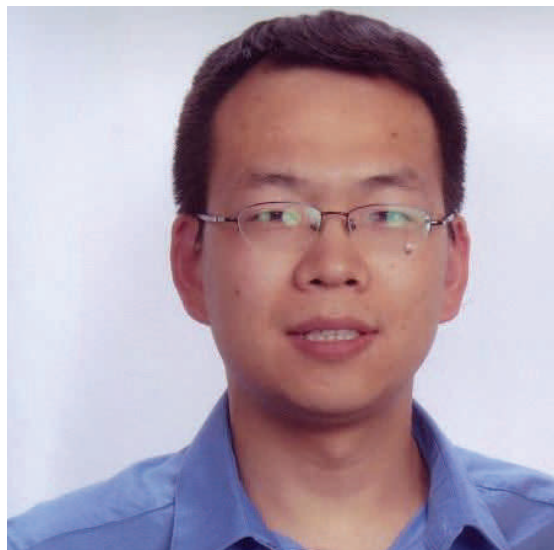


***UMBC Department of Chemical, Biochemical and Environmental Engineering
Seminar Series presents:***



Peng Xu, Ph.D.

Massachusetts Institute of Technology

Controlling and optimizing cell metabolism for efficient production of pharmaceuticals, fuels and green chemicals

Monday, February 22, 2016

10:00am—11:00am

University Center, Room 310

ABSTRACT

Metabolic engineering is the targeted modification of cell metabolism for production of useful compounds. Most of the previous metabolic engineering effort heavily relies on engineering novel biocatalytic route and directing carbon flow from primary metabolic pathways to the target compound. Recent advances in synthetic biology have allowed us to go beyond the mass flow and precisely control the information flow to design tailor-made cell factories with improved titer, yield and productivity. In this talk, I will present synthetic biology strategies to reprogram cell metabolism in terms of the amount, the timing and location of the protein catalyst as well as how we can efficiently redistribute cellular resources to the desired pathway. The presented techniques will support the construction of complex metabolic pathways with predefined regulatory architecture, teach us how to apply combinatorial statistical engineering to accelerate strain engineering endeavor, engineer dynamic sensor-regulator systems to achieve just-in-time gene expression, as well as control the subcellular location of enzyme reaction to improve the catalytic efficiency and specificity. All together, the developed strategies represent promising biological solutions to upgrade low value carbons to high value commodity chemicals, pharmaceuticals and green chemicals in a sustainable and environmentally-friendly manner.

AUTHOR BIO

Peng Xu is a postdoctoral research associate in Stephanopoulos group at the Chemical Engineering department of Massachusetts Institute of Technology. He received his B.S. in biological engineering and M.S. in biochemical engineering from Jiangnan University (China). In 2013, he obtained the Ph.D. in Chemical engineering specialized in Metabolic Engineering and Synthetic Biology supervised by Dr. Mattheos Koffas in Rensselaer Polytechnic Institute.

Before joining RPI, Peng was a PhD student in Koffas group at Chemical engineering department of SUNY-Buffalo. Prior to that, Peng worked two years as a full-time instructor and researcher in Dalian Polytechnic University, where he lectured courses in biochemical engineering and bioprocess optimization and conducted research in applied microbiology and enzyme chemistry.