Title:

**Development of Self Assembled Monolayer of *N*-Heterocyclic Carbenes as Electrochemical Biosensors**

Abstract:

In material chemistry, *N*-heterocyclic carbenes (NHCs) are growing as one of the most extensively researched classes of ligands on surfaces and nanomaterials. NHCs on surfaces, as self-assembled monolayers (SAMs), demonstrate improved stability compared to the traditional thiol-gold chemistry. This seminar will describe the development of NHCs with appropriate terminal functional groups on the backbone, to enable pathogen sensing on gold surfaces. These functionalized NHCs chemically bind Toll-like receptors (TLRs), a biorecognition element that detects various classes of biological pathogens through pattern recognition. TLRs are critical components of the early warning stage of the innate human immune system. The combination of NHCs and TLRs as biosensors are able to detect biological pathogens based on changes in resistance, illustrating their potential to serve as broad-spectrum electrochemical biosensors.