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PHOTOFRAGMENT IMAGINGOF SMALL MOLECULES

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The photodissociation dynamics of 1,2-dibromopropane has been investigated at 234 and 265 nm. The nascent Br(2P3/2) and Br*(2P1/2)atom were state-selectively detected via a [2+1] resonance-enhanced multiphoton ionization (REMPI) scheme combined with photofragment ion imaging technique. The relative quantum yields were measured by REMPI with time-of-flight mass spectrometry (TOF-MS) and the kinetic energy releases and recoil anisotropies were extracted from the three-dimensional reconstructed ion images by inverse-Abel transformation of two-dimensional raw images.The obtained translational energy distributions have been well fitted by Gaussian functions. In the ground Br photofragment channel, the widths of Gaussian function have been broader than the excited Br*, which imply that complex photodissociation channels have been involved. The anisotropy parameters have been also more reduced in the ground Br products. The origin of the each photodissociation channel has been proposed based on the experimental results.