

**Thursday, March 20, 2003**  
**POSTER SESSION II**  
**7:00 p.m. Fitness Center**

**Lunar Remote Sensing: Predictions, Techniques, Results, Archives, and Models**

Yokota Y. Honda R. Iijima Y. Mizutani H.

*New Method of Photometric Correction for Lunar UVVIS Images* [#1885]

We propose the iterative method of photometric correction of the Clementine lunar UVVIS images, in which automatic clustering of multi-band spectrum, and determination of phase function for each spectral group are successively performed.

Shkuratov Y. G. Pieters C. M. Omelchenko V. V. Stankevich D. G. Kaydash V. G. Taylor L. A.

*Estimates of the Lunar Surface Composition with Clementine Images and LSCC Data* [#1258]

A new approach based on analysis of spectral and compositional data for lunar samples by the LSCC and using the UVVIS Clementine data with 1 km resolution is proposed to estimate and map the abundance of TiO<sub>2</sub>, SiO<sub>2</sub>, and FeO, pyroxene and plagioclase content, and maturity degree (I<sub>s</sub>/FeO).

Eliaison E. M. Lee E. M. Becker T. L. Weller L. A. Isbell C. E. Staid M. I. Gaddis L. R. McEwen A. S.

*A Near-Infrared (NIR) Global Multispectral Map of the Moon from Clementine* [#2093]

In May and June of 1994, the NASA/DoD Clementine Mission acquired global, 11-band, multispectral observations of the lunar surface using the UVVIS and NIR cameras. The corresponding NIR DIM has been compiled by the USGS for distribution to the lunar science community.

Hawke B. R. Lawrence D. J. Gillis J. J. Blewett D. T. Lucey P. G. Peterson C. A. Smith G. A.

Spudis P. D. Taylor G. J.

*Spectral Anomalies in the Imbrium Region of the Moon* [#1545]

A variety of remote sensing data was used to determine the composition and origin of spectral anomalies (Red Spots) in the Imbrium region. Pyroclastic material is largely responsible for producing the spectral anomaly at Archimedes. Gruithuisen Gamma and Delta are volcanic constructs.

Gaddis L. Becker T. Weller L. Cook D. Richie J. Bennett A. Redding B. Shinaman J.

*Reviving Lunar Orbiter: Scanning, Archiving, and Cartographic Processing at USGS* [#1459]

We report on a project to digitize, archive, and process a subset of the Lunar Orbiter photographic data. Our goal is to produce a global, cartographically accurate, cosmetically enhanced, digital photographic mosaic of the Moon using LO data.

Byrne C. J.

*Correction of Image Motion Smear in Photo from Lunar Orbiter Mission I* [#1171]

An image processing program improves high resolution Lunar Orbiter photo I-040H of Korolev, smeared by failure of image motion compensation. The correction algorithm is complicated by the nature of the image motion; the amount of motion changed across the image.

Pugacheva S. G. Shevchenko V. V.

*Photometry of the Moon with AMIE/SMART-1: Photometric Parameter as Roughness Index* [#1112]

The view is taken in the paper that information retrieved from the local surface photometric behaviour of the Moon could be used for the remote sensing analyses of specific targets.

Shevchenko V. V. Pinet P. Chevrel S. Pugacheva S. G. Daydou Y.

*Lunar Photometry and Composition of Ejecta Terrains with AMIE/SMART-1* [#1113]

A new technique for remote sensing estimation of lunar surface structure by means photometry method is proposed. A close relationship between the photometric characteristics and thorium abundances is elucidated.

Ohtake M. Demura H. Haruyama J. Hirata N. Nakamura R. Sugihara T. Takeda H.

*Study of the Optical Standard Site for the SELENE Multiband Imager* [#1976]

The Multiband Imager (MI) is an instrument being developed for the SELENE project. Our study to select the best optical standard site and sample(s) for MI revealed that there are possibilities we can use additional information from Apollo 16 samples.

Haruyama J. Ohtake M. Hirata N. Nakamura R. Matsunaga T.

*Expected Performance of Lunar Imager/SpectroMeter on SELENE* [#1565]

The Lunar Imager/SpectroMeter (LISM) is a mission instrument package that will be installed on the Selenological and Engineering Explorer. In this paper, we will introduce the expected performance of LISM flight model.

Berezhnoy A. A. Hasebe N. Hiramoto T. Miyachi T. Yamashita N.

*Possibility of H and S Detection on the Moon by SELENE Mission* [#1210]

The content of C and S can be high near the lunar poles. Theoretical calculations of lunar gamma-ray flux show that SELENE gamma-ray spectrometer can detect H and S at the lunar poles if their abundances are higher than 0.03 and 0.5 wt % respectively.

Maurice S. Feldman W. C. Lawrence D. J. Gasnault O. Elphic R. C. Chevrel S.

*Distribution of Hydrogen at the Surface of the Moon* [#1867]

First global map of hydrogen implanted within the first 2 m of the lunar regolith.

Sisterson J. M.

*The Status of Cross Section Measurements for Neutron-induced Reactions Needed for Cosmic Ray Studies* [#1326]

A summary of the irradiations made to measure the cross sections of relevant neutron-induced reactions needed to understand cosmic ray interactions with lunar rocks and meteorites will be presented.

Dunkin S. K. Grande M. D-CIXS Team

*X-ray Spectroscopy of the Lunar Surface Using the D-CIXS Instrument on ESA's SMART-1 Mission to the Moon* [#1678]

Details of the science objectives and instrument performance of D-CIXS, an X-ray spectrometer on ESA's SMART-1 mission to the Moon, due for launch in 2003.

Bussey D. B. J. Lucey P. G. Robinson M. S. Spudis P. D. Edwards K. D. Steutel D.

*Permanent Shadow in Simple Craters near the Lunar Poles* [#1897]

Simulations of realistic crater topography have been conducted to produce new lower limits on the amount of permanent shadow near both lunar poles. Our new values are larger than previous estimates.

Dissly R. Miller K. L. Murrow D. Van Cleve J.

*Future Moon Missions: Flight Systems for the Cold, Dark, or Unseen 2003–2013* [#1471]

We present our capabilities and recent internal R&D on remote sensing of cold and dark regions, *in situ* experiments, sample handling, and cryogenic sample return, and apply them to contemporary lunar questions.

Stooke P. J.

*Exploration Strategies and Landing Sites at the Lunar South Pole* [#1265]

Seven landing sites near the lunar south pole are identified based on these criteria: availability of adequate sunlight, direct Earth communication, South Pole/Aitken basin ejecta and rover access to potential volatiles in areas of perpetual darkness.

Campbell B. A. Campbell D. B. Nolan M.

*New High-Resolution 70-cm Wavelength Radar Images of the Moon* [#1700]

Using the Arecibo Observatory 430 MHz radar system, we are collecting new images of the lunar surface with spatial resolution of ~300 m.

Lawson S. L. Rodger A. P. Henderson B. G. Bender S. C. Lucey P. G.

*Multispectral Thermal Imager Observations of the Moon During Total Eclipse* [#1761]

Here we present Multispectral Thermal Imager satellite images of the Moon taken during the total lunar eclipse of 9 January 2001.

Lawrence S. J. Lau E. Steutel D. Stopar J. D. Wilcox B. B. Lucey P. G.

*A New Measurement of the Absolute Spectral Reflectance of the Moon* [#1269]

We present a new ground-based telescopic measurement of the absolute lunar spectral reflectance. We used an atmospheric modeling algorithm to quantify scattering and absorption, permitting the calculation of absolute lunar spectral reflectance.

Helpenstein P. Shepard M. K.

*A Blind Test of Hapke's Photometric Model* [#1968]

A blind-test of Hapke's (2002) photometric model was conducted using spectrophotometric observations of 11 well-characterized particle samples. One author attempts to interpret fits of Hapke's model for the undisclosed samples.

Piatek J. L. Hapke B. W. Nelson R. M. Hale A. S. Smythe W. D.

*Size-dependent Measurements of the Scattering Properties of Planetary Regolith Analogs: A Challenge to Theory* [#1440]

Laboratory measurements of the scattering properties of planetary regolith analogs with particle sizes both smaller and larger than the wavelength are compared with predictions of independent particle scattering theory. The results do not agree.

Nelson R. M. Hapke B. W. Smythe W. D. Hale A. S. Piatek J. L.

*A Study of the Opposition Phase Curve in Low Albedo Media* [#1869]

The reflectance phase curves of very low albedo materials are consistent with shadowing hiding as the principal contributor although materials with albedos as low as 13% exhibit a significant contribution from coherent backscattering to the phase curve.