

Tuesday, March 8, 2011
FORMATION AND EVOLUTION OF THE MOON III:
SECONDARY CRUST PRODUCTION
1:30 p.m. Waterway Ballroom 6

Chairs: Ryan Zeigler
 Justin Hagerty

- 1:30 p.m. Buz J. * Weiss B. P. Garrick-Bethell I.
[*Recent Lunar Magnetism*](#) [#1675]
 The magnetization of some young lunar samples has led to skepticism of the ancient core dynamo hypothesis. We present paleomagnetic studies of possibly the youngest lunar magnetization identified and present a likely explanation for the source.
- 1:45 p.m. Mercer C. N. * Treiman A. H.
[*New Lunar Meteorite NWA 2996: A Window into Highland Plutonic Processes and KREEP Metasomatism*](#) [#2111]
 We describe new petrological results from the recently found lunar meteorite, NWA 2996 to test whether it could have originated from either the margin of the PKT or the SPA terrane, and to contribute to the understanding of lunar highland petrogenesis.
- 2:00 p.m. Robinson K. L. * Taylor G. J.
[*Intrusive and Extrusive Lunar Felsites*](#) [#1257]
 We identified the silica polymorph in 19 lunar felsites as quartz. The felsites have similar composition to lunar silicic constructs. The presence of quartz in the felsites indicates that they originated intrusively rather than in a silicic dome.
- 2:15 p.m. Zeigler R. A. * Korotev R. L. Jolliff B. L.
[*Petrography and Geochemistry of Lunar Meteorite Dhofar 1442*](#) [#1012]
 Here we present the detailed petrography and geochemistry of lunar meteorite Dhofar 1442, the most incompatible-element-rich lunar regolith sample ever found, and model its major lithologic components and likely provenance.
- 2:30 p.m. van Kan Parker M. Sator N. Guillot B. van Westrenen W. *
[*The High-Pressure, High-Temperature Density of Primitive Lunar Melts*](#) [#1723]
 New molecular dynamics simulations are combined with published experimental data to provide a synthesis of our knowledge of the density of primitive lunar melts.
- 2:45 p.m. McGovern P. J. * Litherland M. M.
[*Lithospheric Stress and Basaltic Magma Ascent on the Moon, with Implications for Large Volcanic Provinces and Edifices*](#) [#2587]
 The response of the lunar lithosphere to mare loading creates a pressure distribution on dikes at basin margins that is particularly favorable to magma ascent, accounting for the presence of large volcanic provinces/edifices peripheral to Imbrium and Serenitatis.
- 3:00 p.m. Sun C. * Yao L. Liang Y.
[*Some Speculations on the Distribution of REE Between Orthopyroxene and Lunar Picritic Glass Melts at Multiple-Saturation Points*](#) [#2009]
 Based on multiple-saturation experiments, our predictive model shows that REE partitioning in opx varies greatly with picritic glass melts, suggesting that this need to be considered in future trace-element modeling studies of lunar magma genesis.

- 3:15 p.m. Donohue P. H. *
[*Petrogenesis of Apollo 17 High-Titanium Basalts Using Crystal Stratigraphy*](#) [#2833]
This study investigates magma evolution through compositional changes across and between ilmenite, armalcolite, and pyroxene crystals.
- 3:30 p.m. Krawczynski M. J. * Grove T. L.
[*Petrogenesis of Lunar High-Titanium Liquids: The Importance of \$fO_2\$ on the Depth of Origin and Melt Structure*](#) [#2333]
High-Ti glasses are remelts of lunar magma ocean cumulates. We present our experimental data on how the depth of origin for these magmas depends on fO_2 as well as discuss their melt structure and possible relation to the high-Ti mare basalt suite.
- 3:45 p.m. Dygert N. * Liang Y. Hess P. C.
[*Experimental Evidence for High Field Strength Element Incompatibility in Titaniferous Phases in Equilibrium with High Titanium Mare Basalts and Picritic Glass Melts*](#) [#1956]
We conducted ilmenite-high Ti melt HFSE partitioning experiments at P-T-X relevant to the lunar mantle. Our Kds are lower than those previously reported and we demonstrate the dependence of ilmenite-melt HFSE Kds on the Ti content of picritic melts.
- 4:00 p.m. Jolliff B. L. * Tran T. N. Lawrence S. J. Robinson M. S. Scholten F. Oberst J. Hawke B. R. Hiesinger H. van der Bogert C. H. Greenhagen B. T. Wiseman S. A. Glotch T. D. Paige D. A.
[*Compton-Belkovich: Nonmare, Silicic Volcanism on the Moon's Far Side*](#) [#2224]
LRO NAC and WAC images reveal nonmare volcanic features on a 26 x 32 km, high-reflectance terrain feature at the center of the Compton-Belkovich Th Anomaly. Dome shapes, high reflectance, and Diviner Christiansen Feature data indicate silicic volcanism.
- 4:15 p.m. Hagerty J. J. * Lawrence D. J. Hawke B. R.
[*Thorium Abundances of Basalt Ponds in South Pole-Aitken Basin: Insights into the Composition and Evolution of the Far Side Lunar Mantle*](#) [#1431]
We used forward modeling of Lunar Prospector thorium (Th) data derived from basalts in South Pole-Aitken basin to demonstrate that large expanses of basalt could be reliably used to obtain compositional information about the far side lunar mantle.
- 4:30 p.m. Yamamoto S. * Nakamura R. Matsunaga T. Ogawa Y. Ishihara Y. Morota T. Hirata N. Ohtake M. Hiroi T. Yokota Y. Haruyama J.
[*Distribution of Olivine-Rich Sites in the South-Pole Aitken Basin Revealed by SELENE Spectral Profiler*](#) [#1184]
We report the distribution of olivine exposures in the South-Pole Aitken basin discovered by the Spectral Profiler onboard the Japanese lunar Explorer SELENE (Kaguya).