



# IBS Center for Multidimensional Carbon Materials



## Prof. Daniel J. MINDIOLA

Department of Chemistry,  
University of Pennsylvania

<http://mindiolagroup.chem.upenn.edu>

### Titanium-Carbon Multiple Bonds.

From Fundamental C-H Activation Reactions to Catalytic and  
Selective Dehydrogenation of Linear Alkanes to Terminal Olefins

**APRIL 17** | Bldg. 101  
**MON 14:00** | Seminar room on the 1<sup>st</sup> floor

We will present the reactivity of a transient titanium alkylidyne (PNP)Ti≡CtBu (pincer PNP = N[2-P(CHMe<sub>2</sub>)<sub>2</sub>-4-methylphenyl]<sub>2</sub>-), specifically how this species engages in intermolecular C-H activation and functionalization reactions. Such species can dehydrogenate methane, and C<sub>2</sub>-C<sub>8</sub> alkanes selectively at the terminal position (in the case of linear alkane C<sub>4</sub>-C<sub>8</sub>) to form the olefin product. The mechanism to this transformation as well as other new reactions such as the dehydrogenation of cyclohexane, C<sub>3</sub>-C<sub>8</sub> alkanes, and trapping reactions will be presented and discussed. A new catalytic cycle for transfer dehydrogenation of alkanes will be also introduced as well as the new platforms to form kinetically stable Ti-C multiply bonded scaffolds will be also discussed.

Professor Mindiola and co-authors groups have published over 160 research articles in peer-reviewed journals, and has given over 200 lectures at universities (national and international), national laboratories, chemical companies, and federal agencies. From 2010-2013, he was Associate Editor for the Royal Society of Chemistry journal Dalton Transactions from 2011-2013. In 2014 became Associate Editor for the American Chemical Society publishing journal Organometallics.

Daniel's research work entails the design and assembly of reactive metal complexes, especially, the application of earth-abundant transition metals in very important transformations such as the selective activation of carbon-hydrogen bonds. He is also interested in novel catalytic processes mediated by reactive complexes containing metal-ligand multiple bonds and their involvement in important reactions (reactions that are non-combustion based) with natural resources such as Natural Gas and Shale Gas.

***You are cordially invited to attend!***

*Special Guest Speaker*