



Program in Polymers  
and Soft Matter

SEMINAR

**“Engineering Supramolecular Biomaterials Made of  
Recombinant Fusion Proteins for Synthetic Cell Applications”**

**Wednesday March 2<sup>nd</sup>, 2022. • 3:30 PM**

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**Abstract:** The formation of unique self-assembled structures made of polymeric biomolecules is one of the essential characteristics of living organisms, which enables complex functions such as growth, maintenance, and responsiveness. My research group aims to develop bio-inspired materials consisting of recombinant proteins and/or polymers with highly organized structures and controlled properties. To achieve this goal, our lab leverages recombinant protein technology to rationally design biomacromolecules that serve as building blocks for supramolecular biomaterials. We currently focus on engineering Globular Protein Vesicles (GPVs), self-assembled from recombinant fusion proteins, to achieve a synthetic protocell model capable of sensing, stimuli-responsiveness, and furthermore, self-growth and division. In this talk, I will share our recent efforts to apply traditional polymer sciences for tuning size, membrane-organized structure, and permeability of the GPVs and engineer their biological functions to exhibit specific bioactivity from functionally folded, globular proteins incorporated.

**Yeongseon Jang** is an assistant professor of Chemical Engineering at the University of Florida. She received a B.S. degree and a Ph.D. degree in Chemical & Biological Engineering at Seoul National University in 2008 and 2013, respectively. She was a postdoctoral researcher in the Chemical Engineering Department at the University of Pennsylvania, co-advised by Prof. Daeyeon Lee and Prof. Daniel Hammer, then moved to Georgia Institute of Technology for more postdoc training under the supervision of Prof. Julie Champion in 2015-2018. Currently, her research is focused on the design and engineering of self-assembled structures from recombinant fusion proteins and polymers for biomedical applications including synthetic cell development and antibacterial surface coatings. She is passionate about increasing the participation and retention of underrepresented groups in STEM. Jang received an NSF Early-Career Development Program (CAREER) Award and KICHe President Young Investigator Award in 2021.