University of Central Florida
Department of Chemistry Seminar Series
Spring 2023

Friday, April 21, 2023, 3:30 PM – **HPA1-O119 (Health Sciences)**

Spatiotemporal control for integrated catalysis

Prof. Paula L. Diaconescu
Professor, Department of Chemistry and Biochemistry
University of California, Los Angeles, Los Angeles, California 90095
Host: Prof. Fernando Uribe-Romo

Integrated catalysis is an emerging methodology that can streamline the multistep synthesis of complicated products in a single reaction vessel, achieving a high degree of control and reducing the waste and cost of an overall chemical process. Integrated catalysis can be defined by the use of spatial and temporal control to couple different catalytic cycles in one pot. As an example, a strategy for coupling electrochemical and organometallic catalysts that enables polyketone synthesis from CO2 and ethylene in a single multicompartment reactor will be discussed. Polyketone materials that are up to 50% derived from CO2 can be prepared in this way. Potentiostatic control over the CO-producing catalyst enables the controlled generation of low-pressure CO, which in conjunction with a palladium phosphine sulfonate organometallic catalyst enables copolymerization to nonalternating polyketones with the CO content tuned based on the applied current density.