DYNAMICAL STRUCTURE OF LIQUID ALCOHOLS AND DEPHASING OF INTRAMOLECULAR VIBRATIONS

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To obtain the information about the peculiarities of the structure of liquid alcohols the temperature dependence of the vibrational profiles widths in Raman spectra of these objects was studied. The results of these investigations have shown that in the region 150 - 340 K the time of vibrational dephasing determining the Raman bandwidths is constant. This dephasing time correlates with the known time of hydrogen bond dissociation, which was measured in direct femtosecond experiment. From the data on the constancy of the number of hydrogen bonds per one molecule (in the same temperature range) the conclusion on the dynamic stability of the cluster structure of alcohols was made. The characteristic time of transformation of the structure can be obtained from the widths of the vibrational bands.