Friday, March 5, 2010
PETROLOGIC CHARACTERIZATION OF THE MOON
1:30 p.m. Waterway Ballroom 6

Chairs: **Juliane Gross**
Mirjam van Kan Parker

1:30 p.m. Barr J. A. * Grove T. L.
Primordial Lunar Mantle Melts and Assimilated Magma Ocean Cumulates: Implications for the Depth of the Lunar Magma Ocean Based on Ultramafic Glass Compositions **[#2427]**
We have developed a model to predict the chemistry of primordial lunar mantle melts. These model melts can be used in mixing calculations to help constrain the depth of magma ocean cumulates, and by association the depth of the lunar magma ocean.

1:45 p.m. Elardo S. M. * Draper D. S. Shearer C. K.
Magma Ocean Composition and the Lunar Mantle: Implications for the Source Lithologies of the Highlands Magnesian Suite **[#1450]**
Experiments have been conducted on two bulk Moon compositions to assess whether the earliest cumulates from the lunar magma ocean could have served as the source lithologies for the Mg-rich, Ni, Co and Cr- poor mafic silicates of the Mg-suite.

2:00 p.m. Sakai R. * Kushiro I. Nagahara H. Ozawa K. Tachibana S.
Chemical Composition of Lunar Magma Ocean Constrained by High Pressure Experiments **[#2066]**
We report our attempts to constrain bulk chemical compositions of lunar magma ocean based on experimental constraints from physical properties of magma that can float anorthite to form the lunar anorthosite crust.

2:15 p.m. van Kan Parker M. * Mason P. Liebscher A. Frei D. van Sijl J. Blundy J. Franz G. van Westrenen W.
Trace Element Evolution During Lunar Magma Ocean Crystallisation **[#1588]**
We present new experimental results on orthopyroxene-melt and ilmenite-melt partitioning that can be used for predictive modelling of lunar magma ocean crystallisation of major and trace elements.

2:30 p.m. Sunshine J. M. * Besse S. Petro N. E. Pieters C. M. Head J. W. Taylor L. A. Klima R. L. Isaacson P. J. Boardman J. W. Clark R. C. M3 Team
Hidden in Plain Sight: Spinel-rich Deposits on the Nearside of the Moon as Revealed by Moon Mineralogy Mapper (M^3) **[#1508]**
The Moon Mineralogy Mapper has revealed a new, unique, and unexpected spinel-rich lithology on the central nearside. These spinel-rich deposits are found only among the Sinus Aestuum pyroclastic deposits and are notably absent from nearby Rima Bode.

2:45 p.m. Pieters C. M. * Boardman J. Buratti B. Clark R. Combe J. P. Green R. Goswami J. N. Head J. W. Hicks M. Isaacson P. Klima R. Kramer G. Kumar K. Lundeen S. Malaret E. McCord T. B. Mustard J. Nettles J. Petro N. Runyon C. Staid M. Sunshine J. Taylor L. A. Thaisen K. Tompkins S. Varanasi P.
Identification of a New Spinel-rich Lunar Rock Type by the Moon Mineralogy Mapper (M^3) **[#1854]**
Diffuse and widely separated regions along the highly feldspathic inner ring of Moscoviense Basin exhibit unusual mineral components. One composition is a new rock type dominated by Mg-spinel with no detectible mafic silicates (<5%).

3:00 p.m. Neal C. R. * Fagan A. L. Oshrin J. C.
Differentiating Between Pristine Mare Basalts and Impact Melts Using Quantitative Petrography **[#1647]**
Lunar impact melts and pristine mare basalts have similar textures. We present a quantitative study of lunar melt rock textures via crystal size distributions to demonstrate distinguish impact melts from pristine mare basalts.

3:15 p.m. Taylor G. J. * Martel L. M. Spudis P. D.
Apollo 15 KREEP Basalts and Emplacement of the Apennine Bench Formation **[#1510]**
The Apennine Bench Formation, represented by Apollo 15 KREEP basalts, is composed of a range of compositionally similar but not identical pahoehoe lava flows.

3:30 p.m. O'Sullivan K. M. * Neal C. R.
Exploring the Petrogenesis of Apollo 12 Ilmenite Suite Basalts **[#2322]**
We report crystal size distributions along with major and trace element abundances of pyroxene and ilmenite to determine the petrogenesis of these samples.

3:45 p.m. Gross J. * Treiman A. H.
New Insights into the Complex History of Lunar Highlands: ALHA 81005 Under Reinvestigation **[#2180]**
Lunar meteorites represent the Moon's crust better than returned mission samples. This reinvestigation of ALH A81005 improves our understanding of unsampled areas and enlarges our knowledge of lunar highland rock types and the Moon's early history.

4:00 p.m. Ohtake M. * Matsunaga T. Takeda H. Yokota Y. Yamamoto S. Morota T. Ogawa Y. Hiroi T. Nakamura R. Haruyama J.
Distribution of Purest Anorthosite on the Entire Lunar Surface **[#1628]**
We surveyed the distribution of the purest anorthosite over the entire lunar surface by using reflectance spectra derived by the SELENE Spectral Profiler. Results indicate a homogeneous distribution of the purest anorthosite.

4:15 p.m. Korotev R. L. * Jolliff B. L. Zeigler R. A.
On the Origin of the Moon's Feldspathic Highlands, Pure Anorthosite, and the Feldspathic Lunar Meteorites **[#1440]**
If anorthosite consisting of nearly 100% plagioclase occurs globally at depth in the lunar crust, why is it rare in the ~37 feldspathic lunar meteorites?

4:30 p.m. Nyquist L. E. * Shih C.-Y. Reese Y. D. Park J. Bogard D. D. Garrison D. H. Yamaguchi A.
Lunar Crustal History Recorded in Lunar Anorthosites **[#1383]**
Variations in ages and initial 143Nd/144Nd of lunar anorthosites show they do not all derive from the LMO. "Old" Ar-Ar ages for anorthosites in lunar meteorites suggest the "lunar cataclysm" may be a localized phenomenon.