

## Abstract

A series of new arene ruthenium(II) complexes were prepared by reaction of ruthenium(II) precursors of the general formula  $[(\eta^6\text{-arene})\text{Ru}(\mu\text{-Cl})\text{Cl}]_2$  with *N,N'*-bidentate pyridyl-imine ligands to form complexes of the type  $[(\eta^6\text{-arene})\text{RuCl}(\text{C}_5\text{H}_4\text{N}-2\text{-CH=N-R})]\text{PF}_6$ , with arene =  $\text{C}_6\text{H}_6$ , *R* = iso-propyl (**1a**), *tert*-butyl (**1b**), cyclohexyl (**1c**), cyclopentyl (**1d**) and *n*-butyl (**1e**); arene = *p*-cymene, *R* = iso-propyl (**2a**), *tert*-butyl (**2b**). The complexes were fully characterized by  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR, UV–Vis and IR spectroscopies, elemental analyses, and the single-crystal X-ray structures of **2a** and **2b** have been determined. The single-crystal molecular structure revealed both compounds with a pseudo-octahedral geometry around the Ru(II) center, normally referred to as a piano stool conformation, with the pyridyl-imine as a bidentate *N,N* ligand. The activity of all complexes in the transfer hydrogenation of cyclohexanone in the presence of NaOH and iso-propanol is reported, the compounds showing turnover numbers of close to 1990 and high conversions. Complex **2b** was also shown to be very effective for a range of aliphatic and cyclic ketones, giving conversions of up to 100 %.