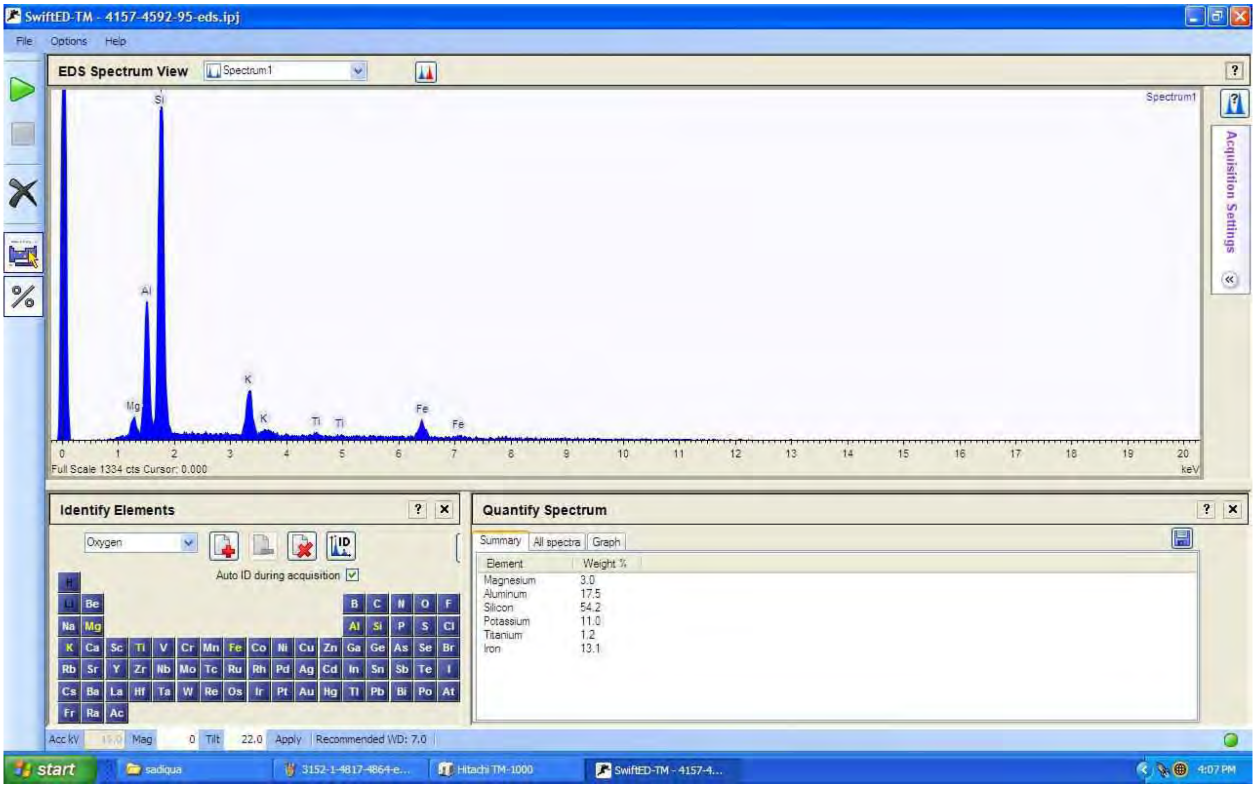
Sample#22 – 3952



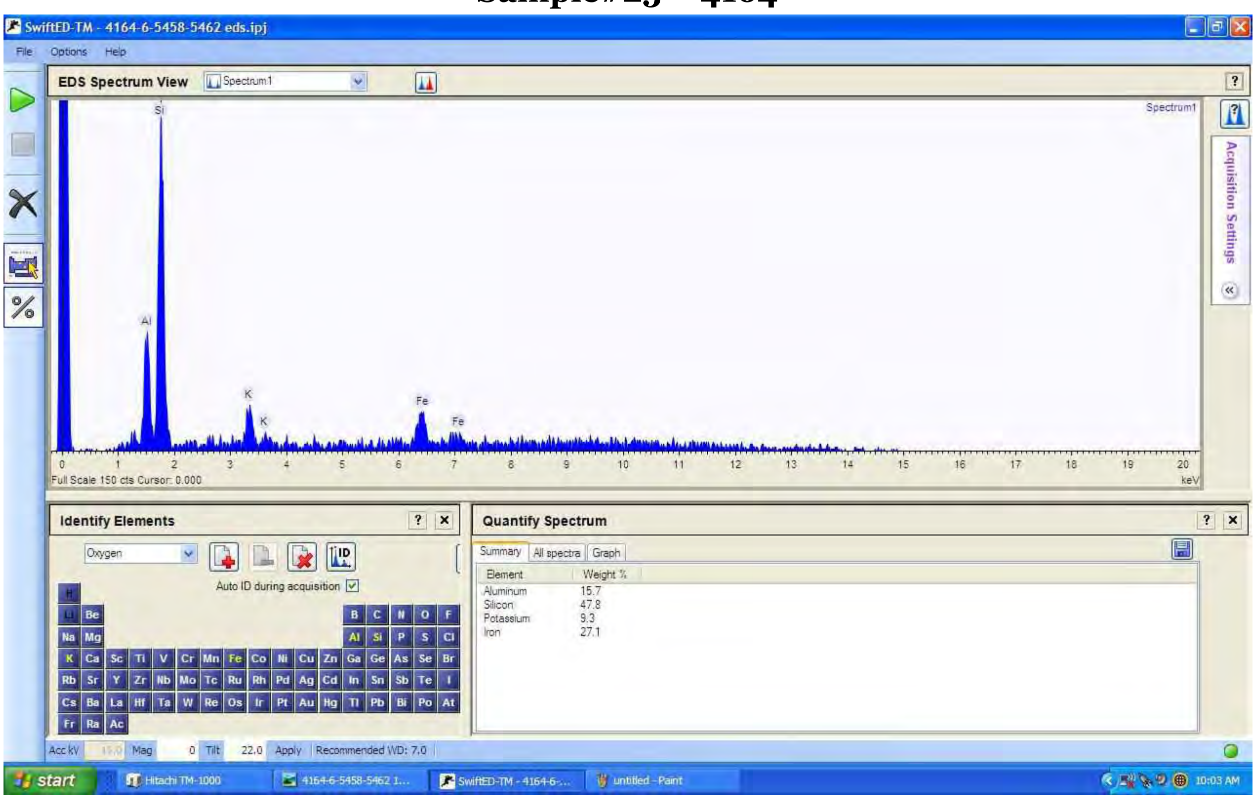
Sample#23 – 3979



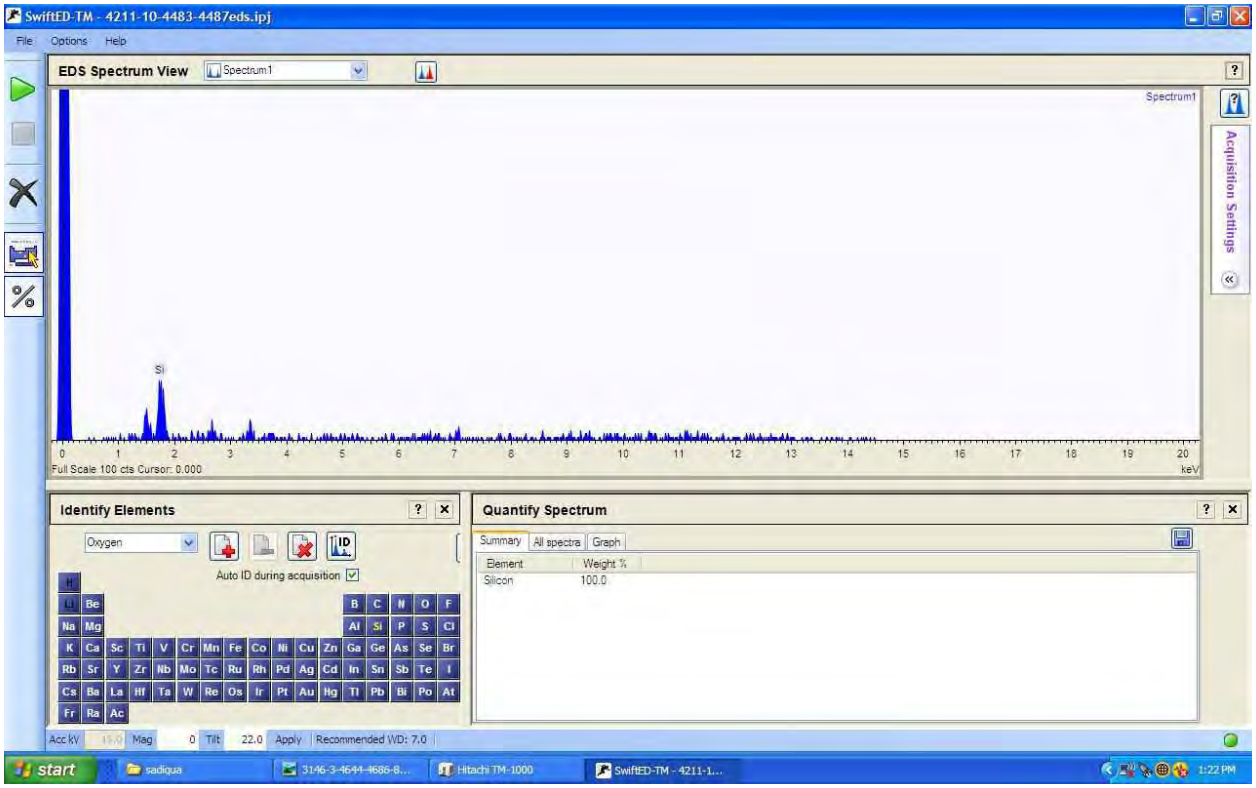
Sample#24 – 4157



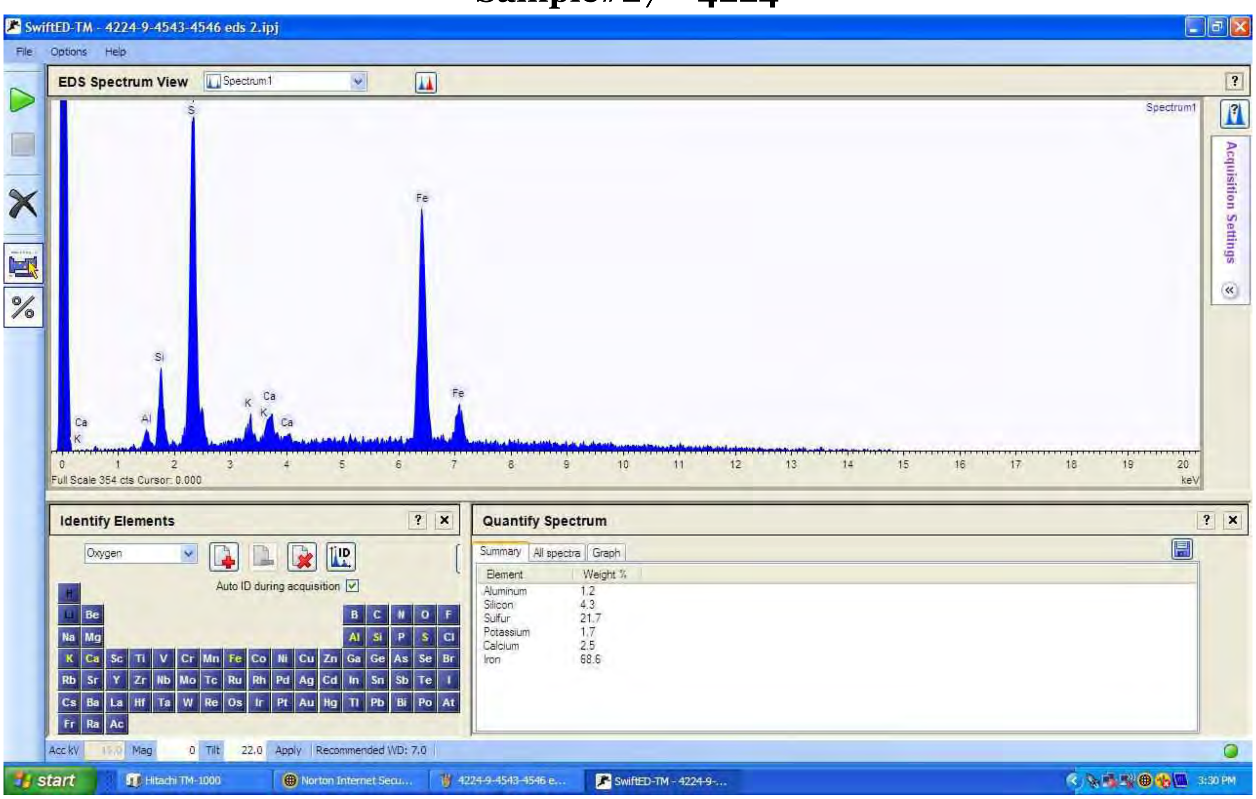
Sample#25 – 4164



Sample#26 – 4211



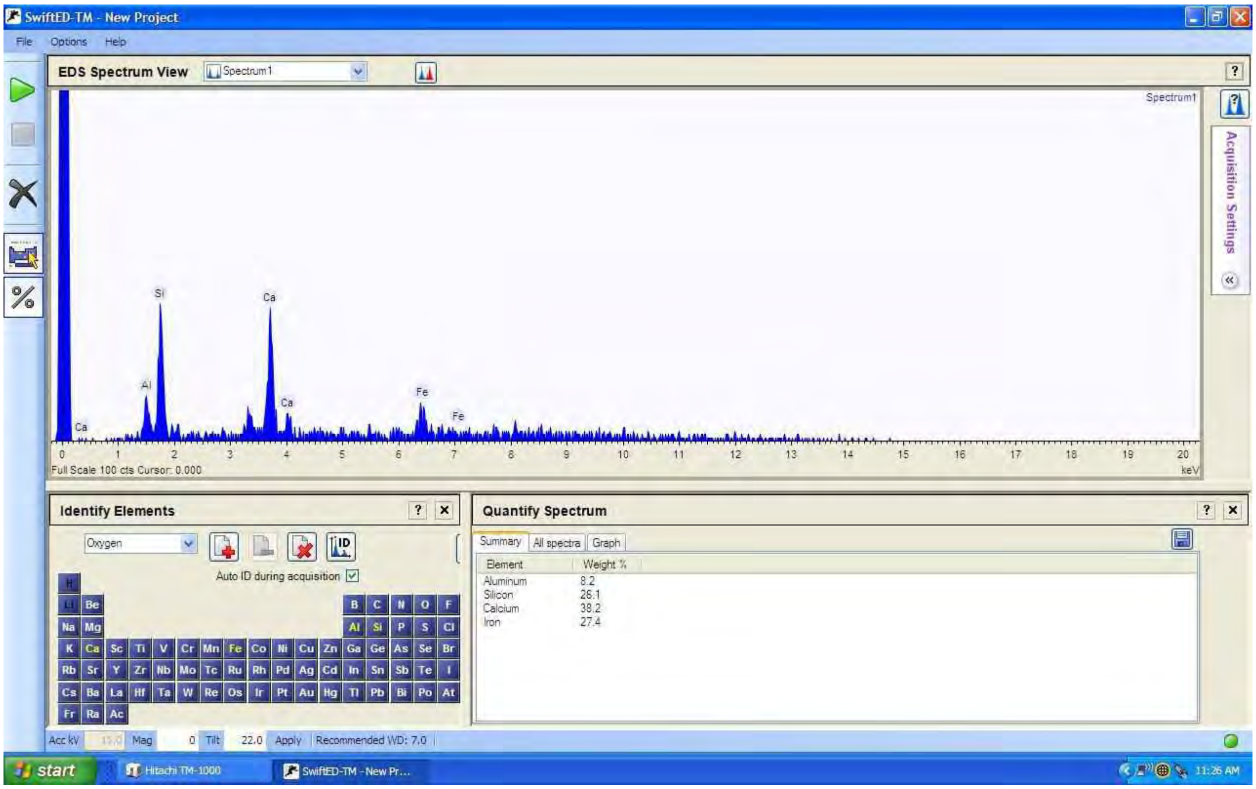
Sample#27 – 4224



Sample#28 – 4226

n/a

Sample#29 – 4458



Sample#30 – 4515