

Friday, July 27, 2018
MARS: METEORITES AND SAMPLE RETURN
9:00 a.m. Red Room

Chairs: Takashi Mikouchi
 Jeremy Bellucci

- 9:00 a.m. MacArthur J. L. * Bridges J. C. Hicks L. J. Burgess R. Joy K. H. Branney M. J. Piercy J. D.
[Constraining the Thermal History of Martian Breccia Northwest Africa 8114](#) [#6330]
 The first martian regolith breccia offers the chance to study thermal conditions in the near-surface, close to an impact crater on Mars. We report the results of our mineralogical study used to constrain the regolith's thermal history.
- 9:15 a.m. Hu S. * Lin Y. T. Zhang T. Zhang J. C. Hao J. L. Yang W.
[Formation Mechanisms of D-Enriched Martian Apatites: Clues from the Martian Basaltic Shergottite Northwest Africa 8657](#) [#6082]
 Cl and H isotopic compositions of the apatite from NWA 8657 preferentially support the scenario that apatite crystallized from a crustal assimilated magma.
- 9:30 a.m. O'Brien A. C. * Hallis L. Steele A. Daly L. Lee M. R.
[Complex Organics and Elemental Sulfur in Northwest Africa 8159: Martian or Extra-Martian?](#) [#6197]
 Macromolecular carbon and elemental sulfur detected in Northwest Africa 8159. We present possible scenarios for the material's origin in light of data from Raman spectroscopy and XANES analysis.
- 9:45 a.m. Bellucci J. J. * Whitehouse M. J. Nemchin A. A. Snape J. F. Kenny G. G.
[Remnants of the Oldest Martian Crust](#) [#6052]
 Pb isotope evidence for the oldest pieces of martian crust preserved in regolith breccia NWA7533.
- 10:00 a.m. Weimer D. * Busemann H. Irving A. J. Maden C.
[Noble Gas Record in a Large Number of Shergottites: Potential Implication for the Number of Ejection Events on Mars](#) [#6300]
 Using newly acquired noble gas data for >20 recently found shergottites and literature data, we assess the number of ejection events that formed the shergottites and examine if CRE age clusters correlate with the petrological/chemical classification.
- 10:15 a.m. Mari N. * Riches A. J. V. Hallis L. J. Marrocchi Y. Villeneuve J. Lee M. R.
[Sulphur Isotope Fractionation in the Nakhla Lava Flows: New Insights into Martian Volcanic and Atmospheric Processes](#) [#6009]
 Sulphur isotope fractionation was used to infer which processes affected five nakhrites on the martian surface. Evidences of atmospherically processed sulphur derived from martian volcanic aerosol is discussed.
- 10:30 a.m. Mikouchi T. * Yamashita R. Takenouchi A. Ono H. Kagi H. Yamaguchi A.
[Coesite and Other Silica Polymorphs in the Nakhla Martian Meteorite](#) [#6194]
 We studied silica minerals in Nakhla martian meteorite by Raman spectroscopy and SEM-EBSD. We found coesite coexisting with cristobalite and orthorhombic tridymite on submicron scale, which is consistent with estimated shock pressure of 14–20 GPa.
- 10:45 a.m. Thomas-Keprta K. L. * Clemett S. J. Baskar N. Rahman Z. Gibson E. K. Wentworth S. J. McKay D. S.
[Unusual Aqueous Deposits Located Within the Nakhla Mars Meteorite](#) [#6332]
 We report the first identification of two unique, aqueously altered, foliated assemblages on interior fracture surfaces of the martian meteorite Nakhla.

- 11:00 a.m. Gattacceca J. Devouard B. Debaille V. Rochette P. * Lorand J.-P. Bonal L. Beck P. Sautter V. Meier M. M. M. Gounelle M. Marrocchi Y. Maden C. Busemann H.
[*Nakhlite Caleta el Cobre 022: Initial Description and Comparison with Other Nakhlites*](#) [#6227]
We present here the initial description and the first results obtained on a recently discovered tenth nakhlite: Caleta el Cobre 022.
- 11:15 a.m. Beaty D. W. Vijendran S. Edwards C. D. Meyer M. A. Carrier B. L. Grady M. M. *
McSween H. Y. Sefton-Nash E.
[*Mars Sample Return — A Proposed Mission Campaign Whose Time is Now*](#) [#6344]
The paper will summarize the current status of science and engineering planning for Mars Sample Return, and the recent momentum that has been established.