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A Modified Electrodialytic Cell to Recover Heavy Metals from Wastewater

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Abstract

A modified electrodialytic cell integrates electro dialysis and redn. of metal ions. The cell is able to recover metallic copper from wastewater contg. 1000 ppm cupric ions and bring the concn. down to about 1 ppm. The kinetic data of decreasing copper ion concn. fit well in first order kinetics and allow calcn. of the over all reaction rate const. Effect of several parameters, namely, width of wastewater compartment, applied potential and concn. of anolyte and catholyte soln.; on the over all reaction rate const. and specific energy consumption were studied. The best combination of parameters results in an overall rate const. of $7.84 \times 10^{-4} \text{ sec}^{-1}$ and specific energy consumption of 48.18 kW-h/kg copper.