



Seminar

Date : July 9 (Mon.) 2018, 10:00 ~

Venue : Research Complex 1 (81615B)

- **Speaker : Prof. Young Jik Kwon**

(Professor Department of Pharmaceutical Sciences,
University of California Irvine)

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

**Title : Mined from Nature and Engineered for Therapy:
Semi-synthetic Virus, Stimuli-transforming Polymer,
and Chemically-blebbed Extracellular Vesicles**

Abstract

Emerging therapies require a capability of effectively, specifically, and precisely manipulating the highly complex processes underlying in disease development and progress. Emerging therapies for highly challenging diseases require a multi-dimensional therapeutic capability in overcoming the limitations of narrowly-defined single-modal therapies. Naturally-occurring materials are often equipped with the highly-desired properties and further custom-tuning them develops novel therapies. In this lecture, biopolymer, and cellular vesicles are engineered for synergistic gene therapy, treatment of drug-resistant infections, and personalized and versatile therapy. Adeno-associated virus (AAV) was shelled with a siRNA-encapsulating, acid-degradable polymeric layer for enhanced eradication of chronic myeloid leukemia (CML) *in vitro* and *in vivo*. Chitosan, known to be antimicrobial but poorly soluble in water, was ketalized for improved aqueous solubility and stimuli-responsive delivery of therapeutics. Chemically-induced extracellular vesicles (EVs) were prepared by a highly scalable production and loaded with a chemotherapeutics for efficient and biocompatible cancer therapy. This talk will introduce the current challenges in medicine and how interdisciplinary engineering would help find a better tool to cure diseases.