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RESEARCH NOTES

离子在电解质溶液-荷电膜界面的分配平衡

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摘要 Ionic partition equilibrium in charged membrane immersed in solution of single electrolyte with mono valence or multi-valence is systematically investigated and several expressions are established for determination of partition coefficients. On this basis, the effects of the ratio of membrane charge density to bulk electrolyte solution concentration, the charge sign and valence of electrolyte ions and the type of membrane on the partition equilibrium were analyzed and simulated within chosen parameters. It is revealed that ion partition is not related solely with the respective concentrations but also definitely with the concentration ratio of fixed group to bulk solution in addition to the charge sign and the valence. For a counterion, the partition coefficient increases with this ratio and the valence; while for a coion, the partition coefficient decreases with this ratio and the valence. The theoretical calculations were compared with the experimental data and a good agreement was observed.

关键词 partition coefficient Donnan equilibrium electrolyte charged membrane

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Partition Equilibrium Between Charged Membrane and Single Electrolyte Aqueous Solution

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Abstract Ionic partition equilibrium in charged membrane immersed in solution of single electrolyte with mono valence or multi-valence is systematically investigated and several expressions are established for determination of partition coefficients. On this basis, the effects of the ratio of membrane charge density to bulk electrolyte solution concentration, the charge sign and valence of electrolyte ions and the type of membrane on the partition equilibrium were analyzed and simulated within chosen parameters. It is revealed that ion partition is not related solely with the respective concentrations but also definitely with the concentration ratio of fixed group to bulk solution in addition to the charge sign and the valence. For a counterion, the partition coefficient increases with this ratio and the valence; while for a coion, the partition coefficient decreases with this ratio and the valence. The theoretical calculations were compared with the experimental data and a good agreement was observed.

Key words partition coefficient; Donnan equilibrium; electrolyte; charged membrane

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