



Seminar

Date : November 17 (Fri.) 2017, 11:00 ~

Venue : Research Complex 1 (81615B)

Speaker : Prof. Jung Kwon Oh

(Associate Professor and Canada Research Chair Tier II, Concordia University,
Department of Chemistry and Biochemistry, Montreal, QC, Canada)

Host : Prof. Doo Sung Lee (School of Chemical Engineering, SKKU)

Title : Stimuli-responsive degradable block copolymer nanoassemblies for cancer therapy

Abstract

Nanoscale platforms have been developed to improve the delivery and biodistribution of small drug therapeutics to targeted tumors in chemotherapy. In particular, self-assembled micellar aggregates based on amphiphilic block copolymers have been extensively explored as promising nanocarriers for tumor-targeting drug delivery applications. However, a critical challenge to be addressed is controlled release of drugs in tumor tissues and cancer cells after nanocarriers escape from blood circulation. Stimuli-responsive degradation (SRD) is a promising platform in that SRD-exhibiting nanocarriers are stable under physiological conditions during blood circulation; however, they can be dissociated in a controlled fashion, thus leading to enhanced release of encapsulated drugs as cellular components provide the appropriate stimuli to trigger biodegradation in microenvironments of tumors and inside cancer cells. Our group has put significant efforts to develop various strategies to synthesize novel reduction-responsive block copolymer-based nanocarriers with varying densities of disulfide linkages positioned at single and dual locations. Recently, we have focused on an effective SRD strategy that centers on the development of new intracellular nanocarriers having multiple stimuli-responsive cleavable linkages at multiple locations (denoted as multi-location multiple SRD (ML-MSRD) strategy). This strategy dramatically increases versatility since responses to each stimulus can independently and precisely regulate release of encapsulated biomolecules at several locations.