STRUCTURAL RELAXATION AND THERMOELASTIC PROPERTIES OF ELECTROLYTIC SOLUTIONS

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S u m m a r y

On the basis of the kinetic equations for the one- and two-particle distribution functions accounting the contributions of the spatial correlations of density and the correlations of velocities, we study the thermoelastic properties of electrolytic solutions. We obtained the formulas for the dynamical heat conduction coefficient $\lambda(\omega)$ and the thermal modulus of elasticity $Z(\omega)$ which include the contributions of the translational and structural relaxations. We studied the asymptotic behavior of the latter at low and high frequencies which completely agrees with the result obtained by the method of molecular dynamics for classical liquids. At low frequencies, $\lambda(\omega)$ tends to its static value by the law $\sim \omega^{1/2}$, and $Z(\omega)$ tends to zero as $\sim \omega^{3/2}$. It is established that, at high-frequency mode, the thermal modulus of elasticity does not depend on the frequency, which corresponds to the Zwanzig high-frequency modulus of elasticity for liquids, and $\lambda(\omega)$ tends to zero proportionally to ω^{-1}.