

LAC L. M. Venanzi Distinguished Lecture 2016

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2. Vortrag:

Mittwoch, 13. April 2016, 17.15 Uhr, ETH, HCI J7

«Chemical Transformations with Unusual Metal-Silicon Species and Two-Coordinate First-Row Metal Complexes»

Organosilicon compounds play an important role as reagents and intermediates in organic synthesis, and as monomers for the production of oligomers, polymers and composites used in various applications. Thus, new catalytic transformations are highly desired, and there is considerable interest in development of more cost-effective and selective hydrosilylation catalysts. A general approach to addressing these issues involves discovery of new fundamental reaction steps for activations of appropriate substrates. This presentation will describe new types of metal-silicon complexes that enable mechanisms for transformations of organosilanes, including hydrosilylation. Such complexes include unsaturated metal silylene complexes, sigma-complexes of cationic metal centers, and coordinatively unsaturated, first-row transition metal complexes.

The chemistry of two-coordinate, open-shell metal complexes has not been extensively explored. Such research may reveal new transformations for chemistry and catalysis that utilizes earth-abundant metals. The latter activity involves incorporation of a first-row metal into a ligand environment that allows it to follow catalytic pathways analogous to those currently associated with complexes of heavier metals. For example, a redox-active ligand might allow a metal complex to engage in two-electron substrate activations (oxidative additions), rather than the one-electron redox change that the metal would naturally prefer. Other strategies for utilization of first-row metals in catalysis might leverage new mechanisms that feature intermediates and transition states peculiar to the metals of interest. This consideration might leverage a unique property of first row transition metals, in their ability to support reactive complexes with exceedingly low coordination numbers. This presentation will describe synthetic, structural, mechanistic and reactivity studies that reveal new opportunities in catalysis *via* discovery of fundamental transformations at a first-row transition metal center.

followed by a get-together in front of J7

Guests are most welcome



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