PHOTODISSOCIATION DYNAMICS OF HYDROCARBON RADICALS

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Laser photodissociation of the allyl, propargyl, and ethyl radicals are studied in a pump-probe experiment on both the nanosecond and picosecond timescales. In each of the radicals, initial UV excitation is followed by very rapid internal conversion, generating chemically activated radicals on the ground electronic surface with a microcanonical internal energy distribution. Hydrogen loss is monitoried by Lyman-α detection of atomic hydrogen. Rates and kinetic energy release in the dissociation can be derived from the data. Comparison to rates and energy distributions calculated by statistical theories are made.