Accepted Manuscript

Research paper

Electrodynamical forbiddance of a strong quadrupole light-molecule interaction in fullerene C_{60} and its withdrawal in fullerene C_{70}

V.P. Chelibanov, A.M. Polubotko

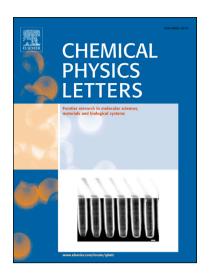
PII: S0009-2614(18)30094-0

DOI: https://doi.org/10.1016/j.cplett.2018.02.010

Reference: CPLETT 35422

To appear in: Chemical Physics Letters

Received Date: 12 December 2017 Accepted Date: 6 February 2018



Please cite this article as: V.P. Chelibanov, A.M. Polubotko, Electrodynamical forbiddance of a strong quadrupole light-molecule interaction in fullerene C_{60} and its withdrawal in fullerene C_{70} , *Chemical Physics Letters* (2018), doi: https://doi.org/10.1016/j.cplett.2018.02.010

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

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

V.P. Chelibanov¹ A.M. Polubotko^{2*}

¹State University of Information Technologies, Mechanics and Optics, Kronverkskii 49, 197101 Saint Petersburg, RUSSIA E-mail: Chelibanov@gmail.com

² A.F. Ioffe Physico-Technical Institute, Politechnicheskaya 26, 194021 Saint Petersburg,

RUSSIA, Tel: (812) 274-77-29, E-mail: alex.marina@mail.ioffe.ru

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.

^{*}corresponding author

Download English Version:

https://daneshyari.com/en/article/7838069

Download Persian Version:

https://daneshyari.com/article/7838069

<u>Daneshyari.com</u>