Thursday, March 18, 2004
MARS MINERALOGY: WEATHERED AND DRY
8:30 a.m. Salon A

Chairs: N. J. Tosca
W. C. Feldman

8:30 a.m. Brown A. J. * Walter M. R. Cudahy T.
Hyperspectral and Field Mapping of an Archaean Komatiite Unit in the Pilbara Craton, Western Australia: Applications for CRISM Mission **[#1420]**
Results of recent VNIR-SWIR airborne hyperspectral investigations of the Archaean East Pilbara Granite-Greenstone Terrane are reported. Mapping of hydrothermal alteration minerals has revealed a previously unrecognized aqueously altered komatiite flow. Relevance to CRISM mission is discussed.

8:45 a.m. Michalski J. R. * Kraft M. D. Sharp T. G. Williams L. B. Christensen P. R.
Emission Spectroscopy of Smectites: Implications for the TES Andesite-weathered Basalt Debate **[#1401]**
TES surface type-2 spectra of Mars have been interpreted previously as weathered basalt or unweathered andesite. We conclude that evidence for smectite clays from TES is lacking. Silica-rich weathering products are consistent with TES observations.

9:00 a.m. Koeppen W. C. * Hamilton V. E.
Volcanism and/or Aqueous Alteration on Mars: Constraints on Distinguishing Glass and Phyllosilicate in the Thermal Infrared **[#1457]**
This study uses deconvolutions of numerically generated spectral mixtures to constrain how well glass and phyllosilicate phases can be distinguished in thermal infrared data.

9:15 a.m. Tosca N. J. * Hurowitz J. A. Meltzer L. McLennan S. M. Schoonen M. A. A.
Olivine Weathering on Mars: Getting Back to Basics **[#1043]**
Experimental evidence shows that olivine weathering produces a surface indistinguishable from unweathered olivine. Experimental constraints on weathering rates under Martian conditions will also be discussed.

9:30 a.m. Gendrin A. * Mustard J. F.
Sulfate-cemented Soils Detected in TES Data Through the Application of an Automated Band Detection Algorithm **[#1205]**
We apply an automated band detection algorithm, based on the wavelet transform, to the TES dataset. We find a band at 1120 cm^{-1}, consistent, with sulfate-cemented soils, in the region already suspected to have a high sulfate concentration.

9:45 a.m. Lane M. D. *
Thermal Emission Spectroscopy of Sulfates: Possible Hydrous Iron-Sulfate in the Soil at the MER-A Gusev Crater Landing Site **[#1858]**
Emissivity spectra are presented of a large suite of sulfate-bearing minerals. Comparison of these midinfrared spectra to preliminary mini-TES data of the soil in Gusev crater suggests the presence of hydrous iron-sulfate on Mars.

10:00 a.m. BREAK

10:15 a.m. Burt D. M. * Kirkland L. E. Adams P. M.
Barite and Celestine Detection in the Thermal Infrared — Possible Application to Determination of Aqueous Environments on Mars **[#2085]**
Here we suggest trying to look on Mars for two easily detected sulfate minerals, barite and celestine, which indicate their respective aqueous environments (hydrothermal and evaporitic).

10:30 a.m. Dalton J. B. * Sutter B. Kramer M. G. Stockstill K. R. Moersch J. Moore J. M.
Search for Evaporite Minerals in Flaugergues Basin, Mars **[#1869]**
We have used a hydrologic model to simulate water flows on the surface of Mars and identify basins which may have drained large regions. Using a combination of MOC, THEMIS, MOLA and TES data we have searched these basins for evidence of aqueous minerals.

10:45 a.m. Feldman W. C. * Mellon M. T. Maurice S. Prettyman T. H. Carey J. W. Vaniman D. T. Fialips C. I. Kargel J. S. Elphic R. C. Funsten H. O. Lawrence D. J. Tokar R. L.
Contributions from Hydrated States of $MgSO_4$ to the Reservoir of Hydrogen at Equatorial Latitudes on Mars **[#2035]**
In order to estimate the contributions from the hydration states of $MgSO_4$ to the reservoir of hydrogen at equatorial latitudes on Mars, we examined their stability to loss of water to the atmosphere.

11:00 a.m. Bandfield J. L. * Christensen P. R. Hamilton V. E. McSween H. Y. Jr.
Identification of a Quartz and Na-Feldspar Surface Mineralogy in Syrtis Major **[#1449]**
Mars Odyssey THEMIS and Mars Global Surveyor TES data indicate the presence of quartz and Na-plagioclase on the Martian surface. Two limited exposures have been identified near the base of the central peaks of two craters in northern Syrtis Major.

11:15 a.m. Pieters C. M. * Dyar M. D. Hiroi T. Bishop J. Sunshine J. Klima R.
Pigeonite Masquerading as Olivine at Mars: First Results from Mars Spectroscopy Consortium **[#1171]**
Our consortium analyzed mineral separates from several Mars' meteorites with high quality Mössbauer and optical (0.3 to 50 µm) spectroscopy data. A pure pyroxene separate from LEW88516 exhibits features from 20–50 µm comparable to those of olivine.

11:30 a.m. Hamilton V. E. * Christensen P. R.
Green Mars: Geologic Characteristics of Olivine-bearing Terrains as Observed by THEMIS, MOC, and MOLA **[#2131]**
THEMIS IR and VIS data are integrated with MOC and MOLA data to understand regional and global trends between olivine-bearing terrains and local geology. We observed common, but variable, correlations between these datasets and present new VIS spectra.

11:45 a.m. Wyatt M. B. * McSween H. Y. Jr. Bandfield J. L. Christensen P. R.
Global Chemical Abundances and Distributions on Mars from MGS-TES Spectra **[#1887]**
We report initial MGS-TES derived major oxide abundance maps (4 pixels/degree or 15 km/pixel) of low-albedo surface materials and examine chemical variation diagrams to better understand the relative roles of igneous and sedimentary processes on Mars.