

Thursday, March 10, 2011

**POSTER SESSION II: FIELD AND LABORATORY ANALOGS FOR MARTIAN ALTERATION
6:00 p.m. Town Center Exhibit Area**

Vaniman D. T. Bish D. L. Chipera S. J. Rearick M. S.

[*Relevance to Mars of Cation Exchange between Nontronite and Mg-Sulfate Brine*](#) [#2276]

Nontronite with interlayer Ca, exposed to Mg-sulfate brine, produces a more Ca-enriched brine and a more Mg-rich nontronite. This is typical of smectites and Mg content of the clay mineral component of a sediment could be a record of brine exposure.

Golden D. C. Koster A. M. Ming D. W. Morris R. V. Mertzman S. A. Graff T. G.

[*Experimental Acid Weathering of Fe-Bearing Mars Analog Minerals and Rocks: Implications for Aqueous Origin of Hematite-Bearing Sediments in Meridiani Planum, Mars*](#) [#2658]

Here we report an experimental simulation of sulfuric acid weathering under hydrothermal conditions of Mars analog minerals, i.e., olivine, siderite, and rocks, i.e., olivine-rich basalt, to form minerals characteristic of meridiani outcrop.

Bullock M. A. Moore J. M.

[*Laboratory Simulations of Mars Evaporite Geochemistry: Evaporation of Modern Brines Under Various Headspace Gas Mixtures*](#) [#2823]

We report on laboratory experiments that generate Mars-analog evaporites under a modern-Mars gas mixture, and under a gas mixture with added acidic gases. Compositional differences show how atmospheric chemistry may influence the deposition and composition of evaporites on Mars.

McHenry L. J. Chevrier V. F. Schröder C.

[*Ephemeral K-Jarosite in a Saline-Alkaline Paleolake Deposit: Implications for the Long-Term Survival of Jarosite on Earth and Mars*](#) [#1808]

Samples of a K-jarosite-bearing zeolitically-altered tephra from a saline-alkaline paleolake deposit collected in four different years show a decrease in jarosite abundance from 4.5% to 0%. Jarosite can be lost rapidly under appropriate conditions.

Merrison J. P. Gunnlaugsson H. P. Nørnberg P. Knak Jensen S.

[*Wind Mediated Oxidation of Magnetite: A Putative Mechanism for Hematite Production on Mars*](#) [#1681]

Experiments on magnetite (Fe_3O_4) to produce hematite (Fe_2O_3) under martian conditions are reported. Water and atmospheric oxygen are not involved in oxidation. The findings represent a putative mechanism for the reddish color of Mars.

Johnson J. R. Herkenhoff K. E. Bell III J. F. Farrand W. H. Gellert R. Ashley J. Schröder C. Squyres S. W.

[*Pancam Visible/Near-Infrared Spectra of Fe-Ni Meteorite Oileán Ruaidh at Meridiani Planum, Mars*](#) [#1929]

Pancam imaged the Fe-Ni meteorite Oileán Ruaidh on Sols 2367–2371. The surface is similar to other meteorites, with discontinuous coatings that exhibit reflectance spectra consistent with ferric oxides, suggestive of chemical weathering.

Elwood Madden M. E. Keiser L. Marra K. Sorregan G. S. Stumpf A. Hall B.

[*Chemistry of Sediments and Aqueous Fluids Produced by Chemical Weathering in Cold, Arid Systems*](#) [#1500]

Analyses of Antarctic Dry Valley sediment and water samples suggest that cold, arid, proglacial systems produce unique chemical and textural weathering products. High surface areas play a key role in the weathering process at these conditions.

Greenberger R. N. Mustard J. F. Kumar P. S. Dyar M. D. Speicher E. A. Skulte E. C.

[*Weathering Products of Deccan Basalts and Implications for Mars*](#) [#2548]

We characterized mineral signatures of an alteration profile of basalts with spectroscopy and then constrained our interpretations with laboratory measurements of mineralogy and chemistry to better understand alteration processes on Mars.

Gavin P. El Senousy A. Chevrier V. Sayyed M. R. G. Islam R.

[*Spectral Properties of Deccan Palaeosols, India: Implications for Thermally Altered*](#)

[*Phyllosilicates on Mars*](#) [#1905]

XRD and reflectance spectra of Deccan Palaeosols are compared to thermally altered phyllosilicates and used to help distinguish between altered and unaltered phyllosilicates on Mars.

Salvatore M. R. Wyatt M. B. Mustard J. F. Head J. W. III

[*Development of Alteration Rinds on the Ferrar Dolerite of the Antarctic Dry Valleys: Initial*](#)

[*Characterization*](#) [#1479]

Rock surface alteration in Antarctica is a valuable analog to surface weathering on Mars. The chemistry and mineralogy of Antarctic alteration products are investigated with regard to the unaltered parent rock to investigate the alteration process.

Leach J. H. J.

[*The Tuff Rings of South East Australia and the Surficial Deposits of Mars: A Cautionary Tale*](#) [#1020]

The tuff rings of Australian maar eruptions can mimic many of the features normally considered to be typical of sediment deposits.

Bleamaster L. F. III Wetz A. Chuang F. C.

[*Comparative Analysis of Mineralogic Signatures with Macro-Scale Morphology in Nili Fossae and*](#)

[*Mawrth Vallis, Mars: Results from Geologic Mapping at 1:1 Million Scale*](#) [#2412]

Geologic mapping will provide broad spatial and temporal context for isolated mineral signatures and a means to look for correlations between geology/morphology and mineralogy.