Thursday, March 4, 2010
LARGE IMPACT BASINS ON THE MOON
8:30 a.m. Waterway Ballroom 6

Chairs: **Patrick McGovern**
Peter Schultz

8:30 a.m. Zuber M. T. * Smith D. E. Neumann G. A. Lemoine F. G. Mazarico E. Garrick-Bell I. Head J. W.
Contribution of Major Basins to the Long-Wavelength Shape of the Moon from the Lunar Orbiter Laser Altimeter (LOLA) **[#2022]**
We characterize the contribution of the largest lunar basins to the long-wavelength lunar shape using new observations from the Lunar Orbiter Laser Altimeter (LOLA), as well as consideration of gravity.

8:45 a.m. McGovern P. J. * Litherland M. M.
Loading Stresses and Magma Ascent In and Around Large Lunar Impact Basins: Scenarios for the Emplacement of Mare Basalts **[#2724]**
We show that the filling of large lunar impact basins with mare basalts creates a mechanical response beyond their rims that greatly facilitates magma ascent, and discuss the implications for the evolution of various maria.

9:00 a.m. Balcerski J. A. * Hauck S. A. II Dombard A. J. Turtle E. P.
The Influence of Local Thermal Anomalies on Large Impact Basin Relaxation **[#2535]**
Several lunar basins appear to be superisostatically compensated, yet the causes for, and the preservation of, this state are poorly understood. We investigate the role of impact and KREEP-derived thermal anomalies on large impact basin relaxation.

9:15 a.m. Namiki N. *
Admittance and Correlation of Localized Gravity and Topography of Freundlich-Sharonov Basin of the Moon **[#1885]**
New global data sets obtained by Kaguya are used to localize gravity and topography of Freundlich-Sharonov basin on far side of the Moon. Calculated admittance and correlation give clues to understand internal structure of the far side basins.

9:30 a.m. Schultz P. H. * Papamarcos S.
Evolving Flowfields from Imbrium and Orientale Impacts **[#2480]**
Secondary craters and grooves from the Orientale and Imbrium Basins reveal an evolving flow field related the angle of impact. Moreover, extensions of distal grooves reveal the size of the objects that formed these basins.

9:45 a.m. Head J. W. III * Pieters C. Boardman J. Burratti B. Cheek L. Clark R. Combe J.-P. Fassett C. Green R. Hicks M. Isaacson P. Klima R. Kramer G. Lundeen S. Malaret E. McCord T. Mustard J. Nettles J. Petro N. Runyon C. Staid M. Sunshine J. Taylor L. Tompkins S. Varanasi P.
The Lunar Orientale Basin: Structure and Crustal Mineralogy from Chandrayaan-1 Moon Mineralogy Mapper (M^3) Data **[#1030]**
Moon Mineralogy Mapper (M^3) data have provided new insight into the lunar Orientale basin and the nature of multi-ring impact basin formation, depth of sampling, impact melt characteristics, crustal structure and processes of ring formation.

10:00 a.m. Potter R. W. K. * Collins G. S. Kring D. A. Kiefer W. McGovern P.
Constraining the Size of the South Pole-Aitken Basin Impact **[#1700]**
We compare the dimensions of the compositional and gravity anomalies of the South Pole-Aitken basin with the results of hydrocode simulations of giant lunar impact basin formation to constrain the size of the SPA impact.

10:15 a.m. Sasaki S. * Ishihara Y. Araki H. Noda H. Hanada H. Matsumoto K. Goossens S. Namiki N. Iwata T. Ohtake M.
Structure of the Lunar South Pole-Aitken Basin from Kaguya (SELENE) Gravity/Topography **[#1691]**
KAGUYA gravity and topography data are used to characterize the structure of South Pole-Aitken basin. Previously proposed elliptic basin shape was confirmed by crustal thickness. The thinner region with 30km crust is offset from the basin center.

10:30 a.m. Kim K. J. * Dohm J. M. Williams J.-P. Ruiz J. Yu B.-H. Hare T. M. Hasebe N. Yamashita N. Karouji Y. Kobayashi S. Hareyama M. Shibamura E. Kobayashi M. d'Uston C. Gasnault O. Forni O. Reedy R. C.
Investigation of the South Pole-Aitken Basin Region using GIS and SELENE Elemental Information **[#2040]**
Using Geographic Information Systems (GIS), we performed comparative analysis among stratigraphic information and the Kaguya (SELENE) GRS data of the South Pole-Aitken basin and surroundings.

10:45 a.m. Petro N. E. * Sunshine J. Pieters C. Klima R. Boardman J. Besse S. Head J. Isaacson P. Taylor L. Tompkins S.
Lower Crustal Materials Exposed in the Apollo Basin Revealed Using Moon Mineralogy Mapper (M^3) Data **[#1802]**
Moon Mineralogy Mapper data show the interior of the Apollo Basin to contain distinct anorthositic and noritic materials, which might represent unique exposures of lower crustal material that were not excavated by the South Pole-Aitken Basin (SPA).

11:00 a.m. Zeigler R. A. * Jolliff B. L. Korotev R. L.
Petrography and Pairing Relationships of Lunar Meteorites Sayh al Uhaymir 449 and Dhofar 925, 960, and 961 **[#1985]**
Similarities among their lithic clast populations definitively indicate that despite bulk compositional differences, Dhofar 925, 960, and 961 are paired and strongly suggest that SaU 449 is also paired.

11:15 a.m. Liu D. * Jolliff B. L. Zeigler R. A. Wan Y. Zhang Y. Dong C. Korotev R. L.
A 3.91 Billion Year Age for Apollo 12 High-Thorium Impact-Melt Breccias: Products of Imbrium, or an Older Impact Basin in the Procellarum KREEP Terrane? **[#2477]**
SHRIMP-II dating of zircons within fragments of Apollo 12 high-Th IMB yield $^{207}Pb/^{206}Pb$ crystallization ages of 3.913±7 Ga, the same age as the IMB lithology in lunar meteorite SaU 169, and older than the accepted age range of the Imbrium Basin.

11:30 a.m. Grange M. L. * Nemchin A. A. Jourdan F.
Review of Ages of Lunar Impact Rocks: Implication to the Timing of Serenitatis and Imbrium Impacts and the LHB Model **[#1275]**
Ages obtained on lunar breccias have been reviewed in order to isolate reliable and precise data that can be used to constrain the timing of major impacts. Revised ages for Imbrium and Serenitatis and impact rate affecting the Moon are proposed.