



Bi-ionic potential: Experimental measurements and diffusion coefficients determinations

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Received 1 June 2010; accepted 4 April 2011

ABSTRACT

The bi-ionic potential of charged membranes has been studied theoretically and limiting expression corresponding to not negligible diffusion boundary layer effects has been used. A system formed by two electrolyte aqueous phases bathing an ion-exchange membrane was studied in order to determine the bi-ionic potential, in the case of a ionics cation exchange membrane. The experiments were conducted at different concentration solutions and temperature. To do it a new device was designed and constructed allowing the measuring of potential membrane in the bi-ionic system. The values obtained show a concentration dependence with different maximum values for each temperature. A theoretical model given the bi-ionic potential as a function of diffusion coefficients was used to obtain the values for the K^+ at different temperatures from the corresponding values of Na^+ measured by means a rotating diffusion cell.

Keywords: Ion-exchange membranes; Transport phenomena; Bi-ionic potential

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