Friday, March 11, 2011
LUNAR IMPACTS II: BASINS, CRATERS, AND IMPACT MELTS
1:30 p.m. Waterway Ballroom 6

Chairs: **Noah Petro**
Veronica Bray

1:30 p.m. Potter R. W. K. * Collins G. S. Kring D. A. Kiefer W. S. McGovern P. J.
Numerical Modeling of Lunar Multi-Ring Basins **[#1452]**
We compare our numerical impact model with observations of crustal structure beneath lunar basins to test our model and further understanding of basin formation.

1:45 p.m. Kiefer W. S. * Potter R. W. K. Collins G. S. McGovern P. J. Kring D. A.
Thermal Evolution of Large Lunar Impact Basins: Implications for Basin Compensation and the Duration of the Lunar Cataclysm **[#2349]**
We calculate the long-term thermal evolution of large lunar impact basins, using the results of hydrocode impact simulations to define the initial thermal state. We use the results to assess the nature of isostatic and flexural compensation of the basin center and basin rim.

2:00 p.m. Balcerski J. A. * Hauck S. A. II Dombard A. J.
Preservation of Superisostasy in Large Lunar Basins **[#2432]**
Numerical viscoelastic models of isostatically overcompensated lunar basins of 400–1000 km in diameter indicate that preservation of this superisostasy is likely to occur even in conditions where temperatures reach 1000 K at the crust-mantle interface.

2:15 p.m. Kreslavsky M. A. *
New Observational Evidence of Strong Seismic Effects of Basin-Forming Impacts on the Moon **[#1531]**
A map of kilometer-scale roughness shows that Orientale ejecta have a very distinctive roughness signature, while ejecta of other large impact basins do not. This is interpreted as a result of intensive seismic effect of the Orientale-forming impact.

2:30 p.m. Wieczorek M. A. * Weiss B. P. Stewart S. T.
The Fate of the South Pole-Aitken Impactor and the Origin of Lunar Magnetic Anomalies **[#1696]**
The most prominent concentrations of lunar magnetic anomalies are located on the northern rim of the South Pole-Aitken basin. These anomalies are consistent with magnetized iron-rich ejecta from an oblique South Pole-Aitken forming impact event.

2:45 p.m. Petro N. E. * Jolliff B. L.
Basin and Crater Ejecta Contributions to the South Pole-Aitken Basin (SPA) Regolith: Positive Implications for Robotic Surface Samples **[#2637]**
The center of the South Pole-Aitken Basin (SPA) has accumulated ejecta from basins, distal craters, and local craters. Despite its age, the interior of SPA retains a significant amount of SPA-derived impact melt.

3:00 p.m. Schultz P. H. * Stickle A. M.
Arrowhead Craters and Tomahawk Basins: Signatures of Oblique Impacts at Large Scales **[#2611]**
Expressions of the coupling stage of cratering become more evident at basin scales, low impact angles, and significant surface curvature. Laboratory experiments and numerical modeling reveal possible surface expressions of impactor failure and downrange scouring.

3:15 p.m. Robinson M. S. * Thomas P. C. Tran T. Denevi B. W. Cisneros E. B. Plescia J. van der Bogert C. H. Hiesinger H.
Highland Smooth Plains, an Exceptional Grouping **[#2511]**
LROC NAC images reveal an unusual grouping of smooth plains deposits in the central farside highlands. Their morphology and young age suggest emplacement as impact melt; however, there is no apparent source crater in the region.

3:30 p.m. Wittmann A. * Lapen T. Swindle T. D. Kring D. A.
Petrography and Provenance of Impact Melt and Granulite Particles from the Ancient Regolith Breccias 60016, 61135, and 66035 **[#2289]**
Granulite and melt particles in ancient regolith breccias 60016, 61135, and 66035 formed in variably energetic impacts, and record their provenance from feldspathic, noritic, and KREEP-rich precursor rocks during the basin forming epoch on the Moon.

3:45 p.m. Fagan A. L. * Neal C. R.
Crystallization Conditions of Apollo 16 Impact Melts **[#2137]**
We use crystal stratigraphy to examine the petrogenesis of Apollo 16 impact melt 60635, which contains plagioclase crystals with surprising negative Eu anomalies.

4:00 p.m. Steele A. * McCubbin F. M. Fries M. Glamoclija M. Kater L. Nekvasil H.
Graphite in an Apollo 17 Impact Melt Breccia **[#1585]**
We have detected discrete grains of graphite in an Apollo 17 impact melt breccia.

4:15 p.m. Wells K. S. * Campbell D. B. Campbell B. A. Carter L. M.
A New View of Tycho and Copernicus Craters' Secondary Crater Populations **[#1535]**
We investigate the abundance and distribution of Copernicus and Tycho secondary craters using 2.38-GHz Arecibo-Green Bank Telescope radar circular polarization ratio mosaics.

4:30 p.m. Plescia J. B. * Cintala M. J. Robinson M. S. Barnouin O. Hawke B. R.
Impact Melt in Small Lunar Highlands Craters **[#2033]**
Impact melt occurs as pools and veneers in fresh, simple craters as small as 200–300 m. Volumes are consistent with that expected from theory. But, it is unclear why such small volumes are preserved as well-defined deposits and not ejected.