

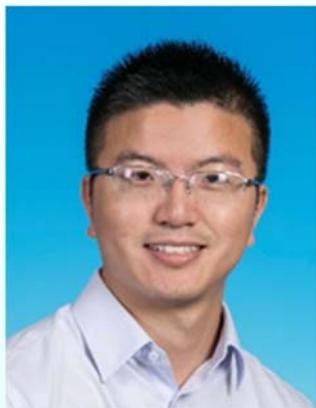


The Chinese University of Hong Kong
Department of Biomedical Engineering



Time: 1:30 pm, 5 Dec 2017 (Tue)

Venue: Rm. 215, William M.W. Mong Engineering Building, CUHK



Synthetic Biology Approaches toward Diverse Protein-Based Materials

Prof. Fei SUN

Assistant Professor

Department of Chemical and Biological Engineering
The Hong Kong University of Science and Technology

Abstract

The synthesis of molecular systems with precise structural and functional control constitutes a fundamental challenge for molecular engineering. Development of the ability to construct complex biomolecular architectures provides a solution to this challenge.

My team is interested in a new category of protein chemistry, namely, genetically encoded click chemistry (GECC), which can covalently stitch together protein molecules with high specificity and efficiency under mild physiological conditions. We have demonstrated that a prototypical GECC, SpyTag-SpyCatcher chemistry, enabled cellular synthesis of macromolecules while exerting precise control over the fundamental properties of these molecules including length, sequence, stereochemistry and topology. The same chemistry further led to the creation of bioactive and photo-responsive protein materials for three dimensional stem cell culturing and controlled stem cell/protein release.

Given its potential in molecular engineering and materials science, we will continue to enrich and diversify the GECC toolbox through directed evolution and other protein engineering methods. By bridging the two fields, synthetic biology and materials science, GECC provides us with enormous opportunities to create new protein materials for a variety of applications ranging from regenerative medicine to green mining.

Biography

Dr. Fei Sun is currently an Assistant Professor at the Department of Chemical and Biological Engineering, the Hong Kong University of Science and Technology. He worked as a postdoctoral researcher at the Department of Chemical Engineering, Caltech from 2012 to 2014. He obtained Ph.D. degree at the University of Chicago in 2012 and B.S. degree at Peking University in 2007 with the work recognized by several awards including Chicago Biomedical Consortium Scholar Award and The Everett E. Gilbert Memorial Prize in Organic Chemistry.

*****ALL ARE WELCOME*****

For enquiries, please contact Ms. Christine Ko, Department of Biomedical Engineering at 3943 8278.