SCHOOL OF CHEMICAL, BIOLOGICAL & MATERIALS ENGINEERING

And

UNIVERSITY OF OKLAHOMA BIOENGINEERING CENTER

100 E. Boyd, Sarkeys Energy Center, T-335 405-325-5811 The University of Oklahoma Norman, Oklahoma 2010 – 2011 Seminar Series

DR. MACIEK R. ANTONIEWICZ

DUPONT YOUNG PROFESSOR OF CHEMICAL ENGINEERING
ASSISTANT PROFESSOR
DEPARTMENT OF CHEMICAL ENGINEERING
UNIVERSITY OF DELEWARE
NEWARK, DELAWARE

Will present a seminar on

"TANDEM MASS SPECTROMETRY TOOLS FOR MEASURING METABOLIC FLUXES IN LIVING CELLS"

Metabolic flux analysis (MFA) has emerged as a tool of great significance for metabolic engineering and clinical investigations. Metabolic fluxes describe the rate of metabolite interconversion in the context of the entire cell. Metabolic fluxes are therefore a fundamental determinant of cell physiology and a necessary parameter to quantify metabolic control within biochemical reaction networks. In recent years, our lab has developed novel analytical and computational methods for quantifying metabolic fluxes using tandem mass spectrometry and stable isotope experiments to provide additional avenues for analysis of metabolic network regulation. Further applications of these methods include metabolic network reconstruction, validation of metabolic pathways structure, and dynamic flux analysis. In addition to experimental and analytical advances, we have developed a new mathematical framework for describing isotopic labeling in network models that allows us to take full advantage of the additional information that can be obtained from tandem MS measurements. This research provides a solid foundation for the use of tandem MS for measuring fluxes in living cells. I will demonstrate the application of these tools in two model systems that we use in our lab, adipocytes and hepatocytes. (Additional information at http://www.che.udel.edu/directory/facultyprofile.html?id=23383.)

THURSDAY, SEPTEMBER 23, 2010 COOKIES AND COFFEE -- 2:45 P.M. SEMINAR -- 3:00 P.M. SARKEYS ENERGY CENTER, ROOM M-204

THIS IS A REQUIRED SEMINAR FOR CHE 5971

Accommodations on the basis of disability are available by contacting the office above three days before the event.