"Frustrated Lewis Pairs": Metal-Free Hydrogenations and Small Molecule Activation

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Frontiers in Catalysis Science and Engineering
Seminar Series

Presented by…

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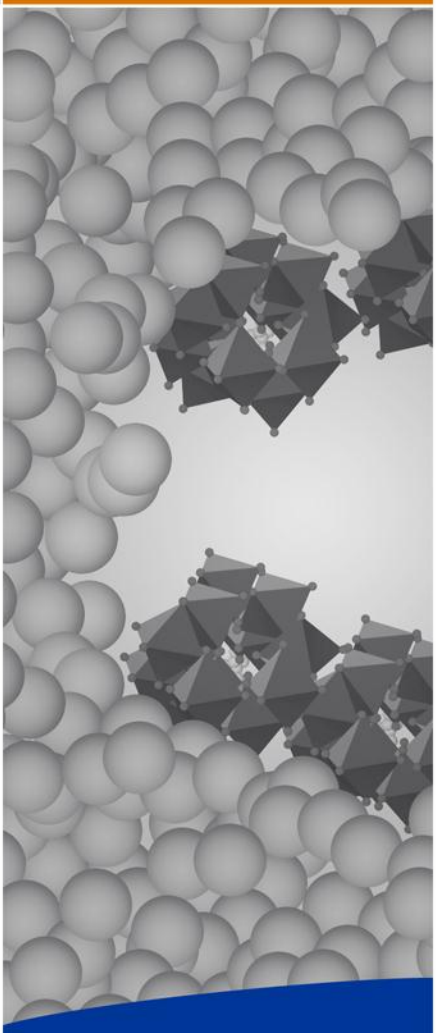
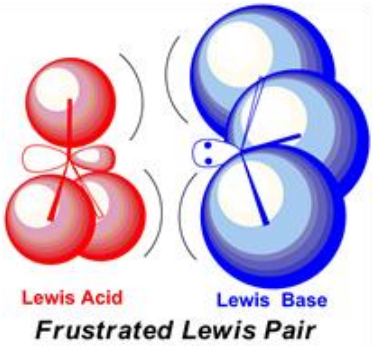


Abstract

The activation of hydrogen has been the purvue of transition metals for 100 years. In recent work we have discovered the first metal-free system capable of H_2 activation. Sterically encumbered Lewis acid and base combinations do not form "classical" Lewis acid-base adducts. Rather, the unquenched Lewis acidity and basicity of such sterically "*frustrated Lewis pairs (FLPs)"* is available for reactivity. Such systems have been Shown to effect the heterolytic cleavage of hydrogen and applied to develop metal-free hydrogenations for C=N bonds in a variety of organic substrates. In addition, we have shown that FLP hydrogenation can be used to effect aromatic reductions. FLPs are also shown to exhibit unprecedented reactivity with a variety of other small molecules, including olefins, dienes, alkynes, cyclopropanes, CO_2 and N_2O. The implications of the discovery of such systems to catalysis and further details will be presented in this lecture.



More info?

http://www.chem.utoronto.ca/staff/DSTEPHAN/doug.html

Date: Thursday, January 26, 2012

Location: EMSL 1077

Time: 1:00pm