

EMSL Spotlight

Collaborations Key to New Understanding of Atmospheric Chemistry

EMSL experts participate in international research consortium through AirUCI

To answer fundamental questions behind the role of aerosols in climate change, researchers from the Department of Energy's EMSL are collaborating with international aerosol experts through AirUCI, or Atmospheric Integrated Research for Understanding Chemistry at Interfaces. AirUCI focuses on a new type of chemistry that occurs in the atmosphere at the interface between air and water.

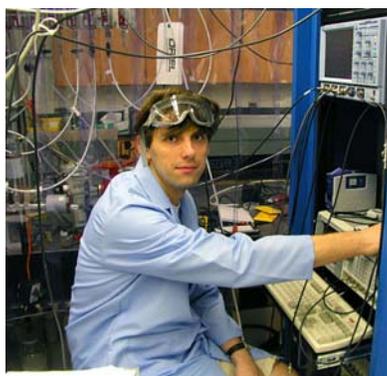
AirUCI is a partnership between faculty at the University of California at Irvine and scientists from EMSL, Pacific Northwest National Laboratory, Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, Academy of Sciences of the Czech Republic, Hebrew University of Jerusalem in Israel, and University of Canterbury, New Zealand.

The Director and principal investigator for AirUCI is one of EMSL's distinguished users, Professor Barbara Finlayson-Pitts of UCI. "Barbara Finlayson-Pitts is one of the most prominent leaders in this area," said Alex Laskin, an EMSL researcher working on AirUCI studies. "She has a strong vision and attracts people from all sides."

At EMSL, scientists are working with AirUCI collaborators to study secondary organic aerosols (SOAs). These aerosols can harm air quality and are the largest uncertainty in climate change models. One example is Barbara's work with M. Lizabeth Alexander of EMSL and Alla Zelenyuk of PNNL to define the role of sodium nitrate in forming SOAs. Recently, the team, using instruments at UCI and EMSL, found that sodium nitrate could impact both the SOA formation and the aerosol's water uptake. This information could provide insights into SOA formation and, in particular, organic nitrates and their atmospheric impact. This work has led to two published papers and the preparation of six journal articles and five presentations.



Through AirUCI, Professor Barbara Finlayson-Pitts has brought together talented researchers from EMSL and around the world to answer key questions behind climate changing aerosols.



Research by Professor Sergey Nizkorodov is focused on analytical, physical, and atmospheric chemistry of aerosols.

As another example, Sergey Nizkorodov at UCI, Alex Laskin at EMSL, and Julia Laskin at PNNL collaborate on a project focused on molecular-level characterization of SOA constituents and mechanisms of their formation. This project resulted in finding a number of previously unrecognized reactions that yield SOAs with more complex composition than predicted. This collaboration resulted in two published papers and several conference presentations. Adam Bateman, a graduate student from UCI, who works on this project, was recently awarded an environmental fellowship from the Global Change Environmental Program of DOE's Office of Biological & Environmental Research. The fellowship covers academic and research expenses for Adam, including a stipend for his extended visits to EMSL.

For more information, contact EMSL Communications Manager Mary Ann Showalter (509-371-6017).