



Electrochemical and Spectral Investigations of Copper in Different Mixed Ligand Complex Solutions in Non- Aqueous Solvents

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ABSTRACT

Electrochemical behaviour of copper in its mixed ligand complexes of picolinic acid with diimines {where diimines =1, 10- Phenanthroline(phen)1; 2, 2'-bipyridyl(bipy)2; 4, 4'-dimethyl 2, 2'-bipyridyl(4,4'-Me₂bipy)3; 5, 5'-dimethyl 2, 2'-bipyridyl(5,5'-Me₂bipy)4}[Cu²⁺(diimine)pic] in 1:2:10 metal to ligand molar ratio have been studied in dimethylsulfoxide (DMSO) and dimethyl formamide (DMF) separately containing 0.2 M sodium perchlorate (NaClO₄) as a supporting electrolyte at a glassy carbon disc working electrode using cyclic voltammetry. It should be mentioned that the complexes displayed a single quasireversible redox couple (Cu^{2+/+}). It is observed that the cathodic peak potential shift more negatively and anodic peak potential shifts more positively with increasing scan rate. Anodic to cathodic peak potential difference, ΔE_p values are more than 60 mV, clearly showing the quasireversible nature of redox process. The UV-visible electronic spectra of the above Cu(II) complexes were also studied in DMSO and DMF at room temperature.

Keywords: Cu (II) complexes, diimines, picolinic acid, cyclic voltammetry, UV-visible spectra.