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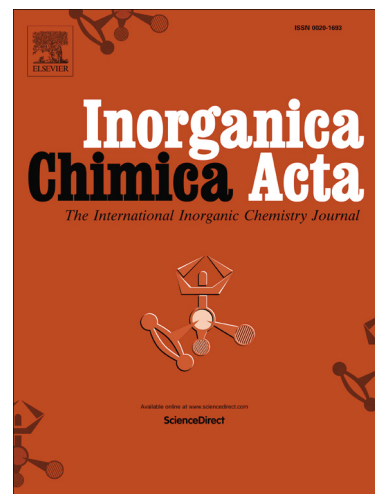
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Ruthenium(II) complexes of some simple classic amine ligands

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Abstract

Several new Ru(II) complexes of tris(2-aminoethyl)amine (Tren) and diethylenetriamine (Dien) have been prepared using $\text{Ru}(\text{PPh}_3)_3\text{Cl}_2$ and $[(\text{CH}_3)_4\text{N}]_2[\text{Ru}(\text{Phen})\text{Cl}_4]$ (1) as starting materials. The reaction of Tren or Dien with $\text{Ru}(\text{PPh}_3)_3\text{Cl}_2$ leads to the formation of either the $[\text{Ru}(\text{Tren})(\text{PPh}_3)\text{Cl}]\text{Cl}$ (2) or the $\text{Ru}(\text{Dien})(\text{PPh}_3)\text{Cl}_2$ (4) complex, of which the latter then reacts further with a heterocyclic diimine (N–N) ligand to yield $[\text{Ru}(\text{Dien})(\text{PPh}_3)(\text{N–N})]\text{Cl}_2$. Addition of Tren or Dien to solutions of the $[(\text{CH}_3)_4\text{N}]_2[\text{Ru}(\text{Phen})\text{Cl}_4]$ complex replaces the coordinated chlorides with the N-donor ligand, forming $[\text{Ru}(\text{Tren})\text{Phen}](\text{ClO}_4)_2$ (3) and $[\text{Ru}(\text{Dien})(\text{Phen})\text{Cl}]\text{Cl}$ (5) respectively. Redox chemistry shows single-electron $\text{Ru}(\text{II}) \rightarrow \text{Ru}(\text{III})$ oxidations over a wide range of potentials.

Keywords: Ruthenium; Amine; Diimine; X-ray structure

1. Introduction

Tripodal amines, such as TPA (tris(2-pyridylmethylamine)),^[1] have been used with first-row transition metals, such as $\text{Fe}^{[2,3]}$ and $\text{Cu}^{[4]}$ as part of metalloenzyme modelling studies. There has also been increasing focus on

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