

PHOTOCHEMISTRY OF CYANOMETHYLENE CYCLOPROPANE ( $C_5H_5N$ ) IN A LOW TEMPERATURE RARE GAS MATRIX

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We are interested in the photochemistry and spectroscopy of interstellar molecules, and recently focused on isomers of pyridine. We examined the photochemistry of cyanomethylene cyclopropane in low temperature conditions relevant to the interstellar medium. Cyanomethylene cyclopropane was mixed with argon prior to deposition onto a CsI window at temperatures below 30 K. We collected IR spectra in the range of 400-4,000  $cm^{-1}$ . We irradiated the molecule at  $\lambda > 200$  nm using a Xe/Hg arc lamp, and observed IR bands indicative of a new organic nitrile develop over time; no change to the IR spectrum of cyanomethylene cyclopropane was observed when a  $\lambda > 295$  nm UV cut-off filter was used. The new IR bands produced from this process were compared to other experimental and predicted IR spectra of  $C_5H_5N$  isomers to interrogate the  $C_5H_5N$  potential energy surface .