

Abstract Submitted
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Near-ultraviolet photoionization of Xe@C₆₀: Sizable oscillator strength transfer from shell to atom HIMADRI CHAKRABORTY, Northwest Missouri State University, Maryville, MO 64468, MOHAMED MADJET, Freie Universitaet, D-14195 Berlin, Germany, JAN-MICHAEL ROST, MPIPKS, D-08117 Dresden, Germany, STEVE MANSON, Georgia State University, Atlanta, GA 30303 — The encapsulation of an atom in a fullerene cage offers a unique laboratory to probe the behavior of an atom in confinement. We perform calculations on the photoionization of a Xe atom endohedrally confined in C₆₀. The time-dependent local density approximation is employed to treat the correlated motion of 240 valence electrons of the fullerene *plus* all Xe electrons in the background of a uniformly charged classical jellium hull that centrally holds the Xe nucleus. In the energy region from Xe 5p ionization threshold to about 40 eV, the atomic cross section is found to enhance considerably by drawing strength from the collective motion of C₆₀ electrons. This is confirmed by identifying an equivalent depletion of the surface plasmon in the ionization cross section of the confining shell. Results corroborate our prediction [1] that the correlation moves oscillator strength from the shell to the atom, not in the opposite path. [1] Madjet et al., Phys. Rev. Letts. **99**, 243003 (2007).

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