

Homogeneous Co(I)(OH)_4^{3-} generation in NaOH medium by divided cathodic electrolytic cell towards TCE removal using electro-scrubbing

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Simple and stable homogenous mediators are the current need for mediated electrochemical reduction to minimize the complexities. In light of many mediators, free metal ions like Co(I), Cu(I), and Ni(I) can be a good choice in the reduction process. Among many ways to stabilize the low valent metal ions, electrolyte concentration variation itself acts as a stabilizer in many situations. Here, redox behavior of Co(II)(OH)_4^{2-} studies planned to investigate using cyclic voltammetry analysis. Through the redox behavior, one can say whether the low valency of metal ions stabilized. Further, low valent homogeneous electrocatalyst was generated using cathodic half electrochemical cell. By applying constant current, one can measure the reduction efficiencies of the respective species by monitoring ORP (oxidation reduction potential) change. A model pollutant trichloroethylene (TCE) was tested to ensure MER process. The removal process monitored by online FTIR gas analyser.