

**Thursday, March 26, 2009**  
**POSTER SESSION II: SOURCES AND ERUPTION OF LUNAR BASALTS**  
**6:30 p.m. Town Center Exhibit Area**

Arai T. Misawa K. Tomiyama T. Yoshitake M. Irving A. J.

[\*Constraints on Lunar KREEP Magmatism: A Variety of KREEP Basalt Derivatives in Lunar Meteorite NWA 4485\*](#) [#2292]

Lunar meteorite NWA 4485 includes a variety of lithic clasts derived from KREEP magmatism. Pyroxene composition and zoning trends indicate that the KREEP basalt clasts in this meteorites are moderately equilibrated relative to Apollo KREEP basalts.

Burger P. V. Shearer C. K. Papike J. J.

[\*The Multi-Stage Cooling History of Lunar Meteorite NWA 032 as Recorded by Phenocrystic Olivine and Pyroxene\*](#) [#2043]

This study examines previously undocumented oscillatory zoning in phenocrystic pyroxene grains from lunar meteorite NWA 032, and its implication for the crystallization history of this sample.

Hauri E. H. Saal A. E. Van Orman J. Rutherford M. J. Friedman B.

[\*New Estimates of the Water Content of the Moon from Apollo 15 Picritic Glasses\*](#) [#2344]

In this abstract, we report the results of new SIMS measurements of water on over 200 new samples of picritic glasses recovered from the Apollo 15 mission. Our new measurements suggest an upward revision of current estimates for the water content of lunar magmas.

van Kan Parker M. Agee C. B. van Westrenen W.

[\*Density of Molten "Apollo 17 Orange Glass"\*](#) [#1722]

The density of molten intermediate-high titanium bearing Apollo 17 orange glass was determined at lunar mantle pressures and temperatures using the sink/float technique.

van Kan Parker M. van Westrenen W. van Sijl J.

[\*Computational Study of Trace Element Partitioning Between Orthopyroxene and Melt: Implications for Substitution Mechanisms in Earth and Moon\*](#) [#1714]

A computational study of element partitioning between orthopyroxene and silicate melt highlighting the possible effects of iron content and charge balancing mechanisms on partition coefficients.

Krawczynski M. J. Sutton S. R. Grove T. L. Newville M.

[\*Titanium Oxidation State and Coordination in the Lunar High-Titanium Glass Source Mantle\*](#) [#2164]

XANES and EXAFS spectra from synthetic HiTi lunar glasses determine coordination of Ti in the HiTi source region. The amount of  $Ti^{3+}$  present affects the olivine-opx equilibrium, and the total amount of  $Ti^{3+}$  present requires a pyx bearing source.

Fernandes V. A. Korotev R. L. Renne P. R.

[\*\$^{40}Ar\$ - \$^{39}Ar\$  Ages and Chemical Composition for Lunar Mare Basalts: NWA 4734 and NWA 4898\*](#) [#1045]

$^{40}Ar$ - $^{39}Ar$  ages are reported for lunar mare basalts NWA 4734 and NWA 4898. The age obtained for NWA 4734 is  $2.766 \pm 0.022$  Ga (same as NWA 032/479) and for NWA 4898 is  $3.520 \pm 0.060$  Ga, the same as Rb-Sr age reported by Gaffney et al. (2008).

Donohue P. Neal C. R.

[\*Apollo 17 High-Titanium Basalt Petrogenesis Revealed by Crystal Size Distributions and Mineral Geochemistry\*](#) [#1805]

Crystal size distributions (CSDs) and mineral geochemistry are presented for ilmenite crystals in a Type B2 (70275,35) lunar sample, and two Type C (74255,55 and 74275,312) lunar samples.

Liu Y. Spicuzza M. J. Valley J. W. Taylor L. A.

[\*Oxygen Isotopes of Lunar Rocks: Different Sources for Different Hi-Ti Basalts?\*](#) [#2291]

New oxygen isotopes of lunar mare basalts show difference among high-Ti basalts.

Haloda J. Tycova P. Thöni M. Jelenc M.

[\*The Petrogenesis and Chronology of Lunar Meteorite Northeast Africa 003-A: Sm-Nd and Rb-Sr Isotopic Studies\*](#) [#1247]

The Sm-Nd age of lunar mare basalt NEA 3.089 ± 0.064 Ga represents the crystallization age of the meteorite, suggesting that NEA 003-A can be a product of younger low-Ti mare basalt volcanism within the Apollo 15 olivine-normative basalt suite.

Wilson L. Head J. W.

[\*Lunar Volcanic Eruptions: Range of Eruption Styles and Implications for Magma Ascent and Emplacement\*](#) [#1159]

We characterize the range of volcanic feature morphologies observed on the Moon in a manner suitable to allow them to be related to the conditions under which eruptions and intrusions took place.