FLUORESCENCE IMAGING: A VERSATILE METHOD TO STUDY PHOTODISSOCIATION DYNAMICS

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To reduce the image blurring which originates from contributions of a cylindrical array of photolysis events in a photodissociation experiment, a variant of fluorescence imaging techniques has been developed to study photodissociation dynamics and collisional relaxation processes in the bulk. The experimental arrangement utilizes sliced imaging techniques of photofragments by the laser-induced fluorescence detection scheme. An unconventional procedure is employed to guide the photolysis laser in the viewing direction of the imaging detector with a proper obstruction. The perpendicularly sliced image is equivalent to a two-dimensional projection of the fluorescence image of photofragments from a single photolysis center. Experimental images of the ICN photodissociation and the collisional relaxation of CN photofragments are presented to illustrate the versatility of the present method.