

Tuesday, March 18, 2014  
**MARS PETROLOGY AND PETROGENESIS**  
 8:30 a.m. Waterway Ballroom 4

[T202]

**Chairs: Ryan Mills**  
**Jennifer Rapp**

- 8:30 a.m. Symes S. J. K. \* Borg L. E. Brennecke G. A.  
[\*A Young Differentiation Age for Mars Deduced from High-Precision <sup>142</sup>Nd Analyses of Martian Meteorites\*](#) [#2063]  
 We present Sm- and Nd-isotopic data combined with a new mathematical approach to define the age of silicate differentiation on Mars.
- 8:45 a.m. Righter M. \* Andreassen R. Lapen T. J. Irving A. J.  
[\*The Age and Source Composition for Depleted Shergottite Northwest Africa 7635: A 2.3 Ga Magmatic Rock from Early Amazonian Mars\*](#) [#2550]  
 NWA 7635 depleted shergottite has an Sm-Nd age of 2.3 Ga. Calculated source compositions show that it derived from a source that is more depleted than any other shergottites.
- 9:00 a.m. Andreassen R. \* Righter M. Lapen T. J. Irving A. J. Nishiizumi K. et al.  
[\*Lead-Lead Isotope Systematics and Terrestrial and Ejection Ages of Early Amazonian Depleted Shergottite Northwest Africa 7635\*](#) [#2865]  
 Depleted shergottite NWA 7635 has an ejection age of 1 m.y. and a 2.8-k.y. terrestrial. Lead-lead isotopes are the least radiogenic measured for martian meteorites.
- 9:15 a.m. Bellucci J. J. \* Nemchin A. A. Whitehouse M. J.  
[\*A Unique Differentiation History of Mars Preserved in Martian Meteorite NWA 7533\*](#) [#1327]  
 A Pb isotopic study of martian regolith breccia NWA 7533.
- 9:30 a.m. Sharp Z. D. \* Shearer C. K. Burger P. V. Agee C. McKeegan K.  
[\*The Unique Chlorine Isotope Composition of Mars: Implications for Planetary Formation and Differentiation\*](#) [#1617]  
 The Cl-isotope composition of Mars differs from Earth, the Moon, and chondrites. Mantle samples are light; crustal materials are heavy. Mantle samples are unique.
- 9:45 a.m. Shearer C. K. \* Sharp Z. D. McKeegan K. D. Burger P. V. McCubbin F. M.  
[\*Chlorine Isotopic Composition of Martian Meteorites. Implications for the Composition of the Martian Crust and Mantle, Their Interactions, and Magmatic Processes\*](#) [#1502]  
 We examine the Cl-isotopic compositions of a variety of martian rocks to better understand the composition of the martian crust and mantle and their interactions.
- 10:00 a.m. Balta J. B. \* McSween H. Y. Jr.  
[\*Application of the MELTS Algorithm to the Composition and Crystallization of Martian \(and Other Extraterrestrial\) Magmas\*](#) [#1365]  
 The MELTS algorithm is commonly used to model crystallization of planetary magmas. We apply it to martian compositions and explore its strengths and weaknesses.
- 10:15 a.m. Collinet M. \* Charlier B. Medard E. Vander Auwera J. Grove T. L.  
[\*New Experimental Constraints on the Origin of Shergottites: Super-Chondritic Ca/Al in Melts from a Garnet-Free Martian Mantle\*](#) [#2776]  
 Melts with CaO/Al<sub>2</sub>O<sub>3</sub> ratios identical to shergottites were produced from a primitive martian mantle at a lower pressure than the spinel to garnet transition.

- 10:30 a.m. Peters T. J. Simon J. I. Jones J. H. Usui T. Moriwaki R. et al.  
[Tracking the Martian Mantle Signature in Olivine-Hosted Melt Inclusions of Basaltic Shergottites Yamato 980459 and Tissint](#) [#2405]  
We present here our in situ SIMS analysis of trace elements in olivine hosted melt inclusions for the basaltic shergottites Yamato 980459 and Tissint.
- 10:45 a.m. Williams K. B. \* Sonzogni Y. Treiman A. H.  
[Amphibole in the Tissint Martian Meteorite: Composition and Implication for Volatile Content of Parental Magma](#) [#1435]  
Our chemical analyses of kaersutite in the new Tissint shergottite provide volatile contents that, in turn, constrain the volatile content of the parent magma.
- 11:00 a.m. Bell A. S. \* Burger P. V. Le L. Papike J. J. Jones J. et al.  
[Chromium Oxidation State in Planetary Basalts: Oxygen Fugacity Indicator and Critical Variable for Cr-Spinel Stability](#) [#2198]  
The ratio of trivalent to divalent Cr in magmas has consequences for the stability of phase spinel and the Cr concentration of clinopyroxene and olivine.
- 11:15 a.m. Agee C. B. \* Muttik N. Ziegler K. McCubbin F. M. Herd C. D. K. et al.  
[Discovery of a New Martian Meteorite Type: Augite Basalt — Northwest Africa 8159](#) [#2036]  
We report here the discovery of a new type of martian meteorite, NWA 8159 augite basalt, that has characteristics distinct from other martian meteorite types.
- 11:30 a.m. Herd C. D. K. \* Agee C. B. Muttik N. Walton E. L.  
[The NWA 8159 Martian Augite Basalt: Possible Eruptive from the Nakhilite Suite](#) [#2423]  
A new Mars basalt / Defies being classified / Nakhilite related?