Department of Chemistry Seminar Series Fall 2022

Friday, November 14, 2022, 3:30 PM - **HS1 O112 (Health Sciences)**
Host: Quo (Treen) Huo

Nanotechnology in its research applications to educational endeavors in South Africa

Prof. Elaine J. Park
Department Chair and Associate Professor of Chemistry
Rollins College, Winter Park, FL

Nanotechnology, from polymeric to metal composition, hold tremendous potential in various applications from improved cancer treatments and purifying contaminated drinking water. The development of customized polymeric nanoparticles promises more effective forms of cancer therapy based on the target-specific, triggered release of therapeutic agents at the tumor site. Previous studies have shown the potential of multidrug-conjugated polymeric nanoparticles synthesized via the brush-first ring-opening metathesis polymerization (ROMP) method in treating tumor cells while reducing the off-target toxicity compared to traditional chemotherapy. We present a method that makes structural changes to these Brush-Arm Star Polymer (BASP) nanoparticles to become more “gel-like”. Characterized via gel permeation chromatography (GPC) and dynamic light scattering (DLS), the size differentials upon acid degradation of these BASP nanogels reveal dynamics of steric hindrance in the ROMP synthesis. From my recent return from sabbatical in completing a Fulbright project in Durban, South Africa, I will share about my recent collaboration with faculty at University of KwaZulu-Natal, innovating their chemistry curriculum. Through guest lectures and teaching workshops, I promoted active learning and sought to integrate more real-world applications and nanotechnology into their curriculum but faced some resource challenges. This seminar talk is geared toward Ph.D. students interested in nanotechnology and its pedagogical applications toward undergraduate education.