Keeping Up with the Martian Meteorites and Constraining the Number of Separate Launch Sites on Mars [#2068]

Petrologic, chemical, and cosmogenic nuclide criteria suggest that the 101 unpaired martian meteorites may come from as few as 20 launch sites on Mars.

Multi-Layered Clast in Martian Breccia Northwest Africa 10922 [#2743]

We performed chemical analyses of an unusual, concentrically-layered clast within the martian breccia NWA 10922.

Feldspar Variability in Northwest Africa 7034 [#2349]

Northwest Africa 7034 contains feldspar of different grain size, texture, and composition, some of which suggest modification by secondary alteration.

Petrology and Mineral Chemistry of the Enriched Basaltic Shergottite Northwest Africa 8656 [#1384]

The characterization of primary petrography and mineralogy of Northwest Africa 8656, basalt shergottite, are described in this abstract.

Uranium-Lead Dating of Zagami Phosphates by NanoSIMS [#1816]

U-Pb dating of Zagami phosphates was conducted by NanoSIMS. A total Pb/U isochron age of 245 ± 80 Ma is consistent with whole rock age but older than baddeleyite.

Lead Isotope Systematics of Acid Residues from Depleted Olivine-Phyric Shergottites: Implications for Heterogeneous Depleted Source Mantle [#1803]

Lead isotopic compositions of acid residues from Tissint and DaG 476 suggest that the depleted martian mantle has geochemical heterogeneity.

Heavy Shock Metamorphism of the Enriched Lherzolitic Shergottite Northwest Africa 7755 [#1077]

We report the petrographic and mineralogical features in martian meteorite NWA 7755 to constrain its shock metamorphism and implications.

Mineralogy and Shock Effects in Martian Breccia NWA 8171 by In Situ Micro X-Ray Diffraction and Micro-Raman Spectroscopy [#2827]

NWA 8171, the most recent addition to the Black Beauty suite: Mineralogy and shock deformation examined by complementary micro-XRD and micro-Raman spectroscopy.
Igneous zonation, fracturing, and oxidation trends allow a possible terrestrial origin for alteration in Northwest Africa 10416 olivine.

Petrogenesis of gabbroic shergottite NWA 6963 interpreted from pyroxene zoning profiles.

Clues to unraveling magma storage conditions are quantified here using the compositions, textures, and zoning patterns of P in olivines from martian meteorites.

Structure transitions / Apatite prefers chlorine / Fluorine feels betrayed.

Multi-year terrestrial weathering studies of Tissint show dramatic changes in H2O contents and D/H in olivines within a few tens of micrometers of the surface.

We report sharp contrasts in abundance of secondary K-sulfates between MIL 03346 and MIL 090136 using complementary application of SEM-EDS/ Raman spectroscopy.

To constrain the role of impact and alteration on the redox record of martian meteorites, we mapped the iron oxidation state in silicate crystals using XAFS.

A machine learning approach is used to classify mineral regions in EDS X-ray images of a shergottite specimen.

This abstract focuses on the VIS-IR imaging spectroscopy investigation on some grains of merrillite in the North West Africa 8657 shergottite slab.

Comparison of EBSD data of shocked chassignite NWA 8694 with those of other olivine-rich achondrites negates the influence of shock exposure on olivine LPO.
Liu Y.  Ma C.  Fisher W. W.  Guan Y.  Webb S. M.  et al.  POSTER LOCATION #485
Evidence for O₂-Rich Environments on Mars from Hydrous Mn(IV)-Oxides in Northwest Africa (NWA) 7034 and 7533 Meteorites  [#1345]
First report of hydrous Mn(IV)-oxides in martian meteorites, NWA 7034 and 7533, suggesting local O₂-rich environment.

Evans M. E.  Niles P. B.  Locke D. R.  Chapman P.  POSTER LOCATION #486
Isotopic Composition of Carbonates in Antarctic Ordinary Chondrites and Miller Range Nakhlites:  Insights into Martian Amazonian Aqueous Alteration  [#2727]
Study of Antarctic OCs and MIL Nakhlites shows distinct carbonate phases and δ¹³C reservoirs with variable δ¹⁸O from contribution of meteoric H₂O and atmospheric CO₂.

Buz J.  Murphy T.  Kirschvink J. L.  POSTER LOCATION #487
Investigating Potential Martian True Polar Wander with ALH 84001  [#2924]
Magnetization directions in mutually oriented slices of ALH 84001 lie along a girdle distribution, which may be interpreted as martian true polar wander.