

Wednesday, March 25, 2009  
**IMPACTS I: MODELS AND EXPERIMENTS**  
 1:30 p.m. Waterway Ballroom 6

**Chairs:** Kai Wünnemann  
 Keith Holsapple

- 1:30 p.m. Hammond N. P. \* Nimmo F. Korykansky D.  
[Hydrocode Modeling of the South Pole Aitken Basin-forming Impact](#) [#1455]  
 We model vertical lunar impacts to investigate whether the formation of the South Pole Aitken Basin excavated lunar mantle.
- 1:45 p.m. Plesko C. S. \* Asphaug E. Weaver R. P. Wohletz K. H. Korycansky D. G.  
[Initial Conditions of an Impact-generated Greenhouse Event from Hydrocode Models of Large Impacts on Noachian Mars](#) [#2167]  
 We model impacts into Mars-like stratigraphies to constrain initial conditions and energy partitioning of hypothesized impact-generated greenhouse events. Early results show impactors as small  $d = 50$  km may trigger a greenhouse event.
- 2:00 p.m. Senft L. E. \* Stewart S. T.  
[The Role of Phase Changes During Impact Cratering on Icy Satellites](#) [#2130]  
 We conducted simulations of impacts onto the Jovian satellite Ganymede using a new EOS for H<sub>2</sub>O. We find that including the high-pressure solid phases produces more complex crater formation phenomenology.
- 2:15 p.m. Collins G. S. \* Davison T. Elbeshausen D. Wünnemann K.  
[Numerical Simulations of Oblique Impacts: The Effect of Impact Angle and Target Strength on Crater Shape](#) [#1620]  
 Impact craters are asymmetric if the impactor's trajectory is below a threshold angle of incidence. Lab experiments and 3D numerical simulations show that the threshold angle is higher if target strength is high and cratering efficiency is low.
- 2:30 p.m. Stöffler D. \* Meyer C. Reimold W. U. Artemieva N. A. Wünnemann K.  
[Ries Crater and Suevite Revisited: Part I Observations](#) [#1504]  
 A reevaluation of the geologic setting and properties of suevite at the Ries Crater reveals a new hypothesis based on "phreato-magmatic"-like explosions of a clast-laden impact melt sheet induced by surficial water.
- 2:45 p.m. Artemieva N. A. \* Wünnemann K. Meyer C. Reimold W. U. Stöffler D.  
[Ries Crater and Suevite Revisited: Part II Modelling](#) [#1526]  
 Presented numerical models cannot reproduce the previous hypotheses on suevite origin as plume-related non-ballistic ejecta. We suggest an alternative explanation.
- 3:00 p.m. Kimberley J. \* Ramesh K. T. Barnouin-Jha O. S. Swaminathan P. K. Ernst C. M.  
[Visualization of High- and Low-Rate Compressive Failure of Quartz](#) [#2337]  
 Quasistatic and dynamic compression experiments were performed on single crystal quartz specimens. In cases where the specimens were loaded below catastrophic failure crack propagation was observed only during the unloading of the specimen.
- 3:15 p.m. Mikouchi T. \* Ohsumi K. Ichiyangi K. Adachi S. Nozawa S. Koshihara S. Zolensky M.  
[Nano-Second Time-Resolved Synchrotron X-Ray Diffraction Study of Olivine Under Laser-induced Shock Compression](#) [#2250]  
 We performed *in situ* nano-second time-resolved synchrotron X-ray diffraction analysis of olivine by synchronization of X-ray and laser pulses. We could successfully obtain 0–30 ns Laue diffraction images at the shock pressure of 1.2–6.5 GPa.

- 3:30 p.m. Bell M. S. \*  
[\*Relative Shock Effects in Mixed Powders of Calcite, Gypsum, and Quartz: A Calibration Scheme from Shock Experiments\*](#) [#1321]  
A systematic experimental shock study of calcite, gypsum, and quartz powders mixed 1:1:1 was carried out in order to calibrate shock pressures in naturally shocked carbonates and sulfates to shock effects in quartz.
- 3:45 p.m. Ishibashi K. \* Yagi T. Matsui T.  
[\*Determination of the Decomposition Boundary of CaCO<sub>3</sub> at High Temperature: Implications for Impact-induced Degassing of CaCO<sub>3</sub>\*](#) [#1569]  
We experimentally determined the decomposition boundary of CaCO<sub>3</sub> up to ~5000 K and ~10 GPa with a technique of laser-heated diamond-anvil cell. Then, impact-induced degassing of CaCO<sub>3</sub> is discussed using the newly determined decomposition boundary.
- 4:00 p.m. Hermalyn B. \* Schultz P. H. Heineck J. T.  
[\*Early-Stage Ejecta Velocity Distribution\*](#) [#2492]  
This study investigates high speed early-time departures from the accepted power-law relationship of ejecta velocity over a range of projectile diameters by utilizing a new high speed 3D-Particle Imaging Velocimetry technique.
- 4:15 p.m. Kraus R. G. \* Stewart S. T.  
[\*Thermodynamics of Impacts onto Icy Mixtures: Peak and Post-Shock Temperature Measurements in an Ice-Sand Mixture\*](#) [#2508]  
We present the first experimental shock and release temperature data on ice-sand mixtures.
- 4:30 p.m. Schultz P. H. \* Anderson J. L. B. Hermalyn B.  
[\*Origin and Significance of Uprange Ray Patterns\*](#) [#2496]  
Arcuate uprange crater rays occur on the Moon, Mercury, and Mars. This pattern reflects depends on the evolution of initial coupling that depends on both impactor (density, speed and angle) and target (porosity).