

Anode variation on reduction of Co(II)(CN)_5^{4-} and Ni(II)(CN)_5^{4-} in highly alkaline medium: A galvanostatic analysis

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MEO is emerging field towards environmental pollutants removal process using anodic part of a full electrochemical cell. At the same time, MER is in initial level, which must be developed to utilize the full electrochemical cell. It is evident from the literature that combination of anode and cathode decides the overall cell voltage. The present investigation focuses on reduction of Co(II)(CN)_5^{4-} and Ni(II)(CN)_5^{4-} especially at different anode variation. At first, current density, temperature, and the cathodic part has fixed by keeping carbon as cathode in 0.01 M Co(II)(CN)_5^{4-} and Ni(II)(CN)_5^{4-} in 10 M KOH constant. The Ni(II)(CN)_5^{4-} reduction investigated using at different like Pt, BDD, PbO_2 and Ti. The reduction of Co(II)(CN)_5^{4-} and Ni(II)(CN)_5^{4-} confirmed via ORP electrode. The reduction efficiencies calculated using titration with FeSO_4 and KMnO_4 . Additionally, CV, SEM and XRD analyses supports the suitable electrode on effective reduction of Ni(II)(CN)_5^{4-} . Based on the constant ORP value with a constant concentration of low valent Co(I)(CN)_5^{3-} and Ni(I)(CN)_5^{3-} , suitability of pair of electrodes fixed. Finally, there will be a discussion on the electrodes pair on reduction of Co(II)(CN)_5^{4-} and Ni(II)(CN)_5^{4-} .