Department of Chemical and Environmental Engineering

2014—2015 Seminar Series

Friday, January 23, 2015

9:10—10:00 AM

WCH 205/206

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Professor

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Engineering Biology for Energy Applications

Biological systems are capable of performing many useful functions with potential applications in energy and chemical production, environmental remediation, pharmaceutical production, and agricultural systems. However, their full potential remains unrealized due to critical knowledge gaps in our understanding of how these systems function and in our ability to engineer and control them. Our research seeks to fill in these gaps by designing and implementing novel (metabolic) engineering strategies to optimize the performance of biological systems. In this talk, I will highlight our recent progress in these areas with special emphasis on the use of systems and synthetic biology approaches to engineer novel platforms for product synthesis. Of special interest are the use of glycerol fermentation and a reversal of the β-oxidation cycle as efficient biological platforms for the production of advanced fuels and chemicals.

Biosketch: Dr. Ramon Gonzalez is a Professor in the Departments of Chemical & Biomolecular Engineering and Bioengineering at Rice University and the Director of Rice's Energy and Environment Initiative. Dr. Gonzalez has published over 60 articles in leading scientific journals, is the lead inventor in six patents or patent applications, and has given over 100 invited talks. He holds several editorial positions including Senior Editor of the Journal of Industrial Microbiology & Biotechnology and Member of the Editorial Board of Science, Applied & Environmental Microbiology, Biotechnology Journal, Metabolic Engineering Communications, Applied Biochemistry & Biotechnology, and Food Biotechnology. Dr. Gonzalez was the Program Chair of the 2011 Annual Meeting of the Society for Industrial Microbiology and Biotechnology (SIMB), and currently serves as a Director in the SIMB's Board of Directors. He is co-founder of Glycos Biotechnologies, Inc., a Houston-based technology company. Dr. Gonzalez is also a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E) of the U.S. Department of Energy. His areas of technical focus include biological conversion of natural gas and other sources of methane to liquid fuels and the direct synthesis of liquid fuels from carbon dioxide. Dr. Gonzalez received a Ph.D. in Chemical Engineering from the University of Chile, a M.S. in Biochemical Engineering from the Pontifical Catholic University of Valparaíso (Chile), and a B.S. in Chemical Engineering from the Central University of Las Villas (Cuba).