

Ions in water and biophysical implications : from chaos to cosmos

Marcus, Yizhak, author

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Abstrak

The book examines water as a solvent for gases, non-electrolytes, and electrolytes and reviews the properties, sizes and thermodynamics of isolated and aqueous ions, as well as their interactions, including those of polyelectrolytes. The effects of ions on water structure, including those on solvent dynamics and certain thermodynamic quantities, are presented. This volume investigates water surfaces with its vapour, with another liquid, and with a solid, as well as the effects of solutes, including simple ions and the water-miscible non-electrolytes. Surfaces are relevant to biomolecular and colloidal systems and the book discusses briefly surfactants, micelles and vesicles. Finally, the book concludes with a review of the various biophysical implications involving chaotropic and kosmotropic ions in homogeneous solutions and the Hofmeister series for ions concerning biomolecular and colloidal systems and some aspects of protein hydration and K^+/Na^+ selectivity in ion channels.