Liquid DCM removal using electrochemically generated homogeneous $Ni(I)(CN)_4^{3-}$ by semi batch electrolyzer

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Organic pollutants must be removed to have healthy environment for humans. Among many ways to remove them, metal ions mediated electrochemical reduction (MER) can be a good choice due to its a futuristic technology. Metal complexes are more suitable to use as a mediator in the MER process due to stabilize the active low valent state of metal ion. The present investigation focuses on removal of Dichloromethane (DCM) using electrogenerated $Ni(I)(CN)_4^{3-}$ mediator. Electrolytic reduction of $Ni(II)(CN)_4^{2-}$ on Cu electrode in KOH medium identified by ORP variation and potentiometric titration. The reduction efficiencies changes calculated using titration with $KMnO_4$. Cyclic voltammetry analysis at said electrodes correlated with the reduction of Ni(II)(CN)42−. Finally, DCM removal was carried out by optimized conditions using semi batch electrolytic cell. The removal efficiency was calculated from the GC/MS analysis.