

Tuesday, March 13, 2007

**POSTER SESSION I: PLANETARY ANALOGS: CHEMICAL AND MINERAL  
6:30 p.m. Fitness Center**

Gleeson D. F. Pappalardo R. T. Grasby S. E. Templeton A. S. Spear J. R.  
*Characterization of a Sulfur-rich Icy Ecosystem by Remote Sensing Observations* [#1028]

Borup Fiord Pass is home to sulfur-rich springs depositing elemental sulfur, gypsum and calcite onto ice. This terrestrial analog site allows us to test remote sensing and *in situ* techniques for application to Europa.

Hyde B. C. Foster I. S. King P. L. Southam G. Nushaj D.  
*Limits of Detection for Life on Mars: An Example Using IR Spectroscopy of Sulfate Salts and Halophiles from Lakes in British Columbia, Canada* [#2278]

Salt lakes in B.C., Canada are Mars analog sites for biology and sulfate formation. We use halophiles from them to show the lower limit of infrared detection of halophiles in salt to be 10–15 wt% halophiles providing constraints for martian study.

Johnson J. R. Shepard M. K. Grundy W. Morris R. V. White T. S.  
*Spectrogoniometric Measurements and Models of Mars Analog Soils* [#1288]

Laboratory vis/near-IR multispectral observations of ten Mars analog soils have been acquired using the Bloomsburg University Goniometer. Data were acquired at a variety of incidence, emission, and phase angles to allow modeling using Hapke theory.

Friedlander L. R. Tosca N. J. Arvidson R. E.  
*Preliminary Experiments in the Systematic Investigation of the Spectroscopic Properties of Synthetic Copiapite Group Minerals* [#2049]

Results of preliminary XRD and SEM synthetic copiapite-group mineral identifications are reported as part of a systematic effort to characterize their spectral signatures and aid in the interpretation of martian and terrestrial remote sensing data.

Golden D. C. Ming D. W. Morris R. V. Graff T. G.  
*Hydrothermal Synthesis of Hematite-rich Spherules: Implications for Diagenesis and Hematite Spherule Formation in Outcrops at Meridiani Planum, Mars* [#2257]

In this study, we have synthesized in the laboratory hematite-rich spherules that are analogous in nearly all respects to the Meridiani Planum hematite-rich spherules.

Szynkiewicz A. Pratt L. M. Glamoclija M.  
*Sulfur Cycling in Gypsum Dunes from New Mexico — Terrestrial Analogs to Sulfate-Eolian Deposition and Early Diagenesis on Mars* [#2250]

We propose a latitudinal study of Salt Basins associated with the Rio Grande Rift in order to assess the terrestrial sulfur cycle in regions influenced by volcanism and formation of sulfate-rich dunes at regional and local scales to better understand similar environments on Mars.

Berkley J. L.  
*Biogenic Ba-rich Mn Oxide-Hydroxide Cemented Sandstone as Possible Mars Analog* [#1385]

A narrow exposure of black sandstone in western New York State displays cement consisting of Ba-rich Mn oxides/hydroxides. Cement mostly occurs as botryoidal laminae suggesting a bacterial origin. These rocks are interpreted as early-Mars-like fossil spring deposits.

Blank J. G. Valley J. W. Treiman A. H. Kita N. T. Blake D. F.  
*Oxygen Isotope Variation in Ca-Mg Carbonate Cements in the California Coast Range Ophiolite: Geochemistry of Martian Analog Environments* [#2150]

We present *in situ* oxygen isotope measurements of fine-scale banding in carbonate cements formed in direct contact with microbial mats in a highly-serpentinized, ophiolite setting and discuss our results in the context of a potential Mars analog site.

Fristad K. E. Botta O. Mahaffy P. R. Eigenbrode J. L. Steele A. AMASE 2006 Team  
*Comparing Three Organic Extraction and Chemical Derivatization Methods on Five Mars Analogue Rocks from Svalbard, Norway* [#2039]

Three organic extraction and chemical derivatization methods are compared using five Mars analogue rocks from Svalbard, Norway. The techniques explored are one-step extraction derivatization using MTBSTFA and BSTFA, and a multi-step extraction using DCM and MeOH with MTBSTFA derivatization.

Botta O. Fristad K. E. Mahaffy P. R. Eigenbrode J. Steele A.  
*Dolomite Sample from Svalbard, Norway, Analyzed Using the Pyrolysis Protocol of the SAM Instrument* [#1466]  
 Using the pyrolysis analytical protocol of the Sample Analysis on Mars (SAM) instrument, aromatic, aliphatic and sulfur-containing organic compounds were detected in a dolomite sample from Svalbard, Norway, during the AMASE 2006 expedition.

Marinangeli L. Pettinelli E. Vannaroni G. Cereti A. Rossi A. P. Baliva A. Biccari D. Seu R.  
*Inferring the Dielectric Properties of the Surface of Mars from Martian Missions and Analogue Samples* [#1619]  
 We identified different classes of surface material on Mars with potential similar dielectric properties to estimate the wave propagation velocity and attenuation of the signal penetration depth as support to current and future radar investigation.

Heggy E. Clifford S. M. Younsi A. Miane J. L. Carley R. Morris R. V.  
*On the Dielectric Properties of Dust and Ice-Dust Mixtures: Experimental Characterization of the Martian Polar-layered Deposits Analog Materials* [#1756]  
 This work present parametric dielectric characterization of dirty-ice materials to support radar sounding data analysis of the martian PLDs.

Zent A. P. Ichimura A. I. Quinn R. C.  
*Heterogeneous Redox Chemistry on Martian Surface Materials* [#2208]  
 Silicate minerals are poor candidates for heterogeneous redox chemistry. The processes are more likely dominated by metal oxides.

Beegle L. W. Peters G. H. Mungas G. S. Bearman G. H. Smith J. A. Anderson R. C.  
*Mojave Martian Simulant: A New Martian Soil Simulant* [#2005]  
 We have identified and characterized a basaltic Mars simulant suite that is available as whole rocks, red-cinder sorted and graded dust. It was chosen for its chemical composition, variety of particle sizes, and inert hygroscopic characteristics.

Johnson J. B. Hopkins M. A. Kaempfer T. Moore J. M. Sullivan R. J. Richter L. Schmit N. Athena Science Team  
*Progress Developing Techniques for Determining Mars Soil Properties from Laboratory Tests, Discrete Element Modeling, and Mars Trenching Experiments* [#1706]  
 A combination of terrestrial laboratory tests of MER wheel interaction with Mars regolith simulant combined with DEM simulations are being developed. A preliminary DEM simulation of the MER wheel/soil system is being used to conduct a first order examination MER wheel interactions with soil.

Adachi T. Kletetschka G. Chan M. Mikula V. Adamovic J. Pruner P. Schnabl P. Wasilewski P.  
*High Field Remagnetization of Hematite Concretions from Utah, USA and Czech Republic* [#1101]  
 Terrestrial hematite concretions of the Navajo Sandstone have been discussed as analogues to the blueberries on Mars. Magnetic investigation of terrestrial concretions showed unusual behavior of antiferromagnetic hematite-goethite composition that may memorize past magnetization events.

Sollitt L. S. Beegle L. W.  
*Characterization of Methane Diffusion Through Simulated Martian Regolith* [#1870]  
 An experiment to characterize the diffusion of methane through simulated martian regolith is described, and first results given. Diffusion is examined as a function of regolith simulant size, temperature and water ice content.

Roush T. L. Helbert J. Hogan R. C. Maturilli A.

*Classification of Mars Analogue Mixtures and End-Member Minerals Using Self-Organizing Maps* [#1291]

Emissivity spectra of pure materials and their mixtures are statistically clustered using self-organizing maps. The results exhibit distinct segregation of coarse-grain from fine-grain size samples and primary materials from their potential alteration products.

Bonaccorsi R. Stoker C. R. MARTE Project Science Team

*Searching for Organics During the Robotic Mars Analog Rio Tinto Drilling Experiment: Ground Truth and Contamination Issues* [#2072]

The Mars Analog Rio Tinto Experiment (MARTE) performed a simulation of a Mars drilling experiment at the Rio Tinto (Spain). Ground-truth and contamination issues during the distribution of bulk organics and their CN isotopic composition in hematite and goethite-rich gossanized rocks and clays.