

# Seminar



Friday, November 3, 2017

11:00 AM – 206 Furnas Hall

**Hiroshi Umakoshi**

Professor and Head of Department  
Chemical Engineering—Osaka University

## **Can Model Biomembranes Achieve Chiral Recognition and Asymmetric Conversion of Small Molecules?**

A "Biomembrane" is a highly-organized self-assembly of biomolecules (i.e., lipids, proteins, etc.) and a key interface for the survival of a cell. The "Membranome" can be defined as the Properties of vesicles (or liposomes), which arise from the bilayer molecular assembly of amphiphiles, focusing on "emergent properties" which are not present in the individual components, and is gradually recognized as an important research methodology to investigate the potential functions of vesicles (or liposomes) and to apply them for the design of bio-inspired process. A "Self-Organizing System", such as a liposome or vesicle, possesses several benefits in the recognition of (bio)molecules, where it can recognize them, at its "designed" surface, with "multiple-molecular interactions" that consist of (i) electrostatic interactions, (ii) hydrophobic interactions, and (iii) hydrogen bonds. In this presentation, I would like to introduce (1) how to design the surface of the Self-Organizing System and (2) how to utilize the designed surface (i.e., Chiral Recognition and Chiral Conversion of small molecules (i.e., amino acids and drug molecules)).

Refreshments at 10:45



University at Buffalo

Department of Chemical  
and Biological Engineering

School of Engineering and Applied Sciences