



Curiosity/SAM Experiment Offers New Method For Life Search

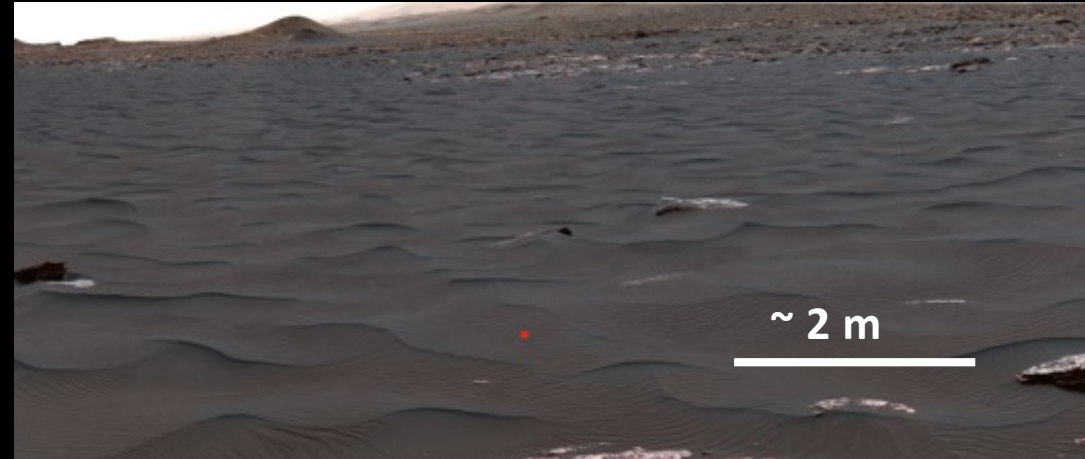


Maëva Millan (699), Samuel Teinturier (699), Charles Malespin (699), Jean-Yves Bonnet, Arnaud Buch, Jason Dworkin (691), Jen Eigenbrode (699), Caroline Freissinet, Daniel Glavin (690), Rafael Navarro-González, Anushree Srivastava, Jen Stern (699), Brad Sutter, Cyril Szopa, Amy Williams, Ross Williams (699), Greg Wong, Sarah Johnson and Paul Mahaffy (690)

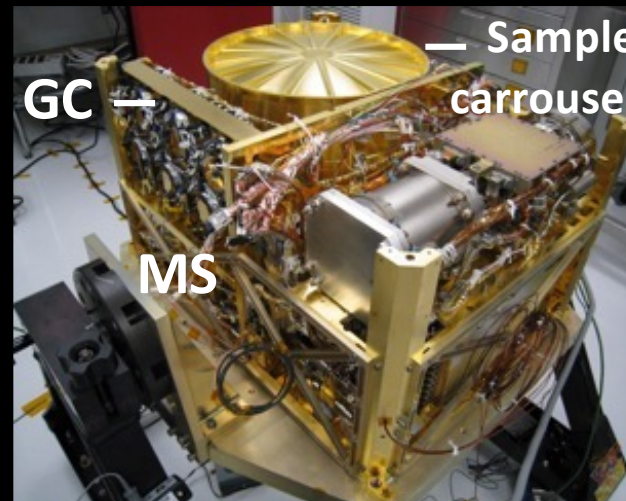
Significance: The first wet chemistry experiment performed on Mars has expanded our understanding of the range of organics that could be present in Martian sands. The success of this experiment offers new method for the search for chemical biosignatures in habitable environments in our solar system.

Background: The search for organics, one of the main goals of the Curiosity rover exploring Gale crater, is crucial to determining whether life existed on Mars. Goddard’s SAM instrument on Curiosity uses “wet chemistry” techniques to help release organic compounds from rocks and sand.

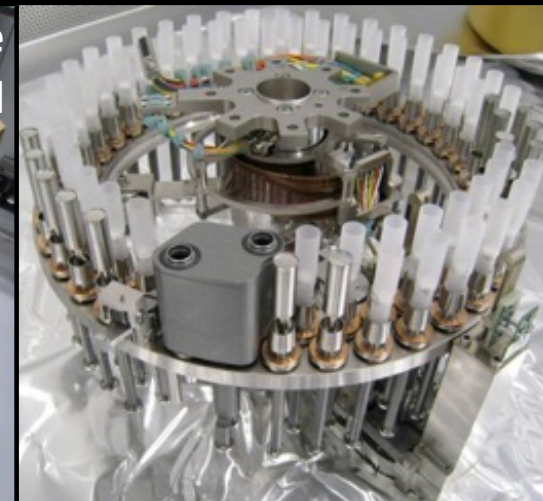
Experiments & Results: Team analyzed sand from Bagnold Dunes, detecting benzoic acid for the first time. The benzoic acid could be produced from the oxidation of meteoritic organic matter delivered to Mars or from ancient biological material produced on Mars.



The sand of Bagnold Dunes, where the sample for derivatization was collected



The SAM instrument



Sample carousel with the 9 wet chemistry cups



Wet chemistry cup

“Organic molecules revealed in Mars’s Bagnold Dunes by Curiosity’s derivatization experiment.” *Nature Astronomy* (2021).

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