Q46a **Abundance Anomaly of the ^{13}C Species of CCH**

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We have observed the $N = 1 - 0$ lines of CCH and its ^{13}C isotopic species toward a cold dark cloud, TMC-1, and a star-forming region, L1527, in order to investigate the ^{13}C abundances and formation pathways of CCH. We have successfully detected the lines of ^{13}CCH and C^{13}CH toward the both sources, and have found a significant intensity difference between the two ^{13}C isotopic species. The [C^{13}CH]/[^{13}CCH] abundance ratios are found to be 1.6 ± 0.4 (3σ) and 1.6 ± 0.1 (3σ) for TMC-1 and L1527, respectively. The abundance difference between C^{13}CH and ^{13}CCH means that the two carbon atoms of CCH are not equivalent in the formation pathway, as far as the isotope exchange reaction after the formation of CCH can be ignored. Thus, the electron recombination of $C_2H_2^+$ or $C_2H_3^+$ cannot explain the difference, and the C + CH_2 reaction would significantly contribute to the CCH production. On the other han d, the [CCH]/[C^{13}CH] and [CCH]/[^{13}CCH] ratio are evaluated to be larger than 170 and 250 toward TMC-1, and to be larger than 80 and 135 toward L1527, respectively. Therefore, both of the ^{13}C species are significantly diluted in comparison with the interstellar ^{12}C/^{13}C ratio of 60. The dilution is discussed in terms of a behavior of ^{13}C in molecular clouds.