

Tuesday, March 20, 2018

[T323]

POSTER SESSION I: LUNAR PETROLOGY AND GEOCHEMISTRY

6:00 p.m. Town Center Exhibit Area

Vander Kaaden K. E. Draper D. S. McCubbin F. M. Rowland R. L.
Reppart J. J. et al. **POSTER LOCATION #272**

[*Partitioning of Moderately Volatile Elements in Major Rock Forming Minerals at Low Pressure: Implications for the Moon*](#) [#1233]

Mod. vol. elements / Lunar melts and minerals / Where will they end up?

Chen H. Meshik A. P. Pravdivtseva O. V. Day J. M. D. Wang K. **POSTER LOCATION #273**

[*Evaporative Fractionation of Potassium Isotopes During the First Nuclear Detonation and Implication on the Formation of the Moon*](#) [#1609]

We reported K isotopic compositions of trinitite samples produced by the nuclear detonation and compare the results with the lunar samples.

Zeng H. Z. Dauphas N. D. Meheut M. M. Blanchard M. B. Galli G. G. **POSTER LOCATION #274**

[*First-Principle Computations of Equilibrium Potassium Isotope Fractionation in Orthoclase*](#) [#2452]

We provide a detailed scheme of first-principle computation of the equilibrium fractionation ratios for orthoclase.

Okabayashi S. Yokoyama T. Terakado K. Galimov E. M. **POSTER LOCATION #275**

[*Trace Element Analysis and Iron Isotopic Signature of Lunar Regolith*](#) [#1409]

Trace element composition and Fe isotopic composition of lunar regolith samples of Soviet Luna robotic missions (Luna 16, 20, 24) were measured.

Gargano A. M. Sharp Z. D. Shearer C. K. **POSTER LOCATION #276**

[*The Chlorine Isotope Composition of Lunar Ferroan Anorthosites*](#) [#2825]

Preliminary chlorine isotope data on lunar ferroan anorthosites.

Valdes M. C. Debaille V. Jolliff B. L. Jones C. Carpenter P. et al. **POSTER LOCATION #277**

[*Towards Quantifying Calcium Stable Isotope Fractionation Among Lunar Rock Suites by SIMS*](#) [#2989]

We calibrate methods to measure Ca isotope ratios by SIMS to give mineralogical context to Ca isotope data of bulk lunar rock suites obtained by MC-ICP-MS.

Holte E. P. Dougherty E. B. Colson R. O. **POSTER LOCATION #278**

[*Experimental Measurements of CoO Activities in Silicate Melts*](#) [#1479]

This study looks at the activity coefficient for Cobalt in silicate melts of various compositions. Results are applied to two lunar basalts.

McLeod C. L. Krekeler M. P. S. **POSTER LOCATION #279**

[*On the Search for Rare Earth Element Resources: The Earth, Moon, and Beyond*](#) [#1506]

The REEs are used throughout modern society. To sustain our reliance on these raw materials, investigation of potential extraterrestrial resources is necessary.

Barker D. C. Snow J. E. Costin G. **POSTER LOCATION #280**

[*Lunar Soil Sample 15421,67 — Stranger Things*](#) [#2495]

Apollo soil samples remain full of unexplored materials that continue to elicit more questions than answers, and 15421,67 is full of awaiting stranger things.

Leitzke F. P. Fonseca R. O. C. Göttlicher J. Steininger R. Lagos M. **POSTER LOCATION #281**

[*XANES Ti K-Edge Study on the Coordination Chemistry and Oxidation State of Ti in Synthetic Pyroxene, Olivine, Fe-Ti Oxides, and Basaltic Glasses Under Lunar \$fO_2\$*](#) [#2110]

XANES data on a wide range of minerals and silicate glasses equilibrated under lunar fO_2 were used to constrain the amount of trivalent Ti in the Moon.

Martin D. J. P. Joy K. H. Morlok A. Bagshaw H. Wogelius R. A. et al. **POSTER LOCATION #282**
[Modal Mineralogy and Maturity Estimates of Apollo 14, 15, and 16 Soils Using FTIR and OEMSCAN Techniques](#) [#2123]

We report modal proportions for 7 Apollo bulk soils and associated size fractions (<25 to >250 μm), along with a non-destructive method of estimating maturity.

Day J. M. D. **POSTER LOCATION #283**
[On the Possibility of Residual Metal or Sulfide in Mare Basalt Source Regions](#) [#1011]

There is no supporting evidence for residual metal or sulfide in mare basalt sources, supporting a Moon with low abundances of highly siderophile elements.

Mouser M. D. Simon J. I. Christoffersen R. Ross D. K. **POSTER LOCATION #284**
[Petrological Investigations of Volatile-Bearing Lunar Granophyres](#) [#1944]

Previous studies of volatiles in lunar rocks has prompted this petrological investigation of felsic clasts in Apollo samples 12013 (,167 and ,141) and 15405,78.

Steenstra E. S. Seegers A. X. Eising J. Tomassen B. G. J. **POSTER LOCATION #285**
 Webers F. P. F. et al.
[Evidence for a Sulfur-Depleted Lunar Interior from the Solubility of S in Lunar Melts](#) [#1199]

We present new S solubility data for various lunar melt compositions as a function of P-T and show that the lunar mantle is not sulfide-saturated.

Warren P. H. Esposito R. Manning C. **POSTER LOCATION #286**
[Secondary, Aqueous\(?\) Metasomatic Olivine Veins in Apollo 14 Mare Basalt 14072](#) [#2747]

A new sampling of mare basalt 14072 reveals widespread secondary olivine veins, probably fluid-deposited, as they are nearly confined to pyroxene-core locales.

Xu Y. Zhu D. Zhang M. **POSTER LOCATION #287**
[Top-Down Solidification of the Lunar Magma Ocean](#) [#1823]

Here we propose a new model of lunar magma ocean. This model tries to explain the conflicts between the observations and dominated model prediction.

Schwinger S. Zhu M.-H. **POSTER LOCATION #288**
[Redistribution of Titanium in the Lunar Mantle by Giant Impact-Induced Melting](#) [#2343]

Differentiation of a melt pool derived from the Procellarum impact might explain the source of Ti-rich mare basalts on the nearside of the Moon.

Fu X. H. Hsu W. B. Ling Z. C. Cao H. J. Chen J. **POSTER LOCATION #289**
[Petrography and Mineralogy of Lunar Feldspathic Breccia Northwest Africa 11111](#) [#1666]

NWA 11111 is a new lunar feldspathic breccia. It contains various lithic fragments and represents a mixture of pristine rocks in lunar highland crust.

Zellner N. E. B. Norman M. D. Jourdan F. **POSTER LOCATION #290**
[Volcanic Events at the Apollo 15 Landing Site: Eruption Ages from Old to Young](#) [#2356]

Moon's volcanic glass / Old or young or in-between? / Check out the data!

Breitenfeld L. B. Dyar M. D. Tokle L. Robertson K. **POSTER LOCATION #291**
[Predicting Ilmenite-Geikielite Composition Using Raman Spectroscopy Through Multivariate Analysis](#) [#1072]

We explore the use of Raman spectroscopy to measure the composition of synthetic samples covering the solid solution between ilmenite and geikielite.

Tang C. P. Sawchuk K. Warren P. H. **POSTER LOCATION #292**
[A Textural/Mineralogical Gradient Within Vitrophyric Mare Basalt Northwest Africa \(NWA\) 8632](#) [#2029]

Lunar meteorite NWA 8632 has been described as vitrophyric. Actually one corner is holocrystalline, with abundant plagioclase and compositionally distinctive pyroxene.

Cao H. J. Ling Z. C. Chen J. **POSTER LOCATION #293**
[*Petrography and Mineralogy of Northwest Africa \(NWA\) 4884 with Raman Spectroscopy*](#) [#2176]

We determined the mineral assemblages and mineral chemistries of lunar meteorite NWA 4884 by combining Raman spectroscopy and SEM-EDS analytical methods.

Zhuqing X. Long L. X. Clive R. N. **POSTER LOCATION #294**
[*Xenocryst Origin of Pyroxene and Plagioclase in Enriched High-Ti Basalt Clast from Lunar Meteorite Dhofar 1428*](#) [#1393]

We observed an enriched high-Ti basalt clast in feldspathic breccia Dhofar 1428, trace element analysis of mineral zonations can uncover its evolution pathways.

Boyle S. Gross J. Prissel T. C. **POSTER LOCATION #295**
[*Understanding the Magnesium-Suite Lithology and Lunar Highlands Terrain Through a Detailed Investigation of Lunar Meteorites Northwest Africa \(NWA\) 10291 and 11182*](#) [#2346]

An investigation of lunar meteorites to expand our knowledge of lunar highland rock types and understand their global provenance.

Yokoi N. Y. Takenouchi A. T. Mikouchi T. M. **POSTER LOCATION #296**
[*Iron Valence States of Plagioclase in Some Lunar Meteorites*](#) [#2227]

By measuring Fe valences of plagioclase in lunar meteorites of different rock types, we investigated redox states and relationships with their water contents.

Simon S. B. Sutton S. R. **POSTER LOCATION #297**
[*Valences of Ti and Cr in Apollo 16 Impact Melt Rocks*](#) [#1232]

We report the first Ti and Cr valence and Ti coordination measurements for lunar crystalline melt breccias. Differences with basalts are noted.

Chen J. Jolliff B. L. Carpenter P. K. Korotev R. L. Wang A. et al. **POSTER LOCATION #298**
[*Mineralogy and Composition of Lunar Impact Melt Breccia Northwest Africa 8651*](#) [#2950]

We report here a preliminary mineralogical and compositional characterization of an impact-melt breccia lunar meteorite Northwest Africa (NWA) 8651.

Chen J. Wang A. Jolliff B. L. Korotev R. L. Ling Z. C. et al. **POSTER LOCATION #299**
[*Petrogenetic and Shock History of Mare Basaltic Lunar Meteorite Northwest Africa 4734*](#) [#2976]

Our work applied Raman spectroscopy to understand the petrogenetic and shock history of Northwest Africa 4734.

Robinson K. L. Smith C. L. Kearsley A. T. Nagashima K. Bevan A. W. R. et al. **POSTER LOCATION #300**
[*Fragments of Multiple Impactors Preserved in Lunar Meteorite Lynch 002*](#) [#1454]

Potential meteoritic relics in Lynch 002 represent at least two different impactors, including the first reported ordinary chondrite fragment in a lunar breccia.

Gleißner P. Becker H. **POSTER LOCATION #301**
[*The Composition of Lunar Basin Forming Impactors: Constraints from Siderophile Elements in Ancient Impactites*](#) [#1082]

Material accreted during formation of lunar basins comprises volatile-depleted and volatile-rich primitive impactors and differentiated metal-rich compositions.

McIntosh E. C. Day J. M. D. Liu Y. **POSTER LOCATION #302**
[*Insights into Impactor Populations Striking the Moon from Melt Coat and Regolith Meteorite Compositions*](#) [#1022]

Impact melt coats and anorthositic regolith breccia meteorites give clues to composition of impactors that were striking the Moon.