SEMINAR AGENDA

SESSION 1: 9:00 AM TO 10:20 AM

Assessing the Texture of Porous Materials

Jeff Kenvin, Ph.D. Senior Scientist, Micromeritics Instrument Corp.

Porous materials provide a network of macro, meso, and micropores, the resulting texture controls the access to active sites and the transport properties. Traditionally, the textural characterization employed during new material synthesis and in particular porous materials has relied upon adsorption and mercury intrusion to determine parameters such as surface area and porosity. These techniques are often used separately to assess the pore volume and pore size distribution. For example, it is quite common to use sorption isotherms for micro – and meso pore characterization; and complement the analysis by using mercury porosimetry for describing the meso – and macro-pores. A generalized approach to modeling the pore size distribution is presented to determine the complete distribution of macro, meso, and micropores. The resulting pore size distribution has the benefit of modeling both the adsorption (or desorption) isotherm and the mercury intrusion.

A variety of modeling approaches have been employed to characterize the texture of porous materials using adsorption isotherms. These models typically assume geometrically uniform pores and from that a theoretical isotherm may be calculated for a given pore width. Unfortunately, many naturally occurring, or synthetically produced materials do not have a uniform pore system. These geometrically heterogeneous materials also exhibit significant isotherm hysteresis, and this often leads to an erroneous or questionable calculation of the pore size and area distribution. In this work, we use both the adsorption and desorption branches of the isotherm to calculate the size distribution of pore throats and cavities.

>> BREAK: 10:20 AM TO 10:40 AM <<
Complimentary coffee, fruits, and pastries

SESSION 2: 10:40 AM TO 12:00 AM

The Particle Size Paradox

Lily Zu, Ph.D. Product Manager, Micromeritics Instrument Corp.

Particle size is an important piece of information for research and development, quality control, and quality assurance as well as understanding the small physical details in a milling or powder compaction process. These details can contribute to potential desired and undesired products. With recent technological advances, particles are now measured using various analytical techniques and instrumentation. Different analytical techniques seldom provide the same value for particle size. The "paradox" of particle sizing is that all the different values are the correct value. A survey of six different particle size techniques are discussed and compared.

This talk will explore:

- Dynamic image analysis
- Sedimentation
- Static light-scattering (laser diffraction)
- Electric sensing zone
- Air permeability
- Dynamic light scattering (DLS)

>> LUNCH: 12:00 PM TO 1:00 PM <<
Complimentary Lunch Served

SESSION 3: 1:00 PM TO 2:30 PM

Understanding Size by DLS & Zeta Potential Applications

Lily Zu, Product Manager, Micromeritics Instrument Corp.

One of the most common techniques used today is Dynamic Light Scattering (DLS) to determine and monitor the size of nanoparticles, proteins, emulsions, and other sub-micron materials. DLS instruments are typically coupled with the ability to determine zeta potential by electrophoretic light scattering. It is often the case where DLS and zeta potential are used by a supplier of material, a purchaser of material, or a partner company and now your company or lab is required to use this technology without an understanding of "why."

In addition, to "why," many researchers consider size to be an absolute, single unit property and have trouble explaining why size of particles determined by SEM or TEM do not match size by DLS.

This talk will explore:

- How size is determined by DLS and why is it different from size by SEM and TEM
- What zeta potential is and how to use the data
- The relationship between size and zeta potential

>> BREAK: 2:30 PM TO 2:55 PM <<
Complimentary coffee, fruits, and pastries

SESSION 4: 2:55 PM TO 4:00 PM

External Morphology and Elemental Characterization of Catalyst by Desktop SEM-EDS

Jeff Sherman, PhD, Vice President, Micromeritics Instrument Corp.

The characterization of surface topography has become increasingly important in catalyst characterization and through the increasing resolution and simplification of microscopic devices, such as SEM, (scanning electron microscopy), the move from sophisticated and dedicated operations to a benchtop, user friendly device has transformed the industry. The simplification of SEM into an operator-friendly instrument permits any user to perform microstructural analysis and nondestructive testing of catalyst to identify its textural character and to determine the elemental composition.

This talk will explore:

- Under one-minute catalyst surface topography investigation with up to 130,000x magnification
- Understanding data from SEM and how to apply to your research
- Elemental composition examination using SEM-EDS

* THE SEMINAR WILL BE HELD IN THE **COMMONWEALTH BALLROOM 4**

The event will be held on **06/12/18**
Boston Marriott Newton
2345 Commonwealth Avenue,
Newton, Massachusetts, 02466

Seating is limited, register today:
>> CLICK HERE to REGISTER <<

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