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Reaction Control through Coherent Excitation of a Superposition State: Resonant Multiphoton Dissociation-Ionization of Sulfur Dioxide
BING XUE, JUN HAN, HAI-LUNG DAI, Department of Chemistry, University of Pennsylvania — Through coherent excitation of a pair of eigenlevels, an oscillation of 130 kcal/mole in energy excitation between electronic and vibrational motions on nano second time scale is created for the molecule sulfur dioxide. The reactivity of the molecule can be influenced depending on whether the molecule is vibrationally or electronically excited with this large amount of energy. The effect of excitation on reactivity is demonstrated in resonance enhanced multiphoton dissociation-ionization of sulfur dioxide as a function of time following the coherent excitation.

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