

Real time electrochemical flow sensor development for monitoring an electron mediator $[\text{Co}(\text{I})(\text{CN})_5]^{4-}$ during its generation and pollutant removal

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

Quantification of electrochemically generated electron mediator is still by ex-situ way with indirect titration method. The present work aims to develop a suitable electrode in flow sensor cell to monitor electrogenerated $[\text{Co}(\text{I})(\text{CN})_5]^{4-}$ during electrolysis and its use in pollutant removal. First, suitable potential window for each electrode (Pt, carbon, Au, Ag) was derived using cyclic voltammetry under flow condition (solution flow rate between 0.5 to 3.0 L/min). The limiting potential change with electrolysis time was compared with chemically prepared $[\text{Co}(\text{I})(\text{CN})_5]^{4-}$ and potentiometric titration values to make calibration plot that was used to monitor the electron mediator concentration. The optimized method was also used to monitor the $[\text{Co}(\text{I})(\text{CN})_5]^{4-}$ concentration during air pollutant removal.

Key words: Macro sensor, In-situ flow cell, high concentrated supporting electrolyte, mediator monitoring.