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Photoionization of fullerene and endohedral fullerene ions at the Advanced Light Source, Lawrence Berkeley National Laboratory.¹

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Over the past 11 years, a comprehensive program on the photoionization cross-section of fullerene and endohedral fullerene molecular ions has been conducted at the ALS using the merged-beams technique pioneered during the 1960's in the UK. In contrast to targets using neutral atomic or molecular species, photoionization of ions presents unique challenges, especially large molecules such as fullerenes and in particular, rare encapsulated fullerenes, i.e., endohedrals, where an atom or molecule is trapped within the fullerene cage. I will discuss the program which initially studied C_{60}^+ and follow with a near-complete investigation into the photoionization of $Xe@C_{60}^+$ and C_{60}^+ including some remarks on the current progress on exotic endohedrals such as $Sc_3N@C_{80}^+$ and $Ce@C_{82}^+$ and ending with preliminary results from the study of $Au@C_{60}^+$. Atomic ion photoionization remains a principal objective of the program which motivated a recent NSF MRI proposal to replace the recently decommissioned ALS apparatus.

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