Thursday, July 26, 2018
LUNAR SAMPLES AND METEORITES, ORIGIN, AND EVOLUTION OF THE MOON
9:00 a.m. Red Room

Chairs: **Paul Warren**
Allan Treiman

9:00 a.m. Warren P. H. * Keller L. P. Han J.
Eucrite-Like Secondary Metasomatism in Apollo 14 Mare Basalt 14072 **[#6305]**
Secondary-metasomatic veins found mainly within pyroxene in Apollo 14 mare basalt 14072 are remarkably similar to secondary olivine-rich veins found mainly within pyroxene in some eucrites. The veins were most likely deposited by water-bearing fluid.

9:15 a.m. Stadermann A. C. * Jolliff B. L. Krawczynski M. J. Hamilton C. W.
Experimental Investigation of Fractionation During Solidification of an Incompatible-Element-Rich Lunar Basalt from Apollo 12 **[#6271]**
Investigation of mesostasis region in Apollo 12 regolith sample 12032,366-18 through electron microprobe analyses and analog experiments. We find that it is possible that the mesostasis formed via silicate liquid immiscibility.

9:30 a.m. Cernok A. * White L. Darling J. Dunlop J. Fougerouse D. Rickard W. Reddy S. Saxey D. Quadir Z. Zhao X. Franchi I. Anand M.
Sub-Micron Chemical and Structural Complexities Within Shocked Lunar Apatite **[#6292]**
This study aims at understanding the effect of shock on internal structure of apatite and consequences thereof on distribution of geochemically relevant elements, mostly H, Cl, and Pb.

9:45 a.m. Treiman A. H. * Coleff D. M.
Lunar Meteorite Northwest Africa (NWA) 11421: X-Ray Tomography and Preliminary Petrology **[#6329]**
A piece of lunar meteorite NWA 14211 contains a fragment of dunite exposed on its surface. We obtained an X-ray micro CT scan to determine the shape and extent of the dunite fragment, and help plan to use it most effectively. Analytical results will be presented.

10:00 a.m. Demidova S. I. * Anosova M. O. Kononkova N. N. Badekha K. A.
Apollo 14321 Lunar Breccia — Clue to the Understanding of P-Bearing Olivine Source **[#6206]**
Apollo 14321 lunar sample has been extensively studied using a wide range of analytical approaches. Detail study of 14321 P-bearing olivine and its associating minerals allows characterizing its source rock affinities.

10:15 a.m. Will P. * Busemann H. Maden C.
Noble Gases in Glass and Mineral Grains Separated from the Unbrecciated Lunar Mare Basalts Lapaz Icefield 02205, 02224, 02226, 02436 **[#6360]**
We found solar wind noble gases in glasses from the unbrecciated lunar mare basalts LAP 02224 and 02436 that cannot be explained by direct surface entrapment. We discuss possible origins of the solar wind based on noble gas and other data.

10:30 a.m. Warren P. H. *
Lunar Meteorites and the Global Abundance of "PAN" (Purest Anorthosite): Inconvenient Truths about Remote Sensing for Planet-Surface Composition **[#6033]**
I have tested various remote-sensing lunar surface composition data sets for consistency with one another, and with the ground truth from highland meteorites. Results disagree by a factor of three (3) for implied average highlands mafic mineral %.

10:45 a.m. Hidaka H. * Yoneda S.
Isotopic Variations of Sm, Gd, Dy, Er and Yb Induced from the Neutron Capture Reactions on the Moon **[#6104]**
In this study, isotopic analyses of Sm, Gd, Dy, Er and Yb in a series of lunar surface materials were performed to reconstruct a neutron energy spectrum on the lunar surface.

11:00 a.m. Zhu M.-H. * Artemieva N. Morbidelli A. Wünnemann K. Becker H.
The Moon's Impact History: Reconstruction Based on Highly Siderophile Elements **[#6102]**
Reproduced the mass of HSE in crust and mantle of the Moon with the revised impactor retention ratio.

11:15 a.m. Righter K. *
Assessment of Volatile Depletion Mechanisms for the Moon — Pre-Cursors, Giant Impact, Core Formation, Post-Impact Loss **[#6240]**
Core formation is an important factor in depleting the Moon of its volatile siderophile elements.

11:30 a.m. Greenwood R. C. * Barrat J.-A. Miller M. F. Anand M. Dauphas N. Franchi I. A. Sillard P. Starkey N. A.
Oxygen Isotope Evidence for a High-Energy Moon-Forming Giant Impact and Early Delivery of Earth's Water **[#6345]**
Oxygen isotope data indicates that the Moon-forming impact caused near-total isotopic equilibration. A 3 to 4 ppm Earth-Moon difference requires a post-impact explanation and indicates that the bulk of Earth's water accreted before the giant impact.

11:45 a.m. Miljkovic K. * Gerrick-Bethell I. Werner S. C.
Shock and Deformation History of the Ancient Lunar Crust Based on Numerical Impact Modelling and Impact Statistics **[#6078]**
We investigate shock and deformation levels of the early and late ejecta in lunar basins, and review crustal re-mixing and changes in crustal stratigraphy during basin formation.