



3rd Annual Anton B. Burg Memorial Lecture

Friday, September 1, 2017, 4:00 pm

Stauffer Science Lecture Hall

SLH 100

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Exploiting the non-innocence of antimony ligands: organometallic catalysis to photoreductive elimination of halogens

Abstract:

Although often regarded as heavy phosphine analogues, stibines behave as non-innocent ligands and display an unusual reactivity, even when ligated to transition metals (M). This reactivity comes to light in their ability to undergo oxidation reactions without dissociation of the coordinated transition metal. This oxidation induces the formation of a M->Sb interaction, resulting in a drastic Lewis acidity increase at the transition metal center. Using a family of gold stibine derivatives, we will demonstrate that such coordinated-stibine oxidation reactions can be used to afford potent hydroamination catalysts. Stibines are also non-innocent from a coordination point of view and can readily bind hard anions such as fluoride, without dissociation from the transition metal center. These anion binding events convert the antimony atom into a more strongly donating ligand, leading to an increase of electron density at the metal center. In this presentation, we will explain how this process can be exploited in reverse as a means to increase the electrophilic character of the transition metal center.

The scientific community is invited