OCCI Lecture

Title: Stimuli Responsive Polymer-Based Sensors, Muscles, and Drug Delivery Platforms

Lecturer: Prof. Michael J. Serpe, University of Alberta

Date: February 3, 2015
Time: 1:00 pm
Place: TB 208

The group's research is focused on the development of novel polymer-based materials for solving environmental and health-related problems. To solve these problems, the group primarily employs poly (*N*-isopropylacrylamide) (pNIPAm)-based spherical particles as the active component in our technologies. PNIPAm-based particles (nano or microgels, depending on their diameter) are extremely porous, and are fully water soluble and swellable. Additionally, pNIPAm-based nano/microgels are responsive to temperature, shrinking in diameter as the temperature is increased to >32 °C and reswelling when they are cooled to < 32 °C. Our group has exploited these properties for numerous applications. Today's talk will highlight the group's work on the development of these devices for sensing and biosensing, as muscles, and for controlled/triggered drug delivery.

Bio: Michael J. Serpe received his B.S. at the University of Central Florida in 2000. He received his Ph.D. from the Georgia Institute of Technology in 2004, working in the group of Professor Andrew Lyon. There he developed novel polymeric materials for applications in drug delivery, microoptic arrays, and photonics. After conducting research in industry, he joined the group of Professor Stephen Craig at Duke University in 2006. There he used single-molecule force spectroscopy to investigate reversible polymer bridging between surfaces. He joined the Department of Chemistry at the University of Alberta as an Assistant Professor in 2009 and was awarded early tenure and promoted to Associate Professor in 2013. The Serpe Group is studying various aspects of colloid, polymer and surface science, with special interests in developing novel photonic materials from responsive polymers, water remediation, controlled drug delivery and polymer mediated surface-surface interactions. Prof. Serpe has been named a Grand Challenges Canada Rising Star in Global Health, received the 2013 Petro Canada Young Innovator Award, and has been named one of Edmonton's Top 40 Under 40 by Avenue Magazine for 2013-2014.