



# Library Indian Institute of Science Education and Research Mohali



**DSpace@IISERMohali (/jspui/)**  
**/ Publications of IISER Mohali (/jspui/handle/123456789/4)**  
**/ Research Articles (/jspui/handle/123456789/9)**

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/2307>

Title:	Tuning the redox non-innocence of a phenalenyl ligand toward efficient nickel-assisted catalytic hydrosilylation
Authors:	Adhikari, D. (/jspui/browse?type=author&value=Adhikari%2C+D.)
Keywords:	Hydrosilylation Nickel compounds Phenalenyl ligand DFT
Issue Date:	2018
Publisher:	Royal Society of Chemistry
Citation:	Chemical Science, 9(10), pp. 2817-2825
Abstract:	In this report, a ligand-redox assisted catalytic hydrosilylation has been investigated. A phenalenyl ligand coordinated nickel complex has been utilized as an electron reservoir to develop a base metal-assisted catalyst, which very efficiently hydrosilylates a wide variety of olefin substrates under ambient conditions. A mechanistic investigation revealed that a two-electron reduced phenalenyl based biradical nickel complex plays the key role in such catalysis. The electronic structure of the catalytically active biradical species has been interrogated using EPR spectroscopy, magnetic susceptibility measurements, and electronic structure calculations using a DFT method. Inhibition of the reaction by a radical quencher, as well as the mass spectrometric detection of two intermediates along the catalytic loop, suggest that a single electron transfer from the ligand backbone initiates the catalysis. The strategy of utilising the redox reservoir property of the ligand ensures that the nickel is not promoted to an unfavorable oxidation state, and the fine tuning between the ligand and metal redox orbitals elicits smooth catalysis.
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://pubs.rsc.org/en/content/articlelanding/2018/sc/c7sc04687a#divAbstract">https://pubs.rsc.org/en/content/articlelanding/2018/sc/c7sc04687a#divAbstract</a> ( <a href="https://pubs.rsc.org/en/content/articlelanding/2018/sc/c7sc04687a#divAbstract">https://pubs.rsc.org/en/content/articlelanding/2018/sc/c7sc04687a#divAbstract</a> ) <a href="http://hdl.handle.net/123456789/2307">http://hdl.handle.net/123456789/2307</a> ( <a href="http://hdl.handle.net/123456789/2307">http://hdl.handle.net/123456789/2307</a> )
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format
Need to add pdf.odt (/jspui/bitstream/123456789/2307/1/Need%20to%20add%20pdf.odt)		8.63 kB	OpenDocument Text

[View/Open \(/jspui/bitstream/123456789/2307/1/Need%20to%20add%20pdf.odt\)](#)

[Show full item record \(/jspui/handle/123456789/2307?mode=full\)](#)

[Statistics \(/jspui/handle/123456789/2307/statistics\)](#)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.