VIBRATIONAL ZEKE PHOTOELECTRON SPECTROSCOPY OF CHLOROBENZENE CATION

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Test of submission for JD. Zero-kinetic-energy (ZEKE) photoelectron spectroscopy was used to probe the vibrational levels in the ground electronic state of the chlorobenzene cation using a two-color photoionization scheme via the S$_1$ electronic state of the neutral\textsuperscript{a}. Exciting through different S$_1$ vibrational levels has revealed mixing of some S$_1$ normal coordinates in the ground state of the cation. A previously-identified Fermi resonance in the S$_1$ state of the neutral is also confirmed by the ZEKE spectra. The adiabatic ionization energy is measured as 73.170 ± 5 cm$^{-1}$.