NEGATIVE ION PHOTOELECTRON SPECTRA OF HALOMETHYL ANIONS

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Halomethyl anions undergo a significant geometry change upon electron photodetachment, resulting in multiple extended vibrational progressions in the photoelectron spectra. The normal mode analysis that successfully models photoelectron spectra when geometry changes are modest is unable to reproduce the experimental data using physically reasonable parameters. A three-dimensional anharmonic coupled-mode analysis was employed to accurately reproduce the observed vibrational structure. We present the 364 nm negative ion photoelectron spectra of the halomethyl anions CHX_2^- and CDX_2^- (X = Cl, Br, I) and report electron affinities, vibrational frequencies, and geometries.

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