

Electrochemical generation of low valent homogeneous Co(OH)_2 in NaOH medium towards
MER of allyl chloride

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A stable homogenous mediators are the current need for mediated electrochemical reduction/oxidation to minimize the complexities. In light of many mediators, free metal ions like Ag(II), Ce(IV), and Co(III) are highly energetic for complete oxidation of environmental pollutants. But, low valent state of metal ions stability upon reduction is a key factor to use the metal ions like Co(I), Cu(I), and Ni(I) 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(OH)_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 allyl chloride was tested to ensure MER process. The reduction process monitored by HACH and FTIR analyses. Finally, there will be a discussion on stabilization of Co(OH)_2 and its MER of allyl chloride.