

Monitoring of electrochemically generated Ni(I) at 10 M KOH medium using in-situ flow electrochemical cell towards online electrochemical sensor development: An initial study

Perumal Silambarasan, G. Muthuraman, 문일식[†]
순천대학교
(ismoon@sunchon.ac.kr[†])

Tremendous electrochemical sensors are available for neutral and less supporting electrolyte concentrations but, no electrochemical sensors for high concentrated supporting electrolyte medium. Here in, we have initiated to monitor the electrochemically prepared mediator $[\text{Ni(I)(CN)}_4]^{3-}$ by in-situ flow sensor cell coupled with paired electrolysis cell. First, cyclic voltammetry peak current for a standard redox couple Fe(II)/Fe(III) with different concentration ratios was used in the flow sensor cell to check the developed method. Then the Chemically prepared $[\text{Ni(I)(CN)}_4]^{3-}$ in presence of 10 M KOH at different concentrations were analyzed by UV-Visible and potentiometric titration method and compared. In order to find right redox peak potential of Ni(II)/Ni(I) at high concentrated KOH, different electrodes (Pt, carbon, Cu, Ag) were checked and derived a suitable electrode. In Finally, the chemically prepared different concentration of Ni(I) do monitored using selected electrode under the inert atmosphere by flow sensor cell. The resulted calibration plot used to derived the electrolytically prepared $[\text{Ni(I)(CN)}_4]^{3-}$.