Tuesday, March 8, 2011
POSTER SESSION I: SAMPLES AND SPECTROSCOPY:
INSIGHTS INTO THE LUNAR CRUST
6:00 p.m. Town Center Exhibit Area

Ling Z. C. Zhang J. Liu J. Z. Zhang W. X. Zhang G. L. Liu B. Ren X. Mu L. L. Liu J. J. Li C. L.
Mapping Titanium Abundance Using Chang'E-1 IIM Data **[#1807]**
The derivation of the preliminary algorithm for TiO_2 mapping using Chang'E-1 IIM data were presented in this abstract. A regional case study near MS2 region is also performed in comparisons with corresponding Clementine TiO_2 mapping.

Wu Y. Z. Gan F. P. Yan B. K. Tang Z. S.
Global Distribution of FeO and TiO_2 as Derived from Chang'E-1 IIM data **[#1223]**
The global maps of Fe and Ti were derived with CE-1 data. Our maps suggest that (1) Fe and Ti are exponentially related; (2) the histogram of Fe is unimodal and that of Ti is continuous; (3) the Fe of the highest area is very low, and the materials are perhaps not from SPA.

Kong W. G. Jolliff B. L. Wang A.
Ti Distribution in Grain-Size Fractions of Apollo Soils 10084 and 71501 **[#1641]**
Grain-size fractions of lunar soils 10084 and 71501 were studied using X-ray digital image analysis. We report results for mineral and lithologic modal analysis, shape analysis of ilmenite grains, and Ti distribution analysis.

Isaacson P. J. Pieters C. M. Hiroi T. Liu Y. Dhingra D. Klima R. L. Taylor L. A.
Reflectance Spectroscopy of Ilmenite: New Constraints from Apollo Sample Measurements **[#2130]**
New laboratory measurements of lunar basalt samples provide important new data on the VNIR spectral reflectance properties of ilmenite-rich materials. These data provide key constraints for evaluating ilmenite abundance with remote sensing.

Peel S. E. Dyar M. D. Klima R. L.
Crystal Structure Parameters as Predictors of VNIR Spectroscopy of Synthetic Pyroxenes **[#1394]**
We demonstrate relationships between steric parameters of the pyroxene structure and the positions of bands at 1.0, 1.2, and 2 μm in the near-infrared.

Klima R. L. Dyar M. D. Peel S. E.
Spectral Modeling and Crystallographic Properties of Al-Rich Pyroxenes **[#2181]**
We integrate crystallographic and NIR spectroscopic measurements of Al-rich pyroxenes to quantify the effect of Al on pyroxene spectra. These results will expand the foundation for remote compositional analyses of extraterrestrial pyroxenes.

Sugita S. Nagata K. Tsuboi N. Hiroi T. Okada M.
A New Modified Gaussian Model (MGM) Using a Bayesian Estimation Approach: Toward Automated Analysis of Planetary Spectra **[#2624]**
A new modified Gaussian model (MGM) that determines the optimum number of Gaussians and has little dependence on initial parameter selection is proposed, enabling automated analyses of currently available large volume of lunar reflectance spectra.

Li L. Li S.
Deriving Lunar Mineral Abundance with Hyperspectral Reflectance Data **[#2565]**
GA-PLS models are derived from the LSCC dataset and these models can be directly applied to mapping of lunar mineral abundances with the hyperspectral M^3 images.

Dhingra D. Mustard J. F. Wiseman S. Pariente M. Pieters C. M. Isaacson P. J.
Non-Linear Spectral Un-Mixing Using Hapke Modeling: Application to Remotely Acquired M^3 Spectra of Spinel Bearing Lithologies on the Moon **[#2431]**
This study reports initial results from nonlinear spectral unmixing of remotely acquired spectra of Mg-spinel-bearing lithologies on the Moon using Hapke's radiative transfer modeling.

Prettyman T. H. McSween H. Y. Jr.
Gamma-Ray Spectral Unmixing of Compositional End-Members: A Fresh Look at Lunar Geochemistry **[#2731]**
A mixing model is used to analyze Lunar Prospector nuclear spectroscopy data. The global lunar composition is represented by four end members. Remotely-sensed compositions, under-represented in the sample collection, are consistent with the model.

Donaldson Hanna K. L. Wyatt M. B. Thomas I. R. Bowles N. E. Greenhagen B. T. Paige D. A.
Thermal Infrared Emissivity Measurements in a Simulated Lunar Environment of the Major Silicate Minerals on the Moon **[#1927]**
We characterize the TIR spectral changes between ambient and SLE for minerals on the Moon and evaluate their application for remote sensing. Our new measurements demonstrate the sensitivity of minerals to environmental conditions under which they are measured.

Cheek L. C. Pieters C. M. Parman S. W. Dyar M. D. Speicher E. A. Cooper R. F.
Spectral Characteristics of Plagioclase with Variable Iron Content: Applications to Remote Sensing of the Lunar Crust **[#1617]**
Reflectance spectra of synthetic plagioclases show a well-resolved increase in absorption band depth for samples with <0.4 wt% FeO, suggesting that small differences in the compositions of highland plagioclases should be distinguishable remotely.