Thursday, March 20, 2014 **[R704]**
POSTER SESSION: LUNAR SAMPLES: PETROLOGY AND GEOCHEMISTRY
6:00 p.m. Town Center Exhibit Area

Robinson K. L. Barnes J. J. Tartèse R. Hallis L. J. Franchi I. A. et al. ***POSTER LOCATION #59***
Apatite in Allan Hills 81005 and the Origin of Water in the Lunar Magma Ocean **[#2413]**
We present the first apatite water content and H-isotope results from an apatite-rich ferroan anorthosite-like lithology from meteorite Allan Hills A81005.

de Moor M. J. Shearer C. K. Burger P. V. Papike J. J. Provencio P. P. ***POSTER LOCATION #60***
The Behavior of Volatiles in Mare Basalts. An Investigation of the Mineralogy of Linings in the Vugs and Vesicles in Lunar Basalt 12072 **[#1409]**
The overarching theme of this abstract is to illustrate the mineral assemblages in vesicles and vugs in mare basalt 12072 and to deduce their origin.

Poston M. J. Aleksandrov A. B. Grieves G. A.
Hibbitts C. A. Dyar M. D. et al. ***POSTER LOCATION #61***
Temperature Program Desorption Measurements of Water Molecules on Lunar Samples 12001 and 72501 **[#2283]**
Laboratory experiments measuring desorption activation energies of water molecules adsorbed to lunar soil grains with application to lunar observations.

Morison M. Applin D. Cloutis E. Izawa M. Mann P. et al. ***POSTER LOCATION #62***
Compositional and Grain-Size Variations in Ilmenite Reflectance Spectra **[#1505]**
Reflectance spectra of ilmenite are examined across a range of compositions and grain sizes to address a gap of knowledge in ilmenite spectral variation.

Carpenter P. K. Jolliff B. L. Coman E. I. ***POSTER LOCATION #63***
Mineralogy and Chemistry of Ti-Bearing Lunar Soils and Size Fractions **[#2787]**
We present results on ilmenite and TiO_2 content of lunar soils and grain size fractions with implications for remote sensing using UV/VIS spectral parameters.

Stockstill-Cahill K. R. Blewett D. T. Cahill J. T. S.
Denevi B. W. Lawrence S. J. et al. ***POSTER LOCATION #64***
Reflectance Modeling of Spectra of the Wells Lunar Glass Simulants **[#1934]**
Wells [1977] lunar glass simulant spectra were modeled using linear and linear-exponential influence of Fe-, Ti- abundances on the optical constants.

Donohue P. H. Neal C. R. Stevens R. E. Zeigler R. A. ***POSTER LOCATION #65***
Crystal Stratigraphy of Two Basalts from Apollo 16: Unique Crystallization of Picritic Basalt 60603,10-16 and Very-Low-Titanium Basalt 65703,9-13 **[#2648]**
Two crystalline fragments with end-member compositions (picritic and VLT) have unique textures, but mineral trace-element compositions support basaltic origin.

Ray D. Misra S. ***POSTER LOCATION #66***
Depth-Dependent Mantle Sources for High and Low Ti-Mare Basalts — An Investigation Through Trace Element Geochemistry **[#1091]**
Lunar mantle can be classified into two types: a deeper mantle depleted in Pb and U and a shallower mantle enriched in Pb and U.

Griffiths A. A. Barnes J. J. Tartèse R. Potts N. J. Anand M. ***POSTER LOCATION #67***
Characterization of Mesostasis Areas in Mare Basalts: Petrography and Mineral Chemistry **[#1905]**
We have characterized the petrology and mineral chemistry of mesostasis areas in four Apollo mare basalts (10044, 12064, 15058, and 70035).

Potts N. J. Tartese R. Anand M. Franchi I. A. van Westrenen W. et al. ***POSTER LOCATION #68***
Characterization of Mesostasis Areas in Mare Basalts: Constraining Melt Compositions from Which Apatite Crystallizes **[#1946]**
Mesostasis modal abundances in mare basalts are presented, combined with MELTS and SPICEs modeling to constrain melt compositions in which apatite forms.

Cronberger K. Neal C. R. ***POSTER LOCATION #69***
Apollo 15 KREEP Basalts: An Integrated Approach to Determining Origin and Evolution **[#1622]**
Apollo 15 KREEP basalt are analyzed using a integrated approach to understand formation and evolution.

Cronberger K. Neal C. R. ***POSTER LOCATION #70***
Apollo 14 KREEP-Rich lithologies: Evidence for Magma Chamber Processes. **[#2394]**
Analysis of Apollo 14 KREEP samples are presented along with evidence for magma chamber processes.

North - Valencia S. N. Jolliff B. L. ***POSTER LOCATION #71***
Petrography and Mineral Compositions of 12013,165 **[#2663]**
We examined 12013,165 major and minor mineral compositions to find similarities and differences between the gray and black breccias.

Roberts S. E. Neal C. R. ***POSTER LOCATION #72***
New Insights into VHK Petrogenesis Through Quantitative Textural Analysis **[#1279]**
Crystal size distributions applied to VHK petrogenesis.

Alexander L. Snape J. F. Crawford I. A. Joy K. H. Russell S. S. ***POSTER LOCATION #73***
A Petrological and Geochemical Analysis of Lunar Basaltic Fines 12070,891 and 12030,187 **[#1149]**
We present petrological and geochemical results for two basalt fines — 12070,891 and 12030,187 — as part of a study of diversity of basalts at the Apollo 12 site.

Snape J. F. Burgess R. Joy K. H. Ruzie L. Crawford I. A. ***POSTER LOCATION #74***
Non-Basaltic Fragments in the Apollo Soil Sample 12003 **[#1974]**
Analyses of two breccias and one granulitic impactite are presented. These data provide evidence of pre-Imbrium impact ejecta at the Apollo 12 landing site.

Mills R. D. Simon J. I. Alexander C. M. O'D.
Wang J. Christoffersen R. et al. ***POSTER LOCATION #75***
Chemical Zoning of Feldspars in Lunar Granitoids: Implications for the Origins of Lunar Silicic Magmas **[#1547]**
Fine-scale zoning between plagioclase and alkali feldspar in lunar granitoids suggests a shallow plutonic origin.

Righter K. Pando K. A. Danielson L. R. ***POSTER LOCATION #76***
Phase Equilibrium Experiments on Potential Lunar Core Compositions: Extension of Current Knowledge to Multi-Component (Fe-Ni-Si-S-C) Systems **[#2111]**
This study aims to bridge the gap of relevant phase equilibria data for the Moon's metallic core with new low-pressure experiments on multicomponent systems.

Bell A. S. de Moor J. M. Shearer C. K. ***POSTER LOCATION #77***
Thermodynamic and Isotopic Constraints on the Gas Composition and Formation Temperature of Sulfide Replacement Assemblages in Lunar Breccias 67016, 294, 67016, 297, and 67915, 150 **[#2187]**
Thermodynamic calculations and S isotopes are used constrain to the composition of the gas phase that formed sulfide replacement textures in lunar breccias.

Miley H. M. Agee C. B. Korotev R. L. Muttik N. Morgan M. ***POSTER LOCATION #78***
Northwest Africa 8010: Feldspathic Regolith Breccia with Abundant Crystalline Lunar Spherules **[#2823]**
Northwest Africa 8010 has an unusually high abundance of crystalline lunar spherules, which suggests that the component rock is derived from lunar regolith.

Kuehner S. M. Irving A. J. Korotev R. L. ***POSTER LOCATION #79***
Petrology and Composition of Lunar Felsic Granulitic Breccia Northwest Africa 8022 and Occurrence of Forsterite in Lunar Breccia NWA 8001 **[#2495]**
We characterize another example of a lunar granulitic breccia (more felsic than those known previously), and report the most Mg-rich olivine known from the Moon.

Korotev R. L. Irving A. J. ***POSTER LOCATION #80***
Keeping Up with the Lunar Meteorites — 2014 **[#1405]**
Twelve new lunar meteorites are described.

Nekvasil H. Coraor A. E. DiFrancesco N. Lindsley D. H. ***POSTER LOCATION #81***
Reconsidering the Nature of Magmas and Processes Contributing to Lunar Highlands Formation: Insights from Lunar Feldspars **[#1213]**
A model is presented that permits simultaneous formation of ferroan anorthosite at depth and Mg-suite rock types at shallow levels from the same "sodic" LMO.

DiFrancesco N. J. Nekvasil H. Lindsley D. H. Ustununik G. ***POSTER LOCATION #82***
Low Pressure Crystallization of a Lunar Highlands Basalt: A Means for Producing Anorthosite Locally? **[#1893]**
Fractional crystallization experiments on highlands basalt 14053 demonstrate the possibility of producing anorthosites locally on the lunar surface.

Jiskoot C. Day J. M. D. Moynier F. Walker R. J. Taylor L. A. ***POSTER LOCATION #83***
Impact Contamination of Lunar Crustal Rocks **[#1332]**
Impact melt coatings on lunar crustal rocks reveal new information on impactor compositions striking the Moon.

Blachut S. T. Zellner N. E. B. ***POSTER LOCATION #84***
Statistical Analyses of Compositions and Ages of Lunar Impact Glasses **[#2631]**
Compositions and ages of 185 lunar impact glasses from five Apollo landing sites have been statistically analyzed. Trends will be reported.

Sharp M. Puchtel I. S. Walker R. J. ***POSTER LOCATION #85***
Characterizing Impactor Signatures of Apollo 16 Impact Melt Rocks **[#1064]**
This study provides new highly siderophile-element concentration and osmium isotopic data for four Apollo 16 impact melt rocks.

Fagan A. L. Joy K. H. Bogard D. D. Kring D. A. ***POSTER LOCATION #86***
Investigating a Potential Impact Pulse in the Earth-Moon System ~2Ga **[#1907]**
We examine projectile relics in lunar regolith breccias to characterize the impactor population during a potential pulse of impact activity at ~2 Ga.

Zeigler R. A. ***POSTER LOCATION #87***
Nondestructive Analysis of Apollo Samples by Micro-CT and Micro-XRF Analysis: A PET Style Examination **[#2665]**
We report micro-CT/micro-XRF analyses of Apollo 14 samples assessing the techniques usefulness for discovery of "new" Apollo samples and in future PET efforts.

Pillnger C. T. Tindle A. G. Kelley S. P. Quick K. Scott P. et al. ***POSTER LOCATION #88***
A Virtual Petrological Microscope for all Apollo 11 Lunar Samples **[#2747]**
A means of viewing, over the Internet, polished thin sections of every rock in the Apollo lunar sample collections is described.

Prissel T. C. * Crow C. A. Parman S. W. McKeegan K. D. ***POSTER LOCATION #89***
Petrogenesis of the Lunar Highlands Mg-Suite as told by Spinel **[#2514]**
A pink spinel speaks / Of ancient lunar magmas / And hot rocks melting.