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# Preparation of Proton Permselective Composite Membrane and Its application in Waste Acid Reclamation by Ion Substitution Electrodialysis

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## Abstract

Nowadays, the reclamation of industrial waste acid characterized with low acid concentration and high metal ion content has attracted much attention. How to carry out effectively a separation between protons and metal ions becomes a top priority. In this report, a so-called proton permselective composite membrane was prepared specifically for waste acid reclamation by electrodialysis. Above all, a porous supporting membrane was prepared from polysulfone via classical wet phase inversion technology. Therein appropriate amount of sulfonated polysulfone (SPSF) was added to adjust its microstructure. Subsequently, a hydrophilic composite layer, such as Poly(ethylene imine) layer or Poly(vinyl alcohol) layer, was used to endow the proton permeability based on the unique transport mechanism of protons in which water molecules play an important role. ATR-FTIR and SEM were employed to monitor the changes in chemical

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