



the fission product

THE RHODE ISLAND SECTION OF THE AMERICAN CHEMICAL SOCIETY
"THE FIRST SECTION"

Vol 74 No. 2

April 2024

2024 Poster Session and Awards Night Monday, April 22, 2024

**Roger Williams University
Bristol, Rhode Island**

Undergraduate and graduates are invited to bring posters of their research to the Rhode Island Section's 2023 Poster session. The audience will be friendly, informal, and enthusiastic. Posters should be no more than 4 ft. wide and 3 ft. high. Please bring your poster mounted on a poster board if possible – poster boards are extremely limited. Easels will be provided. To present a poster or for more details contact Professor Clifford Murphy, cbmurphy@rwu.edu.

*The Poster Session and dinner will be held in the Roger Williams University Law School
Please look for the signs once you enter the building.*

5:30-6:00 Set up Poster

6:00-8:00 Poster Session, Reception, Dinner, and Awards

Reservations should be made with Professor Murphy (cbmurphy@rwu.edu) by noon on Thursday April 18th. The price of the dinner is \$25 (and \$10 for students).

RIACS May Meeting Monday, May 13, at URI

**The Richard E. Beaupre Center for Chemical and Forensic Sciences
University of Rhode Island**

**Professor Daniel Thomas
University of Rhode Island**

Leveraging the Vacuum “Clean Room” to Probe Chemical Structure and Reactivity by Ion Infrared Spectroscopy

Dinner – Awards – 50 Year Member Recognition

Abstract: Chemical reactions and structural dynamics in solution are governed by a complex interplay of both inter- and intramolecular interactions that can be challenging to disentangle. The transfer of molecules from solution to vacuum provides a complementary experimental approach that can pinpoint the properties of target systems. Our research group uses custom instrumentation that combines the gentle ionization and selectivity afforded by electrospray ionization mass spectrometry (ESI-MS) with the structural insight available from infrared action spectroscopy to interrogate species that are dynamic, transient, or otherwise difficult to isolate in solution. This presentation will provide an overview of the methodology and selected applications. In the analysis of biomolecules, we can provide a detailed description of the intramolecular interactions that give rise to the observed three-dimensional structure. However, the removal of solvent molecules can also dramatically alter the observed structure, and we are developing methods based on noncovalent complexation of charge recognition reagents to provide a "bridge" between solution and vacuum. We are also using this methodology to study the intermolecular interactions in deep eutectic solvents, which typically comprise a salt such as choline chloride and a hydrogen bond donor such as urea. These solvents are non-toxic, biocompatible, and have unique solvation properties. We are combining condensed-phase analysis approaches with infrared spectroscopy of isolated ionic clusters to connect global parameters to local interactions.

**For dinner reservations contact Kathy Siok
(Kathys5@cox.net) by Monday, April 29.**

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