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Concentration dependences of self-diffusion coefficients of water molecules in dilute solutions of saccharides

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Abstract

The DAq(c) concentration dependences of the self-diffusion coefficients of water molecules in aqueous solutions of saccharose and dextran (molecular weight 40000) are analyzed in terms of hydration phenomena. The exponential DAq(C) dependence in dilute solutions is determined by interactions of water molecules with hydroxyls and oxygen atoms of saccharide molecules; H-bond lifetime τ_g is three times longer than correlation time τ_0 of translational mobility of molecules in pure water.
