Observations of Molecular Isotope Fractionation in Prestellar Cores

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Anomalously fractionated isotopic material is found in many primitive Solar System objects, such as meteorites and comets. It has been suggested that these extreme isotope ratios, are tracers of interstellar chemistry. We will present observations of the nitrogen and carbon fractionation chemistry in dense molecular clouds, particularly in cores where substantial freeze-out of molecules, namely CO, onto dust has occurred. Recent models have suggested that non-depleted species, carbon and nitrogen-rich, may undergo isotopic enhancements in these conditions. The fractionation ratios measured in different interstellar molecules will be discussed and compared to the ratios determined in molecular clouds, comets, and meteoritic material.