

Investigation of redox behavior from voltammetric studies of room temperature ionic liquids containing metal ions

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Generally powerful metal ion redox couples exist in acid medium that can be employed for several useful applications such as organic synthesis and organic and inorganic pollutant destruction studies. In these applications the metal ion is made to recycle but the usage of acid electrolytes form undesired side products at the cathodic compartment of the electrochemical cell. Ionic liquids could be recycled for a number of times and hence they can be ideally used as an electrolyte medium for metal ion oxidation. In the present investigation room temperature ionic liquids (RTILs) are used as the solvent for the metal ion oxidation by cyclic voltammetric studies. The cyclic voltammetric behavior of Cobalt metal salt containing room temperature ionic liquids of imidazolium type are studied at room temperature. The metal ion is introduced into the ionic liquids by dissolution. The working electrode used was glassy carbon and a Pt wire electrode was used as a counter electrode and Ag wire was used as the pseudo reference electrode. The redox behavior was explained, diffusion coefficient of the metal ion Co was estimated and Tafel analysis was used to understand the mechanism of the oxidation and reduction