**Monday, July 27, 2015**
**IMPACT CRATERING PROCESSES: SHATTERING, SHOCKING, BOMBARDING**
**1:30 p.m. Sibley Auditorium**

**Chairs:** **Michael Poelchau**
**Megan Bruck Syal**

1:30 p.m. Buchner E. * Schmieder M.
*Possible Impactor Remnants on Shatter Cone Surfaces from the Steinheim Basin, SW Germany* **[#5007]**
Surfaces of Steinheim shatter cones are covered by mineral coatings that consist of Fe, Ni, Co, Cu, Pt, and Au mineral assemblages. A plausible explanation is that they represent impactor matter remobilized in an impact-induced hydrothermal system.

1:45 p.m. Kenkmann T. * Wilk J.
*Shatter Cones: A Cascade of Bifurcations During Dynamic Fragmentation* **[#5216]**
Shatter cones display branching ridges and grooves on their surface. We propose that the frequency of bifurcations, the bifurcation angle, and the curvature of propagating fractures control their geometry. A heterogeneity at the apex is not required.

2:00 p.m. Hossain M. S. * Kruhl J. H.
*Characteristics and Extent of Fragmentation Structures Around an Impact Crater* **[#5029]**
Impact-induced dynamic deformation form typical fragmentation structures that are different from the quasi-static tectonic fragmentation structures. The characteristics of these structures show systematic changes with distance from the impact centre.

2:15 p.m. Ferrière L. * Brandstätter F.
*What is Maskelynite? Back to the Original Description and Thin Sections in Which it was First Described* **[#5184]**
In the last decades the word maskelynite has been used to describe both glasses formed by solid-state transformation (i.e., diaplectic glass) and by quenching from a melt. In the original definition by Tschermak, maskelynite is formed by melting.

2:30 p.m. Chang Y. * Kayama M. Tajika E. Sekine Y. Sekine T. Nishido H. Kobayashi T.
*Shock-Induced Effect on Chathodoluminesence of Experimentally Shocked Quartz* **[#5189]**
We conducted a series of shock recovery experiments on single crystals of natural and synthetic quartz. In the presentation, we show the results of the variation of Cathodoluminescence (CL) spectral features with increasing shock pressure.

2:45 p.m. Kowitz A. * Schmitt R. T. Reimold W. U. Holzwarth A.
*Formation of Shock Features in the 2.5 to 20 GPa Shock Pressure Range in Porous Sandstone and Quartzite* **[#5059]**
We are focusing on shock deformation experimentally generated in 1. porous, 2. water-saturated sandstone, 3. dense quartzite, at pressures <20 GPa. Shock compression of porous sandstone results in different effects than observed in non-porous rocks.

3:00 p.m. Tikoo S. M. * Swanson-Hysell N. L. Bezaeva N. S.
*Rock Magnetic Effects Induced in Basalt and Diabase by >20 GPa Experimental Spherical Shock Waves* **[#5079]**
Our spherical shock experiments on basalt and diabase demonstrate that shock-induced magnetic effects at pressures >20 GPa likely include coercivity changes, shock demagnetization and thermal remagnetization.

3:15 p.m. Bruck Syal M. * Chen L. Herbold E. B. Owen J. M. Swift D. Miller P. L.
*Meteorite Material Properties for Use in Impulsive Asteroid Deflection Simulations* **[#5282]**
Numerical modeling of asteroid deflection by impacts or nuclear devices is refined using data from high-strain-rate experiments on a variety of chondrite samples.

3:30 p.m. Winkler R. * Poelchau M. H. Moser S. Hoerth T. Schäfer F. Kenkmann T.
*Subsurface Deformation in Hypervelocity Cratering Experiments into High-Porosity Tuffs* **[#5121]**
Three hypervelocity impact experiments into 43% porosity tuff were performed to analyze the effects of porosity during impact cratering. We investigated the crater shapes and processes in the subsurface of hypervelocity impacts.

3:45 p.m. Poelchau M. H. * Hoerth T. Pietrek A. Schäfer F. Kenkmann T.
*Transient Crater Growth and Ejecta Behavior in Experimental Impacts into Geological Materials* **[#5249]**
High-speed images from cratering experiments were evaluated. Initial results suggests that transient crater growth rates in strength-dominated cratering increase with velocity and projectile size, and ejecta cone angles increase with velocity.

4:00 p.m. Wünnemann K. * Zhu M. H.
*Numerical Modeling of Ejecta Distribution and Crater Formation of Large Impact Basins on the Moon* **[#5108]**
We present a systematic modeling study of ejecta distribution at large impact basins as a function of impactor size, velocity, crustal thickness, and thermal gradient to predict the thickness, composition, and melt content of the ejecta blanket.

4:15 p.m. Ezzedine S. M. * Miller P. L. Dearborn D. S. P.
*Parametric Studies of the Effect of Bolides Impacts on Earth or Their Near-Surface Airbursts on Cratering* **[#5393]**
We have conducted numerical simulations of cratering formation due to impact on ground and ocean. Cratering scaling laws have been derived for both cases. A sensitivity analysis has been conducted to identify key parameters for cratering formation.

4:30 p.m. Schmitz B. * Boschi S. Cronholm A. Heck P. R. Monechi S. Montanari A. Terfelt F.
*Fragments of Late Eocene Earth-Impacting Asteroids Linked to Disturbance of Asteroid Belt* **[#5040]**
The impactors that created the large Popigai and Chesapeake Bay craters represent two different meteorite types. A Late Eocene multi-type asteroid shower may reflect solar-system instability and indicate an astronomical trigger of ice-house climate.

4:45 p.m. Trieloff M. *
*Close Encounters Within the Sun's Stellar Cluster as Trigger for the LHB and Other Episodic Bombardments of Terrestrial Planets* **[#5261]**
As geochronological data indicate possible pre LHB episodic bombardments of inner solar system bodies, it is suggested that the early sun experienced close stellar encounters that led to dynamical excitation of minor body populations.