

Redox behavior of $\text{Co}(\text{OH})_2$ and $\text{Cu}(\text{OH})_2$ in different concentrations of KOH: An electrochemical study

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A simplified homogenous mediators are the current need for mediated electrochemical reduction/oxidation to minimize the complexities. In light of many mediators, free metal ions like Ag(II), Ce(IV), and Co(III) are highly energetic for complete oxidation of environmental pollutants. But, low valent state of metal ions stability is a key factor to use the metal ions like Co(I), Cu(I), and Ni(I) in reduction process. Among many ways to stabilize the low valent metal ions, electrolyte concentration variation itself act as a stabilizer in many situations. Here, cyclic voltammetry studies planned to investigate the $\text{Co}(\text{OH})_2$ and $\text{Cu}(\text{OH})_2$ redox behavior. Through the redox behavior, one can say whether the low valency of metal ions stabilized. In first the stage, solubility of $\text{Co}(\text{OH})_2$ and $\text{Cu}(\text{OH})_2$ analused using different concentrations of KOH. The same concentrations of KOH planned to used CV analysis in different scan rates. Based on the CV peak potential and current variation, one can derive whether the process follows diffusion controlled. To support the cyclic voltammetry results, SEM and XRD analyses of the electrodes adopted. Finally, there will be a discussion on stabilization of $\text{Co}(\text{OH})_2$ and $\text{Cu}(\text{OH})_2$ upon reduction.