

Tuesday, March 20, 2012

**POSTER SESSION I: LUNAR REMOTE SENSING: VISIBLE, INFRARED, AND BEYOND**  
**6:00 p.m. Town Center Exhibit Area**

Allen C. C. Greenhagen B. T. Donaldson Hanna K. L. Oehler D. Z. Paige D. A.  
[\*Derivation of FeO Abundances in Lunar Pyroclastic Deposits Using LRO Diviner\*](#) [#1504]

Lab and Diviner thermal IR data correlate closely with FeO abundances across the range of soil and pyroclastic glass in the Apollo sample collection. Such data have the potential to analyze FeO concentrations in unsampled lunar pyroclastic deposits.

Otake H. Ohtake M. Hirata N.

[\*Lunar Iron and Titanium Abundance Algorithms Based on SELENE \(Kaguya\) Multiband Imager Data\*](#) [#1905]

We present algorithms for deriving the abundances of iron and titanium on the lunar surface based on SELENE (Kaguya) Multiband Imager's high-spatial-resolution data that have been calibrated and released to the public.

Bhatt M. Mall U. Bugiolacchi R.

[\*Iron Abundance Estimation of the Lunar Surface Using VIS-NIR Spectrometers On-Board Chandrayaan-1\*](#) [#1409]

Our method of estimating iron abundance is based on an empirical relation between the 2- $\mu\text{m}$  absorption parameters and the laboratory measured FeO wt%. A comparison of results from our method and Clementine-derived maps are in good agreement.

Moriarty D. P. III Pieters C. M. Petro N. Isaacson P. J.

[\*Compositional Heterogeneity Within Lunar Central Peaks\*](#) [#2399]

The purpose of this study is to characterize the compositional heterogeneity across lunar central peaks in order to determine properties of the source region of central peak material.

Cheek L. C. Donaldson Hanna K. L. Pieters C. M. Head J. W. Whitten J. L.

[\*Anorthosite Exposures in the Inner Rook Mountains of the Lunar Orientale Basin\*](#) [#2731]

Moon Mineralogy Mapper ( $M^3$ ) spectra over the Orientale Basin show that crystalline plagioclase is pervasive throughout the IRM while mafic signatures are lacking. This indicates that an extensive, coherent layer of highly pure anorthosite was sampled by the impact.

Bugiolacchi R. Mall U. Bhatt M.

[\*NIR Spectral Characterisation of the Northern Imbrium Region from SIR-2 Data\*](#) [#1462]

We have developed a classification method of spectral characterization that appears to differentiate reliably between heterogeneous lunar surface materials; here we present a preliminary report, focused on six of the most recurrent spectral shapes.

Yamamoto A. Ohtake M. Haruyama J. Matsunaga T.

[\*Kaguya LISM/MI Data Analysis for the Menelaus Crater Region of the Moon\*](#) [#1449]

We used Japanese lunar orbiter "Kaguya" multiband imager data for classification analysis study about the Menelaus crater region on the moon. Nine-band multispectral data is useful to interpret geological history around the crater.

Kaur P. Chauhan P. Bhattacharya S. Ajai Kumar A.S. K.

[\*Compositional Diversity at Tycho Crater: Mg-Spinel Exposures Detected from Moon Mineralogical Mapper \( \$M^3\$ \) Data\*](#) [#1434]

We report for the first time detection of Mg-spinel from Tycho crater along with crystalline plagioclase, olivine, and high-Ca pyroxene from the Tycho crater using  $M^3$  data onboard Chandrayaan-1.

Arivazhagan S. Anbazhagan S.

[\*Lithological Discrimination of Apollo 17 Landing Site Using Chandrayaan1 Moon Mineralogical Mapper Data\*](#) [#1751]

Apollo 17 landing site lithology discriminated using Chandrayaan  $M^3$  data standard band ratio, spectral profiles, and FeO/ TiO<sub>2</sub> estimation. The results were compared with the previously published data.

Lemelin M. Germain M. Morisset C.-E. Hipkin V. Goïta K.

[\*Ilmenite Detection on the Moon by Remote Sensing: An Integration of Multisensor Datasets over Mare Australe and Mare Ingenii Regions\*](#) [#1972]

We propose a method to map ilmenite concentrations on the Moon using integrated Lunar Reconnaissance Orbiter Wide Angle Camera and Clementine UVVIS/NIR datasets to take advantage of the unique spectral characteristics of ilmenite in the UV.

Standart D. L. Hurtado J. M. Jr.

[\*Lunar Mineralogy Exploration Using Moon Mineralogy Mapper \(M<sup>3</sup>\) Hyperspectral Imagery\*](#) [#2142]

Moon Mineralogy Mapper imagery is used to develop iron band ratios for ilmenite exploration. We compare the index images created from these band ratios with ultraviolet/visible light index images from the LROC Wide Angle Camera to check our results.

Boyd A. K. Robinson M. S. Mahanti P.

[\*Automatic Lunar Smooth Plains Classification Using LRO and Clementine Mission Data\*](#) [#2917]

An automatic classification of units on the moon using the WAC 7 band photometrically corrected mosaic, GLD100, and clementine date. Classifications include maria, smooth plains, and highlands material.

Isaacson P. J. Petro N. E. Pieters C. M. Besse S. Boardman J. W. Clark R. N. Green R. O. Lundeen S. Malaret E. McLaughlin S. Sunshine J. M. Taylor L. A. M3 Team

[\*Absolute Ferrous Absorption Band Strength in the Lunar Feldspathic Highlands Terrane from the Moon Mineralogy Mapper\*](#) [#1740]

We evaluate the ferrous band strength in the feldspathic highlands terrane with M<sup>3</sup> data. We find that the ground truth correction delivered with the M<sup>3</sup> PDS archive improves consistency between data collected over different phases of the mission.

Powell K. E. McGovern P. J. Kramer G. Y.

[\*Olivine Detections at the Rim of Crisium Basin with Moon Mineralogy Mapper\*](#) [#1689]

We address the origin and transport of olivine at Crisium using spectra from the Moon Mineralogy Mapper (M<sup>3</sup>) onboard Chandrayaan-1.

Wiseman S. M. Donaldson Hanna K. L. Mustard J. F. Isaacson P. J. Pieters C. M. Jolliff B.

[\*Origin of Aristarchus Olivine Based on M<sup>3</sup> and Diviner Analyses\*](#) [#2515]

Olivine-bearing material is exposed in ejecta deposits on the SE portion of the Aristarchus crater wall. We investigate the nature of these deposits with M<sup>3</sup> and Diviner and compare them to other olivine-bearing deposits in the vicinity of Imbrium.

Mustard J. F. Donaldson Hanna K. L. Wiseman S. Pieters C. M.

[\*Visible-Near Infrared and Morphologic Character of High Silica Areas Identified by Diviner in the Aristarchus Crater: Association with Impact Melt\*](#) [#2246]

The unusual short wavelength Christiansen Feature materials identified with Diviner near Aristarchus crater are analyzed with M<sup>3</sup> and LROC data. These materials are strongly correlated with the distribution and abundance of impact melt.

Foote E. J. Paige D. A. Shepard M. K. Johnson J. R. Grundy W. M. Biggar S. F.

Greenhagen B. T. Allen C. C.

[\*Laboratory and Diviner Bidirectional Reflectance Measurements of Apollo Soils\*](#) [#2357]

We compare laboratory reflectance measurements of Apollo soil samples to LRO Diviner observations of the landing sites.

Goguen J. D.

[\*Apollo Soils Physical Properties Linked to M<sup>3</sup> Spectra Combined with ROLO Photometry\*](#) [#2568]

Forward radiative transfer models are used to link the known size distributions and composition of the returned Apollo lunar soil samples to remote sensing measurements of the lunar sites from which they were collected.

Boyd A. K. Robinson M. S. Sato H.

[\*Lunar Reconnaissance Orbiter Wide Angle Camera Photometry: An Empirical Solution\*](#) [#2795]

The Lunar Reconnaissance Orbiter Wide Angle Camera is constantly imaging illuminated moon. A mostly continuous -63 to 63 latitude photometrically corrected 7 band color mosaic was created.

Yokota Y. Matsunaga T. Yamamoto S. Ohtake M. Haruyama J. Nakamura R. Ogawa Y. Morota T. Honda C. Saiki K. Nagasawa K. Kitazato K. Sasaki S. Iwasaki A. Demura H. Hirata N. Hiroi T. Honda R. Iijima Y. Mizutani H.

[\*Lunar Photometric Properties at Wavelength over 1.7 Microns Acquired by SELENE Spectral Profiler NIR-2 Sensor\*](#) [#2810]

We present photometric correction method for SELENE SP NIR-2 sensor.

Cheng A. F. Domingue D. L.

[\*Photometric Modeling of Particulate Surfaces: A New Radiative Transfer Approach\*](#) [#1568]

Opposition effects, roughness, and porosity effects can be treated within the framework of radiative transfer modeling. Geometric albedo may be a robust measure of surface reflectivity and spectral dependence, relatively unaffected by viewing geometry and by porosity.

Arnold J. A. Glotch T. D. Wolff M. J.

[\*Exact Calculation of the Scattering Properties of Wavelength-Sized Particles\*](#) [#2529]

We are interested in the light-scattering properties of planetary surfaces composed of fine-grained particulates, such as the lunar regolith. Here we focus on modeling the infrared emission spectra of quartz using a T matrix scattering code.

Banks M. E. Watters T. R. Robinson M. S. Tornabene L. L. Tran T. Ojha L.

Williams N. R. LROC Team

[\*Morphometric Analysis of Small-Scale Lobate Scarps on the Moon Using Data from the Lunar Reconnaissance Orbiter\*](#) [#2817]

LROC images and DTMs and LOLA altimetry are used to measure the relief and characterize the morphology of lunar lobate scarps. Results indicate that the scarps typically exhibit tens of meters of relief and are tens of kilometers or less in length.

Mahanti P. Burns K. Tran T. Robinson M. S.

[\*Measurement of Highland Pond Melt Volumes from LRO NAC DEMs\*](#) [#2807]

DEM's obtained from NAC stereo-pair images is used to obtain melt pond volumes in highland area by image processing. Variation of melt volumes with pond area is studied.

Antonenko I.

[\*Leathery Texture in the Bose, Bhabha, and Stoney Crater Region of South Pole-Aitken Basin on the Moon\*](#) [#2581]

LROC data shows fine-scaled leathery texture throughout the central SPA area. A survey of the region was conducted to assess the extent of this texture. Observations are consistent with the texture forming by seismic shaking from small local impacts.

Jin Y. Q.

[\*Diurnal Temperature Changes of Cratered Lunar Surface Inverted from Chinese Chang'E-1 Multi-Channel Radiometer Observations\*](#) [#1004]

Based on a three-layer radiative transfer model, the brightness temperature data of Chinese Chang'E-1 multi-channel microwave radiometer are first studied and applied to invert the diurnal temperatures changes of some specific cratered areas.

Holsclaw G. M. Snow M. McClintock W. E.

[\*Disk-integrated Polarization of the Moon in the Ultraviolet\*](#) [#2832]

We have obtained the first disk-integrated measurement of the lunar polarization at ultraviolet wavelengths and only the second polarization measurement of the Moon to date.

Hendrix A. R. Vilas F. Holsclaw G. M. Feldman P. D.

[\*Ultraviolet Spectroscopy of the Moon: A New Look at Some Not-so-New Data Sets\*](#) [#2839]

We present an analysis of several previously untapped ultraviolet datasets of the Moon: IUE, Apollo 17 UVS, Galileo UVS and Cassini UVIS. We use these data to look into compositional and weathering effects across the surface.

Cahill J. T. S. Bussey D. B. J. Patterson G. W. Turner F. S. Lopez N. R. Raney R. K.

Neish C. D. Mini-RF Science Team

[\*Global Mini-RF S-Band CPR and M-Chi Decomposition Observations of the Moon\*](#) [#2590]

We report on analyses Mini-RF global S-band radar maps using a unique and complimentary method of polarimetric data analysis, known as an m-chi decomposition.

Aldridge T. M. Thomson B. J. Stoddard P. R. Cahill J. T. S. Bussey D. B. J. Mini-RF Science Team

[\*A Mini-RF Radar Analysis of the Moon's South Pole-Aitken Basin\*](#) [#2493]

Using Mini-RF S-band zoom we derive the Stokes (S1), circular polarization ratio (CPR), and same sense (SC) parameters of the South Pole-Aitken basin for comparison with Clementine UVVIS-NIR derived TiO<sub>2</sub> maps.

Baloga S. M. Glaze L. S. Spudis P. D.

[\*Inferred Lunar Boulder Distributions at Decimeter Scales\*](#) [#1647]

Block size distributions for Linné crater and Surveyor III and VII sites were analyzed. Statistical properties of these distributions are determined as well as methods for reliably extrapolating from NAC data down to decimeter scales relevant to CPR.

Hayne P. O. Aharonson O. Bandfield J. L. Greenhagen B. T. Paige D. A.

[\*The Surface Roughness of the Moon from Diviner Infrared Observations\*](#) [#2829]

Surface roughness maps derived from Diviner infrared data present a unique record of geologic processes on the Moon, from lunar swirls to anomalous impact features known as "cold spots".