



Inorganic Chemistry Seminar Series

Tuesday, March 13, 2018, 12:30 pm
Seaver Science Library, Room 150

SSC Auditorium next to the library

Professor Ian Tonks

Department of Chemistry

University of Minnesota - Twin Cities

Ti-Catalyzed Nitrene Transfer Reactions: Harnessing the Ti^{II}/Ti^{IV} Redox Couple for New Organic Methods

Abstract:

Titanium is an ideal metal for green and sustainable catalysis—it is the second most earth-abundant transition metal, and the byproducts of Ti reactions (TiO_2) are nontoxic. However, a significant challenge of utilizing early transition metals for catalytic redox processes is that they typically do not undergo facile oxidation state changes because of the thermodynamic stability of their high oxidation states. We have recently discovered that Ti imidos ($L_nTi=NR$) can catalyze oxidative nitrene transfer reactions from diazenes via a Ti^{II}/Ti^{IV} redox couple, and are using this new mode of reactivity to develop a large suite of practical synthetic methods. In this talk, our latest synthetic and mechanistic discoveries related to Ti nitrene transfer catalysis will be discussed, including new synthetic methods for the modular, selective construction of pyrroles via [2+2+1] cycloaddition of alkynes with Ti nitrenes and alkynes, as well as new methods for catalytic oxidative carboamination of other unsaturated organics by Ti nitrenes.

Hosted by Professor Smaranda Marinescu

The scientific community is invited

USC Department of Chemistry

chem.usc.edu