

P154a Formaldehyde deuteration in Galactic high-mass star-forming cores

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Formaldehyde and its deuterated forms can be produced both in the gas phase and on grain surfaces. However, their relative importance is unclear. Our recent APEX observations of formaldehyde and its deuterated species suggested that they form mostly on grain surfaces although some gas-phase contribution is expected at the warm high-mass protostellar stage. Since the APEX beam is larger, and since these high-mass star-forming regions are clustered and complex, it is however unclear whether the emission arises from the protostellar sources or from starless/pre-stellar cores associated with them. Therefore, interferometric observations are needed to separate the emission originating from the small and dense cores, to determine the size of the emitting regions, and then being able to use them as powerful diagnostic tools of the chemical properties of high-mass star forming regions. In our ALMA Atacama Compact Array follow-up observations, we targeted the continuum and formaldehyde emission of high-mass star-forming cores in different evolutionary stages. The ACA observations helped us to resolve the formaldehyde emission and give a better estimate on the source sizes. Our combined APEX and ALMA data support our single dish results: the deuteration fraction of formaldehyde decreases with evolutionary stage, confirming the importance of the gas-phase contribution to the formation process.