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Dissociation Dynamics of Energy-Selected Ions with Threshold Photoelectron-Photoion Coincidence Velocity Imaging

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During the past ten years, a threshold photoelectron-photoion coincidence (TPEPICO) double imaging setup has been built at the Hefei Light Source (HLS) combining with tunable vacuum ultraviolet (VUV) synchrotron radiation, and applied on the state-of-the-art dissociative photoionization dynamics. The fundamental data, such as ionization energy and appearance potential, and the dissociation dynamics of energy-selected ions have been measured and investigated. The kinetic energy and the angular distributions of fragment ions dissociated from parent ions with definitive internal energy or state have been acquired directly from TPEPICO images. The non-adiabatic quantum effects, like conical intersection and internal conversion, have been revealed to play the significant roles in the dissociation mechanisms of halogenated hydrocarbon in electronically excited state.

Summary

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