

Abstract Submitted
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Photoionization of Xe in a Fullerene Ion Cage RONALD PHANEUF, NAGENDRA ARYAL, DAVID ESTEVES, CHRISTOPHER THOMAS, University of Nevada, DAVID KILCOYNE, ALEJANDRO AGUILAR, Lawrence Berkeley National Laboratory, CARMEN CISNEROS, UNAM Cuernavaca, Mexico — Photoionization of $\text{Xe}@C_{60}^+$ endohedral fullerene ions was investigated in the photon energy range 76 - 170 eV by merging beams of ions and synchrotron radiation. A solid sample containing 5 ppm of $\text{Xe}@C_{60}$ was prepared by thermally evaporating and depositing C_{60} onto a rotating metal cylinder that was simultaneously bombarded by a 500 eV beam of Xe^+ ions for several weeks. The sample was then evaporated into a low-power discharge in an ECR ion source, yielding a 30 - 40 fA beam of $\text{Xe}@C_{60}^+$ at 6 keV. Despite a low photoionization signal count rate of approximately 0.1 Hz, a signature due to photoexcitation of the Xe 4d giant resonance is evident in the measurements. The energy position of this feature suggests that the Xe atom donates electrons to the carbon cage of $\text{Xe}@C_{60}^+$. The data show no evidence for a predicted splitting of the Xe 4d giant resonance in $\text{Xe}@C_{60}$ into multiple components due to interference caused by reflection of electron waves by the carbon cage. This research was supported by the Division of Chemical Sciences, Geosciences and Biosciences of the U.S. Department of Energy.

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