ULTRAFAST STUDY OF BROMINE RADICAL IN SOLUTION: THE ROLE OF COMPLEXES AND VIBRATIONAL EXCITATION

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The bromine radical is an interesting species to interrogate with vibrationally mediated chemistry. It forms a long-lived complex in the liquid phase, and hydrogen abstraction from a solvent molecule is endothermic. Photolysis of a bromine precursor forms an *iso*-compound within 1 ps, which decays to a radical-solvent complex on a $\sim$10 ps timescale. We use these features to examine the reaction of the Br radical complex with an excited C-H oscillator. A potential reaction pathway that becomes available upon vibrational excitation is H abstraction from the excited oscillator by Br. Vibrational excitation can also cause dissociation of the Br complex. We follow the progress of these reactions using transient broadband UV-Vis spectroscopy.