Tuesday, July 28, 2015
POSTER SESSION: MARS EXPLORATION AND MARTIAN METEORITES: PETROLOGY, GEOCHEMISTRY, AND WATER-ROCK INTERACTION
5:30 p.m. Hearst Memorial Mining Building (HMMB) Floor One

Busemann H. Seiler S. Wieler R. Kuga M. Maden C. Irving A. J. Clay P. L. Joy K. H.
Martian Noble Gases in Recently Found Shergottites, Nakhlites, and Breccia Northwest Africa 8114 **[#5235]**
New noble gas data for several recently found martian meteorites will be presented to determine cosmic-ray exposure ages and source pairing. The presence of trapped (atmospheric) components and discrepancies to earlier data sets will be discussed.

Takenouchi A. Mikouchi T.
Olivine Darkening and Shock Textures in ALH 77005 Lherzolitic Shergottite **[#5171]**
We observed darkened olivine in ALH 77005 and compared them to those in other lherzolitic shergottites, all of which were probably ejected by the same impact. Variable features in darkened olivine have a potential to constrain unique shock histories.

Lee M. R. Chatzitheodoridis E.
Formation of Berthierine in the Martian Meteorite Nakhla by Replacement of Aluminosilicate Glass **[#5219]**
We have found the Al-Fe serpentine mineral berthierine in the nakhlite meteorite Nakhla, which has formed by water-mediated replacement of glass within an olivine-hosted melt inclusion.

Hicks L. J. Bridges J. C.
Siderite Precipitated in the Nakhlite Meteorites: Early Formed Precipitates from a Hydrothermal Brine **[#5290]**
Siderite carbonate is present in three of the nakhlites — occurring in olivine fractures and also in the mesostasis of two of these. The compositions in both settings require formation from dissolution of mixed minerals in the nakhlites.

Liu Y. Ma C. Beckett J.
Hydrothermal Alteration of Martian Zircons in NWA 7034/7533 **[#5080]**
Alteration features in zircons in NWA 7034/7533.

Bridges J. C. Schwenzer S. P. Leveille R. Wiens R. C. McAdam A. Conrad P. Kelley S. P.
Hematite Indicator of High Water to Rock Ratio Alteration in Gale Crater **[#5293]**
Through our modelling of Gale Crater mineral and rock compositions, the Hematite Ridge outcrop is predicted to be the result of near surface, high W/R weathering, providing a new type of ancient environment for the Curiosity Rover to study.

Bishop J. L. Velbel M. A. Filiberto J.
Determining Martian Aqueous Mineralogy Through Analyses of Orbital Remote Sensing and Martian Meteorite Geochemistry **[#5113]**
We are investigating similarities and differences in the aqueous mineralogy of Mars determined both from meteorites and the surface in order to provide insights into Mars' geologic history.

Hausrath E. M. Gainey S. R. Bartlett C. L. Adcock C. T.
Primary and Secondary Minerals in Meteorites Shed Light on the Habitability of Mars **[#5262]**
Primary and secondary minerals in meteorites record environmental conditions and potential nutrient availability. We present results interpreting these mineral assemblages with implications for the potential habitability of Mars.

Danielson L. R. Righter K. Waeselmann N. Humayun M.
Majorite-Garnet Partitioning of the Highly Siderophile Elements: New Results and Application to Mars **[#5343]**
Highly siderophile elements in martian mantle reservoirs exhibit both super- and sub-chondritic HSE ratios, which may be fractionated by deep mantle phases. We present new majorite/melt partitioning data for the HSE and other siderophile elements.

Breton H. Lee M. R.
Low-Ca Pyroxenes in the NWA 998 Nakhlite Meteorite: Reactive Products of Olivine-Plagioclase Mineral Assemblage **[#5111]**
Here, we investigate the development of reactive low-Ca pyroxenes by partial consumption of olivine and plagioclase during late-stage igneous processes.

Caseres J. R. Liu Y. Guan Y. Chen Y. Ma C. Howarth G. Taylor L. A.
Trace Element Chemistry of Larkman Nunatuk (LAR) 12011, a New Olivine-Phyric Shergottite **[#5357]**
We examine the trace element geochemistry of major phases and melt inclusions in LAR12011, and implications for crystallization history.

Tait K. T. Irving A. J. Kuehner S. M. Andreasen R. Righter M. Lapen T. J. Gregory D. A.
Petrology, Mineralogy, and Radiogenic Isotopic Composition of Enriched Mafic Shergottite Northwest Africa 10134 **[#5303]**
Northwest Africa 10134 is a new enriched shergottite from the Royal Ontario Museum's meteorite collection. A combined isotopic, petrographic and mineralogical study on the meteorite will be discussed.

Humayun M. Crowther S. A.
Elemental Volatility During Vacuum Melting of Martian Meteorite NWA 8114 **[#5313]**
We show that vacuum melting of basaltic rocks results in severe depletion of U from silicate melts, comparable to Zn, quite contrary to its refractory behavior under reducing conditions.

Chen Y. Liu Y. Guan Y. Ma C.
New Rock Types from Mars: Trace Element Signatures in NWA 7034 Clasts **[#5239]**
This study investigates the concentrations of rare earth elements in feldspars, pyroxenes, and apatites in igneous clasts in NWA 7034, and suggests that the clasts were derived from a primitive mantle source.

Stephen N. R. Dijkstra A. H.
Constraining Pigeonite on Mars; Further Developments in Resolving Zoned Pyroxenes Within the Martian Meteorites **[#5394]**
Developments in SEM techniques allowed accurate measurement of pigeonite using EDS to define EBSD patterns, thus constrain orientation profiles previously unresolved; implicating spectral studies as crystallographic orientation affects mineral spectra.

Clark B. C.
Searching for the Meteoritic Contribution to Martian Soils and Sediments **[#5044]**
Martian soils and surface sediments will contain contributions from meteoritic (and IDP) input, with multiple important consequences. Determination of this input must interpret in situ measurements which focus on trace elements and evolved gases.

Beaty D. W. Hays L. E. Williford K. Farley K.
Sample Science Input to Landing Site Selection for Mars 2020: An In-Situ Exploration and Sample Caching Rover **[#5340]**
This abstract describes the need for sample-related inputs to the Mars-2020 landing site selection process.

Beaty D. W. Niles P. B. Bass D. S. Bell M. S. Bleacher J. E. Cabrol N. A. Eppler D. B. Hamilton V. E. Hays L. E. Head J. W. Kahre M. A. Levy J. S. Lyons T. W. Macalady J. L. Rafkin S. C. R. Rice J. W. Rice M. S.
Planning Ahead for Mars Sample Science in the Human Exploration Era **[#5335]**
This presentation summarizes some advance planning for the sample-related science that may be accomplished by a human mission to the martian surface.