

Abstract

The reaction of $[\text{MoCl}(\text{NO})\text{T}_p]^* = \text{tris}(3,5\text{-dimethylpyrazolylborate})$ with copper Schiff base complexes derived by condensation of one mole each of 2,5-dihydroxybenzaldehyde and salicylaldehyde with α,ω diamines $[\text{NH}_2(\text{CH}_2)_n\text{NH}_2, n = 2\text{--}4]$ yields heterobinuclear complexes with two potential redox centres. I.r., electronic and e.s.r. spectroscopic properties of these complexes are described. Cyclic voltammetric data of the base complexes in DMSO reveal that the copper redox centres undergo irreversible one electron reduction at potentials which vary slightly with the polymethylene carbon chain backbone of the Schiff base ligands. Incorporation of $[\text{MoCl}(\text{NO})\text{T}_p]^*$ groups in the copper Schiff base complexes, results to a slight anodic shift (100 mV) in the reduction potential of the copper centre which remains invariant as the polymethylene carbon chain lengthens. Electrochemical data of the heterobinuclear complexes using CH_2Cl_2 and DMSO as solvents indicate the solvent dependence of the reduction potentials of these complexes. In CH_2Cl_2 , the reduction potential of the copper centre shifts cathodically by 100 mV, while that of the molybdenum centre shifts anodically by 200 mV. However, accumulated electrochemical data of the heterobinuclear complexes indicate minimal electronic interactions between the copper and molybdenum redox centres.