Wednesday, March 23, 2016

PHYSICOCHEMICAL EVOLUTION OF MARS FROM MANTLE TO CRUST
1:30 p.m. Waterway Ballroom 6

Chairs:
Janice Bishop
Elizabeth Rampe

1:30 p.m.
Kiefer W. S. * Rapp J. F. Usui T. Draper D. S. Filiberto J.

_Melting experiments to eight GPa on shergottite Yamato 980459 and mantle plume models show that it is much easier to create Y98-like melts than was once believed._

1:45 p.m.
Balta J. B. *

_Modeling Melting of the Martian Mantle Using pMELTS [1674]_

_I apply the pMELTS algorithm to investigate fractional melting of the martian mantle and then compare calculated melts to experiments and shergottites._

2:00 p.m.

_Coupled 142Nd–182W Evidence for Early Crust Formation on Mars [2115]_

_New analyses of martian meteorites provide evidence for a global mantle differentiation on Mars around 20–30 Ma after solar system formation._

2:15 p.m.
Tobita M. * Usui T. Moriwaki R. Yokoyama T.

_New Constrains on the Shergottite Petrogenesis by Analysis of Pb Isotopic Compositional Space: Evidence for Mantle Heterogeneity and Crustal Assimilation on Mars [1416]_

_We analyze all the available Pb isotopic compositions of shergottites, and imply the existence of heterogeneous mantle and an enriched crustal reservoir on Mars._

2:30 p.m.
Gazel E. * McSween H. Y. Moore L. R.

_Crustal Evolution of Earth and Mars [1619]_

_The continental crust is unique to Earth and records processes distinctive to our planet._

2:45 p.m.
Cannon K. M. * Parman S. W. Mustard J. F.

_Hot and Steamy: Alteration of the Primordial Martian Crust by Supercritical Fluids During Magma Ocean Cooling [1265]_

_We conduct experiments to determine if supercritical fluids at the base of a magma ocean outgassed atmosphere could have formed some of the clays on Mars._

3:00 p.m.
DiFrancesco N. J. * Nekvasil H. Lindsley D. H. Rogers A. D.

_Modifying Martian Surface Chemistry: Chlorides as Sublimates from Volcanic Degassing on Mars [1517]_

_Hot martian magma / Iron and chlorine exsolved / Into salt they turn?_

3:15 p.m.
Humayun M. * Yang S. Righter K. Zanda B. Hewins R. H.

_The Germanium Dichotomy in Martian Meteorites [2459]_

_We show that Ge is twice as high in minerals from nakhlites and chassignites compared with shergottites, which might indicate volcanic outgassing of Ge on Mars._

3:30 p.m.

_Alumina + Silica + Germanium Alteration in Smectite-Bearing Marathon Valley, Endeavour Crater Rim, Mars [2086]_

_In situ compositional measurements reveal impact breccias enriched in Al, Si, and sometimes Ge in a region bearing Fe-Mg smectites as determined from orbit._
3:45 p.m. Catalano J. G. * Chemtob S. M. Nickerson R. D. Morris R. V. Agresti D. G. 
Ferrous Smectites and the Redox Evolution of Early Mars [#1609]
Ferric smectites observed on Mars today may be altered remnants of earlier ferrous clays, indicating that planetary-wide oxidation postdates the Noachian.

4:00 p.m. Bellucci J. J. * Whitehouse M. J. John T. Nemchin A. A. Snape J. F. 
Halogen Content and Cl Isotope Systematics on Mars: From the Atmosphere to the Hydrosphere to the Lithosphere [#1434]
Halogen and Cl isotopic composition of martian meteorite phosphates, implications for atmospheric/low temperature process recorded in basaltic rocks.

Oxychlorine Species on Mars: Implications from Gale Crater Samples [#2947]
Every sample analyzed by SAM on MSL has released oxygen from oxychlorine species. Oxychlorine formation has occurred throughout Mars’ history and is global.

4:30 p.m. Gainey S. R. * Hurowitz J. A. 
The Geochemistry and Habitability of Martian Aquifers [#2088]
Thermodynamic and kinetic modeling of the geochemistry and habitability of martian aquifers coupled with evaporation simulations under Mars relevant conditions.

4:45 p.m. Murchie S. L. * Ehlmann B. L. Arvidson R. E. 
Geological Water Resources for Humans on Mars: Constraints from Orbital Spectral Mapping and In Situ Measurements [#1261]
Mars regolith may yield 1 wt% water by heating to 500°C; select clay and sulfate bearing rocks may have up to 10%, much releasable by heating to 250°C or lower.