

A SEARCH FOR THE HOCO RADICAL IN THE MASSIVE STAR-FORMING REGION Sgr B2(M)

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Despite importance of the origin of life, long lasting challenges to detect the simplest amino acid glycine ($\text{H}_2\text{NCH}_2\text{COOH}$) in interstellar medium has not been successful. As a preliminary step toward search for glycine, detection of its precursor has received attention. It is considered that glycine is produced by the reaction of the HOCO radical and the aminomethyl radical (CH_2NH_2) on interstellar grain surface:



HOCO is produced by the reaction of $\text{OH} + \text{CO} \rightarrow \text{HOCO}$ and/or $\text{HCOOH} \rightarrow \text{HOCO} + \text{H}$. However, HOCO and CH_2NH_2 have not been investigated in interstellar medium. Recently, we determined the accurate molecular constants of HOCO.^a Thus, accurate rest frequencies were derived from the constants. In the present study, we carried out the observations of HOCO in the massive star-forming region Sgr B2(M), having variety of interstellar molecules, with Nobeyama 45 m radio telescope. Although HOCO could not be detected in Sgr B2(M), the upper limit of the column density was derived to be $9.0 \times 10^{12} \text{ cm}^{-2}$ via the spectrum in the 88 GHz region by the rotational diagram method. If the reaction (1) is a main process of the glycine production in this region, an extremely deep search is needed to detect glycine.

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