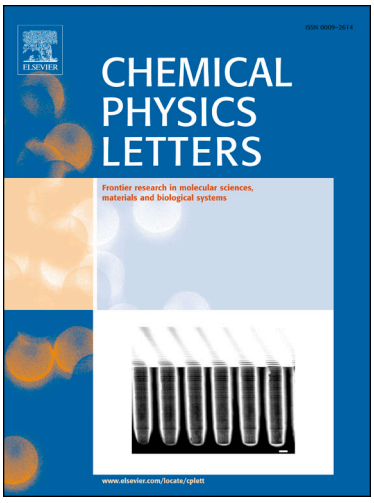

Research paper

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ELECTRODYNAMICAL FORBIDDANCE OF A STRONG QUADRUPOLE LIGHT-MOLECULE INTERACTION IN FULLERENE C_{60} AND ITS WITHDRAWAL IN FULLERENE C_{70}

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Key words: SERS, fullerene, electrodynamical forbiddance, quadrupole, forbidden lines.

Abstract

It is demonstrated that in fullerene C_{70}, there is a withdrawal of an Electrodynamical forbiddance of a strong quadrupole light-molecule interaction, which is realized in the fullerene C_{60}. This situation occurs because of the reduction of symmetry of C_{70} from the icosahedral symmetry group Y_h to the group D_{5h}. The withdrawal results in appearance of the lines in the SERS spectra of C_{70}, which are forbidden in usual Raman scattering and are allowed in infrared absorption. The measured SERS spectra of C_{70} demonstrates existence of such lines that strongly confirms our ideas about the dipole –quadrupole SERS mechanism.

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