

**Thursday, March 16, 2006**  
**POSTER SESSION II: MARTIAN METEORITES: ON THE ROCKS**  
**7:00 p.m. Fitness Center**

Wittke J. H. Bunch T. E. Irving A. J. Farmer M. Strope J.

*Northwest Africa 2975: An Evolved Basaltic Shergottite with Vesicular Glass Pockets and Trapped Melt Inclusions* [#1368]  
 Yet another basaltic shergottite has been found in Algeria — an evolved martian lava containing partially crystallized melt inclusions.

Calvin C. Rutherford M. Sullivan N.

*Comparing Primitive EETA79001 Melts with Those from Other SNC Meteorites* [#1697]  
 The major and minor element chemistry of fused ground mass from EETA79001 lithology A is compared with rehomogenized melt inclusions from ALH 77005 in order to understand the petrogenesis of the shergottites.

Burgess K. D. Musselwhite D. S. Treiman A. H.

*Experimental Petrology of Olivine-Phyric Shergottite NWA 1068: Toward Defining a Parental Melt* [#1972]  
 We have determined experimentally the phase relations for the olivine-phyric basaltic shergottite NWA 1068 at martian upper mantle conditions. We have used these results to infer a model parent-melt composition for this important martian meteorite.

Nagao K. Park J. Bartoschewitz R.

*Terrestrial Weathering Effects on Noble Gases of Martian Meteorites* [#1800]  
 Noble gas compositions of weathering products are compared with those of martian meteorites. Terrestrial noble gases trapped on martian meteorites by weathering processes might be the “Chassigny-type” end member observed for some shergottites.

Thompson J. R. Wiens R. C. Clegg S. M. Barefield J. E. Vaniman D. T. Newsom H. E.

*Remote Laser Induced Breakdown Spectroscopy (LIBS) Analyses of DaG 476 and Zagami Martian Meteorites* [#1761]  
 LIBS was selected as part of the ChemCam instrument package for the MSL rover. Here we investigate the ability of LIBS to remotely determine differences between basaltic rock types on Mars by analyzing two Martian basaltic shergottite meteorites in a simulated Martian environment.

Gaffney A. M. Borg L. E. Connelly J. N.

*U-Pb Isotope Systematics of Shergottite Queen Alexandra Range 94201: Seeing Through Terrestrial Lead Contamination to Identify an Even Lower-Mu Source on Mars* [#1483]  
 New U-Pb isotopic results for martian meteorite QUE 94201 show evidence for a very low- $\mu$  ( $<2$ ) source in the martian mantle, as well as Pb contamination by Antarctic ice.

Rao M. N. McKay D. S. Wentworth S. J. Garrison D. H.

*Martian Brines: Clues from Sulfur and Chlorine in Salts from Some Martian Meteorites and MER Samples* [#1969]  
 S and Cl in salts from Nakhla and from the gas-rich impact-melt (“grim”) glasses in Shergotty and EET79001 suggest that these salts are produced from neutral-chloride and acid-sulfate solutions on Mars. Interaction with similar solutions generated salts occurring in Meridiani rock- rinds.

Chennaoui Aoudjehane H. Jambon A.

*Occurrence of Post Stishovite in Shergottites NWA 856 and Zagami: A Cathodoluminescence Study* [#1036]  
 We used cathodoluminescence images and spectra for identifying silica phases: High pressure silica glass, stishovite and particularly post stishovite in shergottites NWA 856 and Zagami. CL appears an easy and powerful technique especially for post stishovite.

Chennaoui Aoudjehane H. Jambon A. Boudouma O.

*Cristobalite and K-Feldspar in the Nakhlite MIL03346: A Cathodoluminescence Study* [#1037]  
 We used cathodoluminescence images and spectra for identifying cristobalite and K-feldspar in the mesostasis of MIL03346 nakhlite. The presence of cristobalite suggest that the shock intensity in MIL03346 is low in agreement with that of other nakhrites, much weaker in comparison to shergottites.

Makishima J. McKay G. Le L. Miyamoto M. Mikouchi T.

*Calibration of the Eu Oxybarometer for Nakhrites* [#1589]

We report preliminary results of our experimental calibration of the depth of Eu anomaly in pyroxene vs. oxygen fugacity for nakhrites. Our results suggest that Nakhla may have formed under fairly reducing conditions.

Mikouchi T. Miyamoto M. Koizumi E. Makishima J. McKay G.

*Relative Burial Depths of Nakhrites: An Update* [#1865]

We updated our model of the nakhrite igneous body in terms of their relative burial depths. Olivine chemical zoning gave burial depths of 1–2 m for NWA817, 4 m for MIL03346, 7 m for Y000593, 10 m for Nakhla/Gov. Val. and >30 m for Lafayette/ NWA998.

McKay G. Mikouchi T. Schwandt C.

*Additional Complexities in Nakhrite Pyroxenes: A Progress (?) Report* [#2435]

Al zoning in nakhrite pyroxenes correlates with cooling rate. Melt inclusions occur predominately in Al-rich zones. These observations are puzzling. If zoning formed in the magma chamber, why does it correlate with post-eruption cooling rate?

McCanta M. C. Dyar M. D. Treiman A. H. Pieters C. M. Hiroi T. Lane M. D. Bishop J. L.

*Mössbauer and Synchrotron MicroXANES Analysis of NWA2737* [#1751]

We report on the distribution of Fe<sup>3+</sup> between the mineral phases in NWA 2737 as measured with Mössbauer and synchrotron microXANES spectrometry. The brown olivine in NWA 2737 implies that it has been subject to different processes than Chassigny.

Mohapatra R. K. Crowther S. A. Gilmour J. D. Marty B.

*Xenon Isotopic Components in NWA 2737 — A Chassignite from the Hot Desert* [#1840]

We present here preliminary xenon isotopic data from mineral separates from a 10 mg sample of NWA 2737, and discuss their implications for the volatile components in this meteorite.

Reynard B. Beck P. Barrat J.-A. Bohn M.

*Pyroxene Crystal-Chemistry and the Late Cooling History of NWA 2737* [#1963]

The chassignite NWA 2737 display a specific pattern of pyroxene compositions with Fe/Mg ratios following equilibrium tie-lines. This pattern can be explained in the context of late crystallization in the interstitial liquid of a dunitic cumulate, and sets constrains on the late cooling history.

Bogard D. D. Garrison D. H.

*Ar-Ar Dating of Martian Chassignites, NWA2737 and Chassigny, and Nakhrite MIL03346* [#1108]

Ar-Ar ages determined for chassignites Chassigny and NWA2737 and nakhrite MIL03346 are ~1.35 Gyr and are similar to various radiometric ages reported for these martian meteorites and for other nakhrites.

Domeneghetti M. C. Fioretti A. M. Camara F. Molin G. McCammon C.

*Constraints on the Thermal History and Oxidation State of MIL03346 Martian Meteorite: Single-Crystal XRD, Electron Microprobe and Mossbauer Analyses of Clinopyroxene* [#1238]

Augite from MIL03346 was studied by single crystal X-ray diffraction, electron microprobe and single crystal Mössbauer spectroscopy to measure the Fe<sup>2+</sup>-Mg order degree and to retrieve information on thermal history and redox state of this meteorite.

Domeneghetti M. C. Fioretti A. M. Camara F. Molin G. Tazzoli V.

*Closure Temperature of Fe<sup>2+</sup>-Mg Ordering in Orthopyroxene: Implications for Thermal History of ALH84001 Meteorite* [#1237]

The closure temperature of Fe<sup>2+</sup>-Mg ordering state, expressed by kD, was calculated in ALH84001 orthopyroxene using X-ray single-crystal diffraction and electron microprobe data.

Gildea K. J. Holland G. Lyon I. C. Chatzitheodoridis E. Burgess R.

*High Calcium (~80mol%) Late Stage Carbonate in ALH84001* [#1776]

Brief petrological, chemical and textural description of previously undescribed high Ca late stage carbonate in Martian meteorite ALH84001. This carbonate surrounds Mg rich carbonates and rosette fragments.

Schwenzer S. P. Ott U.

*Evaluating Kr- and Xe-Data in the Nakhrites and ALHA84001 — Does EFA Hide EFM?* [#1614]

We evaluate the noble gas components contributing to the nakhrite Lafayette, estimate the Kr/Xe ratio of fractionated martian atmosphere and apply our results on literature data and a model taken from petrological studies.

Morlok A. Anand M. Grady M. M.

*Dust from Collisions: Mid-Infrared Absorbance Spectroscopy of Martian Meteorites* [#1512]

Mid-infrared transmission/absorbance spectra of a representative range of martian meteorites are presented. The data is used for mineralogical bulk studies, but also for the comparison with astronomical dust spectra.