



High order polarizabilities from optical interaction-induced Spectroscopy

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Résumé en anglais Multipolar polarizability contributions to the collision-induced light scattering spectra of optically isotropic molecules may be put in evidence in the Rayleigh wings and in the vicinities of the ν_1 Raman vibrational lines. Experiments on CH_4 or CF_4 (tetrahedral symmetry) and SF_6 (octahedral symmetry) make possible evaluations of the multipolar polarizabilities provided that isotropic Rayleigh spectra and anisotropic Raman bands are obtained in some relatively large frequency ranges. These evaluations — in particular those based on set inversion analysis — constitute experimental references for quantum chemistry computations of the multipolar polarizabilities. In the case of CH_4 , CF_4 and SF_6 , the agreement between experimental and *ab initio* values is quite good.

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