Abstract Submitted
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Radiative vacancies decay of endohedral atoms[1] MIRON AMUSIA, Racah Institute of Physics, Hebrew University, Jerusalem, Israel; Ioffe Physical-Technical Institute, St. Petersburg, Russian Federation, ARKADIY BALTENKOV, Arifov Institute of Electronics, Tashkent, Uzbekistan — It is demonstrated that the fulleren shell affects dramatically the radiative vacancy decay of an endohedral atom A@C60. It also adds new possibilities to radiative and non-radiative decay by opening a number of new interchannel decays similar to that in ordinary atoms where initial and final state vacancies almost always belong to different subshells. We demonstrate that the radiative width of a vacancy decay due to electron transition in the atom A in A@C60 acquire an additional factor that can be expressed via the polarizability of the C60 at transition energy. In general, it can not only enhance but also totally lock the radiative decay channel. For vacancies in subvalent shells of noble gas atoms N the non-radiative decay is forbidden. For N@C60 this decay is allowed since can proceed due to transition of fulleren shell electron to the vacancy in N. Corresponding width is expressed via the C60 total photoabsorption cross-section at the transition energy.

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