Thursday, March 21, 2013 [R404]
LUNAR SAMPLES AND EXPERIMENTS: THE BIG PICTURE
8:30 a.m. Waterway Ballroom 6

Chairs: **Jennifer Rapp**
Clive Neal

8:30 a.m. Rapp J. F. * Draper D. S.
Can Fractional Crystallization of a Lunar Magma Ocean Produce the Lunar Crust? **[#2732]**
Experimental fractional crystallization of the lunar magma ocean produces cumulates similar to the observed anorthosite crust and predicted early cumulates.

8:45 a.m. Grove T. L. * Charlier B. Brown S. M.
Experimental Study of Lunar Magma Ocean Crystallization, I: Plagioclase Saturation and Major Element Constraints on Cumulate Remelting Processes **[#2391]**
Crystallization experiments quantify mineralogical and chemical variations in cumulates formed during late-stage lunar magma ocean crystallization.

9:00 a.m. Carlson R. W. * Borg L. Gaffney A. M. Boyet M.
Rb-Sr, Sm-Nd and Lu-Hf Isotope Systematics of Norite 77215: Refining the Age and Duration of Lunar Crust Formation **[#1621]**
Concordant ^{142}Sm, ^{143}Nd, and Lu-Hf internal isochron ages (4296 ± 20 Ma) for norite 77215 add support for a late (<4.5 Ga) formation of the Moon.

9:15 a.m. Borg L. * Connelly J. Cassata W. Gaffney A. M. Carlson R. et al.
Evidence for Widespread Magmatic Activity at 4.36 Ga in the Lunar Highlands from Young Ages Determined on Troctolite 76535 **[#1563]**
Young Sm-Nd and Rb-Sr ages of 4.30 Ga determined on lunar troctolite 76535 are consistent with a widespread magmatic event late in the Moon's history.

9:30 a.m. Andreasen R. * Simmons S. T. Righter M. Lapen T. J.
Lutetium-Hafnium and Samarium-Neodymium Systematics of Apollo 17 Sample 78236: Age and the Importance of Thermal Neutron Fluence on the Lutetium-Hafnium System **[#2887]**
Sm-Nd and Lu-Hf ages of Apollo 17 sample 78236 are 4448 ± 32 and 4446 ± 23 Ma, respectively. Lu-Hf neutron fluence corrections are larger than predicted by Sm and Gd.

9:45 a.m. O'Sullivan K. M. * Neal C. R.
Crystal Stratigraphy of Lunar Troctolite 76535: Implications for Mg-Suite Origins and Evolution **[#2658]**
Analysis of lunar troctolite 76535 via crystal stratigraphy allows much more detailed petrogenetic information to be obtained.

10:00 a.m. Gaffney A. M. * Borg L. E.
A Young Age for KREEP Formation Determined from Lu-Hf Isotope Systematics of KREEP Basalts and Mg-Suite Samples **[#1714]**
Initial Hf-isotopic compositions of KREEP basalts and Mg-suite samples indicate that KREEP formed at 4.36 Ga.

10:15 a.m. Cronbererger K. * Neal C. R.
15434,8,181 Orthopyroxene Xenocrysts; Implications for the Petrogenesis of Apollo-15 KREEP Basalts **[#2878]**
New chemical data for 15343,8,181. Trace-element data suggests that the large Opx crystals might be xenocrysts.

10:30 a.m. Seddio S. M. * Wang A. Korotev R. L. Jolliff B. L.
Silica Polymorphs in Lunar Granite **[#2660]**
Apollo 12 granites? Silica polymorphs! Raman spectra! Quartz! Cristobalite! Hackle fracture pattern! Cristobalite or tridymite inversion! Rhyolitic volcanism?

10:45 a.m. Wilson L. * Head J. W.
Lunar Mare Basalt Volcanism: New Constraints on Magma Ascent and Eruption **[#1169]**
GRAIL data on lunar crust density imply that all lunar basalts were negatively buoyant in the crust, placing constraints on source depths and eruption rates.

11:00 a.m. Rai N. * Perrillat J. P. Mezour M. Petitgirard S. Colin A. et al.
The Viscosity of Lunar Magmas at High Pressure and Temperature **[#1258]**
We measure lunar magma viscosity at high P-T as a function of composition, using in situ falling sphere viscometry and X-ray absorption techniques.

11:15 a.m. Elardo S. M. * Shearer C. K. Fagan A. L. Borg L. E. Gaffney A. M. et al.
The Origin of Young Mare Basalts Inferred from Lunar Meteorites NWA 4734, NWA 032, and LAP 02205 **[#2762]**
Geochemical and isotopic analyses of NWA 4734, NWA 032, and LAP 02205 show that melting of the mantle sources of the youngest mare basalts does not require KREEP.

11:30 a.m. Brown S. M. * Grove T. L.
The Origin of the Apollo 14, 15 and 17 Yellow Glasses **[#2858]**
The compositional variability of the intermediate-Ti yellow glasses suggests magma mixing from at least two lunar cumulate source regions from 200 to 300 km deep.