

UI researcher cites need for a 'small view' of the environment

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By thinking small, scientists can solve big environmental problems. That is the message University of Iowa researcher Vicki H. Grassian delivered to colleagues Sunday, Feb. 18, at the 2007 Annual Meeting of the American Association for the Advancement of Science in San Francisco. She urged them to take a molecular view in order to understand problems, find solutions and move the country toward a sustainable society.

As one example, she cited Antarctic ozone thinning -- the "ozone hole" -- as an environmental problem that has already been well understood and alleviated.

"By taking a molecular perspective, scientists saw not only the role of chlorofluorocarbons (CFCs) in the problem, but also the role that ice particles play in the stratosphere by catalyzing reactions leading to ozone destruction," Grassian said. "This understanding has led to a ban on CFCs and a predicted stabilization of the ozone hole size and filling in of the hole over the next few decades."

She added that there needs to be more research focused on understanding molecular processes as they apply to a wide range of important environmental issues. "For example, there should be a design function of molecular assembly and disassembly and other strategies employed to safely degrade and recycle the materials contained in outdated computers so that they don't end up in landfills," she said.

Grassian said that her talk and other talks given during the AAAS session on sustainability were intended as a wake-up call to inspire scientific and technological innovations.

Her talk, titled "A Molecular Understanding of the Natural and Human-Impacted Environment: Laboratory Studies of Mineral Dust Aerosol Chemistry and Climate," was delivered during a AAAS session on the "Contributions from Chemical and Molecular Sciences in Achieving a Sustainable Future."

The AAAS session focused on the contributions that basic research in chemistry and related-scientific fields, including engineering and nanoscience, can make toward sustainability. Chemical innovations -- as they relate to sustainability -- have the potential to significantly impact many areas, including pharmaceuticals, agrochemicals, and air and water quality, she noted. The session featuring Grassian and National Science Foundation Chemistry Division Director Luis Echegoyen focused on several issues including renewable energy and green chemistry, as well as the importance of international collaboration and education in achieving a sustainable future. The session summarized much of a report Grassian co-authored as part of a 2006 NSF workshop she co-chaired with Gerald Meyer of Johns Hopkins University.

Vicki H. Grassian is professor of chemistry in the University of Iowa College of Liberal Arts and Sciences, professor of chemical and biochemical engineering in the UI College of Engineering, and director of the Nanoscience and Nanotechnology Institute at the University of Iowa.

Source: University of Iowa

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