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Title:	Storing redox equivalent in the phenalenyl backbone towards catalytic multi-electron reduction†
Authors:	Adhikari, D. (/jspui/browse?type=author&value=Adhikari%2C+D.)
Keywords:	Key steps Considered Storing and transferring Multi-electron reduction
Issue Date:	2019
Publisher:	Royal Society of Chemistry
Citation:	Chemical Science,10(31), pp.7433-7441.
Abstract:	Storing and transferring electrons for multi-electron reduction processes are considered to be the key steps in various important chemical and biological transformations. In this work, we accomplished multi-electron reduction of a carboxylic acid via a hydrosilylation pathway where a redox-active phenalenyl backbone in Co(PLY-O,O)2(THF)2, stores electrons and plays a preponderant role in the entire process. This reduction proceeds by single electron transfer (SET) from the mono-reduced ligand backbone leading to the cleavage of the Si–H bond. Several important intermediates along the catalytic reduction reaction have been isolated and well characterized to prove that the redox equivalent is stored in the form of a C–H bond in the PLY backbone via a ligand dearomatization process. The ligand's extensive participation in storing a hydride equivalent has been conclusively elucidated via a deuterium labelling experiment. This is a rare example where the ligand orchestrates the multielectron reduction process leaving only the metal to maintain the conformational requirements and fine tunes the electronics of the catalyst.
Description:	Only IISERM authors are available in the record.
URI:	https://pubs.rsc.org/en/content/articlelanding/2019/sc/c9sc02057h#!divAbstract (https://pubs.rsc.org/en/content/articlelanding/2019/sc/c9sc02057h#!divAbstract) http://hdl.handle.net/123456789/2339 (http://hdl.handle.net/123456789/2339)
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