

# Surface reactions on interstellar grain analogues: From carbon grains to carbon-bearing ice species

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The formation of large Complex Organic Molecules (COM) and exobiologically-relevant species on the surface of dust interstellar grains and their processing during desorption represent an important step toward the understanding of the origin of life on earth. In order to gain more insight onto these physical and chemical processes, we have investigated surface reactions on carbon grains and on interstellar ice analogues. Such a study would help to justify the abundances of species already detected through astronomical observations or to guide the future exploratory observations. Interstellar grain analogues are prepared under ultra high vacuum of  $1 \times 10^{-10}$  mbar and at very low temperatures (3-20 K), conditions reproducing the extreme environments of the interstellar clouds. In the context of this conference, I will focus on the interstellar grain analogues irradiated by UV photons or high energy particles combined to the H-addition reactions, the most predominant reaction in the interstellar medium. This experimental study which combine energetic and non-energetic processing will bring more insight onto the route of COM formation and answer the question why different aldehydes like methanal, ethanal, propynal, propenal and propanal are present in dense molecular clouds while the only alcohol detected in those cold regions is methanol.