Interstellar grains: generation, ID, & processing

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The interstellar medium is a physico-chemical laboratory where extreme conditions are encountered, and whose environmental parameters (*e.g.* density, reactant nature, radiations, temperature, time scales) define the composition of matter. Whereas cosmochemists can spectroscopically examine collected extraterrestrial material in the laboratory or via space probes, astrochemists must rely on remote observations to monitor and analyze the physico-chemical composition of interstellar solids. The observations give essentially access to the molecular functionality of these solids, rarely to elemental composition constraints and isotopic fractionation only in the gas phase. Astrochemists bring additional information from the study of analogs produced in the laboratory, placed in simulated space environments. In this presentation laboratory experiments will be presented, setting constraints on the composition of organic solids and molecules in the cycling of matter in the Galaxy.