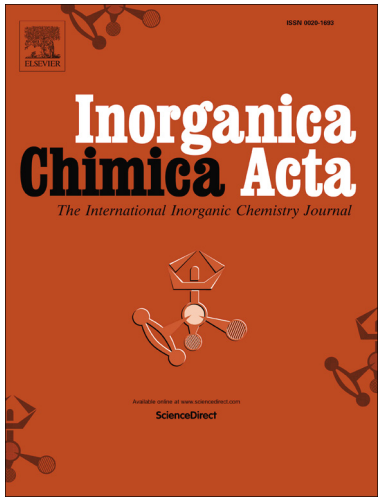

Ruthenium(II) complexes of some simple classic amine ligands

GorDan T. Reeves, Anthony W. Addison, Matthias Zeller

PII: S0020-1693(15)00195-4
DOI: http://dx.doi.org/10.1016/j.ica.2015.04.007
Reference: ICA 16500

To appear in: *Inorganica Chimica Acta*

Received Date: 11 February 2015
Revised Date: 10 April 2015
Accepted Date: 11 April 2015

Please cite this article as: G.T. Reeves, A.W. Addison, M. Zeller, Ruthenium(II) complexes of some simple classic amine ligands, *Inorganica Chimica Acta* (2015), doi: http://dx.doi.org/10.1016/j.ica.2015.04.007

Ruthenium(II) complexes of some simple classic amine ligands

GorDan T. Reeves,[a]* Anthony W. Addison[b]* and Matthias Zeller[c]

[a] Department of Chemistry and Pharmaceutical Science, Fairleigh Dickinson University, Madison, NJ 07940, U.S.A.
Fax: 973-443-8761
E-mail: reevesg@fdu.edu
[b] Department of Chemistry, Drexel University, Philadelphia, PA 19104-2816, U.S.A.
Fax: 215-895-1265
E-mail: AddisonA@drexel.edu
[c] STaRBURSTT CyberInstrumentation Consortium, Youngstown State University, Department of Chemistry, 1 University Plaza, Youngstown, OH 44555-3663, U.S.A.
Fax: 330 941 1579
E-mail: mzeller@ysu.edu

Abstract

Several new Ru(II) complexes of tris(2-aminoethyl)amine (Tren) and diethylenetriamine (Dien) have been prepared using $Ru(PPh_3)_3Cl_2$ and $[(CH_3)_4N]_2[Ru(Phen)Cl_4]$ (1) as starting materials. The reaction of Tren or Dien with $Ru(PPh_3)_3Cl_2$ leads to the formation of either the $[Ru(Tren)(PPh_3)Cl]Cl$ (2) or the $Ru(Dien)(PPh_3)Cl_2$ (4) complex, of which the latter then reacts further with a heterocyclic diimine (N–N) ligand to yield $[Ru(Dien)(PPh_3)(N–N)]Cl_2$. Addition of Tren or Dien to solutions of the $[(CH_3)_4N]_2[Ru(Phen)Cl_4]$ complex replaces the coordinated chlorides with the N-donor ligand, forming $[Ru(Tren)Phen](ClO_4)_2$ (3) and $[Ru(Dien)(Phen)Cl]Cl$ (5) respectively. Redox chemistry shows single-electron Ru(II)→Ru(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 Fe[2,3] and Cu[4] as part of metalloenzyme modelling studies. There has also been increasing focus on