FACULTY RESEARCH TALKS

LISTEN. LEARN. COLLABORATE.

Zoom talk | Friday, August 12, 2022 | Noon to 1 p.m.

PRESENTER 1:
DENISIA M. POPOLAN-VAIDA
Assistant Professor,
Chemistry

Tracking the Evolution of Highly Reactive Elusive Intermediates in Atmospheric and Combustion Systems

In the reactivity of complex atmospheric and combustion chemical systems, the crucial reaction steps are often determined by highly unstable intermediate species. Identification and quantification of these reactive species within complex reactive mixtures is essential for the development of a fundamental, chemically accurate description of the reaction mechanisms. In this talk, Dr. Popolan-Vaida will present results in which high-resolution mass spectrometry in conjunction with synchrotron-based techniques are used to detect, identify and follow the evolution of important reactive elusive intermediate species.

Dr. Popolan-Vaida's research areas include atmospheric and combustion chemistry. Prior to joining UCF, she earned a Ph.D. in physical chemistry from the University of Ulm, Germany and was a postdoctoral research fellow at the University of California, Berkeley and Lawrence Berkeley National Laboratory. Dr. Popolan-Vaida is the co-author of more than 30 peer-reviewed scientific publications. She has been awarded several honors, including the Feodor Lynen Research Fellowship, DAAD Scholarship, Erasmus Mundus Scholarship and European Mobility Scheme for Physics Students Scholarship. In June 2022, she was awarded the DOE Early Career Research Program Award.

PRESENTER 2:
LOTZI BOLONI
Professor,
Computer Science

Doing More With Less Data

The most recent successes of deep learning such as language models had been obtained with gigantic datasets encompassing the whole internet. While the theoretical limits of these systems have not been reached, we are running against limits of available data. This talk will survey some of the techniques developed by Dr. Boloni's research group that reduce the amount of data needed to accomplish computer vision or robotics tasks.

Dr. Boloni's research areas focus on the practical applications of artificial intelligence and machine learning. He takes the "agent stance" of artificial intelligence, focusing on decision problems that an agent sensing and acting in the world need to take. This covers applications ranging from robot manipulation to sensor networks, and from underwater vehicles to human-AI social interaction. He received a Ph.D. in computer science from Purdue University and a B.Sc. in computer engineering from the Technical University of Cluj Napoca, Romania. His group's papers were published at NeurIPS, AAAI, CVPR, ICLR, ICRA and others.

PRESENTER 3:
PARAG BANERJEE
Associate Professor,
Materials Science and Engineering,
REACT Cluster

Coating Powders with Atomically Thin Films as Building Blocks for Advanced Multifunctional Materials: A Unique Capability at UCF

In this presentation, Dr. Banerjee will introduce the field of atomic layer deposition (ALD), a method to deposit thin films with monolayer precision, specifically related to coating of powders. At UCF, his lab is developing unique hardware capabilities to coat powders via ALD. He will present case studies that show the use of ALD films that are few nanometers thick to enhance the powder catalyst activity by deposition of precious metal nanoparticles, impart stability of lasing particles in optical composites, and control the release of drugs.

Dr. Banerjee joined UCF in 2018. His research focuses on the fundamental and applied aspects of atomic layer deposition. He has more than 60 peer-reviewed publications and holds nine U.S. and international patents. His research work is supported by the NSF, AFOSR, Semiconductor Research Corporation and private entities. Prior to his appointment at UCF, Dr. Banerjee was an assistant professor at Washington University. He was also a research and development process engineer at Micron Technology Inc., studying high-k dielectrics and their reliability in DRAM transistors and capacitors.