

VACUUM UV LABORATORY STUDY OF THE PHOTODISSOCIATION OF CS

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Photodissociation of carbon monosulfide (CS) in UV-dominated regions, including diffuse interstellar medium and protoplanetary regions, may produce metastable carbon and sulfur in 1S and 1D states, which could contribute internal energy to gas-phase chemical reactions. However, unlike its isoelectronic CO molecule, little is known about Vacuum UV (VUV) photodissociation of CS. In the present study, we investigated the $C^1\Sigma^+ - X^1\Sigma^+$ band of CS. CS is generated by photolysis of CS_2 and then adiabatically expanded into a vacuum chamber. The two-independently-tunable-VUV photodissociation-photoionization spectroscopy coupled with velocity map imaging (VMI) detection was used to measure state-specific photodissociation cross sections and atomic state branching fractions. Our experiment is the first quantitative study of CS in the VUV spectral region.