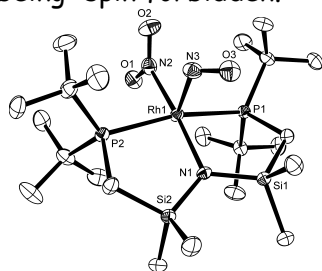


INORGANIC SEMINAR

Prof. Kenneth Caulton
Indiana University

“Spin States, Unsaturation, and Pi- Donation: Impact on Reactivity?”

A challenge for chemistry today is to make chemical reactivity of transition metal complexes as systematic and rational as that of organic chemistry. It will be argued that the amide *ligand* ($^t\text{Bu}_2\text{PCH}_2\text{SiMe}_2$) $_2\text{N}^-$, “PNP” creates a sterically protected (from ^tBu) and electron rich (from amide N pi-donation) metal center with unusual reactivity. When it is attached to Ru(II), the compound (PNP)RuCl is unusual in being “doubly unsaturated,” 4 coordinate and planar, and this leads to facile binding of PhCN, C_2H_4 , and N_2 , but remarkably “deeper” reactions with H_2 , with terminal alkynes, and with Me_3SiN_3 . The analogous osmium chemistry shows dramatic differences, leading into the chemistry of radical species, and the rhodium analog shows remarkable C-H bond cleavage ability. Understanding all of this reaction chemistry is enhanced by concurrent DFT calculations, which reveal levels of ligand redox non-innocence. Generalization of the above reactivity principles is possible by studies with lighter transition elements Fe, Co and Ni, which, in turn, leads to results relevant to the concept of a chemical reaction being “spin forbidden.”



Wednesday, February 3rd, 2010
3:30 P.M. ROOM 1315 CHEMISTRY

FOR MORE INFORMATION PLEASE CALL THE INORGANIC OFFICE AT 262-6815

Host is John Berry

Refreshments will be available at 3:15 outside of the seminar room, and setup by Elizabeth Blaes. Thanks Elizabeth.