Later Lunar Evolution: How Old Is Old?

1:30 p.m. Waterway Ballroom 1

Chairs: Herbert Frey
Nicolle Zellner

We present science priorities for three examples of lunar exploration missions: SPA sample return, dating young basalts, and exploring Compton-Belkovich volcanics.

We use the Bouguer gravity signals of lunar complex craters to probe the subsurface structure of the South Pole-Aitken Basin.

2:00 p.m. James P. B. * Smith D. E. Kendall J. D. Zuber M. T. Solomon S. C. The Heterogeneous Mantle Under South Pole-Aitken Basin as Constrained by GRAIL and LOLA Observations [#1953]
We isolate the mantle gravity signature under SP-A through an analysis of topography and geoid power spectra.

New magnetic source geometry determination techniques suggest there is a regional magnetic layer near the lunar surface and also dike- and sill-like sources.

67955 formed by crystal accumulation in a KREEP-rich impact melt at 4.2 Ga and was excavated by Imbrium at 3.9 Ga. Its age has nothing to do with Nectaris.

2:45 p.m. Park J. * Nyquist L. E. Herzog G. F. Turrin B. D. Lindsay F. N. et al. Newly Determined Ar/Ar Ages of Lunar Troctolite 76535 [#2018]
Ar age spectra of lunar 76535 may indicate the possibility that the lunar troctolite formed relatively early in a plutonic environment in the lunar crust.

3:00 p.m. Spudis P. D. * Murl J. N. Impact Melt from Lunar Multi-Ring Basins: Orientale and Imbrium [#1853]
Deposits of ejected impact melt from the lunar Orientale and Imbrium multi-ring basins have been identified and compositionally characterized.

Basin ejecta/Multiple facies observed/Come see our new map.

3:30 p.m. Cahill J. T. S. * Lawrence D. J. Delen O. Stickle A. Raney R. K. The Maturely, Immature Orientale Impact Basin [#2981]
A look at Orientale impact basin surface and subsurface regolith maturity with neutron, radar, near-, and thermal-infrared datasets.
3:45 p.m. Boehnke P. * Heizler M. T. Harrison T. M. Lovera O. M. Warren P. H.  
Lunar $^{40}$Ar/$^{39}$Ar Data Does Not Indicate a ca. 3.9 Ga Impact Episode [#2745]  
New analyses of Apollo 16 samples and published literature $^{40}$Ar/$^{39}$Ar analyses do not support a ca. 3.9 Ga impact episode.

4:00 p.m. Frey H. V. *  
Geophysical Evidence Supporting an Early as Well as Late Heavy Bombardment on the Moon [#1125]  
Candidate impact basin Bouguer gravity and rim-interior topographic contrasts add to the evidence for an Early, as well as a Late, Heavy Bombardment on the Moon.

Comparing U-Pb SIMS Ages of Ca-Phosphates in Apollo 12, 14, and 17 Breccias [#1171]  
In this study, we compare in situ U-Pb ages from Ca-phosphate grains obtained from breccias collected during the Apollo 12, 14, and 17 missions.

4:30 p.m. Fagan A. L. * Joy K. H. Kring D. A.  
Unravelling the Bombardment History of the Earth-Moon System ~2 Billion Years Ago [#1405]  
We identify four types of projectile relics in lunar regolith breccias with closure ages ~2 Ga that provide evidence of the projectile population.

4:45 p.m. Zellner N. E. B. * Delano J. W.  
Lunar Impact Glass Ages and the Bombardment of the Moon: Composition, Size, and Shape Matter [#2028]  
Lunar impact glass/A tricky little sample!/What can you tell us?