Wednesday, March 25, 2009
SULFUR ON MARS: ROCKS, SOILS, AND CYCLING PROCESSES
1:30 p.m. Waterway Ballroom 1

Chairs: **Scott McLennan**
Deanne Rogers

1:30 p.m. McLennan S. M. * Grotzinger J. P.
Sulfur and the Sulfur Cycle on Mars **[#2152]**
Elevated S in martian mantle/crust and absence of plate tectonics results in a S-enriched sedimentary mass. The S-cycle of Mars is analogous to the Earth's C-cycle, with long-term storage in the rock record and shorter-term S-recycling processes.

1:45 p.m. Milliken R. E. * Edgett K. S. Swayze G. Clark R. N. Thomson B. J. Anderson R. Bell J. F. III
Clay and Sulfate-bearing Rocks in a Stratigraphic Sequence in Gale Crater **[#1479]**
CRISM reflectance spectra of a >5 km thick sequence of strata in Gale Crater reveal the presence of diverse mineralogy, including clay-bearing rocks interbedded with sulfate-bearing rocks. Gale is one of four final MSL candidate landing sites.

2:00 p.m. Wiseman S. M. * Arvidson R. E. Morris R. V. Murchie S. L. Seelos F. P. Andrews-Hanna J. C. CRISM Team
Hydrated Sulfate Deposits Detected Within Schiaparelli Crater, Mars **[#1798]**
Hydrated sulfate deposits are detected within Schiaparelli crater using CRISM spectral data. The hydrated sulfate deposits occur in association with likely sedimentary outcrop and may be related to hydrated sulfate deposits in Meridiani.

2:15 p.m. Niles P. B. * Michalski J.
The Origin of the Meridiani Sediments: The Key for Understanding the Formation of Sulfates and Layered Deposits on Mars **[#1972]**
The provenance of the Meridiani deposits is best explained by reworking of acid-weathered sublimation residue from a large scale ice/dust deposit. The acid weathering is hypothesized to have occurred inside of the ice powered by solar radiant energy.

2:30 p.m. Lichtenberg K. A. * Arvidson R. E. Morris R. V. Murchie S. L. Bishop J. L. Glotch T. D. Noe Dobrea E. Mustard J. F. Andrews-Hanna J. Roach L. H. CRISM Team
Stratigraphy and Relationship of Hydrated Minerals in the Layered Deposits of Aram Chaos, Mars **[#2326]**
Hydrated minerals such as hematite and monohydrated, polyhydrated, and Fe-OH sulfates in Aram Chaos, Mars show stratigraphic relationships indicative of their formation history as a depositional unit in an aqueous environment.

2:45 p.m. Roach L. H. * Mustard J. F. Murchie S. L. Bishop J. L. Ehlmann B. L. Milliken R. E. Lichtenberg K. Parente M.
Hydrated Mineral Stratigraphy in Ius Chasma, Valles Marineris **[#1834]**
Kieserite, a polyhydrated sulfate, hydrated silica, Fe/Mg phyllosilicate, and a hydrated silicate (possibly consistent with an acid-leached phyllosilicate) are found in light-toned units within Ius Chasma, Valles Marineris.

3:00 p.m. Flahaut J. * Quantin C. Allemand P.
Geology and Mineralogy of the Interior Layered Deposits in Capri/Eos Chasma (Mars), Based on CRISM and HiRiSE Data **[#1639]**
We studied HiRiSE and CRISM data over Capri Chasma, a small canyon of Valles Marineris. Layered Deposits in this area show various hydrated minerals signatures, as abundant sulfates, implying a strong past water activity there.

3:15 p.m. Rogers A. D. * Reeder R. J. Glotch T. D.
Infrared Spectroscopy of Amorphous Sulfate Phases **[#1202]**
Stability experiments have indicated that amorphous sulfate phases may be important constituents of martian surface materials. IR spectral properties of X-ray amorphous Mg- and Fe-sulfate phases are described and compared with their crystalline counterparts.

3:30 p.m. Freeman J. J. * Wang A. Ling Z. C.
Ferric Sulfates on Mars: Mission Observations and Laboratory Investigations **[#2284]**
A change was observed in the Pancam spectra of Tyrone salty soils after 190 sols exposure at Gusev. Based on the results of laboratory experiments, we suggest dehydration, amorphization, and phase transition of copiapites to be the potential causes.

3:45 p.m. Hausrath E. M. * Golden D. C. Galindo C. Sutter B. Morris R. V. Ming D. W.
Column Experiments to Interpret Weathering in the Columbia Hills, Mars **[#2423]**
Column dissolution experiments were performed to interpret weathering in the Columbia Hills, Mars. Results suggest that the formation of an amorphous aluminum phosphate and gypsum are likely, and that Si and Ti are relatively immobile.

4:00 p.m. Golden D. C. * Ming D. W. Sutter B. Clark B. C. Morris R. V. Boynton W. V. Hecht M. H. Kounaves S. P.
Sulfur Mineralogy at the Mars Phoenix Landing Site **[#2319]**
The sulfur mineralogy of the soils at Phoenix lander site was derived using Thermally Evolved Gas Analyzer (TEGA) data in combination with known geochemistry of the martian polar regions. The most likely S mineral phase at the Phoenix site is anhydrite.

4:15 p.m. Vaniman D. T. * Bish D. L. Chipera S. J.
Bassanite on Mars **[#1654]**
There are several ways to desiccate gypsum on Mars and form bassanite but rehydration in presence of ice at cold, dry conditions tends to form only bassanite or gypsum plus bassanite. This product may provide a paleoclimate or paleogeothermal marker.

4:30 p.m. Halevy I. * Schrag D. P.
Experimental Inhibition of Carbonate Precipitation by Sulfite Minerals **[#1030]**
Experiments show that sulfite minerals inhibit carbonate precipitation at pH ~7, consistent with the presence of clays and absence of carbonates on early Mars. Subsequent oxidation of these sulfites yields acid and mixtures of sulfates and Fe-oxides.