

## ULTRAFast DYNAMICS OF DIBROMOCYCLOALKANES

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Carbocyclic geminal dibromides are important intermediates in synthesis of complex heterocyclic molecules and natural products.<sup>a</sup> Ultrafast time-resolved techniques can help to obtain information about the electronic structure of the intermediates which appears in the chemistry and photochemistry of these molecules. Also, relaxation dynamics and reactivity of these intermediates in different solvents can be characterized. This information can be used for the design of different compounds with desired properties. In the current work, 1,1-dibromocycloalkanes with 3-, 4-, and 5-member rings were synthesized using previously described procedures.<sup>b c d</sup> For all three samples, ultrafast time-resolved absorption experiments with UV-excitation were performed in acetonitrile and methylcyclohexane solvents. It was shown that excitation of dibromocycloalkane solutions with 250 nm short (40 fs) pulses forms excited state absorption (ESA) of parent molecules in the spectral range from 360 to 760 nm. Within 800 fs, ESA decays with beginning of formation product bands. Next within 50 ps, these broad bands reach their maximum intensity and form well-defined broad peaks centered at 550, 600 and 400 nm for 3-, 4-, and 5-member rings respectively. These product species are long-lived and begin to decay at 1 ns. Obtained results suggest the formation of isomer products  $(\text{CH}_2)_n - \text{C} - \text{Br} - \text{Br}$  ( $n=1-3$ ), similar to the isomeric species (HBrCBr-Br) observed in isomerization of bromoform.<sup>e f</sup>

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