

Wednesday, March 3, 2010
EXPLORING THE MARTIAN CRUST: GEOLOGY, MINERALOGY, AND GEOCHEMISTRY
8:30 a.m. Waterway Ballroom 4

Chairs: **Melissa Lane**
William Farrand

- 8:30 a.m. Squyres S. W. * Athena Science Team
[*Recent Scientific Results from Opportunity's Traverse Toward Endeavour Crater, Meridiani Planum, Mars*](#) [#1757]
 This abstract provides an overview of the key scientific findings from the last year of operations of the Mars Exploration Rover Opportunity.
- 8:45 a.m. Crumpler L. * Arvidson R. Squyres S. Yingst A. McCoy T. DesMarais D. Cabrol N. Schröder C. Cohen B. Rice J. Jr. Ruff S. Morris R. Yen A. McEwen A. deSouza P. Athena Science Team
[*Overview of the Field Geologic Context of Mars Exploration Rover Spirit, Home Plate and Surroundings*](#) [#2557]
 This work provides field context for APXS, MB, MI results of Spirit at Home Plate. High silica /sulfates, nanophase iron oxides, and hematite occur mostly in the lowest stratigraphic unit exposed along the axis of breached antiformal bedding.
- 9:00 a.m. McSween H. Y. *
[*Martian Rock and Soil Compositions from Orbit and the Ground: Why Can't We All Just Get Along?*](#) [#1105]
 Chemical compositions of soils and alteration rinds on rocks are distinct from TES orbital data. Reconciling analyses of Mars surface materials from different techniques and at different scales is problematic.
- 9:15 a.m. Clark B. C. * Gellert R. Morris R. V. Ming D. W. Yen A. Arvidson R. E. Economou T.
[*The Enigmatic Global Martian Soil: Compositional Evidence from MER, Phoenix, Viking, MPF, MGS and Odyssey*](#) [#1419]
 The existence of a global soil unit on Mars hinges on element profiles from five landers. Orbital and *in situ* data, including Phoenix, combine to explain the shortfall in Viking compositions, explicable as carbonate, H₂O, and minor elements.
- 9:30 a.m. Lane M. D. * Goodrich C. A.
[*High-Magnesian Olivine in the Argyre Rim: Derived from a Primitive Magma?*](#) [#2094]
 High-Mg olivine (Fo80–90) units are mapped within the Argyre basin as part of an eroded annulus (uplifted basin rim). This high-Mg olivine, plus other minerals present, may represent primitive martian mantle-derived material similar to Y-980459.
- 9:45 a.m. Hamilton V. E. * McDowell M. L. Koeppen W. C.
[*Correlations Between Olivine Abundance and Thermal Inertia: Implications for Global Weathering and/or Alteration on Mars*](#) [#2239]
 TES data show no global trend between thermal inertia and olivine abundance. But it is premature to conclude that all dark surfaces were once more mafic OR that olivine is not preferentially removed from olivine-enriched outcrops as they erode.
- 10:00 a.m. Howard D. A. * McSween H. Y.
[*Supporting Evidence for an Ultramafic Component of the Martian Crust*](#) [#1679]
 Here we show that the recent CRISM spectrally derived ultramafic mineralogy in the Nili Fossae region is supported by THEMIS IR although the previously proposed mineral assemblage is not unique and the spectra can be matched without Mg-carbonate.

- 10:15 a.m. Ehlmann B. L. * Mustard J. F. Murchie S. L.
[*Geologic Setting of Serpentine Deposits on Mars*](#) [#2235]
Analyses of CRISM, HiRISE, and CTX data acquired to date show serpentine deposits on Mars are small, rare, and restricted to Noachian terrains. We detail the distribution of serpentine and the three distinct geologic settings in which it is found.
- 10:30 a.m. Skok J. R. * Mustard J. F. Tornabene L. L. Isaacson P. Murchie S. L.
[*Crystalline Igneous Crust of Mars: New Insights from the Southern Highlands*](#) [#1926]
High-resolution analysis of excavated mafic minerals from southern highland crater central peaks to constrain the formation of the primary crust of Mars.
- 10:45 a.m. Mittlefehldt D. W. * Gellert R. Herkenhoff K. E. Morris R. V. Clark B. C. Cohen B. A. Fleischer I. Jolliff B. L. Klingelhöfer G. Ming D. W. Yingst R. A. Athena Science Team
[*Marquette Island: A Distinct Mafic Lithology Discovered by Opportunity*](#) [#2109]
We will discuss the results of *in situ* investigation of a unique martian mafic lithology discovered by Opportunity on Meridiani Planum. You will be impressed.
- 11:00 a.m. Farrand W. H. * Lane M. D. Edwards B. R.
[*Analysis of Olivine and Augite Bearing Materials and Ice-related Features Found in Association with Domes on the Northern Plains of Mars*](#) [#1965]
CRISM and HiRISE data covering domes in western Arcadia and Utopia Planitiae were analyzed. MGM analysis indicates the presence of augite and Fe-rich olivine. Light-toned areas around the domes display a “brain terrain” morphology associated with the presence of ice.
- 11:15 a.m. Mustard J. F. * Ehlmann B. L.
[*Intact Stratigraphy Traversing the Phyllosilicate to Sulfate Eras at the Syrtis-Isidis Contact, Mars*](#) [#2070]
We analyze an intact stratigraphic section that captures the transition from early Mars where (alteration mineralogy dominated by phyllosilicate) to middle Mars (hydrous mineralogy is dominated by sulfates) where Syrtis lavas enter the Isidis Basin.
- 11:30 a.m. Hahn B. C. * McLennan S. M.
[*Regional Martian Crustal Heat Flow from Mars Odyssey Gamma-Ray Spectrometry*](#) [#1371]
Using radiogenic elemental abundances derived from Gamma-Ray Spectrometer (GRS) observations, we estimate the crustal component of martian heat flow for specific geologic features and regions, both present day and at the time of formation.