INVESTIGATION OF THE METHYLENE AMIDOGEN RADICAL USING THE CRDS TECHNIQUE

BORIS NIZAMOV and PAUL J. DAGDIGIAN, *Department of Chemistry, The Johns Hopkins University, Baltimore, Md 21218-2685*.

Cavity ringdown spectroscopy (CRDS) was used to study room temperature chemical reactions of the methylene amidogen radical (CH_2N). The radical was prepared by 193 nm photolysis of formaldoxime, $CH_2NOH \rightarrow CH_2N+OH$. CRDS signal from both CH_2N and OH [A–X (1,0) band] was observed in the wavelength region 278-288 nm. By comparison of the OH and CH_2N signals, absorption cross section of the CH_2N was determined. To correct for the loss of OH radical by reaction, the rate constant of the reaction of OH with formaldoxime was measured, k(CH_2NOH+OH)= $2.5*10^{-12}$ molecule cm^3 s^{-1}. Reaction of CH_2N with stable molecules such oxygen, hydrogen and methane could not be observed and only an upper limit of the reaction rate constants, $< 1.0 *10^{-15}$ molecule cm^3 s^{-1}, could be derived. Self-recombination was the main removal process for the CH_2N radical under the conditions of our experiment.