## Organics, Oxidants, Isotopes, and Implications for Habitability of Mars

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The Life Science Experiments on the Viking Lander three decades ago found no evidence of organics in the surface of Mars, which was baffling. Presence of oxidants in the surface was proposed as a way out of this dilemma. Recent detection of hydrogen peroxide in the atmosphere was a good sign, but the quantities are too low to remove the organics. Peroxide produced by electrochemistry triggered by triboelectric processes in dust storms and dust devils, and/or another class of oxidants, such as perchlorates, may be the answer [1,2]. While organics have not been seen in the surface, an "organic" molecule, methane, was detected in the atmosphere six years ago [3,4]. This created a new buzz about Mars, considering that on Earth methane is predominantly biological in origin. Thus one might ask, is Mars alive today, or was it ever? As tantalizing as this possibility is, the available observations cannot distinguish between geological and biological origin of methane. In this presentation. Various plans are currently underway, however, to address the Martian habitability, including measurements of a multitude of trace species and stable isotopes together with the environmental, geologic and mineralogical context [5,6]. [More to read: http://www.umich.edu/~atreya]

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