STRUCTURAL, KINETICS, AND MECHANISTIC STUDIES OF TRANSFER HYDROGENATION OF KETONES CATALYZED BY CARBOXAMIDE ORGANO-RUTHENIUM COMPLEXES

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Transition metal-catalyzed transfer hydrogenation reactions of unsaturated substrates constitute one of the most versatile synthetic routes to a wide range of industrial and domestic feedstocks [1]. The synthesis and characterisation of multi-dentate carboxamide ligands and their corresponding phosphino-carbonyl and piano-stool Ru(II) complexes is discussed (**Fig. 1**). The complexes display rich coordination diversity controlled by the nature of the ligand and Ru(II) metal precursors. The Ru(II) complexes form active catalysts in the transfer hydrogenation of a wide range of ketone substrates even at very low catalyst concentrations of 25 ppm [2]. The performance of the catalysts in these reactions are largely controlled by the coordination chemistry of the Ru(II) complexes, especially the nuclearity [3]. Mechanistic and kinetic insights of these reactions have been studied in detail using spectroscopic and physical techniques and will also be discussed.

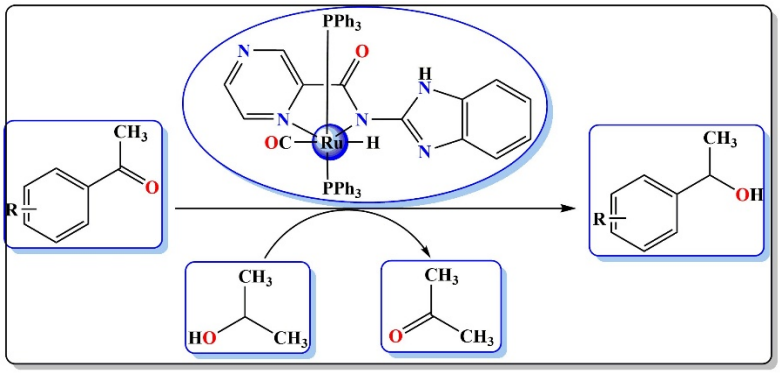

Fig.1: Transfer hydrogenation of ketones catalysed by carboxamide organo-Ru(II) complexes

[1] D. Wang, D. Astruc, *Chem. Rev*., 115 (2015) 6621-6686.

[2] R. T. Kumah, V. Paranthaman, S. O. Ojwach, *New J. Chem*. 2022, **46**, 3146-3155.

[3] R. T. Kumah, S. O. Ojwach, Appl. Organomet. Chem, 2023,