Organic/Analytical Seminar

Presents:

Maral Mousavi, Ph.D.
Postdoctoral Fellow
Harvard University and Wyss Institute for Biologically Inspired Engineering

Receptor-Doped Supramolecular Ion Sensors: From Point-of-Care Diagnostics to New Tools for Studying Neurotransmission

Abstract: Sensing of ions is an integral part in bioanalysis and in the management of healthcare, water, the environment, and a range of industrial activities such as agriculture and food processing. Traditionally, ion sensing was performed by sending samples to central test laboratories. Once the analysis is performed by the technician, the results are reported back to the customer or the healthcare provider. This process is time consuming and impedes the rapid decision making, and thus it is problematic in medical emergencies or where access to test laboratories is limited. Most commercially available ion sensors are large, delicate (made with glass enclosures), expensive, require large sample volumes, and must be operated by skilled users; thus, they are unsuitable for detection at the point of use, and for resource- and cost-limited applications.

This talk will discuss research strategies for shifting the paradigm of ion sensing and accomplishing a sustainable analysis that includes: (i) Developing new classes of ion sensors that are robust, yet affordable and accessible to all, and suitable for decentralized analysis. (ii) Improving the selectivity and sensitivity of receptor-doped supramolecular ion sensors to reach new capabilities for these sensors. (iii) Developing new receptors and new sensor designs for detection of analytically-challenging analytes such as the neurotransmitter acetylcholine, and for developing new methods of assaying enzymes.

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