

2004 Spring Symposium Review

By Tom McDonald

As you have all read in the news, nanotech is hot. This was further evident by the fact that, even on a beautiful sunny Friday, more than 200 individuals attended the day-long conference on ultrafine particle toxicity and nanomaterial safety, held May 7, 2004 in Oakland, California. The meeting was jointly hosted by The Genetic and Environmental Toxicology Association (GETA) of Northern California and the MIT-Stanford-UC Berkeley Nanotechnology Forum. Attendees represented a diverse group including scientists from national research laboratories, academia, state government, and industry, including many from technology companies in the San Francisco Bay Area.

As highlighted in the conference, research and development of nanotechnology is proceeding at an incredible pace. Federal funding for research in nanotechnology is estimated to be approximately 1 billion dollars for fiscal year 2004, with overall state funding likely to rival federal research monies. Unfortunately, a very small proportion of the overall efforts are being focused on the potential environmental and public health impacts that may be associated with this new technology.

The conference specifically explored common toxicological concerns between two areas of research, namely research on ultrafine particles as air pollutants and research on nanoparticles being developed for pharmaceutical and technology applications. Two of the speakers of the conference, Dr. John Froines, Professor and Director of the UCLA Center for Occupational and Environmental Health, Southern California Particle Center and Supersite, and Dr. Kent Pinkerton, Ph.D., Professor and Director of the Center for Health and the Environment, University of California at Davis, discussed current research on ultrafine particles. Ultrafine particles (generally defined as particles of less than 0.1 micron in diameter) and are produced in many processes including fuel combustion and welding. They presented research demonstrating that these tiny particles readily enter cells where they elicit immune responses and cellular effects such as oxidative stress and cell death. The findings suggest that ultrafine particles may be potential risk factors in some air pollution-related diseases.

Dr. Wasiq Bokari, a Partner at Quantum Insight, provided a nice introduction to the field of nanotechnology. This was followed by Dr. David B. Warheit, a Research Fellow at DuPont, who presented his research on the toxicity of carbon nanotubes as well as ultrafine and nanoparticles of titanium dioxide and quartz. (Nanoparticles are at the lower end of the ultrafine-particle spectrum.) The findings indicate that on a per mass basis, inhaled ultrafine particles are more inflammogenic, fibrogenic and tumorigenic than chemically identical larger fine particles in the lungs of rats. However, nanoparticles of quartz and titanium dioxide were equal or less toxic than equivalent ultrafine particles, suggesting that evaluation on a case-by-case basis may be needed. Additionally, Dr. Barbara Karn of the U.S. Environmental Protection Agency discussed federal EPA's efforts and funding towards nanotechnology.

Many of the conference attendees noted that the information presented at the meeting was very interesting and timely. However, it was clear to all that research on nanomaterial safety is in its infancy and additional research is critically needed.

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The conference also featured a student poster session. Congratulations go to two students, Esther Ubick and Sylvia Ahn, for their research conducted in association with the Lawrence Livermore National Laboratory.

As a fitting end to a wonderful conference, GETA held a “Silver Jubilee” event to celebrate 25 years since the founding of the society. The event was held at the Oakland Art Gallery and featured delicious Japanese cuisine. Many past presidents of the society were in attendance; all seemed to have a great time reminiscing. The GETA Fall meeting will be announced soon.



GETA Past Presidents gathered at the 25th anniversary celebration at the Oakland Art Museum. Left to right: Jim Felton (1985), Ann Burrell (1988), Steve Dizio (2001), Melanie Marty (2002 & 2003), Georg Alexeff (1995), Janice Yager (1999), Charles Salocks (1991), Regina Goth-Goldstein (1989), Colette Rudd (1994), Rob Scofield (1997), Karen Steinmetz (2004), Tom McDonald (Pres-elect (2005)