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4 pm (Rome time)

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Salt on Mars: Astrobiological Tombs?



Kathleen C. Benison

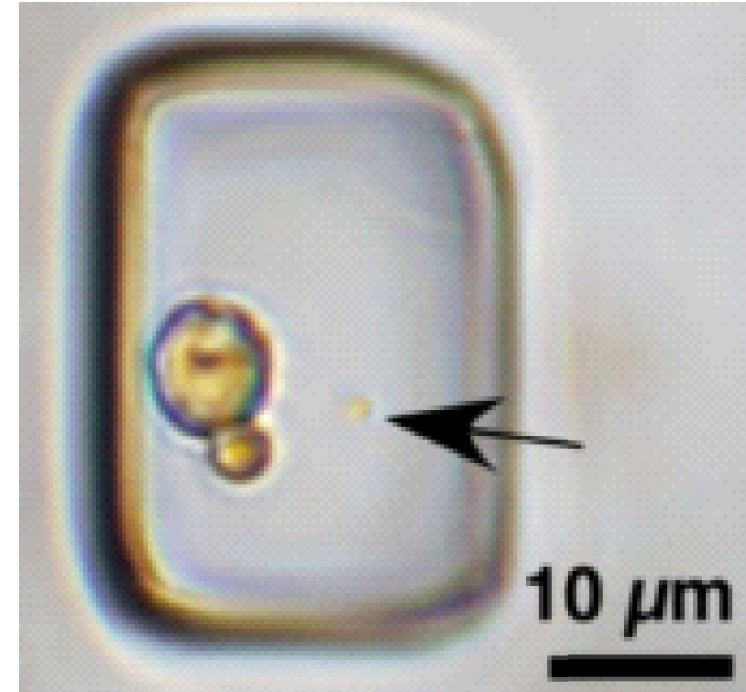
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Abstract

Chemical sediments, including chlorides and sulfates, have been identified on Mars. However, they have not yet been analyzed petrographically. On Earth, halite and gypsum precipitate in modern and ancient acid saline lakes that may be excellent analogs for some martian strata. Analyses by microscopy and laser Raman spectroscopy of terrestrial acid saline lake halite and gypsum show that it preserves microorganisms and organic compounds, especially within primary fluid inclusions. Any salt minerals found by Mars rovers should be returned to Earth for examination for potential biosignatures.



Speaker

Kathy Benison is Professor of Geology at the Department of Geology and Geography of the West Virginia University. Kathy's research program deciphers past environmental conditions and diagenetic histories, past weather and climate, and past life from ancient continental and martian sedimentary strata. This work relies on the study of interactions among waters, rocks, sediments, atmosphere, and life in modern environments. Kathy and her students use a comparative sedimentology approach to describe processes and products in modern environments and then compare to ancient sedimentary rocks to interpret past environmental processes and conditions. Kathy's work includes field work, core studies, petrographic observations, fluid inclusion studies, and geochemical analyses. She is particularly interested in modern and ancient acid saline lake and groundwater systems, which are amongst the most extreme environments on Earth in terms of water chemistry and hospitable environments for life, and result in red beds and evaporites, and are terrestrial analogs for some strata on Mars. Kathy is a Return Sample Selection Participating Scientist for the Mars 2020 mission.

