Friday, March 18, 2005
REMOTE SENSING, MARE BASALTS, AND LUNAR RESOURCE DEPOSITS
1:30 p.m. Salon C

Chairs: D. T. Blewett
R. C. Elphic

1:30 p.m. Blewett D. T. * Hawke B. R. Lucey P. G. Robinson M. S.
Two-Color Studies of the Mercurian and Lunar Surfaces **[#1245]**
We are using Mariner 10 color image data (UV and orange) to examine spectral trends associated with surface features on Mercury. Images of the Moon and lunar sample laboratory spectra provide a framework for interpreting the mercurian data.

1:45 p.m. Gillis J. J. * Lucey P. G.
Evidence that UVVIS Ratio is not a Simple Linear Function of TiO_2 Content for Lunar Mare Basalts **[#2252]**
Comparison of Clementine UVVIS ratio and Lunar Prospector neutron TiO_2 data reveal a less than optimal correlation for estimating TiO_2. We find that effects such as ilmenite grain size and bulk soil FeO content may be the cause of the poor correlation.

2:00 p.m. Pieters C. M. * Tompkins S.
Remote Sensing of Lunar Mineralogy: The Glass Conundrum **[#1346]**
New laboratory measurements of lunar pyroclastic samples are used to constrain requirements for remote mineral analyses. The extensive pyroclastic deposits at Aristarchus are shown to be Fe-rich, but Ti-poor, quench glasses.

2:15 p.m. Nicholis M. G. * Rutherford M. J.
Pressure Dependence of Graphite-C-O Phase Equilibria and Its Role in Lunar Mare Volcanism **[#1726]**
We present new constraints on graphite-C-O phase equilibria, and the depth of gas production in the Moon and other small planetary bodies.

2:30 p.m. Zeigler R. A. * Korotev R. L. Jolliff B. L. Haskin L. A.
Petrography of Lunar Meteorite MET 01210, A New Basaltic Regolith Breccia **[#2385]**
MET 01210 is a new lunar meteorite collected in Antarctica during the 2001 ANSMET field season. It is a basaltic regolith breccia composed predominantly of VLT basaltic material.

2:45 p.m. Arai T. * Misawa K. Kojima H
A New Lunar Meteorite MET 01210: Mare Breccia with a Low-Ti Ferrobasalt **[#2361]**
A new lunar meteorite is a mare breccia with low-Ti mare basalt. The pyroxene crystallization trend and estimated bulk-rock TiO_2 of the basalt is remarkably similar to A881757 basalt. The pyroxene compositions are also very similar to those of Luna 24 ferrobasalt.

3:00 p.m. Basu A. * McKay D. S.
A New Model of Size-graded Soil Veneer on the Lunar Surface **[#1321]**
The top ~ two millimeters of the lunar surface soil is size-sorted but perturbed by gardening and agglutination. This leads to higher irradiation of and vapor deposition on the smaller grains because they exist on top of others with a gradual decrease in irradiation of larger grains below.

3:15 p.m. Bentley M. S. * Ball A. J. Dyar M. D. Pieters C. M. Wright I. P. Zarnecki J. C.
Space Weathering: Laboratory Analyses and In-Situ Instrumentation **[#2255]**
Simulations of space weathering using laser irradiation are exploited to study the formation of sub-microscopic iron. A variety of magnetic techniques are evaluated to characterise this iron and are considered for *in situ* instrumentation.

3:30 p.m. Garrick-Bethell I. * Byrne S. Hoffman J. A. Zuber M. T.
Areas of Favorable Illumination at the Lunar Poles Calculated from Topography **[#2006]**
Using digital elevation models from Arecibo radar interferometry we present integrated illumination conditions at the poles over two lunations during winter and summer.

3:45 p.m. Elphic R. C. * Lawrence D. J. Feldman W. C. Prettyman T. H. Maurice S. Bussey D. B. J. Spudis P. D. Lucey P. G.
Using Models of Permanent Shadow to Constrain Lunar Polar Water Ice Abundances **[#2297]**
We use models of permanent shadow to constrain the locations of enhanced water- equivalent hydrogen at the Moon's poles, deconvolve Lunar Prospector neutron data subject to these constraints and find numerous locations of >1 wt% H_2O equivalent.

4:00 p.m. Neubert J. R. * Lucey P. G. Taylor G. J.
Properties of Permanently Shadowed Regolith **[#1613]**
Permanently shadowed areas at the lunar poles are unique. Regolith properties might be different from regolith elsewhere, gases might be trapped in amorphous ice, and chemical reactions might have formed organic compounds and phyllosilicates.

4:15 p.m. Stubbs T. J. * Vondrak R. R. Farrell W. M.
A Dynamic Fountain Model for Lunar Dust **[#1899]**
A dynamic fountain model is presented which describes how sub-micron dust is lofted up to ~100 km above the lunar surface. Sunlight scattered by this dust causes horizon glow and streamers above the terminator, as observed during the Apollo era.

4:30 p.m. Taylor L. A. * Taylor D. S.
Unique Properties of Lunar Soil for In Situ Resource Utilization on the Moon **[#1812]**
"In-Situ Resource Utilization" (ISRU) of the materials on the lunar surface, uniqueness of lunar soil, dust abatement, microwave principles and processing, and microwave products are discussed.