

INORGANIC SEMINAR

"Ti-Catalyzed Nitrene Transfer Reactions"

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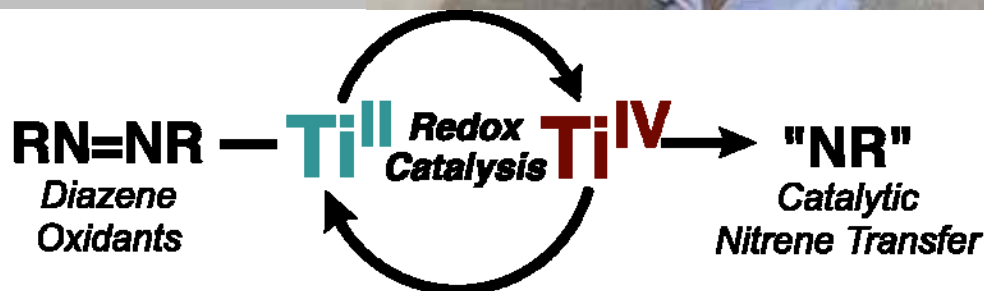
Monday, November 6th

4:00pm

473 Hutchison Hall

University of Rochester

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Abstract: Titanium is an ideal metal for green and sustainable catalysis—it is the 2nd 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 (LnTi=NR) can catalyze oxidative nitrene transfer reactions from diazenes via a $\text{Ti}^{\text{III}}/\text{Ti}^{\text{IV}}$ 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 unsaturated organics by Ti nitrenes.

Host: Bill Jones, jones@chem.rochester.edu