

# **Cluster formation in liquids**

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## **A B S T R A C T**

Our laboratory of optics and spectroscopy focuses on investigations of processes of cluster formation in liquids. Our laboratory's activities aim at a detailed description of self-assembly processes in the molecular condensed phase based both on experimental and theoretical techniques. We have two main research projects funded by the Academy Sciences of Uzbekistan. The first project is investigation of formation of heteromolecular cluster in aqueous solution by methods of dielectric and optical spectroscopy. Dielectric permittivity of aqueous solutions of acetic acid, tetrahydrofuran and dimethylformamide and others in a wide range of concentrations has been studied by molecular dynamics method. The comparison of curves of excess dielectric permittivity depending on the concentration and experimental data on excess refractive indices have been used.

The second project is study of formation of fullerene cluster in toluene, benzene and hexane, which is strongly dependent on the concentration of fullerene. We used transmission electron microscopy and atomic force microscopy to study structural features of fullerene solutions.