

**Thursday, March 10, 2011**  
**EXO BIOLOGY I: HABITABILITY OF MARS**  
**8:30 a.m. Waterway Ballroom 1**

**Chairs: Jack Farmer**  
**Alian Wang**

- 8:30 a.m. Farmer J. D. \* Nunez J. I. Sellar R. G. Gardner P. B.  
[\*A Petrologic Approach to Assessing Ancient Habitability of Mars at the Microscale\*](#) [#1544]  
We highlight a petrologically based approach based on multispectral microscopic imaging and thin section petrography, to explore for evidence of microscale habitable zones on Mars, focusing on terrestrial hydrothermal deposits as compositional and process analogs.
- 8:45 a.m. Hurowitz J. A. \* Tosca N. J. Fischer W. W.  
[\*The Geochemistry and Habitability of Martian Aquifers: A Modeling Approach\*](#) [#2536]  
Reactive transport modeling is used to assess the geochemical and mineralogical properties, and habitability, of aquifer systems along simulated groundwater flow paths through the shallow martian subsurface.
- 9:00 a.m. Wang A. \* Zheng M. P. Kong F. J. Ling Z. C. Kong W. G. Sobron P. Jolliff B. L.  
[\*A Low T, High RH, and Potentially Life-Friendly Environment Within the Martian Salt-Rich Subsurface in Equatorial Regions\*](#) [#2049]  
Hydrated sulfates found in the subsurface at Gusev and at saline playa on the Tibet Plateau imply a high RH environment, supported by lab studies. A high-RH, salt-rich subsurface can accommodate organisms, e.g., halophiles in the Tibet saline playa.
- 9:15 a.m. Wilson S. A. \* Bish D. L.  
[\*Formation of Gypsum and Bassanite by Solid-State Mineral Reactions: Implications for the Bioavailability of Water on Mars\*](#) [#1327]  
Solid-state reactions can occur within mixtures of hydrous minerals under conditions of varying relative humidity similar to those at or just beneath the surface of Mars. These reactions may mobilize H<sub>2</sub>O and nutrients within the martian regolith.
- 9:30 a.m. Renno N. O. \* Mehta M.  
[\*Spectral Evidence for Liquid Water on Mars\*](#) [#1537]  
We show new spectral evidence that liquid saline water currently forms temporarily on Mars. This is important for exobiology because a diverse array of terrestrial microorganisms thrive in brines.
- 9:45 a.m. Quinn R. C. \* Grunthner P. J. Taylor C. L. Bryson C. E. Grunthner F. J.  
[\*The Radiolytic Decomposition of Soil Perchlorates on Mars\*](#) [#2003]  
Our results indicate that on Mars, ionizing radiation will decompose soil perchlorates to form reactive oxyhalide and oxygen species that are likely responsible for the release of O<sub>2</sub> in the Viking GEx experiment and the decomposition of organics in the Viking LR experiment.
- 10:00 a.m. Gaidos E. \* Thorsteinsson Th. Wade N. Marteinson V. Stefansson A.  
[\*Exploring Icelandic Subglacial Volcanoes as Analogs to Habitats on Mars\*](#) [#1446]  
Since 2002 we have studied Icelandic volcanic subglacial lakes. The objectives of our studies are to describe the microbial communities in these environments, determine their sources of energy and nutrients, and evaluate potential biomarkers for application on Mars.