

**Friday, March 27, 2009**  
**MARS ANALOGS II: CHEMICAL AND SPECTRAL**  
**1:30 p.m. Waterway Ballroom 4**

**Chairs:** Lindsay McHenry  
 Eldar Noe Dobrea

- 1:30 p.m. Gough R. V. \* Tolbert M. A. McKay C. P. Toon O. B.  
[\*Methane Adsorption on Martian Soil Analogs: A Possible Abiogenic Explanation for Methane Variability\*](#) [#1968]  
 We report laboratory results of methane adsorption onto JSC-Mars-1. Uptake coefficient values are small; however, atmospheric methane can access a large mineral surface area in the regolith. Significant methane may be temporarily lost in a season.
- 1:45 p.m. Pommerol A. \* Schmitt B. Beck P. Brissaud O.  
[\*Water Sorption on Martian Regolith Analogs: Near-Infrared Reflectance Spectroscopy and Thermodynamics\*](#) [#1608]  
 Adsorption of water by a suite of six plausible martian regolith analogs is experimentally investigated. Adsorption and desorption isotherms are measured as well as near-infrared reflectance spectra for each step of hydration/dehydration processes.
- 2:00 p.m. Rull F. \* Sansano A. Sobron P. Lafuente B. Sarrazin P. Gailhanou M. Blake D.  
[\*Raman and XRD Field Characterisation of Sulfate Efflorescences at Rio Tinto \(Spain\)\*](#) [#1974]  
 In this work a comparative *in situ* analysis of evaporate minerals from Rio Tinto (Spain) is undertaken using two techniques selected for Mars exploration: Raman spectrometer and CheMin XRD both selected as part of the ExoMars and MSL missions respectively.
- 2:15 p.m. McHenry L. J. \* Chevrier V. F. Schröder C.  
[\*Jarosite in an East African Saline-Alkaline Paleolake Deposit: Implications for Mars\*](#) [#1635]  
 Jarosite occurs in zeolite-dominated altered tephra from a pleistocene saline-alkaline lake deposit at Olduvai Gorge, Tanzania. This suggests that the presence of jarosite alone is insufficient evidence to demonstrate dominantly acidic conditions.
- 2:30 p.m. Potter S. L. \* Chan M. A.  
[\*Characterization of Navajo Sandstone Concretions: Mars Comparisons and Criteria for Distinguishing Diagenetic Origins\*](#) [#2100]  
 Characterization of Utah concretions and Mars spherules yields important criteria for distinguishing diagenetic origin in comparison to other models. The similarities between the two examples suggest a concretionary genesis for the Mars spherules.
- 2:45 p.m. McAdam A. C. \* Sharp T. G. Leshin L. A. Harvey R. P. Hoffman E. J.  
[\*Antarctic Mars Analogs and Interpretation of Martian Alteration Signatures\*](#) [#1032]  
 The dominant process which produced Antarctic clay-bearing soils from a Mars analog lithology was physical weathering of the deuterically altered parent rock. Lesser low temperature weathering produced salts, more Fe oxides, and minor clays minerals.
- 3:00 p.m. Noe Dobrea E. Z. \* McKeown N. Bishop J. L. Silver E.  
[\*Terrestrial Analog Studies of Mawrth Vallis, Mars: The Painted Desert\*](#) [#2165]  
 We perform airborne hyperspectral imaging studies of the Painted Desert, an analog site to Mawrth Vallis, Mars. These complement field studies of the same site.

- 3:15 p.m. Garvie L. A. J. \* Burt D. M. Buseck P. R.  
[\*A Microscopists View of Desert Varnish from the Sonoran Desert\*](#) [#1344]  
Nanometer-scale element mapping and spectroscopy of desert varnish reveals a dynamic disequilibrium system characterized by post-depositional mineralogical, chemical, and structural changes, activated by liquid water.
- 3:30 p.m. Chemtob S. M. \* Rossman G. R. Eiler J. M. Jolliff B. L.  
[\*Silica Coatings on the 1974 Kilauea Flow: New SEM and SIMS Results and Implications for Mars\*](#) [#2156]  
Silica and Fe-Ti oxide coatings occur on young flows in the Ka'u Desert, Hawaii, a Mars analog terrain. We present new textural, spectral and isotopic observations to determine the coating formation mechanism and apply the results to silica on Mars.
- 3:45 p.m. McDowell M. L. \* Hamilton V. E. Cady S. L. Knauth P.  
[\*Thermal Infrared and Visible to Near-Infrared Spectral Analysis of Chert and Amorphous Silica\*](#) [#1419]  
We look in detail at the thermal infrared and visible to near-infrared spectra of various forms of chert and amorphous silica and compare the spectral variations between samples with variations in physical and chemical characteristics.
- 4:00 p.m. Rampe E. B. \* Kraft M. D. Sharp T. G.  
[\*Chemical Weathering Trends from TIR Spectral Models: Implications for Deriving Weathering Trends from Martian Spectral Data\*](#) [#2132]  
We compare measured chemical compositions and weathering trends of terrestrial basalts to those derived from TIR spectral models. Deriving true chemistry and weathering trends from TIR models of weathered surfaces on Mars may be impractical.
- 4:15 p.m. Hardgrove C. J. \* Moersch J. E. Whisner S. C.  
[\*Identification of Sedimentary Processes on Alluvial Fans Using Thermal Images and Ground Truth\*](#) [#1211]  
Aerial thermal images and ground based observations are used to study sedimentary processes on a wide assortment of alluvial fans in desert southwest. Thermal images reveal evidence of channelized flow, debris flows, levees and weathering processes.
- 4:30 p.m. Murphy N. W. \* Jakosky B. M. Mellon M. T. Budd D. A.  
[\*Thermophysical Properties of Martian Duricrust Analogs\*](#) [#1420]  
We measured thermophysical properties of samples of terrestrial duricrust from a gypsum deposit in New Mexico and Lunar Lake Playa. Our results suggest that well-indurated materials may cover a significant portion of the Mars surface.