ISOMERIZATION BETWEEN CH_2ClI AND CH_2Cl-I IN CRYOGENIC MATRICES STUDIED ON ULTRAFAST TIMESCALE

THOMAS J. PRESTON, MAITREYA DUTTA, BRIAN J. ESSELMAN, MICHAEL A. SHALOSKI, ROBERT J. MCMAHON, and F. FLEMING CRIM, *The University of Wisconsin-Madison Department of Chemistry, 1101 University Avenue, Madison, WI, 53705*; AIMABLE KALUME, LISA GEORGE, and SCOTT A. REID, *Department of Chemistry, Marquette University, Milwaukee, WI, 53233*.

Photodissociation of species entrained in solid matrices potentially leads to reassociation of the newly formed fragments. After fixing CH_2ClI in various atomic and molecular matrices, we measure ultrafast transient absorptions to monitor the photolysis of the precursor and isomerization to form *iso*-CH_2ClI. We probe the two lowest energy electronic absorption features of CH_2Cl-I near 435 nm and 800 nm. Probing the low energy side of the 435-nm band interrogates the formation and subsequent cooling of the hot, newly formed products. We find that the recoiling fragments, CH_2Cl and I, lose large amounts of energy to the environment in the initial collision with the matrix cage, which leads to formation of the isomer.