P122b Chemical Survey Observations toward Intermediate-Mass Protostars

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Although astrochemical studies around protostars have been progressed in low-mass ($< 2M_\odot$) and high-mass ($> 8M_\odot$) stars, our knowledge about chemistry around intermediate-mass protostars is much poor because of deficient observational data. Our group is working on astrochemical studies toward intermediate-mass protostars to fill large physical gaps between low-mass and high-mass regimes. As an initial step, we have carried out line survey observations in the 30.5–50 GHz band toward five intermediate-mass protostars with the Yebes 40m telescope (Spain). The target sources were selected from the source list of the SOFIA Massive (SOMA) Star Formation project. Various carbon-chain molecules (*e.g.*, HC_nN ($n = 3, 5$), C_nS ($n = 2, 3$), C_4H, *linear*-H_2CCC, *cyclic*-C_3H_2) and complex organic molecules (*e.g.*, CH_3OH, H_2CCO, CH_3CHO, CH_3CN) have been detected from the target sources. These datasets are the first survey result of carbon-chain species toward intermediate-mass protostars, and we continue these observations to increase sample size. In this presentation, we will present chemical composition around these five intermediate-mass protostars, and discuss carbon-chain chemistry by comparing with previous results toward low-mass and high-mass protostars. Moreover, we will investigate a possibility of chemical diversity around the intermediate-mass protostars.