TUNABLE VACUUM ULTRAVIOLET PHOTOIONIZATION MEASUREMENTS OF CARBON CLUSTERS

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The photoionization thresholds for neutral carbon clusters have been measured using tunable vacuum ultraviolet light at the Advanced Light Source (ALS). A laser ablation cluster source with a high repetition rate vaporization laser is coupled to the quasi-contionous light from the ALS. Ionized clusters are detected as a function of photon wavelength to determine the onset of ionization. Ionization thresholds for carbon clusters up to C_{15} have been determined. These thresholds are compared to ionization potentials calculated from ab initio methods (extroplated CCSD(T) energies computed at cc-pVTZ ROCCSD(T) optimized geometries), which allows the investigation of isomeric structures in the molecular beam for some cluster sizes.