
Laboratory studies on photo-processing and desorption of prebiotic molecules in space

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Abstract

Today thanks to the advent of large telescopes, we have detected an increasing number of complex molecules in the gas phase of star forming regions, prestellar dense cores, circumstellar disks, and winds. Planets are formed in protoplanetary disks during the first millions of years of stellar evolution. Thus, it is important to understand if molecules observed in gas phase, are already available in the solid phase adsorbed on the surface of dust, and which fraction of such molecules will end up in protoplanetary disks in newly formed planetesimal. In laboratory, we are studying the interaction between mineral surfaces and biomolecules in simulated space conditions investigating both the photo-stability of molecules and the thermal desorption process. These studies will support the interpretation of the observed molecules in star forming regions with the goal of understanding the role of the grain surface in driving prebiotic chemistry in space.

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