

Friday, March 17, 2006
MARTIAN METEORITES: CHASSIGNITES AND NAKHLITES
1:30 p.m. Marina Plaza Ballroom

Chairs: R. C. F. Lentz
A. H. Treiman

- 1:30 p.m. McCubbin F. M. * Nekvasil H. Lindsley D. H.
Apatite as a Key to Evaluating the Volatile Budget of Martian Magmas: Implications from the Chassigny Meteorite [#1098]
 In Chassigny, olivine-hosted melt inclusions contain fluor-apatite; chlor-fluor-apatite is maskelynite-hosted, suggesting that magmatic volatile concentrations underwent significant changes from early to late stages of the crystallization history.
- 1:45 p.m. Pieters C. M. * Dyar M. D. Hiroi T. Lane M. D. Treiman A. H. McCanta M. Bishop J. L. Sunshine J.
Optical Properties of Martian Dunite NWA 2737: A Record of Martian Processes [#1634]
 Although mid-IR spectra indicate NWA2737 is a well crystallized dunite, visible to near-IR spectra exhibit almost no recognizable features of olivine. The "brown" color is tied to the formation and geologic history of this meteorite.
- 2:00 p.m. Treiman A. H. * McCanta M. Dyar M. D. Pieters C. M. Hiroi T. Lane M. D. Bishop J. L.
Brown and Clear Olivine in Chassignite NWA 2737: Water and Deformation [#1314]
 Olivine in the NWA 2737 chassignite is brown, and cut by ribbons of visually colorless olivine. The latter formed by deformation along the system [100]021. The brown color arises from ferric iron in the olivine, probably formed by loss of dissolved H⁺.
- 2:15 p.m. Reynard B. * Van de Moortèle B. Beck P. Gillet P.
Shock-induced Transformations in Olivines of the Chassignite NWA 2737 [#1837]
 Olivines of the second chassignite NWA 2737 display shock-induced transformations and in particular a black color, which is due to subsolidus reduction likely associated with high post-shock residual temperature. These microstructures are evidenced using TEM.
- 2:30 p.m. Boctor N. Z. * Wang J. Alexander C. M. O'D. Hauri E.
Volatile Abundances and H Isotope Signatures of Melt Inclusions and Nominally Anhydrous Minerals in the Chassignites and ALH84001 [#1412]
 We determined the volatile abundances and H isotope signatures of melt inclusions and nominally anhydrous minerals in the chassignites and ALH 84001 by SIMS.
- 2:45 p.m. Wadhwa M. * Borg L. E.
Trace Element and $\epsilon^{142}\text{Nd}$ Systematics in the Nakhilite MIL 03346 and the Orthopyroxenite ALH 84001: Implications for the Martian Mantle [#2045]
 We report new REE and $\epsilon^{142}\text{Nd}$ data for the nakhilite MIL 03346 and orthopyroxenite ALH 84001. Implications are presented for the Sm-Nd and Hf-W characteristics and the redox conditions in the source reservoirs of the martian meteorites.
- 3:00 p.m. Dreibus G. * Huisl W. Spettel B. Haubold R.
Halogens in Nakhilites: Studies of Pre-Terrestrial and Terrestrial Weathering Processes [#1180]
 The comparison of halogen, C and S contents with those of trace elements like La, Ba, Th and U allows us to distinguish between terrestrial and martian weathering processes in nakhilites.

- 3:15 p.m. Schwenzer S. P. * Herrmann S. Ott U.
Pyroxenes from Governador Valadares and Lafayette: A Nitrogen and Noble Gas Study [#1612]
We present new noble gas and nitrogen data on pyroxene separates from Lafayette and Governador Valadares [rad. ^4He , cosmogenic nuclides (in Ne, Ar), martian interior, fractionated and unfractionated martian, and fractionated terrestrial atmosphere].
- 3:30 p.m. Walton E. L. * Herd C. D. K.
Crystallization of Mesostasis in Two Nakhlite Meteorites: The Fractal Approach [#1988]
Fractal analysis has been used to characterize the mesostasis of two nakhlite meteorites. Using the fractal dimension, in conjunction with previous crystallization experiments, we conclude that, upon eruption of a crystal-rich magma, MIL 03346 cooled at a faster rate compared to Nakhla.
- 3:45 p.m. Shih C.-Y. * Nyquist L. E. Reese Y.
Rb-Sr and Sm-Nd Isotopic Studies of Antarctic Nakhlite MIL 03346 [#1701]
Rb-Sr and Sm-Nd mineral isochron results of nakhlite MIL 03346 indicate that it was produced by clinopyroxene accumulation from a depleted martian mantle source with $^{147}\text{Sm}/^{144}\text{Nd} = \sim 0.23$ and $^{87}\text{Rb}/^{86}\text{Sr} = \sim 0.078$ about 1.36 ± 0.03 Ga ago.
- 4:00 p.m. Morris R. V. * McKay G. A. Ming D. W. Klingelhöfer G. Schröder C. Rodionov D. Yen A.
Magnetite in Martian Meteorite MIL 03346 and Gusev Adirondack Basalt: Mössbauer Evidence for Variability in the Oxidation State of Adirondack Lavas [#1594]
Magnetite in martian meteorite MIL 03346 and Gusev Adirondack basalt is evidence for variable oxidation states for Adirondack lavas. As in the meteorite, the magnetite in Adirondack basalt is possibly present as a mesostasis phase.
- 4:15 p.m. Sautter V. * Jambon A. Boudouma O.
Cl-rich Amphibole in MIL 03346: Trace of Martian Soil in a Martian Meteorite [#1318]
The spacecraft missions revealed that Martian soils are enriched in Cl. We describe the first extra-terrestrial Cl-hastingsite (up to 7 wt % Cl), in melt inclusion from the nakhlite MIL 03346. It evidences contamination of the parent magma by Cl-rich evaporitic debris from the Martian soil.
- 4:30 p.m. Lentz R. C. F. * Taylor G. J. Hamilton V.
Modeling, Defining, and Searching for a Nakhlite-related Gabbro [#2117]
We modeled modes and mineral compositions for a proposed nakhlite-related gabbro using MELTS to crystallize published nakhlite parent magmas. We then derived thermal infrared spectra from these compositions for comparison to martian surface spectra.