

Wednesday, March 17, 2004

MARS: SURFACE COATINGS, MINERALOGY, AND SURFACE PROPERTIES
1:30 p.m. Salon B

Chairs: M. E. Minitti
K. S. Edgett

- 1:30 p.m. Kraft M. D. * Michalski J. R. Sharp T. G.
High-Silica Rock Coatings: TES Surface-Type 2 and Chemical Weathering on Mars [#1936]
 TES observations of silicic Martian surfaces may result from silica-rich rock coatings. The conditions required to form silica coatings may occur on Mars. Silica coatings would form by chemical weathering of Martian dust under low water conditions.
- 1:45 p.m. Murchie S. * Barnouin-Jha O. Barnouin-Jha K. Bishop J. Johnson J.
 McSween H. Morris R.
Old Desert Varnish-like Coatings and Young Breccias at the Mars Pathfinder Landing Site [#1740]
 Many rocks at the Mars Pathfinder landing site exhibit evidence for desert varnish-like coatings, partially stripped by eolian erosion. Rocks excavated subsequently to coating formation have shapes consistent with breccias or conglomerates.
- 2:00 p.m. Wiens R. C. * Kirkland L. E. McKay C. P. Cremers D. A. Thompson J.
 Maurice S. Pinet P. C.
Analyses of IR-Stealthy and Coated Surface Materials: A Comparison of LIBS and Reflectance Spectra and Their Application to Mars Surface Exploration [#1695]
 Surface texture can significantly reduce the ability of reflectance spectroscopy to determine rock types on Mars, as can surface coatings. Here we discuss IR and LIBS spectra from two "IR-stealthy" carbonate samples and a hematite-coated sample.
- 2:15 p.m. Kirkland L. E. * Herr K. C. Adams P. M.
Contrasting Interpretations of TES Spectra of the 2003 Rover "Opportunity" Landing Site: Hematite Coatings and Gray Hematite [#1938]
 TES spectra of the "Opportunity" site best match a hematite coating, although few discuss the coating option. Coarse hematite is also possible. Thus coatings increase the ambiguity in such interpretations. The rover may determine which is present.
- 2:30 p.m. Minitti M. E. * Lane M. D. Bishop J. L.
A New Hematite Formation Mechanism for Mars [#1999]
 Laboratory experiments demonstrate that hematite can form on the surfaces of glassy basalts during extrusion in oxidizing conditions. This new formation pathway has implications for the source of Martian hematite detected by remote sensing.
- 2:45 p.m. Beitler B. * Ormö J. Komatsu G. Chan M. A. Parry W. T.
Geomorphic and Diagenetic Analogs to Hematite Regions on Mars: Examples from Jurassic Sandstones of Southern Utah, USA [#1289]
 Apparent similarities to Utah rocks provide the basis for interpretation of Martian hematite as a chemical precipitate from groundwater flow. Flow related alteration effects rock cementation patterns and could account for differential weathering.
- 3:00 p.m. BREAK
- 3:15 p.m. Edgett K. S. * Malin M. C.
The Geologic Record of Early Mars: A Layered, Cratered, and "Valley-ed" Volume [#1188]
 The upper crust of Mars is a layered, cratered, and valley-ed volume. These materials are the geologic record of early Mars.

- 3:30 p.m. Mustard J. F. *
A Simple Approach to Estimating Surface Emissivity with THEMIS [#1552]
A simple atmospheric correction is applied to two overlapping THEMIS observations separated in time by 30 days. The derived surface emissivity identifies compositional differences in small outcrops near to the spatial resolution of THEMIS.
- 3:45 p.m. Anderson F. S. *
A Large Scale Topographic Correction for THEMIS Data [#2160]
The objective of this work is to test the hypothesis that the atmospheric influence of large-scale topography observed in 2001 Mars Odyssey Thermal Emission Imaging System (THEMIS) images can be removed by decorrelation of topography and emissivity.
- 4:00 p.m. Hynek B. M. * Jakosky B. M. Martinez-Alonzo S. Putzig N. E. Murphy N. Mellon M. T. Pelkey S.
Thermophysical Properties of Meridiani Planum, Mars [#1899]
We used TES and THEMIS data to examine the thermophysical properties of the Meridiani Planum landing site and surrounding terrain. Hopefully, in situ results from Opportunity will provide ground truth for our analysis. Come, listen, enjoy!
- 4:15 p.m. Martinez-Alonzo S. * Jakosky B. M. Mellon M. T. Putzig N. E. Pelkey S. M. Hynek B. M. Murphy N. W.
Thermophysical and Spectral Properties of Gusev, the MER-Spirit Landing Site on Mars [#1951]
The thermophysical and spectral properties of Gusev as derived from newly available data (TES albedo and thermal inertia mosaics, THEMIS brightness temperature and thermal inertia mosaics) and other remote sensing datasets are discussed.
- 4:30 p.m. Milliken R. E. * Mustard J. F.
Determining Water Content of Geologic Materials Using Reflectance Spectroscopy [#1620]
TGA data and reflectance spectra are used to track changes in water absorptions as a function of absolute water content. Calculating band depth areas of absorptions in VIS-NIR data may prove useful for quantifying the water content of Mars' surface.
- 4:45 p.m. Kuzmin R. O. Christensen P. R. Zolotov M. Yu. *
Global Mapping of Martian Bound Water at 6.1 Microns Based on TES Data: Seasonal Hydration-Dehydration of Surface Minerals [#1810]
Global mapping of bound water distribution is consistent with seasonal hydration and dehydration of Martian surface minerals (e.g., sodium sulfates, zeolites) in the middle and high latitudes.