INFLUENCING THE PHOTODISSOCIATION DYNAMICS OF FORMIC ACID USING INITIAL VIBRATIONAL EXCITATION

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Upon excitation to its first electronically excited state, formic acid dissociates into three radical channels, forming HCO + OH, H + COOH, or HCOO + H fragments. The dominant radical channel is the HCO + OH pathway with an estimated quantum yield $\Phi_{OH} \approx 0.8$ at 222 nm for the monomer, while for the dimer the yield is essentially zero [a]. Initially, we have studied the H-atom production channels detecting the H fragments using (3 + 1) REMPI. In these experiments, velocity map ion imaging gives the H-atom velocity distributions and the correlated COOH or HCOO fragment internal state distributions. We are interested in driving specific bond dissociation by initial vibrational excitation changing the photodissociation dynamics for formic acid monomer and dimer.

[a] D. L. Singleton, G. Paraskevopoulos, and R. S. Irwin, *J. Phys. Chem.* **94**, 695 (1990).