Thursday, March 15, 2007
POSTER SESSION II: MARTIAN METEORITES
6:30 p.m. Fitness Center

Schwenzer S. P. Colindes M. Herrmann S. Ott U.
Cold Desert's Fingerprints: Terrestrial Nitrogen and Noble Gas Signatures, Which Might be Confused with (Martian) Meteorites Signatures **[#1150]**
Terrestrial residence times for Antarctic meteorites can be quite long. Here we present data on terrestrial samples from a moraine at Sandford Cliffs to evaluate characteristics of possible influence on the nitrogen and noble gas budget of meteorites.

Schwenzer S. P. Herrmann S. Ott U.
Hot Deserts' Fingerprints in Nitrogen and Noble Gas Budgets of (Martian) Meteorites — Continued. . . **[#1143]**
Our studies on nitrogen and noble gases in terrestrial samples from the hot desert of Sayh al Uhaymir (Oman) revealed signatures that can easily mimic martian interior signatures. Here we add evidence from the Dar al Gani region to the data set.

McCubbin F. M. Nekvasil H. Lindsley D. H.
Late-Stage Volatile Evolution in Martian Magmas: Inferences from Maskelynite-hosted Apatite of the Chassigny Meteorite **[#1347]**
Chemical differences in interstitial and melt inclusion apatite and maskelynite in the Chassigny meteorite record differences in late-stage magmatic volatile evolution in these environments, providing new insights into martian magmatic processes.

Varela M. E. Zinner E. Kurat G.
Trace Element Abundances of Glass-bearing Inclusions in Chassigny **[#1139]**
The results of a SIMS study on glass-bearing inclusions in Chassigny olivines seems to support the non-classical scenario view.

Greenwood J. P. Itoh S. Sakamoto N. Vicenzi E. P. Yurimoto H.
Hydrogen Isotopography of Apatite in Los Angeles, Shergotty, and ALH 84001: New Constraints on Martian Water History and SNC Petrogenesis **[#2134]**
Ion and electron beam analysis of hydrous apatite in SNCs are higher than previously reported for these meteorites and provide new constraints on the evolution of martian water.

Boctor N. Z. Alexander C. M. O'D.
Volatile Abundances and H Isotope Signature of Feldspathic Glass and Clinopyroxene in the Shergottites Zagami, EETA 79001, Shergotty, and ALHA 77005 **[#1801]**
We measured volatile abundances and H isotope signatures of feldspathic glass and clinopyroxene in the shergottites Zagami, EETA 79001, Shergotty, and ALHA 77005.

Irving A. J. Kuehner S. M. Korotev R. L. Hupé G. M.
Petrology and Bulk Composition of Primitive Enriched Olivine Basaltic Shergottite Northwest Africa 4468 **[#1526]**
A fresh olivine-rich basaltic shergottite containing large pyroxene oikocrysts crystallized from a primitive "enriched" martian magma.

Mellin M. J. Taylor L. A. Norman M. D. Patchen A. D. Schnare D. W.
Mineralogical and Petrological Comparisons of Dual-Lithology EETA79001 **[#2179]**
Detailed mineralogy and petrography on five polished thin sections of shergottite EETA79001 composed of two lithologies, A and B, are presented.

Mellin M. J. Taylor L. A. Norman M. D. Patchen A. D. Schnare D. W.
In-Situ Mineral Trace-Element Analysis of Dual-Lithology Shergottite EETA79001 **[#2324]**
New *in situ* mineral trace-element chemistry is presented for EETA79001, lithologies A and B. Using this new dataset, possible relationships between the two lithologies are discussed.

Valley J. W. Ushikubo T. Kita N. T.
In Situ Analysis of Three Oxygen Isotopes and OH in ALH 84001: Further Evidence of Two Generations of Carbonates **[#1147]**
In situ three-oxygen isotope analyses (CAMECA-1280) show no difference in $\delta^{17}O$ (±0.11%) on Earth from 0.1 Ga–4.4 Ga, but SIMS $\delta^{17}O$ is distinct for Mars carbonates vs. Earth. Water is zoned in ALH 84001 carbonates suggesting low T globules and high T clots.

Gaffney A. M. Borg L. E. Asmerom Y.
Disturbance of Sm-Nd, Rb-Sr and U-Pb Isochrons During Shock and Thermal Metamorphism — An Experimental Approach **[#1424]**
In Rb-Sr and Sm-Nd systems, both heating and shock result in ages that are concordant with control ages, although in general, the ages derived from the metamorphosed samples have larger uncertainties. Age information is lost from the ^{238}U-^{206}Pb system in the heated sample.

Walton E. L. Herd C. D. K.
Dynamic Crystallization of Shock Melts in Allan Hills 77005: Implications for Melt Pocket Formation in Martian Meteorites **[#2177]**
A series of crystallization experiments have been conducted in order to investigate the heterogeneous nucleation potential of a shock melt pocket in ALH 77005. This melt pocket cooled at a fast rate from a melt containing few nucleation sites at the onset of cooling.

Debaille V. Yin Q.-Z. Brandon A. D. Jacobsen B. Treiman A. H.
Lu-Hf and Sm-Nd Isotopic Studies of Shergottites and Nakhlites: Implications for Martian Mantle Sources **[#1903]**
This abstract presents a new Lu-Hf and Sm-Nd isotope systematics study of four shergottites and three nakhlites in order to further understand processes occurring during the early differentiation of Mars and the crystallization of its magma ocean.

Makishima J. McKay G. Le L. Miyamoto M. Mikouchi T.
Oxidation State of Nakhlites as Inferred from Fe-Ti Oxide Equilibria and Augite/Melt Europium Partitioning **[#1834]**
We report Fe-Ti oxide equilibria and augite/melt Eu partitioning of nakhlites. We found that studied nakhlites showed f_{O_2} of ~QFM-1 and there is generally good agreement between the two estimates from each method.

Matsuda N. Gucsik A. Nishido H. Ninagawa K. Okumura T. Kayama M.
Cathodoluminescence Microscopy and Spectroscopy of Apatite of the Y-000593 Nakhlite from Antarctica **[#1061]**
The main purpose of this CL study is to provide detailed mineralogical information on apatite in the nakhlite meteorites emphasizing the fluid-rock-atmospheric interactions in the martian environment.

Park J. Garrison D. Bogard D.
^{39}Ar-^{40}Ar Ages of Two Nakhlites, MIL 03346 and Y 000593: A Detailed Analysis **[#1114]**
MIL 03346 and Y 000593 were analyzed for ^{39}Ar-^{40}Ar ages. The both whole rock and mineral separates of plagioclase (plus mesotasis) Ar-Ar ages are older than other radiometric ages. It seems that most excess ^{40}Ar is located in the plagioclase.

Grady M. M. Anand M. Gilmour M. A. Watson J. S. Wright I. P.
Alteration of the Nakhlite Lava Pile: Was Water on the Surface, Seeping Down, or at Depth, Percolating Up? Evidence (Such as It Is) from Carbonates **[#1826]**
We present carbon and oxygen isotope data on carbonates in five nakhlites and use the results to interpret the martian weathering processes.

Kuebler K. Jolliff B. L. Treiman A.
A Survey of Alteration Products and Other Secondary Minerals in Martian Meteorites Recovered from Antarctica **[#2228]**
A survey of Antarctic martian meteorites is underway to improve our understanding of the secondaries present, distinguish Antarctic alteration products from martian, characterize the conditions of formation, and compare the data to MER observations.