

Abstract Submitted
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Trends in correlation and confinement impacts on the e-Xe@C₆₀ generalized oscillator strengths¹ VALERIY DOLMATOV, University of North Alabama, MIRON AMUSIA, Racah Institute of Physics, Hebrew University, Jerusalem, Israel & A. F. Ioffe Physical-Technical Institute, St. Petersburg, Russia, LARISSA CHERNYSHEVA, A. F. Ioffe Physical-Technical Institute, St. Petersburg, Russia — The response of endohedral Xe@C₆₀ to fast electron impact ionization is theoretically studied by calculating its 4d, 5s and 5p generalized oscillator strengths (GOS). The calculation methodology combines the plane wave Born approximation, single-electron Hartree-Fock approximation, and multi-electron random phase approximation with exchange, all in the presence of the C₆₀ confinement. The confinement is accounted for in the framework of both a spherical δ -potential [1] and square-well-potential [2] models to evaluate the effect of the finite thickness of the C₆₀ cage on said GOS's. Impressive confinement brought impact on the latter is revealed. Vitality of accounting for electron correlation in calculations of the Xe@C₆₀ 5s and 5p GOS's is demonstrated. Trends in contributions of multipolar transitions beyond dipole transitions in the calculated GOS's are unraveled. We challenge experimentalists to conduct corresponding measurements.

[1] M.Ya. Amusia, A. S. Baltenkov, and B. G. Krakov, Phys. Lett. A, **243**, 99 (1998).

[2] V. K. Dolmatov, Adv. Quant. Chem. **58**, 13 (2009).

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Valeriy Dolmatov
University of North Alabama

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