

OBSERVATIONS OF HC₃N TOWARD THE SGR B2 MOLECULAR CLOUD

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We have observed the 10 - 9 transitions of HC₃N and its ¹³C substitutes (H¹³CCCN, HC¹³CCN, and HCC¹³CN), and the vibrationally excited 12 - 11 ($v_7=1$) HC₃N transition toward the Sgr B2 molecular cloud. The observed HC₃N emission shows an elongated shape around the Principal Cloud (~ 4.5 pc in R.A. $\times 7.4$ pc in Decl.). The optically thin H¹³CCCN line peaks around the (N) core and we derive the total column density $N(\text{H}^{13}\text{CCCN}) = 4 \times 10^3 \text{ cm}^{-2}$ at this position. Toward the 2' N cloud which shows the peculiar chemistry, the HC₃N lines show enhancements compared to the extended envelope. The shocks of the 2' N may have resulted in the enhancement of HC₃N. The hot component of HC₃N is strongly concentrated around the (N) core and its HPW is ~ 0.9 pc in diameter. We derive the lower limit of the abundance ratio $N(\text{HC}_3\text{N})/N(\text{H}^{13}\text{CCCN})$ to be larger than 40 in most regions except the (M) and (N) cores. The fractionation processes of ¹³C at this region may not be as effective as previously reported.