**Thursday, March 13, 2008**
**LUNAR SAMPLES: CHRONOLOGY, GEOCHEMISTRY, AND PETROLOGY**
**1:30 p.m. Marina Plaza Ballroom**

**Chairs:** **N. E. B. Zellner**
**B. L. Jolliff**

1:30 p.m. Nemchin A. A. * Pidgeon R. T.
*Lunar Cataclysm or Lunar Cataclysms?* **[#1558]**
U-Pb data on apatite and zircon from the Apollo 14 and Apollo 17 breccias suggest that the impact history of the Moon is more complex than just a single late episode of meteorite bombardment.

1:45 p.m. Zellner N. E. B. * Delano J. W. Swindle T. D. Whittet D. C. B.
*Apollo 14 Impact Glasses: Isotopic Ages and Geochemistry* **[#1718]**
Apollo 14 impact glasses show a wide range of compositions and ages. No "recent" impact activity is recorded, as well as nothing earlier than 3.69 Ga ago.

2:00 p.m. Gaffney A. M. * Borg L. E. DePaolo D. J. Irving A. J.
*Age and Isotope Systematics of Northwest Africa 4898, a New Type of Highly-depleted Mare Basalt* **[#1877]**
Preliminary isotope data for mare basalt meteorite NWA 4898 yield an Rb-Sr age of 3.58 Ga, initial $^{87}Sr/^{86}Sr$ of 0.69925, and initial $\varepsilon_{Nd}$ of +16. This basalt may originate from the most incompatible element-depleted mantle source yet identified in the Moon.

2:15 p.m. Touboul M. * Kleine T. Bourdon B. Palme H. Wieler R.
*Hf-W Chronometry of the Moon — New Results from Ferroan Anorthosites and Low-Ti Mare Basalt 15555* **[#1940]**
New Hf-W data for ferroan anorthosites show that the lunar crust and mantle have identical $^{182}W/^{184}W$, indicating crust formation >60 Ma after CAI formation. We show that, in contrast to earlier reports, low-Ti mare basalt 15555 has no $^{182}W$ anomaly.

2:30 p.m. Nyquist L. E. * Shih C.-Y. Reese Y. D.
*Sm-Nd for Norite 78236 and Eucrite Y980318/433: Implications for Planetary and Solar System Processes* **[#1437]**
$^{147}Sm$-$^{143}Nd$ and $^{146}Sm$-$^{142}Nd$ data for lunar norite 78236 and cumulate eucrite Yamato 980318/433 show that the norite data are compatible with its derivation from an isotopic reservoir similar to that from whence the eucrite pair came.

2:45 p.m. Day J. M. D. * Puchtel I. S. Walker R. J. James O. B. Taylor L. A.
*Osmium Abundance and Isotope Systematics of Lunar Crustal Rocks and Mare Basalts* **[#1071]**
Measured Os abundances and isotope compositions of pristine crustal rocks (ferroan anorthosites and high-Mg suite) point to a lunar crust with very low highly siderophile element abundances.

3:00 p.m. Liang Y. * Hess P. C.
*Preferential Assimilation of Armalcolite, Ilmenite, and Pyroxene During Melt Migration in the Lunar Mantle can Produce the Two Linear Arrays Observed in Pristine Lunar Glass Melts* **[#2083]**
Simple models for melt transport and melt-rock reaction in the lunar mantle are developed subject to petrologic constraints and applied to an assimilation problem involving armalcolite and ilmenite.

3:15 p.m. Barr J. A. * Grove T. L.
*Was Garnet in the Source of Apollo 15 Group A Ultramafic Green Glasses?* **[#1213]**
Melts in equilibrium with olivine + orthopyroxene + garnet and either pigeonite or augite can be used to evaluate mixing models of primordial lunar mantle melts and magma ocean cumulates involved in producing the Apollo 15A green glasses.

3:30 p.m. Saal A. E. * Hauri E. H. Lo Cascio M. Van Orman J. A. Rutherford M. J. Cooper R. F.
*The Apollo 15 Very Low-Ti Glasses, Evidence for the Presence of Indigenous Water in the Moon's Interior* **[#1711]**
We present evidence of the indigenous nature of the $H_2O$ in the lunar volcanic glasses from Apollo 15. A degassing model to all the volatile concentration profiles ($H_2O$, F, S, Cl) suggests an initial concentration for $H_2O$ unexpectedly high, ~750 ppm.

3:45 p.m. McCubbin F. M. * Nekvasil H. Jolliff B. L. Carpenter P. K. Zeigler R. A.
*A Survey of Lunar Apatite Volatile Contents for Determining Bulk Lunar Water: How Dry is "Bone Dry"?* **[#1788]**
Lunar magmatic water has yet to be analyzed in more than trace amounts in lunar materials. However mineral reservoirs such as apatite exist that show promise for fossilized lunar magmatic water. How will this affect the lunar magmatic water budget?

4:00 p.m. Jolliff B. L. * Zeigler R. A. Korotev R. L. Carpenter P. K. Vicenzi E. P. Davis J. M.
*Mafic Impact-Melt Components in Lunar Meteorite Dhofar 961* **[#2519]**
Lunar meteorite Dhofar 961 contains exceptionally mafic impact-melt breccia clasts and has compositional characteristics that indicate it could come from the South Pole-Aitken Basin.

4:15 p.m. Joy K. H. * Crawford I. A. Kearsley A. T. Fernandes V. A. Burgess R. Irving A. J.
*The Petrography and Composition of Lunar Meteorite Northwest Africa 4472* **[#1132]**
A detailed petrographic study of lunar meteorite NWA 4472. We present an investigation of the geochemistry and likely source provenance of clast and mineral fragments in this heterogeneous KREEP-rich breccia.

4:30 p.m. Huber H. * Warren P. H.
*Enigmatic, Largely Granitic 73217: A Lunar Mixed Melt-Breccia, but is it Impact Melt?* **[#2405]**
Lunar breccia 73217 consists largely of a uniformly granitic (7.5% $K_2O$) mesostasis glass, which imparts high alkalis, including 2% $K_2O$, to the bulk-rock. The origin of this breccia is enigmatic. The mesostasis may not in the strictest sense be impact melt.