

Formation and isotope fractionation of interstellar ices, and their delivery to a forming disk

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The level of isotope fractionation in molecules provides insights into their formation environments and how they formed [e.g., 1, 2]. In this presentation, we present results from a series of astrochemical simulations from molecular clouds to forming circumstellar disks, considering isotope fractionation mechanisms and a layered ice structure [3, 4, 5]. Our main focus is placed on deuterium fractionation, while, if time allows, we will also discuss nitrogen isotope fractionation. In our models, icy molecules are mostly formed in the prestellar stages, and they are delivered to a disk or (partly) destroyed en route into the disk via thermal and stellar UV processing. The processing modifies the level of isotope fractionation in icy molecules. The numerical results are compared with observational studies of objects at various evolutionary stages.

References

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