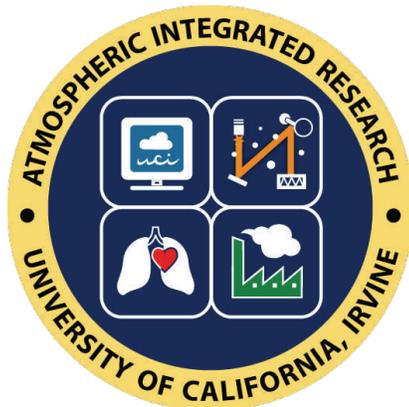


About AirUCI

...smart energy, sustainable environment



Particles in air that contribute to pollution and climate change also help create beautiful sunsets. We work to discover what these particles are, where they come from, how they interact, and how they impact the environment.

Atmospheric
Integrated
Research at the
University of
California at
Irvine

AIRUCI

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AirUCI is an Organized Research Unit (ORU) located at the University of California, Irvine. We're a multidisciplinary environmental research group that is dedicated to understanding and solving critical issues relating to air pollution, water quality, climate change, and green technology — from local to global scales.



To achieve these ambitious goals, our world-renowned team has come together to form an integrated group of researchers, health scientists, and engineers whose focus is to elucidate the fundamental science and impacts of pollution, energy, and climate change and their effects on human health, society, and the planet.

Our award-winning team members conduct collaborative, fundamental research into the critical environmental issues of our time and their associated health effects, utilizing cutting-edge technology and state-of-the-art scientific and engineering approaches.



AirUCI's annual Teacher Workshop, shown here, was cited in 2009 by a committee of the National Academy of Sciences as an exemplary outreach program.

AirUCI researchers work to understand the interactions between man-made emissions (like exhaust gases) and natural ones (such as sea salt) which combine in the atmosphere to create unknown reactions.



AirUCI Outreach

- Teacher Workshop
- Guest Speakers
- Legislators and Media
- Public Events
- Local School Outreach

To complement our fundamental research and unique student and postdoctoral opportunities, AirUCI reaches out to the community to share our research findings as broadly as possible.

Teacher Workshop

We provide ongoing professional training and curricular support in chemistry as well as atmospheric sciences to grades 9-12 school teachers via our highly-acclaimed Summer Teacher Workshop.

This university extension course gives 20 teachers per year an opportunity to study the results of our leading-edge research and to perform actual experiments in our labs with our equipment.

Along with our commitment to be available as an ongoing resource to these teachers, we provide materials that can then be used in their classrooms to educate and inspire the next generation of scientists and citizens.

"We take seriously our responsibility to contribute to the local and international discussion on these vital scientific issues..."

*Prof. Barbara Finlayson-Pitts,
AirUCI Director*

Who We Are

Our team has an established history of effective scientific collaboration. Faculty partners from three UCI schools comprise the AirUCI ORU.

School of Physical Sciences

Dr. Donald R. Blake

Dr. Michael B. Dennin

Dr. Barbara J. Finlayson-Pitts

Dr. Philipp U. Furche

Dr. R. Benny Gerber

Dr. John C. Hemminger

Dr. Saewung Kim

Dr. Craig Murray

Dr. Sergey Nizkorodov

Dr. Michael J. Prather

Dr. Eric S. Saltzman

Dr. Douglas C. Tobias

College of Health Sciences

Dr. Ralph Delfino

Dr. Michael T. Kleinman

Dr. Robert F. Phalen

Dr. Jun Wu

Henry Samueli School of Engineering

Dr. Jacob Brouwer

Dr. William J. Cooper

Dr. Donald Dabdub

Dr. G. Scott Samuelsen

This ORU represents partnerships between faculty at UCI and international researchers from, for example, the Academy of Sciences of the Czech Republic; Hebrew University of Jerusalem in Israel; the Helmholtz-Zentrum/BESSY Institute in Berlin, Germany; the University of Canterbury in Christchurch, New Zealand among others, as well as researchers from Lawrence Berkeley National Laboratory and Pacific Northwest National Laboratory.

What We Do

We collaborate with leading scientists around the world to conduct the fundamental research that will help solve critical issues we face in air pollution, water quality, climate change, and green technology. Some examples of our research include:

- Measurement of trace gases involved in air pollution and climate change at the level of *parts-per-trillion*
- Cross-cutting experiments and theory that provide molecular-level insight into atmospheric processes such as the formation and fates of particles in air
- Translation and application of laboratory studies of impacts of air pollutants to human health and epidemiology
- Advances in water quality and resource strategies and development of new technologies to minimize air pollutant emissions
- Combining theory, experiments, and computer modeling in new ways to provide cutting-edge, transformative insights into previously unrecognized causes of pollution
- State-of-the-art models from local to global scales that provide an integrated view and facilitate development of cost-effective and health-protective energy strategies

We make our findings available to lawmakers and agencies such as the California Air Resources Board, the California State Environmental Protection Agency, and the Air Quality Management District. This helps ensure that policy-makers can base decisions about health and environmental issues on the latest findings in the fields of atmospheric chemistry, alternative energy development, water resources, air quality and its effects on human health, and other vital areas of research.

Why our work matters...

It has become increasingly clear that environmental impacts of human pollutants are among the most pressing problems for this and future generations. Understanding the sources and effects of these pollutants is crucial if we are to avoid the most extreme impacts and find cost-effective solutions.

AirUCI is dedicated to understanding and solving air pollution, energy, water quality, and climate problems locally and globally and to mitigating the effects of pollution on human health. To achieve these ambitious goals, UCI chemist and Distinguished Professor Barbara Finlayson-Pitts and her world-renowned colleagues have joined forces to establish an integrated group of researchers, engineers, and health scientists.

AirUCI also works closely with leading U.S. and international scientists, thus enhancing the impact of our research findings and greatly multiplying their benefits for the public. Our award-winning team conducts the fundamental research needed to address the urgent challenges we face in air and water quality, human health, climate change, and green technology.

Impact

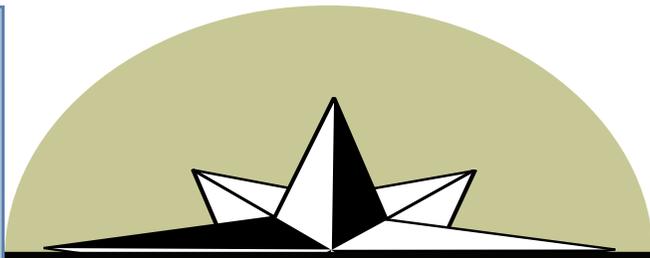
The research breakthroughs achieved by AirUCI scientists can be used to model test scenarios for:

- Air pollutant controls that would ease effects on health and the environment
- Advances in clean energy sources
- Water quality and availability
- Climate change mitigations and solutions

AirUCI's work promises to help create innovative technologies that will minimize the effects of pollution and uncover new approaches to solving these vital issues.



AirUCI's Prof. Sergey Nizkorodov in his lab where his ground-breaking research into air purifier emissions was conducted.



Legislative Action

Based on scientific evidence provided by Sergey Nizkorodov of AirUCI and other researchers, it was shown that many household air purifiers generate ozone at unsafe levels in homes.

California's state legislature passed a bill (AB2276) in August, 2006 that requires the California Air Resources Board to develop regulations for these air purifier ozone emissions. This bill was signed by Governor Schwarzenegger in November, 2006 allowing CARB to prohibit devices that are out of compliance.

To learn more about CARB, visit their web site at www.arb.ca.gov/homepage.htm

You can read details of the AB2276 bill on the California State Assembly web site at www.assembly.ca.gov/acs/acsframeset2text.htm

AirUCI and California Regulatory Agencies

We work with several state and regional agencies, including such high-profile organizations as:

- California Air Resources Board
- California State EPA
- California Energy Commission
- Orange County Water Districts

Our research areas include: medical and epidemiological effects of air pollution, earth systems affected by gases released into the atmosphere, effects of pollution on the oceans and urban water resources, sustainable fuel and energy issues, the role of clouds in photochemistry, ice core sampling for atmospheric composition and content and many other areas of scientific interest.

Educational Opportunities

AirUCI provides outstanding opportunities for undergraduates, graduate students, postdoctoral researchers, and UCI faculty to contribute to our research projects... and they do!

This is particularly beneficial for students who wish to further their studies in the areas of smart energy, health, and a sustainable environment.

Our research employs innovative laboratory techniques using the latest equipment—as well as the occasional “classic” apparatus—to achieve the best and most reliable results.

Our computer modeling facility is second to none and allows us to accurately model our theoretical and lab results. Members of the AirUCI team have access to these tools in performing research tasks.

In addition to the vital laboratory work they perform, our team members from undergrads on up regularly give presentations at scientific meetings held by groups such as the American Chemical Society, the American Geophysical Union, the American Association for Aerosol Research Specialty Health Conference, and many others.

All members of our AirUCI team contribute to the many published papers we submit to peer-reviewed journals, including widely-read interdisciplinary journals such as *Science* and *Nature*.

These published papers are of great benefit for our postdoctoral researchers as they move into new and exciting careers. And many of our undergraduates when applying for graduate school can list publications they have already co-authored, even prior to achieving a Bachelor's degree!

AirUCI offers exceptional educational opportunities for students at every level—including summer high school internships—and we take pride in the knowledge that our institute promotes and inspires higher-level science education across a broad spectrum, from high school and beyond.

Become a Supporter of AirUCI

Our vision for the future is to advance AirUCI as a world-class environmental research collaboration that addresses key health and environmental problems.

AirUCI has a proven track record in these critical areas and we have already contributed enormously to research in these fields. Our reputation as a leader in environmental research enhances the scientific prestige of the UC Irvine community, Orange County, our state, and our entire nation.

In order to achieve these objectives, we are seeking support in our efforts to grow so that we can provide new, integrated, and potentially transformative approaches to understanding environmental problems, from their sources to the solutions.

You can assist with an endowment, with state-of-the-art instrumentation to be housed in an advanced facility, and with other support that will directly work to solve the environmental and health crises we face. For details, contact Melissa Sweet at 949-824-2628 or msweet@uci.edu.

AirUCI gives equal weight to the three main aspects of our mission:

- *Leading-edge research conducted in our labs and published for the scientific community*
- *Educational opportunities for undergrads, grad students, postdoctoral scholars, and community college faculty to be part of our research projects*
- *Timely and appropriate outreach to the public, including lawmakers*

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