



Giovedì 13 Giugno 2019
alle ore 11.00

presso AULA 2 dell'Edificio F
Area della Ricerca CNR
Via Madonna del Piano, 10 Sesto Fiorentino (Firenze)

il **Prof. Aaron D. Sadow**
Iowa State University of Science and Technology
Ames, IA - U.S.A.

terrà il seguente seminario:

"New Alkylanthanides and their Catalytic Chemistry "

Si invitano tutti gli interessati a partecipare.

Dr. Luca Gonsalvi
Primo Ricercatore CNR

Dr. Francesco Vizza
Direttore ICCOM

Short Abstract:

There is, in general, a need to find new uses for overproduced and underutilized early lanthanides, and viable organometallic starting materials for synthesis, surface deposition, and catalysis could help solve that problem. Traditionally, preparation of monomeric organolanthanides containing only one type of ligand (so called homoleptic compounds) have been plagued with synthetic difficulties and challenging characterization due to paramagnetic products, salt and solvent coordination, and temperature sensitive products.

The approach we develop, based on the inclusion of β -SiH groups in the alkyl ligand, overcomes these challenges, and our strategy will make the early organolanthanides species available for new synthetic, materials, and catalytic applications. We have synthesized compounds supported by $C(SiHMe_2)_3$ or $C(SiHMe_2)_2Ph$ ligand, and our work includes detailed spectroscopic and structural characterization of the series, which is important and useful for understanding reactivity properties of heteroleptic or surface grafted derivatives in catalytic or materials applications. Then, selected applications of the compounds as catalysts for C–O bond cleavage via hydroboration, Si–C bond formation via hydrosilylation, and C–C bond formation in polymerizations will be presented.

Biographic sketch:

Prof. Sadow's interest in organometallic chemistry and catalysis began in Ayusman Sen's research group. As an undergraduate at Penn State, he worked on synthesis of polyesters, using CO and activated alcohols as comonomers. He then continued to study organometallics in Don Tilley's group as a graduate student at UC Berkeley, working first on catalysts for polymerization of silanes to make long chains with silicon-only backbones, synthesizing possible intermediates containing reactive metal-silicon bonds, and then on related CH activation reactions and hydrocarbon functionalization catalysis. He then moved to ETH Zürich, where he worked with Antonio Togni on enantioselective hydroamination and hydrophosphination for the synthesis of chiral amines and phosphines.

Sadow Group work is focused upon the development of new catalytic reactions and new catalysts for application in green chemistry, stereoselective synthesis, and the conversion of abundant raw materials into commodity and specialty chemicals. This work impacts energy sciences and chemical production. The approach involves the design and study of main group, early transition-metal, and rare earth organometallic compounds as catalysts for transformations of polar, oxygen- or nitrogen-containing substrates. Sadow Group studies structure and reactivity through a combination of spectroscopy and kinetics to better understand catalytic reactions, the chemical properties that make a good catalysts, and to design new transformations.

More info at: <https://sadow.chem.iastate.edu/>