Research paper

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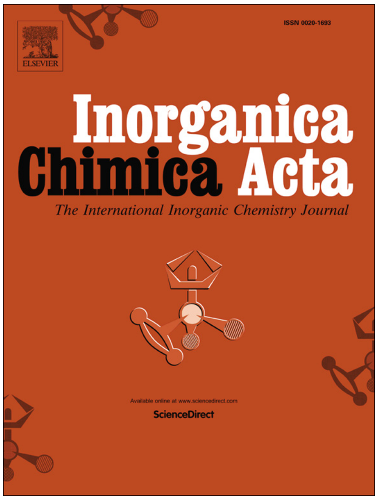

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Syntheses, structures and catalytic properties of ruthenium(II) nitrosyl complexes with bidentate and tetradentate Schiff base ligands

Fule Wu, Chang-Jiu Wang, Hui Lin, Ai-Quan Jia, and Qian-Feng Zhang*

Institute of Molecular Engineering and Applied Chemistry, Anhui University of Technology, Ma'anshan, Anhui 243002, P R China

Treatment of $Ru(NO)Cl_3 \cdot xH_2O$ with 1 equiv. bidentate Schiff bases in the presence of triethylamine in DMF/THF afforded a series of anionic ruthenium(II) nitrosyl complexes of the type $[Et_3NH][Ru(\kappa^2\text{-}N,O\text{-}L^R)(NO)Cl_3]$ (HL^R = 2-butyliminomethyl-phenol **1**, 2-(benzylimino-methyl)-phenol **2**, 2-[(4-chloro-phenylimino)-methyl]-phenol **3**, 2-[(4-nitro-phenylimino)-methyl]-phenol **4**, 2-[(2,6-diisopropyl-phenylimino)-methyl]-phenol **5**). Interaction of $Ru(NO)Cl_3 \cdot xH_2O$ and 1 equiv. tetradentate Schiff bases under the same condition led to isolation of an anionic complex $[Et_3NH][Ru(\kappa^2\text{-}N,O\text{-}L\text{-}CH_2CH_2\text{-}NOH)\text{-}(NO)Cl_3]$ ($HL\text{-}CH_2CH_2\text{-}NOH$ = *N*,*N'*-disalicylidene-1,2-ethanediamine **6**) and a neutral complex [Ru(salen-phn)(NO)Cl] (H_2salen-phn = *N*,*N'*-disalicylidene-1,2-phenyldiamine **7**). The molecular structures of **1**$\cdot \frac{1}{2}C_2H_5OH$, **2**–**6**, and **7**$\cdot CH_2Cl_2$ have been determined by single-crystal X-ray crystallography. Investigation of the catalytic properties of ruthenium(II) nitrosyl complexes **1**–**7** showed that they are efficient catalytic precursors for the transfer hydrogenation of acetophenone.

Keywords: Ruthenium complex; Schiff base; Nitrosyl ligand; Synthesis; Crystal structure

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* Corresponding author. E-mail: zhangqf@ahut.edu.cn (Q. F. Zhang).