Friday, March 11, 2011
LUNAR IMPACTS I: TIMING AND CAUSES OF LUNAR BOMBARDMENT
8:30 a.m. Waterway Ballroom 6

Chairs: **Jeff Plescia**
Katherine Joy

8:30 a.m. Frey H. V. * Romine G. C.
New Candidate Large Lunar Basins from LOLA Data **[#1190]**
LOLA data provide evidence for new large lunar basins not previously recognized in earlier, lower-resolution topographic data. The number >300 km in diameter likely exceeds 100, more than twice the number suggested from photogeologic studies.

8:45 a.m. Marchi S. * Bottke W. F. Kring D. A. Morbidelli A.
New Crater Counts on the Lunar Farside **[#1192]**
In order to study the early evolution of the Moon, we performed new crater counts using LOLA/LRO data on selected pre-Nectarian terrains on the lunar farside. We present the derived crater size-frequency distributions and discuss their observed differences and similarities.

9:00 a.m. Kirchoff M. R. * Sherman K. M. Chapman C. R.
Reevaluation of Lunar Impactor Population Evolution: Preliminary Results from Crater Distributions on Diverse Terrains. **[#2702]**
We discuss implications for secondary cratering and evolution of the external impactor population from lunar impact crater size-frequency distributions. We also present an assessment of human variation in crater identification and measurement.

9:15 a.m. Fischer-Gödde M. * Becker H.
What is the Age of the Nectaris Basin? New Re-Os Constraints for a Pre-4.0 Ga Bombardment History of the Moon **[#1414]**
A Re-Os isochron age of 4.21 ± 0.13 Ga on Apollo 16 impact melt rock 67935 supports an older age for the Nectaris Basin and places critical constraints on the lunar flux rate and the late heavy bombardment hypothesis.

9:30 a.m. Galenas M. G. * Gerasimenko I. James O. B. Puchtel I. S. Walker R. J.
Continued Study of Highly Siderophile Element Characteristics of Apollo 17 Impact Melt Breccias **[#1413]**
^{187}Os/188Os and Ru, Pd, Re, Ir, Os, and Pt abundances for impact melt breccias 72435, 72535, and 73235 are reported. Results were similar to measured poikilitic Apollo 17 rocks consistent with the interpretation of one single Serenitatis impactor.

9:45 a.m. Joy K. H. * Kring D. A. Zolensky M. E. McKay D. S. Ross D. K.
Investigating the Sources and Timing of Projectiles Striking the Lunar Surface **[#2103]**
The lunar surface is exposed to bombardment by asteroids, comets, and debris from them. Here we investigate the impact archive preserved in the Apollo 16 regolith breccias, and compare this record to evidence of projectile species in other lunar samples.

10:00 a.m. Nyquist L. E. * Shih C.-Y. Reese Y. D.
Dating Melt Rock 63545 by Rb-Sr and Sm-Nd: Age of Imbrium; SPA Dress Rehearsal **[#1868]**
Melt rock 63545 yields Sm-Nd and Rb-Sr ages of 3.91 ± 0.10 and 3.84 ± 0.10 Ga showing that melt rocks can be dated by isochron techniques. The age of 63545 agrees with those of Apollo 15 KREEP basalts, consistent with its being Imbrium basin ejecta.

10:15 a.m. Fernandes V. A. S. M. * Fritz J. P.
^{40}Ar/^{39}Ar Ages vs. Shock Features in Apollo 16 and 17 Samples **[#1189]**
SEM, Raman spectroscopy, and optical microscopy studies to complement ^{40}Ar/^{39}Ar age determination of lunar rocks: the process of K-Ar clock resetting in low shocked rocks does not have an “evident” petrologic feature to enable easy assessment.

10:30 a.m. Zhang A. C. * Hsu W. B. Li X. H. Ming H. L. Li Q. L. Liu Y. Tang G. Q.
Polycrystalline Zircon in Lunar Meteorite Dhofar 458: Origin and Implications **[#1056]**
We report the occurrence of a polycrystalline zircon in lunar meteorite Dhofar 458. The texture of the zircon was shock-induced and indicates that the host rock is an impact melt rock. SIMS U-Pb dating gave a recrystallization age of 3.4 Ga.

10:45 a.m. Spudis P. D. * Wilhelms D. E. Robinson M. S.
Sculptured Hills: Implications for the Relative Age of Serenitatis, Basin Chronologies, and the Cratering History of the Moon **[#1365]**
New LROC WAC images show the distribution and relations of Sculptured Hills, a knobby unit found between the Serenitatis and Crisium basins. The characteristics of this unit have significant implications for the sequence of impact basins and the lunar cataclysm.

11:00 a.m. Bottke W. F. * Vokrouhlicky D. Minton D. Nesvorný D. Morbidelli A. Brasser R. Simonson B.
The Great Archean Bombardment, or the Late Late Heavy Bombardment **[#2591]**
Using our new LHB model (i.e., the E-belt), we show that while lunar basin formation ended at ~3.7 Ga, it continued on Earth throughout the Archean. As our “smoking gun,” we reproduce Earth’s distribution of impact-generated spherule beds.

11:15 a.m. Garvin J. B. * Mitrofanov I. Malakhov A. Frawley J.
Relationship Between LRO LEND Neutron Flux and Lunar Impact Crater Ages **[#2538]**
The relationship between neutron flux and impact crater ages on the Moon is evaluated on the basis of LRO LEND data and new crater geometry measurements from LOLA.

11:30 a.m. Plescia J. B. * Robinson M. S.
New Constraints on the Absolute Lunar Cratering Chronology **[#1839]**
Published crater counts for young dated craters under-report frequencies; counts for young crater ejecta include auto-secondaries; absolute model ages with LROC data are greater than actual age; and chronology for young ages has major uncertainties.