

P109a Q-band line survey observations toward 12 intermediate-mass protostars with the Yebes 40m telescope

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Observation toward low-mass and high-mass protostars have revealed that carbon-chain molecules are abundant around some sources, suggestive of the chemical diversity. Carbon-chain species are found to be abundant in warm gas ( $\sim 20 - 30$  K) around some low-mass protostars, which has been known as warm carbon-chain chemistry (WCCC). Recent ALMA observations toward high-mass protostars have revealed that some carbon-chain species are abundant in hot gas ( $> 100$  K) and coexist with complex organic molecules (COMs), which has been named hot carbon-chain chemistry (HCCC). However, it is difficult to directly compare the carbon-chain chemistry around high-mass and low-mass protostars due to their large physical gaps. In order to fill such gaps, we have conducted the Q-band line survey observations toward 12 intermediate-mass protostars, which are taken from the source list of the SOFIA Massive (SOMA) Star Formation project, with the Yebes 40m telescope. Several carbon-chain species (*e.g.*,  $\text{HC}_3\text{N}$ ,  $\text{HC}_5\text{N}$ , *cyclic*- $\text{C}_3\text{H}_2$ ,  $\text{C}_3\text{H}$ ,  $\text{C}_4\text{H}$ ) have been detected from all of the target sources except one. In addition, some COMs (*e.g.*,  $\text{CH}_3\text{OH}$ ,  $\text{CH}_3\text{CN}$ ,  $\text{H}_2\text{CCO}$ ) have been detected. We will present initial analytical results and comparisons of chemical composition among the target sources.