

## INVESTIGATION OF THE METHYLENE AMIDOGEN RADICAL USING THE CRDS TECHNIQUE

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Cavity ringdown spectroscopy (CRDS) was used to study room temperature chemical reactions of the methylene amidogen radical ( $\text{CH}_2\text{N}$ ). The radical was prepared by 193 nm photolysis of formaldoxime,  $\text{CH}_2\text{NOH} \rightarrow \text{CH}_2\text{N} + \text{OH}$ . CRDS signal from both  $\text{CH}_2\text{N}$  and OH [ $A-X$  (1,0) band] was observed in the wavelength region 278-288 nm. By comparison of the OH and  $\text{CH}_2\text{N}$  signals, absorption cross section of the  $\text{CH}_2\text{N}$  was determined. To correct for the loss of OH radical by reaction, the rate constant of the reaction of OH with formaldoxime was measured,  $k(\text{CH}_2\text{NOH} + \text{OH}) = 2.5 * 10^{-12}$  molecule  $\text{cm}^3 \text{s}^{-1}$ . Reaction of  $\text{CH}_2\text{N}$  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  $\text{cm}^3 \text{s}^{-1}$ , could be derived. Self-recombination was the main removal process for the  $\text{CH}_2\text{N}$  radical under the conditions of our experiment.