

Title: “The Abiotic Production in Space of Molecules of Astrobiological Interest”

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Abstract: The chemistry that occurs in space is considerably different from what we are used to in a planetary setting. The extremely low densities, high radiation fields, and extremes in temperature (both high and low), and the fact that hydrogen and helium represent all but a few percent of the available reactants, would normally be thought to be counter-productive for the production of complex molecular species. Surprisingly, chemistry reactions occur in many environments in space, although few of these involve simple aqueous or gas phase reactions of the type we are familiar with on Earth. Instead they involve ion-molecule and radical-molecule reactions, gas-grain reactions, and reactions mediated by ionizing radiation. This talk will focus on the chemistry that can occur when extraterrestrial mixed-molecular ices are exposed to radiation and will concentrate on the production of molecules that are of particular interest for astrobiologists.