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Exploring Complex Organic Molecules in the Orion Protostellar Cores

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Complex organic molecules (COMs) in solar-like young stellar objects (YSOs) are of great interest due to their potential link to the origin of life. Under the ALMA Survey of Orion PGCCs (ALMASOP) project, we have identified 11 out of 56 protostellar cores that are rich in warm COMs. Our modeling suggests that the observed COMs are primarily located in the warm, innermost regions of the envelope. Interestingly, in some cases, the COMs also appear to trace the base of bipolar jets and the rotating ring structure near or within the disk boundary. These findings demonstrate that COMs are not only valuable for their potential role in prebiotic chemistry within the eventual protoplanetary disk, but also serve as insightful tracers of the physical processes occurring in the innermost regions of protostellar systems.

Section

Star Formation

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