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标题: Dynamics of Formamide Ionic Solutions Investigated by Ultrafast Optical Kerr Effect

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摘要: Molecular dynamics of formamide solutions of alkali. metal halide Salts were investigated using the time-resolved ultrafast optical Kerr effect (OKE) to observe the effects of solvation on the dynamics of a nonaqueous high-permittivity H-bonding solvent. The picosecond orientational and ultrafast intermolecular dynamics of liquid formamide as a function of concentration of NaI and KI are compared with the temperature effect on the pure solvent. The effect of a range of other salts at fixed concentration is also recorded. Transient OKE and corresponding low-frequency (THz) Raman spectra of the solutions revealed differences in the solvent dynamics caused by ion solvation. Increasing concentrations of NaI and KI have the effect of slowing down the diffusive reorientation and reducing the librational frequencies of formamide, with cation related effects observed on the THz Raman spectrum These effects are discussed in terms of in ion perturbation of the H-bonding structure in the solution. This approach provides a valuable means of investigating the dynamics, structure, and interactions in complex, interacting systems.

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