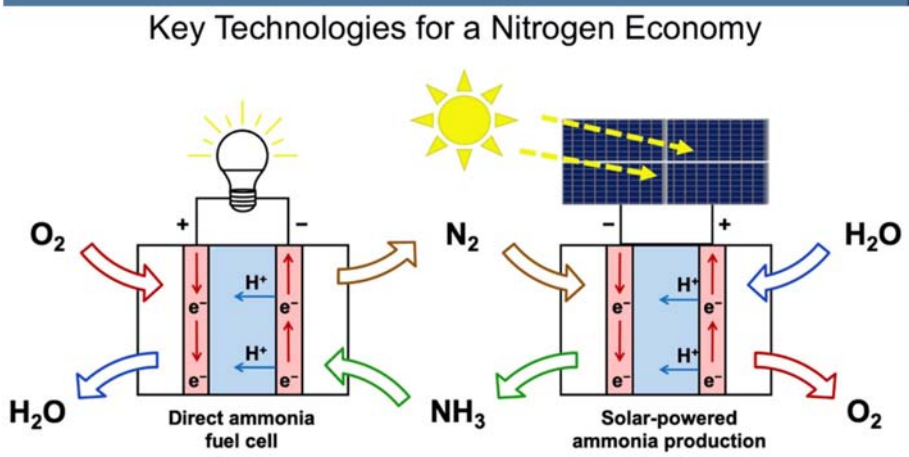
INORGANIC SEMINAR

Professor John F. Berry

University of Wisconsin – Madison
Department of Chemistry

Monday, September 9 4:00 pm
473 Hutchison Hall
University of Rochester
Department of
Chemistry



Title: "New Chemistry of Metal-Metal Bonded Compounds: Toward a Nitrogen Energy Economy"

Abstract: Ammonia has arisen as an attractive potential large-scale energy carrier due to its improved storage and transport over hydrogen, provoking calls to explore a potential *Nitrogen Economy*. Two fundamental technologies are needed in order to realize a zero-carbon nitrogen energy economy: (1) Ammonia synthesis from solar electricity, and (2) high-performance direct ammonia fuel cells. Both are mechanistically challenging multi-proton, multi-electron transformations, prompting investigations into the fundamental coordination chemistry and reactivity of ammonia with transition metals. We report unusual reactivity of ammonia with metal-metal bonded compounds that results in the spontaneous metal-centered reduction and oxidation of ammonia to dinitrogen. Mechanistic aspects of this chemistry will be presented as well as results on electrocatalytic oxidation of ammonia to dinitrogen.

Host: Professor Mike Neidig • email: michael.neidig@rochester.edu