AGGREGATED MOLECULAR FORMATIONS IN POLAR LIQUIDS AND ITS DISLAY ON RAMAN SPECTRA

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On a base of Raman spectra study of C=O vibrations band for some ketones (cyclohexanone, methylethylketone, acetone) the possibility of existence of dipole-dipole aggregated formations is analyzed. For these substances, the noncoincidence of the C=O vibrations band maxima frequencies for parallel ($I_{\parallel}(\nu)$) and perpendicular ($I_{\perp}(\nu)$) polarized components is typical. The difference $\Delta\nu$ is 5-6 cm^{-1}. Our studies show that, in a large degree, the presence of $\Delta\nu$ for C=O vibration and its change with temperature and with the dilution of substance is a result of imposition of near-placed bands with different polarization ratio belonging to monomers and dipole-dipole aggregated formations. In case of pure mithylethylketone and acetone, the C=O vibrations band complexity is displayed in the form of different asymmetry of resulting bands in $I_{\parallel}(\nu)$ and $I_{\perp}(\nu)$, in the peculiarities in trend of depolarization ratio within the band and in the form of typical change of a band's shape at dilution in non-polar and polar solvents. For cyclohexanone the band complexity can evidently be seen from the shape of experimental spectra for $I_{\parallel}(\nu)$ and $I_{\perp}(\nu)$. The behavior of cyclohexanone complicated C=O vibrations band at dilution in non-polar and polar solvents is analogous to that for acetone or methylethylketone.