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Self Diffusion of Bk3+ in aqueous solutions at neutral pH and pH 2.5. Comparison with the trivalent f-elemnts (Eu3+ , Gd3+ , Tb3+ , Tm3+)

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Key words : Self-diffusion (coefficients)/ Solvation / Actinide/ Lanthanide / Trivalent (aqueous ions)/ Hydolysis.

Abstract:

In this paper, we present a realistic model for estimation of trivalent actinides and lanthanides ions self-diffusion coefficients. We take account hydrolysis phenomena. We use Fuoss theory and Bjerrum approach to calculate Kh the thermodynamic hydrolysis constant. We use Marcus summarized data for different radius. We suppose that ion structure skills the same in solid state (salt) or in aqueous solution, regarding the water molecules surrounding central ions (M ≡ La3+ , Ac3+).
Taking account hydrolysis, experimental self-diffusion which allowed us to deduce the structure of the entity hydrated particularly for Berkelium ion.
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