

Membrane potential across a cation-exchange membrane separating solutions with a common electrolyte but two different solvents

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Received 4 January 2010; Accepted in revised form 1 June 2010

ABSTRACT

In the present study, we measured the membrane potential across a cation-exchange membrane separating two solutions with a common electrolyte but two different solvents. Effects of both solvent and electrolyte on the membrane potential were presented respectively. The following results have been obtained: i) membrane potential increases with the electrolyte concentration ratio between two compartments, no matter what the solvent, electrolyte and the weight percentage of organic solvent are; ii) membrane potential decreases with the weight percentage of organic solvent, and the minimum reaches when the weight percentage equals 100%; iii) membrane potentials for different organic solvents gradually decrease in the order of ethylene glycol > methanol > ethanol; iv) membrane potentials for various electrolytes follow such an order: LiCl > NaCl > MgCl₂ > AlCl₃.

Keywords: Membrane potential; Cation exchange membrane; Electrolyte; Solvent

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