

Monday, August 5, 2013
LARGE IMPACT BASINS:
THEIR FORMATION, STRUCTURE, AND ENVIRONMENTAL EFFECTS II
1:30 p.m. Fraser Auditorium

New data, models, and mapping are used to study the formation, structure, and environmental effects of large impact basins on the Moon, Earth and Mercury.

Chairs: Gordon Osinski
William McKinnon

- 1:30 p.m. Schmitt H. H. *
[Large Meteor and Comet Impacts and Origin of Life](#) [#3119]
 Sample, photo-geological, and mineralogical analyses related to the Moon and Mars provide the foundation for understanding the environment in which early life evolved in our solar system.
- 2:00 p.m. Sapers H. M. * Osinski G. R. Banerjee N. R.
[Microbial Trace Fossils Preserved in Impact Materials](#) [#3097]
 Meteorite impact events create unique microbial niches that may have been significant habitats on early Earth and astrobiological targets on other rocky bodies. Here we critique studies reporting evidence of biological activity in impact systems.
- 2:20 p.m. Cousineau M. L. * Therrien F. Maruoka T. Fortin D. Wing B. A.
[New Insights into the Relative Timing and Contribution of the Chicxulub Impact and Deccan Volcanism in the Cretaceous-Paleogene Boundary Extinctions](#) [#3027]
 Using sulfur content and sulfur stable isotope measurements at two well-preserved KPg sections, we propose an environmental scenario for the KPg boundary that places the onset of the main Deccan eruptive phase after the Chicxulub impact.
- 2:40 p.m. Moriarty D. P. III * Pieters C. M.
[Moon Mineralogy Mapper Observations of South Pole — Aitken: Constraints on Basin Formation](#) [#3108]
 Several impact scenarios (vertical, oblique, low-velocity) and melt behaviors (clast-rich flow, differentiation) are compared to Moon Mineralogy Mapper compositional observations of the lunar South Pole — Aitken basin to constrain formation models.
- 3:00 p.m. *Coffee Break*
- 3:15 p.m. Vaughan W. M. * Head J. W.
[Impact Melt Differentiation in South Pole-Aitken Basin](#) [#3017]
 South Pole-Aitken basin (SPA) interior stratigraphy is consistent with that of a differentiated impact melt sheet. The noritic and Th-rich SPA floor may be melt differentiate, not primary crust.
- 3:35 p.m. Cupelli C. L. * Moser D. E. Barker I. R. Darling J. R. Bowman J. R. Wooden J. Dhuime B.
[Discovery of Mafic Impact Melt in the Central Uplift of the Vredefort Basin](#) [#3096]
 Testing the impact origin of a gabbro-norite dyke at Vredefort, evidence includes; contact relationships, shock microstructural state of major and accessory phases, U-Pb and Hf isotopic analysis of zircons, and Ti-in-zircon thermometry.

- 3:55 p.m. Schenk P. * O'Brien D. McSween H. Buczkowski D. Gaskell R. Preusker F. Marchi S. Yingst A. Mest S. Raymond C. Russell C.
[Megascale Impacts into Vesta's South Pole](#) [#3100]
Dawn orbital mapping and observations of the giant impacts into asteroid Vesta's South Polar region are described. Unusual features include a large central mound, extended ejecta deposits, and distinctive arcuate and spiral floor fracture patterns.
- 4:15 p.m. Bowling T. J. * Johnson B. C. Melosh H. J. Ivanov B. A. O'Brien D. P. Gaskell R. Marchi S.
[Antipodal Terrains Created by the Rheasilvia Impact on Asteroid 4 Vesta](#) [#3083]
The Rheasilvia Impact on 4 Vesta was sufficiently large to have caused terrain disruption at the impact antipode. We simulate this event, investigate which internal parameters of the target body control deformation, and compare to Dawn observations.
- 4:35 p.m. Buczkowski D. L. * Edrich S. Ackiss S. Seelos K. D.
[Geomorphic Mapping of the Caloris Basin, Mercury](#) [#3089]
We outline our mapping project of the Caloris basin and its associated intra-ejecta plains, intended to improve our knowledge of the geology and geologic history of the basin.