Wednesday, March 19, 2003
MARTIAN METEORITES: WE COME IN PIECES
8:30 a.m. Marina Plaza Ballroom

Chairs: R. C. F. Lentz
G. A. McKay

Head J. N. *
The Relative Abundance of Recently-Launched Meteorites from the Moon and Mars **[#1961]**
There are similar numbers of lunar and Martian meteorites on Earth. This is counter-intuitive given the size and proximity of the moon. Hydrocode simulations of meteorite launch events show that this is the expected result.

Minitti M. E. * Leshin L. A. Guan Y. Luo S. Ahrens T. J.
The Effect of Impact Shock on Water and H Isotopes in Amphibole **[#1524]**
An experimental and analytical study demonstrates that impact shock is capable of enriching the H isotopic composition of amphibole. These results are applied to H isotopic compositions measured in martian kaersutitic amphiboles.

Monkawa A. * Mikouchi T. Sekine T. Koizumi E. Miyamoto M.
Shock Formation of Kaersutite in Martian Meteorites: An Experimental Study **[#1534]**
We have performed shock experiments on analogous mixture of magmatic inclusions in Martian meteorites to explore the possibility that Martian Ti-rich kaersutite is a shock origin. We could successfully produce a kaersutite-like phase.

Mikouchi T. * McKay G.
Shock Heating and Subsequent Cooling of Basaltic Shergottites: The Cases for QUE94201 and Dhofar 378 **[#1920]**
Although QUE94201 and Dhofar 378 suffered similar degrees of severe shock, plagioclase recrystallized only in Dhofar 378. This is probably because Dhofar 378 cooled slowly enough to allow recrystallization while QUE94201 cooled too rapidly.

McKay G. * Le L. Koizumi E. Mikouchi T.
Additional Constraints on the Crystallization of Basaltic Shergottite QUE94201 **[#2109]**
We provide new constraints on the crystallization of QUE 94201 that support the idea that this sample represents a martian magma, and that it crystallized at an oxygen fugacity no lower than IW-1.

Koizumi E. * Mikouchi T. Monkawa A. Miyamoto M.
Crystallization Experiments of Dar Al Gani Martian Meteorites: A Preliminary Report **[#1567]**
We performed crystallization experiments of the bulk composition of DaGs, and found that the parent melt of DaGs is more Fe- and Al-rich than the bulk DaGs. The groundmass also appears to include some mafic cumulus component.

Imae N. * Ikeda Y. Kojima H.
Igneous Petrogenesis of Yamato Nakhlites **[#1520]**
We summarize analytical results of the Yamato nakhlites obtained by electron probe microanalyzer, and discuss the petrogenesis of nakhlites using the bulk chemical composition of magmatic inclusions in olivine phenocrysts and mesostasis.

Wadhwa M. Crozaz G. *
Trace Element Geochemistry of New Nakhlites from the Antarctic and the Saharan Desert: Further Constraints on Nakhlite Petrogenesis on Mars **[#2075]**
Ion microprobe measurements of REE and other selected trace and minor elements are reported in minerals of the new Antarctic (Y000593/749) and Saharan (NWA 998) nakhlites. Implications for their petrogenesis on Mars are discussed based on these geochemical data.

Lentz R. C. F. * McSween H. Y. Jr.
Crystal Size Distribution Analysis of New Nakhlites and Los Angeles: How Do They Compare with SNCs of Old? **[#1914]**
Crystal size distribution analysis lends insight into crystallization histories. A new Los Angeles CSD shows a resemblance to a CSD of QUE 94201. Yamato nakhlite CSDs support the idea of a depth progression from Lafayette to Nakhla to Yamato.

Goodrich C. A. * Herd C. D. K. Taylor L. A.
Spinels and Oxygen Fugacity in Olivine-Phyric and Lherzolitic Shergottites **[#1426]**
Oxygen fugacities are determined from olivine-pyroxene-spinel assemblages in four olivine-phyric shergottites. Results, combined with previous fO_2 determinations, suggest that shergottites may form two groups: a reduced, LREE-depleted group, and a more oxidized and enriched group.

Shih C.-Y. * Nyquist L. E. Wiesmann H. Barrat J. A.
Age and Petrogenesis of Picritic Shergottite NWA1068: Sm-Nd and Rb-Sr Isotopic Studies **[#1439]**
The Sm-Nd isotopic data for Martian picritic shergottite NWA 1068 indicate a probable age of ~185 Ma and an initial ε_{Nd} of –7.0, resembling Shergotty, Zagami and Los Angeles. Its Rb-Sr isotopic system is severely altered.

Borg L. E. * Asmerom Y. Edmunson J. E.
Uranium-Lead Isotopic Systematics of the Martian Meteorite Zagami **[#1107]**
Uranium-lead isotopic analyses of the martian meteorite Zagami have been completed. The U-Pb isotopic systematics record both the time of formation of the Zagami source region (4550 ± 10 Ma) and the age at which it was disturbed (163 ± 4 Ma).

Dreibus G. * Jagoutz E.
Chemical and Isotopic Constraints for the Martian Crust **[#1350]**
The Rb-Sr systematics of the Martian crust was estimated from observed element correlations in the Martian meteorites and the measured K content of the Martian surface by spacecraft missions.