

DEPARTMENTS OF CHEMISTRY

Seminar Series



MONDAY, September 28, 2026 - 12:00 Noon
MC H313

Strategies in Sustainable Synthesis and Catalysis: Polyesters from Carbon Dioxide



Prof. Ian Tonks

Department of Chemistry, University of Minnesota - Twin Cities
Minneapolis, USA
e-mail: itonks@umn.edu

This research seminar will be focused on new strategies for using C₁ waste feedstocks in polymer synthesis. We have developed a reaction sequence leading to biodegradable polyesters starting from butadiene (an inexpensive and bioderivable commodity chemical) with CO₂. This sequence involves the telomerization of butadiene with CO₂ to a lactone called EVP, which can subsequently undergo ring-opening polymerization to generate vinyl-sidechain functionalized polyesters containing 30% CO₂ by weight that are chemically recyclable and fully biodegradable. In this talk, the kinetics and thermodynamics of polymerizations of EVP derivatives will be discussed in the context of structure-function studies, as well as a detailed analysis of the synthetic sequences that lead to functionalized, polymerizable EVP derivatives.

Bio: Ian Tonks is the Associate Department Head and Lloyd H. Reyerson Chaired Professor at the University of Minnesota – Twin Cities, and associate editor for the ACS journal *Organometallics*. He received his B.A. in Chemistry from Columbia University in 2006 and performed undergraduate research with Prof. Ged Parkin. He earned his Ph.D. in 2012 from the California Institute of Technology, where he worked with Prof. John Bercaw on olefin polymerization catalysis and early transition metal-ligand multiply bonded complexes. After postdoctoral research with Prof. Clark Landis at the University of Wisconsin – Madison, he began his independent career at the University of Minnesota in 2013. His current research interests are focused on the development of earth abundant, sustainable catalytic methods using early transition metals, and on catalytic strategies for incorporation of CO₂ into polymers. Prof. Tonks' work has been recognized with an Outstanding Investigator Award from the National Institutes of Health, an Alfred P. Sloan Fellowship, a Department of Energy CAREER award, and the ACS *Organometallics* Distinguished Author Award, among others. Additionally, Prof. Tonks' service toward improving academic safety culture was recently recognized with the 2021 ACS Division of Chemical Health and Safety Graduate Faculty Safety Award. He is also the co-founder and chief science officer of LoopCO₂, a start-up company focused on commercializing biodegradable plastics derived from CO₂.