Bis(Silylene) Pincer Type Ligands: A Silicon System to Explore in the Universe of Catalysis

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Known σ -donor systems in pincer ligands

Hydrogenation of alkenes
Chirik,
ACS Catalysis 2012

Exploring new frontiers in
 σ -donor systems

Novel highly electron rich Iron (0) species

Isolation of reaction
intermediate!

"The beauty of a living thing is not the atoms that go into it, but the way those atoms are put together."
Carl Sagan, *Cosmos*

Colombian Chemist

Si&Me
Catalytic cycle of
returning to the
society

TU Berlin PhD Studies

Prof. Dr. M. Driess

Divalent Si
compounds as
 σ -donors for
catalysis

Prof. Dr. B. Kersting
Binding of small peptides
to dimetallic complexes

- ✓ Multicultural transition states:
Uni. Lille1, France & Uni. Leipzig, Germany
- ✓ Learning from the roots of chemistry:
Ostwald (Uni. Leipzig): Nobel Prize in
Chemistry 1909
- ✓ German Beer as rate determining step

Personal motivations:

- ✓ Learn every day
- ✓ Curiosity
- ✓ Contribute to society
- ✓ Chemistry

- ✓ Unifying Concepts of Catalysis "UniCat" Cluster of
Excellence & BIG-NSE Graduated School
- ✓ Different chemistry backgrounds: Multicultural group
- ✓ German Beer as energy sink

Prof. Dr. D. Gallego Mahecha

Support:
Economical
Human (students and relatives)
Networking

Hydrosilylation of ketones

	Si	Ge	P
0 eq coe	53	46	29
1 eq coe	90	80	64

Borylation of arenes

σ -donor strength:

Evaluation Method	Si	Ge	P
C=C (coe)			
^1H NMR (ppm)	3.38	4.06	4.31
^{13}C NMR (ppm)	55.8	65.1	81.6
X-Ray (Å)	1.409(9)		1.35(1)

"All started by simply curiosity...
don't let them blind your scientific soul!"