

Taming Methane. Dehydrogenation, Olefination and Catalytic Borylation Reactions

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Abstract: In this presentation I will discuss research progress involving the activation and functionalization of methane with both earth abundant and precious metal complexes. One component of my talk will involve the conversion of methane to a methyldiene by a transient titanium alkylidyne, as well as subsequent dehydrocoupling to form a terminal olefin. The second component of the talk will involve high-throughput and high-pressure assessment techniques to screen some well-defined iridium catalysts that borylate methane with respectable TON and high selectivity for monoborylation. Mechanistic studies (combining experiment and theory) for all these set of homogeneous reactions will be presented and discussed.

Keywords: methane, borylation, alkylidyne.

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