INTERMOLECULAR INTERACTIONS IN COMPLEXES WITH WEAK HYDROGEN BONDS

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Study of intermolecular interactions are of great importance since the character of intermolecular interactions and magnitudes of interaction forces among components of molecular complexes allows one to formulate clear ideas on structure of liquids. The most informative methods are optical ones, especially infrared (IR) and Raman spectroscopy. In the present work we used a method of induced optical transitions, which allows us to determine with high accuracy the nature and character of intermolecular interactions, including weak hydrogen bonds. Aim of this work was to study widths and integral intensities of the bands of simultaneous transitions in absorption spectra in mixtures of carbon dioxide with some haloid-hydrohens, as well as to calculate electrooptic parameters of a series of molecules and complexes to reveal a character and peculiarities of intermolecular interactions in studied systems. We have measured (in pair electrostatic interaction approximation) the absolute intensities of bands of simultaneous transitions in IR absorption spectra in the mixture of chlorous hydrogen with carbon dioxide in gaseous and liquid phases. It was shown a satisfactory agreement of experimental data and data calculated in approximation of dipole mechanism of induction of integral intensity of the band of simultaneous transition f3(CO2)+f(HCl) in gaseous and liquid mixtures. One should point the necessity to take additionally in account the contribution of absorption of complexes with weak hydrogen bond in system CO2.HCl to explain the intensities of bands of simultaneous transitions f(HCl)+f(1),2f(2)CO2.