

Temperature effect of Ni(II)(CN)_5^{3-} reduction on Ag, electrode in highly alkaline medium: An electrolysis study

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Mediated electrochemical oxidation (MEO) is emerging field towards environmental pollutants removal process using anodic part of a full electrochemical cell. At the same time, Mediated electrochemical reduction (MER) is in initial level, which must be enrooted to utilize the full electrochemical cell. It is evident from the literature that metal complexes are more suitable to use as a mediator in the MER process due to stabilize the active low valent state of metal ion. The present investigation focuses on reduction of Ni(II)(CN)_5^{3-} especially at the Ag electrode in different temperatures. At a first step, current density, Pt electrode as anode in 5 M H_2SO_4 in anodic, and 0.01 M CoSO_4 meidator kept constant. The Ni(II)(CN)_5^{3-} reduction investigated using its different temperatures like 10, 20, and 50 C at Ag cathode in 10 M KOH solution. The reduction of Ni(II)(CN)_5^{3-} confirmed via ORP electrode by reduction potential variation. The reduction efficiencies changes calculated using titration with FeSO_4 and KMnO_4 . Additionally, cyclic voltammetry analysis at different temperatures corealted with the reduction efficiency of Ni(II)(CN)_5^{3-}