S E M I N A R
Wednesday 23/5/18 11:00 am
Building Nano 206, room C50

SPEAKER:

Prof. Mindy Levine
The University of Rhode Island

TOPIC:

Supramolecular Complexation in Cyclodextrin Cavities: From Fundamental Intermolecular Interactions to Complex Sensor Performance

The ability to leverage cyclodextrin complexation for a variety of sensing applications requires a detailed understanding of the supramolecular interactions that underlie host-guest binding, how such interactions vary with the structures of each components, and under what conditions larger self-assembled architectures, including ternary complex formation and self-assembled cyclodextrin dimers and trimers may form. Research in our group has focused simultaneously on understanding key interactions in cyclodextrin complexation, and on using those interactions for a variety of high impact sensing applications. We have successfully demonstrated such sensing in the laboratory, as well as in complex environments including human plasma, urine, and breast milk, as well as in extracts collected directly from sites of oil and fuel spills and in contaminated marine environments. High selectivity of these systems is demonstrated through array-based statistical analysis, high sensitivity is demonstrated through low limits of detection, and high applicability is demonstrated through use in complex environments and through the detection of broad varieties of analytes and analyte mixtures. Preliminary efforts towards generating a practical solid-state sensor for such systems and towards adapting the system for colorimetric detection will also be discussed.