Thursday, March 26, 2009
MAGMATIC VOLATILES AND ERUPTIVE CONDITIONS OF LUNAR BASALTS
8:30 a.m. Waterway Ballroom 4

Chairs: **Justin Hagerty**
Brad Jolliff

8:30 a.m. Friedman B. Saal A. E. * Hauri E. H. Van Orman J. Rutherford M. J.
The Volatile Content of the Apollo 15 Picritic Glasses **[#2444]**
We report over 200 new volatile data on volcanic glasses from the Apollo 15 mission. These new data extend the range of previously reported H_2O, C, F, S and Cl contents, and confirm the presence of significant dissolved magmatic volatiles in lunar volcanic glasses.

8:45 a.m. McCubbin F. M. * Nekvasil H. Jolliff B. L. Carpenter P. K. Zeigler R. A.
Inhomogeneous Distribution of Magmatic Volatiles in the Lunar Interior: Clues from the Mineral Apatite **[#2246]**
The variations in apatite volatile contents (F, Cl, OH) between mare basalts and the magnesian and alkali-suite rocks indicate that the lunar interior may be stratified with respect to magmatic volatiles.

9:00 a.m. Agee C. B. * Duncan M. S.
The Effect of CO_2 on Density of Molten Apollo 14 Black Glass at High Pressure **[#1266]**
We present new experimental data on the effect of pressure on CO_2 in lunar magmas.

9:15 a.m. Grimm R. E. * McSween H. Y. Jr.
Water and the Electrical Conductivity of the Lunar Mantle **[#1958]**
Tens of ppm H_2O in ultramafic minerals can fit the lunar conductivity profile, without recourse to high alumina content.

9:30 a.m. Barr J. A. * Grove T. L.
Toward Developing a Garnet Lherzolite Saturation Model for Lunar Low-Ti, Ultramafic Green Glass Compositions **[#2161]**
To evaluate the possible role of primordial lunar mantle in the derivation of the low-Ti ultramafic green glasses, a model of garnet lherzolite melting must be developed for relevant lunar compositions.

9:45 a.m. Liang Y. * Hess P. C.
Simple Models for Trace Element Fractionation During Melting and Melt Migration in an Upwelling Heterogeneous Lunar Mantle **[#2117]**
The lunar mantle is chemically and lithologically heterogeneous. In this paper, we present simple models for trace element fractionation during melting and melt migration in a heterogeneous lunar mantle and discuss their implications for lunar magma genesis.

10:00 a.m. Wilson L. * Head J. W.
Lunar Volcanism: Factors Controlling Intrusion Geometries and Eruption Conditions **[#1160]**
We review theoretical factors controlling geometries of dikes that either do or do not reach the surface to feed eruptions. We then compare the surface expressions of the consequences of both kinds of event with observed lunar volcanic features.

10:15 a.m. Thomson B. J. * Grosfils E. B. Bussey D. B. J. Spudis P. D.
The Thickness of Mare Basalts in Imbrium Basin Estimated from Penetrating Craters **[#1727]**
Here we report basalt thicknesses values in Imbrium Basin derived from analyses of Clementine UV-VIS multispectral images of large craters that penetrate (or failed to penetrate) the mare. The mare volume is ~2× greater than some previous estimates.

10:30 a.m. Oshrin J. Neal C. R. *
Crystal Size Distributions and Basalt Evolution: More from Fra Mauro **[#1706]**
Crystal size distributions have been used to calculated residence times for plagioclase crystals. Trace element data from different crystal populations are also presented.

10:45 a.m. Kramer G. Y. * Hawke B. R. Giguere T. A. Heitman G. McCord T. B.
The Mare Basalts of Eastern Frigoris **[#2369]**
The ejecta composition of small, immature impacts into Eastern Mare Frigoris reveal low-Fe, very low-Ti mare basalts, which may even be high alumina basalts.

11:00 a.m. Hawke B. R. Giguere T. A. * Blewett D. T. Boyce J. M. Cahill J. Gillis-Davis J. J. Hagerty J. J. Lucey P. G. Peterson C. A. Smith G. A. Spudis P. D. Taylor G. J.
Remote Sensing and Geologic Studies of the Northeastern Portion of the Lunar Nearside: Final Results **[#1483]**
Almost all of the light plains units immediately east and southeast of eastern Mare Frigoris are shown to be cryptomare deposits. The buried or obscured mare flows are dominated by VLT and low-TiO_2 mare basalts.

11:15 a.m. Kiefer W. S. *
Gravity Observations of the Aristarchus Plateau on the Moon: Implications for the Volcanic and Impact Histories of the Plateau **[#1106]**
Gravity anomalies in this region wrap around the fault-bounded eastern margin of the Aristarchus Plateau and place constraints on the impact-induced uplift history of the plateau.

11:30 a.m. Hagerty J. J. * Lawrence D. J. Hawke B. R. Gaddis L. R.
New Estimates of Thorium Abundances for the Rima Bode Pyroclastic Glass Deposit **[#1852]**
We use forward modeling of Lunar Prospector Gamma Ray Spectrometer thorium data to show that the Rima Bode pyroclastic glass deposit contains elevated thorium abundances.