DETECTION OF CH_3NCO IN THE GALACTIC CENTER STAR-FORMING REGION SAGITTARIUS B2(M) BY RADIO ASTRONOMICAL OBSERVATIONS

YUKI OHNO, *Faculty of Science Division I, Tokyo University of Science, Tokyo , Japan*; MITSUNORI ARAKI, *Research Institute for Science and Technology, Tokyo University of Science, Noda, Japan*; YOSHIAKI MINAMI, *Faculty of Science Division I, Tokyo University of Science, Shinjuku-ku, Tokyo, Japan*; TAKAHIRO OYAMA, *Department of Materials and Life Sciences, Sophia University, Tokyo, Japan*; SHURO TAKANO, *College of Engineering, Nihon University, Fukushima, Japan*; NOBUHIKO KUZE, *Department of Materials and Life Sciences, Sophia University, Tokyo, Japan*; YOSHIHIRO SUMIYOSHI, *Division of Pure and Applied Science, Faculty of Science and Technology, Gunma University, Maebashi, Japan*; KOICHI TSUKIYAMA, *Faculty of Science Division I, Tokyo University of Science, Shinjuku-ku, Tokyo, Japan*.

Large difference of chemical compositions between molecular clouds and comets is a big question for astrochemistry. The case of a pre-biotic molecule CH_3NCO is one of them. The abundance ratio of [CH_3NCO]/[HNCO] is high in the comet 67P (> 4, [1]), although it is low ($0.02 - 0.3$, e.g., [2]) in molecular clouds. An abundance of CH_3NCO is expected to be held and/or increased during evolutionary process of a cloud. A pair of an old core and a young core having the similar chemical compositions needs to be investigated for this evolutionary process. In this work, we aimed to detect CH_3NCO in the middle (M) core, which is relatively older than the north (N) core, in the Galactic Center star-forming region Sagittarius B2 with the 45 m telescope of Nobeyama Radio Observatory. The rotational transitions of $J = 10 \rightarrow 9$ to $13 \rightarrow 12$ for CH_3NCO were detected in the $85 - 114$ GHz region. The column density and the rotational temperature are derived to be $N = (4.3 \pm 2.1) \times 10^{13}$ cm^{-2} and $T_{rot} = (32 \pm 9)$ K, respectively, assuming local thermal equilibrium. Similarly, an abundance of HNCO is estimated to be $N = (1.3 \pm 0.5) \times 10^{15}$ cm^{-2} ($T_{rot} = 21 \pm 2$ K), giving the ratio of [CH_3NCO]/[HNCO] = 0.032. Thus, as a simplest model, it is suggested that an abundance of CH_3NCO is held during evolutionary process of the Sagittarius B2 region.

[1] Goesmann et al., Science, 349, 689 (2015). [2] Halfen et al., ApJ, 812, L5 (2015).