

Translational mobility of water molecules and Li⁺, F⁻, and Al³⁺ ions in aqueous solutions of LiCl, KF, and Al(NO₃)₃

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Abstract

The concentration dependences of the overall self-diffusion coefficients of water molecules, F⁻ and Li⁺ ions, and [Al³⁺(H₂O)₆] hydrated ions measured in aqueous solutions of LiCl, KF, and Al(NO₃)₃ are discussed. An analysis of the whole set of experimental results shows that translational mobility of water molecules in solutions of electrolytes is largely determined by the degree of hydration of the ions and is virtually independent of their translational mobility; translational mobilities of the ions themselves depend on the structural characteristics of their hydration sheaths and the structure of water around them.
