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Recovery of Zn (II) from its EDTA complexes by electro-membrane process

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ABSTRACT

Factors affecting the efficiency of electrochemical recovery of Zn (II) from its ethylenediaminetetraacetic acid (EDTA) complexes were systematically examined using three types of cation-exchange membranes in a two compartment electrolysis cell. In these experiments, the catholyte contained an equimolar amount of Zn (II) and EDTA, and the anolyte contained 0.1 M $NaNO_3$. The platinum and stainless steel were used as an anode and a cathode, respectively. The effect of current densities, metal concentration, the type of the cation-exchange membrane on the recovery of metals were determined. It was found that recovery of Zn (II) increased with increase of current density, concentration of catholyte solution, concentration ratio between metal—chelate and changed with the type of membrane in CMB>CMS>CMX order. The obtained numerical results showed that electrodeposition seems to be applicable method for the recovery of metals under appropriate conditions.

Keywords: Electrodeposition; Zinc; EDTA; Cation-exchange membrane

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