

Synthesis and structure of ruthenium(II) ternary complexes involving N-2-(aminopyridyl)-2-carbamoylpyridine

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The ligand, N-(2-aminopyridyl)-2-carbamoylpyridine (L) has been synthesized by reacting pyridine-2-carboxylic acid with 2-aminopyridine and has been characterised by elemental analysis, ^1H NMR, IR and mass spectral studies. The complex $[\text{Ru}(\text{PPh}_3)_2(\text{L})\text{Cl}_2]$ has been synthesized by reacting $[\text{Ru}(\text{PPh}_3)_3\text{Cl}_2]$ with L. Further reaction of $[\text{Ru}(\text{PPh}_3)_2(\text{L})\text{Cl}_2]$ with bidentate chelating ligands L' (L' = 2,2'-bipyridine, 1,10-phenanthroline, 2-(2-aminoethyl)pyridine and ethylenediamine) yield complexes of general formula $[\text{Ru}(\text{PPh}_3)_2(\text{L})(\text{L}')\text{ClO}_4]$. All the complexes are diamagnetic (low spin d^6 , $S = 0$) and show intense bands corresponding to metal to ligand charge-transfer transitions and inter-ligand transitions in the UV-Vis spectra. All the complexes show one reversible oxidation due to ruthenium(II)–ruthenium(III) in the anodic region of the cyclic voltammogram. The ruthenium(II)–ruthenium(III) impulses are found to be sensitive to the nature of the donor sites of the bidentate ligand L'. Further characterization of the complexes have been achieved by IR and electro spray mass spectral studies.