

8:00 to 10:00 AM Session

Combustion and Engineered Nanoparticles

Helmut Greim and David Ensor, Chairs

- Introduction
 - David Ensor, RTI International
- Nanoparticles from Combustion Sources
 - Peter McMurry, University of Minnesota
- Nanoparticles from Manufacturing
 - Andrew Maynard, Woodrow Wilson International Center for Scholars
- Deposition and Biological Effects of Nanoparticles
 - Günter Oberdöster, University of Rochester
- Concluding Remarks on Research Needs
 - Helmut Greim, University of Munich
- General Discussion

Combustion and Engineered Nanomaterials

Questions

- What do we know about the physical behaviors and chemical composition of these two different types of nanoparticles?
- How can we measure them?
- Who may be exposed?
- If inhaled what is known about their biological fate and effects?

The Existence of Particles Smaller than 100 nm Has Been Known for Sometime

- Postulated by DaVinci to explain haze
- Discovered by Coulier in 1875
- Study by Aitken in 1880's
- Systematic study and improvement of instrumentation until the present time
 - In particular, the efforts of University of Minnesota and TSI

At This Point, Even the Definitions are not Settled

- Member of United States Technical Advisory Group to ISO Technical Committee 229 "Nanotechnologies" and a member of Working Group 1 "Terminology"
 - What is the size range (1 to 100 nm, approximate range 1 to 100 nm, about 1 to 100 nm, 1 to about 100 nm)?
 - What are nanoscale materials?
 - Only feature size?
 - Novel properties?
 - ASTM E56, defines a transitive nanoparticle with unique properties-important at nanoscale but not in bulk.
 - Novel property a discontinuous function of size?
 - What if the phenomena was discovered in the 19th century?
 - Include molecules?
 - Relationship of ultrafine to nano-?
 - What about items containing nanomaterials (e.g. composites and semiconductors)?
 - Woodrow Wilson Center Website lists self designated consumer products
 - Should the list include rubber tires, automobiles and airplanes?