Tuesday, March 18, 2014 **[T639]**
POSTER SESSION: MARS PETROLOGY
6:00 p.m. Town Center Exhibit Area

Sio C. K. Chaussidon M. Dauphas N. Richter F. M. Roskosz M. et al. ***POSTER LOCATION #516***
Determining the Nature of Olivine Zoning in Nakhlites by In-Situ Mg and Fe Isotopic Analyses **[#2797]**
We show Mg and Fe isotopic profiles in olivines in six nakhlites, measured using SIMS. The profiles are used to constrain the thermal histories of nakhlites.

Corrigan C. M. Velbel M. A. Vicenzi E. P. Konicek A. ***POSTER LOCATION #517***
Modal Mineralogy and Chemistry of Nakhlite Northwest Africa (NWA) 5790: How it Stacks up with the rest of the Nakhlites **[#2128]**
We examine the mineralogy and mineral chemistry of this "high-mesostasis" nakhlite and what they suggest in terms of emplacement within the nakhlite stack.

Collinet M. Medard E. Vander Auwera J. Charlier B. ***POSTER LOCATION #518***
Alkaline Primary Melts from the Primitive Mantle of Mars **[#2839]**
The primitive martian mantle is rich in Na and K. Experiments show that its melting has implications for the origin of alkaline rocks on Mars.

Medard E. Collinet M. ***POSTER LOCATION #519***
Shergottites: Partial Melts of a Depleted Martian Mantle **[#2840]**
Shergottites are interpreted as partial melts of a residual depleted mantle, formed by extraction of the martian crust.

Chen Y. Liu Y. Patchen A. Barry P. Taylor L. A. ***POSTER LOCATION #520***
Mineralogy and Petrology of New Shergottites LAR 12011, LAR 12095, and LAR 12240 **[#2880]**
This abstract describes the mineralogy and petrology of three new olivine-phyric shergottites: LAR 12011, LAR 12095, and LAR 12240.

Gross J. Filiberto J. ***POSTER LOCATION #521***
Granitic Compositions in Gabbroic Martian Meteorite NWA 6963 and a Possible Connection to Felsic Compositions on the Martian Surface **[#1440]**
We report mineralogy, petrology, and texture of two types of granitic compositions from gabbroic meteorite NWA 6963, with implications to felsic surface compositions.

Howarth G. H. Pernett-Fisher J. F. Barry P. H. Bodnar R. J. Taylor L. A. ***POSTER LOCATION #522***
Petrology of the new Enriched lherzolitic Shergottite NWA 7397: Two Stages of Formation **[#1310]**
We present a two-stage formation model for NWA 7397 to account for a distinct change in pressure of crystallization and the HREE profile of the parental magma.

He Q. Xiao L. ***POSTER LOCATION #523***
Preliminary Petrographic and Melt-Inclusion Stuides on the Northwest Africa 7397: Another Enriched "Lherzolitic" Shergottite **[#1668]**
NWA 7397 is another enriched "lherzolitic" shergottite that is similar to RBT 04262/1 and GRV 020090.

Park J. Herzog G. F. Turrin B. Lindsay F. N. Delaney J. S. et al. ***POSTER LOCATION #524***
$^{40}Ar/^{39}Ar$ Studies of Martian Meteorite RBT 04262 and Terrestrial Standards **[#1609]**
$^{40}Ar/^{39}Ar$ ages of six ~30-µg RBT 04262 maskelynites range from 40 to 313 Ma, but form a 244-Ma isochron. We discuss interpretations and standards.

Kuchka C. R. Herd C. D. K. Walton E. L. ***POSTER LOCATION #525***
Hematite in Tissint Shock Melt Glass: Investigating the Possibility of a Martian Near-Surface Component in Shergottites. **[#2693]**
Raman identification of hematite associated with shock melt pockets in Tissint is documented as possible evidence for a near-surface component in shergottites.

Moriwaki R. Usui T. Yokoyama T. Simon J. I. Jones J. H. ***POSTER LOCATION #526***
Preliminary Report on U-Th-Pb Isotope Systematics of the Olivine-Phyric Shergottite Tissint **[#1773]**
This study proposes the possibility that Tissint would have experienced a minor assimilation of the ancient martian crust.

Kiefer W. S. Macke R. J. Britt D. T. Irving A. J. Consolmagno G. J. ***POSTER LOCATION #527***
The Density, Porosity, and Magnetic Susceptibility of Martian Meteorites as Constraints on Gravity Models **[#2028]**
Density and porosity measurements of martian meteorites help to constrain gravity models of martian crustal structure.

Sutton S. R. Ross D. K. Rao M. N. Nyquist L. E. ***POSTER LOCATION #528***
Identification of Martian Regolith Sulfur Components in Shergottites Using Sulfur K XANES and Fe/S Ratios **[#1524]**
Sulfur speciation in shergottite impact glasses provides strong evidence for the occurrence of small amounts of martian regolith in these meteorites.

Selin R. J. Gross J. Filiberto J. ***POSTER LOCATION #529***
Water, Fluorine, and Chlorine Fugacity Ratios of the Martian Interior Derived from Apatite in Gabbroic Shergottite NWA 6963 **[#1462]**
We report apatite compositional data from gabbroic shergottite NWA 6963 and calculate F_2, Cl_2, and H_2O fugacity ratios for its parental magma.

Papike J. J. Burger P. V. Bell A. S. Shearer C. K. Provencio P. et al. ***POSTER LOCATION #530***
Valence State Partitioning of V Between Pyroxene and Melt for Martian Melt Compositions Y 980459 and QUE 94201: The Effect of Pyroxene Composition and Crystal Structure **[#1029]**
The goal of this study is to examine the significant variation in the partitioning of vanadium between pyroxene and melt with changing Wo content in pyroxene.

Burger P. V. Shearer C. K. Papike J. J. McCubbin F. M. Bell A. S. ***POSTER LOCATION #531***
Crystal Chemistry of Merrillite from Martian Meteorites: Mineralogical Recorders of Magmatic Processes and Planetary Differentiation **[#2272]**
We examine major-/trace-element variation in merrillites from a variety of martian samples to decipher the petrogenetic significance of their crystal chemistry.

McCubbin F. M. Shearer C. K. Burger P. V. Hauri E. H. Wang J. et al. ***POSTER LOCATION #532***
Water Contents of Coexisting Merrillite and Apatite in the Shergotty Meteorite: Implications for Merrillite in Hydrous Magmas **[#2774]**
H_2O abundances of merrillite and apatite from the Shergotty meteorite were determined to show that merrillite can form from H_2O-rich magmas.

Udry A. McSween H. Y. Jr. ***POSTER LOCATION #533***
New Investigations of Lithium Abundances in Shergottite Pyroxenes and Olivines: Potential Evidence for Martian Magmatic Water **[#1973]**
We investigate degassing of water from parental magmas of different types of shergottites by analyzing lithium zoning in pyroxene and olivine.

Udry A. Lunning N. G. McSween H. Y. Jr. ***POSTER LOCATION #534***
Petrogenesis of a Vitrophyre in the Martian Meteorite Breccia NWA 7034 **[#1948]**
We present the study of a unique vitrophyric clast in the martian breccia NWA 7034, which represents an impact melt with Humphrey-like composition.

Banerjee N. R. Ali A. Jabeen I. Osinski G. R. Gregory D. ***POSTER LOCATION #535***
Oxygen Isotope Study of Northwest Africa (NWA) Shergottites **[#2191]**
New O-isotope data of shergottites fall on the MFL. Minor slope variations in triple O-isotope plots of maskelynite and pyroxene are observed.

Santos A. R. Agee C. B. McCubbin F. M. Shearer C. K. ***POSTER LOCATION #536***
An Investigation of Pyroxenes Within Different Lithologic Domains in Martian Meteorite NWA 7034 **[#2513]**
Major and minor elements in pyroxenes from different domains within NWA 7034 were used to explore the petrogenetic relationships between each domain.

Tartèse R. Anand M. McCubbin F. M. Santos A. R. Delhaye T. ***POSTER LOCATION #537***
Zircons in Northwest Africa 7034: Recorders of Crustal Evolution on Mars **[#2020]**
We report U-Pb data obtained with the NanoSIMS ion probe on zircons and baddeleyites in martian meteorite Northwest Africa 7034, and discuss their implications.

Stephen N. R. Ross A. J. ***POSTER LOCATION #538***
Examining the Petrology of "Martian" Meteorite NWA 7034; A Polymict Fragmental Breccia **[#2924]**
The odd "Black Beauty" / Is polymict and fragmental / But is it from Mars?

Flynn G. J. Sutton S. R. Wirick S. Lanzirotti A. Rao W. ***POSTER LOCATION #539***
Possible Identification of Surviving Interplanetary Dust Particles in a Mars Regolith Breccia **[#1959]**
We identified Ni hot spots in Mars regolith breccia NWA 7034, consistent with surviving interplanetary dust, and discuss implications for regolith production.

Beck P. Pommerol A. Remusat L. Zanda B. Lorand J. -P. et al. ***POSTER LOCATION #540***
Hydration of the Dark Meteorite and the Red Planet **[#2097]**
The nature of hydration products in the martian meteorite NWA 7533 enables us to unravel the hydration of surface dust and the 3-µm band of Mars.

Bridges J. C. Hicks L. J. Hansford G. M. Gurman S. J. ***POSTER LOCATION #541***
Martian Phyllosilicates in the Martian Meteorites **[#2244]**
XRD, XAS, TEM of nakhlites show ferric saponite similar to that in Gale Crater and ferric serpentine. Weakly crystalline gel veins don't show significant XRD.

Brandenburg J. E. ***POSTER LOCATION #542***
Meteorite NWA 7533, the Confirmation of the CI-Mars Hypothesis, and the Mars Age Paradox **[#1143]**
NWA7533 with its age of 4.4 Gyr and DO17 at 0.57 means the O isotopes and ages of Mars meteorites and CI are now indistinguishable. The CI are from Mars!