LASER ABLATION OF SOLID ORGANIC PRECURSORS AS AN ALTERNATIVE TOOL IN THE GENERATION OF INTERSTELLAR MOLECULES

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In the course of the investigation of the rotational spectrum of prebiotic hydantoic acid by Fourier transform microwave spectroscopy coupled to a laser ablation source in a supersonic expansion, rotational signatures of two cyclic molecules, hydantoin and 2,5-oxazolidinedione, have been unexpectedly observed along with the four most stable conformers of hydantoic acid.[b] Interestingly, two of them presented folded geometric arrangements that might act as precursors in the cyclization reactions assisted by laser ablation. They could play the role of near-attack conformations (NACs) in the framework of the NAC theory for intramolecular reactions. A detailed analysis of the spectrum further revealed the simultaneous formation of other species in the jet, showing that the laser ablation of solid organic precursors constitutes an alternative tool in the generation of new chemical species.[b] It has been recently confirmed using diaminomaleonitrile as a solid precursor. Up to 30 different species (most of them detected in space) have been revealed in the supersonic expansion of our laser ablation chirped pulse Fourier transform microwave LA-CP-FTMW experiment.

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[b]Kolesniková, L.; León, I.; Alonso, E. R. et al.: *J. Phys. Chem. Lett.* **2019**, accepted, DOI: 10.1021/acs.jpclett.9b00208.