

Tuesday, March 8, 2011

POSTER SESSION I: IMPACTS I: MODELING AND EXPERIMENTS

6:00 p.m. Town Center Exhibit Area

Arkani-Hamed J.

[*Could Giant Impacts Cripple Core Dynamos of Small Terrestrial Planets?*](#) [#1532]

The impacts that have created the largest basins Utopia, Caloris, and Aitken on Mars, Mercury, and the Moon, respectively, could have thermally stratified their cores, suppressed their core convection, and crippled their thermally driven core dynamos for ~17, 4, and 5 Ma.

Genda H. Kokubo E. Ida S.

[*Giant Impacts and Terrestrial Planet Formation*](#) [#2090]

We develop the hybrid code for the long-term orbital evolutions of objects (N-body code) and the short-term collision processes of objects (SPH code). Here, we apply this hybrid code to the giant impact stage of terrestrial planet formation.

Crawford D. A.

[*CTH Simulations of Candidate Moon Forming Impacts*](#) [#2112]

CTH simulations of candidate Moon forming impacts are presented. Agreement and differences with other numerical methods will be discussed. Convergence trends with increasing numerical resolution are studied.

Holsapple K. A.

[*On the Flow and Fluidization of Granular Materials: Applications to Large Lunar Craters, Cliff Collapses and Asteroid Shapes*](#) [#2612]

About flows of granular materials and assumptions about fluidization mechanisms to explain large flat craters and landslide run outs. No such mechanisms are needed, the reasons and examples are given.

Housen K. R. Holsapple K. A.

[*Momentum Transfer in Hypervelocity Collisions*](#) [#2363]

Momentum transfer in collisions is important for processes such as collisional evolution of asteroid spin states and mitigation of potentially hazardous objects. Experiments are described that measure the momentum imparted by the projectile and ejecta.

Yasui M. Arakawa M.

[*Impact Experiments of Gypsum-Glass Beads Mixtures Simulating Parent Bodies of Ordinary Chondrites*](#) [#1131]

We conducted impact experiments of porous gypsum-glass beads mixtures simulating the parent bodies of ordinary chondrites to examine the effect of glass beads on the impact strength. We found that the impact strength changed with the glass bead size and the impact velocity.

Arakawa M. Dohi K. Okamoto C. Hasegawa S.

[*Experimental Study on Impact Craters Formed on Basalt Target Covered with Weak Mortar Layer*](#) [#1186]

High-velocity impact experiments on layered targets were conducted to investigate the formation mechanism of tiny complex craters with the size less than 1 km found on the Moon. Then the crater morphology was found to change with the upper layer thickness.

Wada K. Barnouin O. S.

[*Investigating the Formation of Ramparts at Fluidized Ejecta on Mars Using a Granular Flow Model*](#) [#1726]

We carry out numerical granular flow simulation, using distinct element method, to investigate the conditions of ejecta flow that might produce fluidized or layered ejecta at martian craters.

Barnouin O. S. Ernst C. M. Wada K.

[*Experimental Investigation of Ejecta Emplacement on Mars*](#) [#1475]

We present new laboratory data on ejecta emplacement using the JHU/APL ejecta simulator (EESim). The EESim is a large apparatus, capable of throwing sheets of debris with velocity and mass distributions analogous to ejecta from impacts.

Stickle A. M. Schultz P. H.

[*Substrate Effects from Oblique Hypervelocity Impacts into Layered Targets*](#) [#2698]

We experimentally and numerically examine effects of low-impedance layers on subsurface target damage. Oblique impacts into targets with low-impedance surface layers exhibit reduced peak pressures, subsurface damage, and crater size in the substrate.

Poelchau M. H. Deutsch A. Kenkmann T. Hoerth T. Schäfer F. Thoma K. MEMIN Team

[*Experimental Impact Cratering into Sandstone: A MEMIN-Progress Report*](#) [#1824]

The MEMIN Project is currently focused on impact experiments into sandstone. First results are presented here, including the evaluation of high-speed cameras, ejecta catchment devices, crater morphology, and chemical projectile-target interaction.

Poelchau M. H. Dufresne A. Kenkmann T.

[*Impacts into Sandstone: Crater Morphology, Crater Scaling and the Effects of Porosity*](#) [#1838]

Crater morphology results from impact cratering experiments in sandstone within the MEMIN program are presented and compared to other brittle materials. The effects of porosity on crater shape, volume and cratering efficiency are analyzed.

Schmitt R. T. Reimold W. U. Hornemann U.

[*Low Shock Pressure Recovery Experiments with Dry Sandstone Samples Within the MEMIN Research Program*](#) [#1075]

Within the MEMIN program shock recovery experiments with Seeberger sandstone were carried out in the pressure range of 5 to 12.5 GPa to investigate shock effects in quartz and the influence of porosity on progressive shock metamorphism.

Price M. C. Burchell M. J. Cole M. J.

[*The Influence of Target Temperature on Crater Morphometry: Experiments and Hydrocode Modelling*](#) [#2328]

Experimental data on the effect of target temperature on impact crater formation is sparse. Experimental data are presented detailing crater morphometry changes as a function of target temperature in the range 118–500 K.

Kurosawa K. Sugita S.

[*Pressure Measurements of Self-Luminous Rock Vapors Using Atomic Line Broadening*](#) [#1714]

We present a new pressure measurement method for high-temperature rock vapor plumes using spectral line broadening. This method may serve as a powerful tool for the understanding of post-impact chemistry.

Ernst C. M. Barnouin O. S. Schultz P. H.

[*Role of Projectile Failure on the Impact Flash*](#) [#2299]

The evolution of the impact flash provides a means to examine early-time impact processes. We present a suite of experiments to investigate the effects of impact velocity and projectile failure on the resulting flash.

Melosh H. J. Ong L.

[*Is High-Speed Ejection of Meteorites by Spallation Impossible?*](#) [#2354]

DeCarli has strenuously argued that spallation cannot eject lightly shocked meteorites at high speed. We show that such ejection, while forbidden by the Hugoniot relations, is permitted by the more comprehensive Navier-Stokes equations.

Ivanov B. A. Pierazzo E.

[Ice-Rock Mixture Hugoniot: Numerical Modeling](#) [#2185]

We present a detailed analysis of shock wave propagation in an ice-rock mixture (permafrost) that was recently investigated experimentally.

Bell M. S. Zolensky M. E.

[Experimental Shock Transformation of Gypsum to Anhydrite: A New Low Pressure Regime Shock Indicator](#) [#2008]

Raman analyses have been used to verify the experimental shock transformation of gypsum to anhydrite. These shock-induced effects in gypsum can provide a new low-pressure regime shock indicator for impact deposits lacking quartz or other crystalline rock-forming minerals.

Daly T. Kerby J. Austin D. E.

[Electrospray Charging of Minerals: A New Method for Creating and Characterizing High- to Hyper-Velocity Microparticle Impacts](#) [#2078]

We are developing a new method for creating high-velocity microparticle impacts in the lab that allows minerals, mineral-ice mixtures, and ices to be used as projectiles and directly characterizes the chemical speciation occurring during impact.

Reiser F. Dufresne A. Poelchau M. H. Deutsch A. Kenkmann T.

[Catching as much Information as Possible — An Efficient and Easy-to-Build Ejecta Catcher for High-Velocity Impact Experiments](#) [#1733]

A custom designed ejecta catcher has been developed and successfully utilized for gentle capture of experimentally produced impact ejecta. The used materials enable the acquisition of numerous information on the ejection process. Preliminary results are presented.

Pierazzo E. Garcia R. R. Kinnison D. E. Marsh D. R. Mills M. J.

[Atmospheric Ozone Perturbation from Oceanic Impacts of Medium-Size Asteroids](#) [#1501]

We investigate the effects of oceanic impacts of mid-sized asteroids on the lower and middle atmosphere chemistry. We find that maximum ozone perturbation occurs for equatorial impacts, causing strong high-latitude ozone depletion in both hemispheres.

Artemieva N. Morgan J.

[Global Ejecta from Chicxulub: Spherules, Shocked Quartz and More](#) [#1180]

We model the Chicxulub ejecta starting from the crater formation and up to the final deposition of the finest ejecta around the globe. At distances larger than 1000 km interaction of ejecta with the atmosphere plays an important role.

Wünnemann K. Kühn H. Janle P. Kenkmann T.

[The Waqf as Suwwan Impact Crater, Jordan: Numerical Modeling of Crater Formation and Gravity Data](#) [#1700]

Combined modeling of crater formation and gravity data at the well-preserved 6-km complex Waqf as Suwwan impact crater, Jordan, provide insight of the subsurface deformation and brittle fracture.

Vasconcelos M. A. R. Wünnemann K. Crósta A. P. Reimold W. U.

[Numerical Modelling of Serra da Cangalha Impact Structure: Preliminary Analysis](#) [#1046]

The Serra da Cangalha is a Brazilian complex impact structure that is ~13 km in diameter. We used here the iSALE code in order to obtain a two-dimensional model that reproduces the geological information available assuming two different layers in the model.