ULTRAFAST STRUCTURAL DYNAMICS OF 1,3-CYCLOHEXADIENE: ELECTRONIC STATE DEPENDENCE

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The ultrafast structural dynamics of 1,3-cyclohexadiene has been investigated using structurally sensitive Rydberg electron binding energies. Excitation to the 1B state and the 3p Rydberg state yielded different structural responses. In both experiments, the structural dynamics of the molecular core are reflected by time-dependent shifts of the Rydberg electron binding energy. Structural distortions associated with 3p-excitation cause a dynamical shift in the p_x- and p_y-binding energies by 8 and 25 meV/ps respectively, whereas after excitation into 1B more severe structural transformations along the ring-opening coordinate produce binding energy shifts at a rate of 65 meV/ps.