



Chronopotentiometric evaluation of enhanced counter-ion transport through anion exchange membranes in electromembrane processes

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ABSTRACT

This paper reports the use of chronopotentiometry as a powerful technique to study counter-ion transport properties through ion-exchange membranes. Chronopotentiometry at current values less, equal and greater than the limiting current density has been used to understand the role of ammonia buffer in the reduction and elimination of the concentration polarisation phenomena of ion transport through the Neosepta AMX anion exchange membrane (Tokuyama Soda, Japan). The addition of ammonia led to polarisation chronopotentiograms without transition time. The results show that the water dissociation reaction in the boundary layer is catalytically enhanced by ammonia. It shifted the overlimiting current regions towards the ohmic regions by destruction and elimination of the diffusion boundary layer.

Keywords: Ion-exchange membrane; Chronopotentiometry; Buffer solution; Counter-ion transport; Concentration polarisation; Water dissociation

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