# Rhodium is still precious: new directions in organometallic chemistry enabled by pincer, macrocyclic and cavitand-based ligands

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Coordination complexes of rhodium played a pivotal role in developing the science of organometallic chemistry and remain cornerstones of contemporary applications of homogeneous transition metal compounds in organic synthesis and industrial catalytic processes. In this talk, I will present ligand-based approaches being developed in our laboratory for augmenting the reactivity of rhodium complexes to effect challenging small molecule activation reactions and catalytic processes. Discussion will encompass: (**A**) the application of *mer-*tridentate “pincer” ligands in the binding and catalytic reduction of nitrous oxide, (**B**) selective cleavage of the formidably robust C(sp)–C(sp) bond using macrocyclic variants, and (**C**) the use of cavitand-based diphosphine ligands for promoting the branched-selective hydroformylation of unactivated alkenes.



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**Adrian B. Chaplin** commenced his independent research career at the University of Warwick in October 2011 as a Royal Society University Research Fellow, where he was subsequently promoted to his current position as Professor in 2023. He was awarded the RSC Harrison-Meldola Memorial Prize in 2015 and the RSC Sir Geoffrey Wilkinson Prize in 2023. Preceding this appointment at Warwick, he completed 4 years of postdoctoral work at the University of Oxford (Andrew Weller), holding the R. J. P. Williams Junior Research Fellowship at Wadham College for 2 years. Chaplin received his PhD in 2007 from the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland (Paul Dyson) and carried out his undergraduate studies at Massey University, New Zealand.

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