Thursday, March 26, 2009
POSTER SESSION II: MARS ANALOGS: SULFATES AND SULFIDES
6:30 p.m. Town Center Exhibit Area

Wang A. Freeman J. J.
Pathways and Rates of Mg-Sulfate Dehydration and Rehydration on Mars **[#2029]**
New understandings are developed based on a study of the stability field and phase transition pathways of Mg-sulfates in 50ºC =T = –10ºC and 7% < RH < 100%. Especially, the rates of reactions were extracted.

Liu Y. Wang A. Freemen J. J.
Raman, MIR, and NIR Spectroscopic Study of Calcium Sulfates: Gypsum, Bassanite, and Anhydrite **[#2128]**
The spectral peak assignments for fundamental vibration modes in Raman and MIR, for overtone and combination modes in NIR of Ca-sulfates, will help the interpretation of the mission data from current and future exploration to Mars and Venus.

Freeman J. J. Wang A.
Hydrated Magnesium Sulfates Below 0°C — Stable Phases and Polymorphs **[#2301]**
We found a low-T polymorph of epsomite at –10ºC and mid-RH during an experimental study of stability fields and phase boundaries of hydrated Mg-sulfates. Meridianiite was found stable at –10ºC and RH > 90%.

Grindrod P. M. Heap M. J. Meredith P. G. Sammonds P. M.
Strength and Elastic Moduli of Magnesium Sulfate Hydrates Under Martian Conditions **[#1515]**
We present experimentally-derived values of unconfined compressive strength and elastic moduli of mono- and poly-hydrated magnesium sulfates, which control the mechanical behaviour of similar equatorial deposits on Mars.

Kong W. G. Wang A. Freemen J. J. Sobron P. S.
A Comprehensive Spectroscopic Study (Raman, MIR, Vis-NIR, LIBS, XRD) of Synthetic Fe^{2+}, Fe^{3+}, Mg^{2+}, Al^{3+} Copiapites **[#1659]**
Fe^{2+}, Fe^{3+}, Mg^{2+}, and Al^{3+} copiapites were synthesized and investigated by Vis-NIR, Raman, and MIR. These studies will help *in situ* mineral ID, and to link the remote sensing data with the observed ferric sulfates during ground exploration on Mars.

Hyde B. C. King P. L.
Quantification of Structural H_2O and Total H_2O Contents in Iron Sulfate Minerals Using Diffuse Reflectance Infrared Fourier Transform Spectroscopy **[#1895]**
H-bearing Fe-sulfates are found on Mars. Better characterization includes H_2O/OH^- quantification. Kubelka-Munk theory and the NOPL method were applied to biconical diffuse reflectance data. NOPL produces better fits. Both methods are mineral dependent.

Chipera S. J. Sarrazin P. Alcantar-Lopez L. Vaniman D. T. Bish D. L. Blake D. Chiari G.
Real-Time XRD/XRF at a Mars-Analog Sulfate Site in Leadville, Colorado, Using a CheMin-Heritage Instrument **[#1328]**
Real-time XRD/XRF of an acid-sulfate deposit demonstrates the value of *in situ* analysis in the study of ephemeral minerals and hydrates susceptible to rapid alteration and significantly aids in the identification of similar chemical species.

Sansano A. Sobron P. Lafuente B. Medina J. Rull F.
Raman Analysis of Sulfate Sequence of Precipitation from Iron-rich Waters of Rio Tinto River **[#2076]**
Rio Tinto area is considered a referent as an extremophilic scenery of iron rich. Raman spectroscopy is a powerful technique that allows studying these. This work shows the aplication of this technique on natural and simulated evaporitic samples.

Sobron P. Wang A.
Raman and LIBS: A Definitive Combination for the Characterization of Natural Samples from the Rio Tinto Mars Analog **[#2400]**
A combined Raman and LIBS study on natural sulfates from Rio Tinto demonstrated a fully characterization of Gypsum, Al/Mg-copiapite and Na/NH_4-jarosite. It was proven to be a powerful tool for min/geochemical investigations at planetary surfaces.

Gómez-Ortiz D. Fernández-Remolar D. C. Prieto-Ballesteros O. Gómez F. Amils R.
Hydrogeological Study of the Rio Tinto Mars Analog: Implications for Mars Underground Water Fluxes **[#1550]**
A hydrogeological survey, including different tests of tracer injection, has been carried out in order to unravel the groundwater flow scheme of the Rio Tinto martian analog.

Calvin W. M. Shoffner J. D.
Remote Sensing Image Analysis at Leviathan Mine, Ca: A Sedimentary Sulfate Mars Analog Site **[#1210]**
An open pit mine site provides exposures of a wide variety of sulfate minerals. We have mapped the site using multi-spectral satellite data and high spatial resolution hyperspectral data. The results have implications for remote mapping of sulfates on Mars.

Cavalazzi B. Barbieri R. Ori G. G. Westall F. Cady S. L. Gennaro S. Lui A. Canteri R. Bersani M. Lazzeri P. Pepponi G.
Unusual Fe-rich Framboids from Devonian Carbonate Mounds (Sahara Desert, Morocco) Investigated by HR-SEM and ToF-SIMS: Fossil Analogues of OAM-SRB Consortia? **[#1113]**
Microaggregates from fossil mounds are likely related to hydrothermal and methane venting. The aggregates are considered a fossil analogue of living MOA and SRB. The detection of carbonate rocks on Mars make this finding remarkable for astrobiology.

Dyar M. D. Holden J. F. Bishop J. L. Lane M. D.
Spectroscopic Characterization of Hydrothermal Sulfide Chimneys at the Juan de Fuca Ridge **[#2221]**
We present here results of the study of a small sample suite from the Juan de Fuca Ridge using Mössbauer, mid-IR thermal emission, and visible, near-IR, and mid-IR diffuse reflectance spectroscopy.