

Thursday, March 21, 2013

[R718]

**POSTER SESSION: IMPACT CRATERING:
EXPERIMENTS, MODELING, AND LABORATORY STUDIES
6:00 p.m. Town Center Exhibit Area**

Bogard D. D.

POSTER LOCATION #171[*Analysis of Thermal Conditions Required to Reset Ar-Ar Ages*](#) [#1022]

I give general graphical relationships among temperature, impact deposit size, and Ar diffusion characteristics required to reset Ar-Ar ages in a thermal event.

Wright S. P.

POSTER LOCATION #172[*Decompression Cracks in Altered Basalt Subjected to Solid-State Shock Pressures: A New Macroscopic Shock Texture*](#) [#1010]

In Class 2 (~20–40 GPa) shocked basalts, which are solid-state (no melting), decompression cracks form in altered protoliths at Lonar Crater, India.

Steinhardt W. M. Stewart S. T.

POSTER LOCATION #173[*Shock Thermodynamics of Mantle Rocks: Rockport Fayalite*](#) [#2826]

Shock Hugoniot and post-shock temperature measurements of Rockport fayalite show a two-wave structure and complicated temperature field.

Losiak A. I. Koeberl C.

POSTER LOCATION #174[*Relation of the Shock Field Heterogeneity to Shock Pressure Estimations based on PDFs Characteristics*](#) [#1667]

The abstract discusses problems related to using PDFs to estimate the average shock pressure in heterogeneous, multi-mineral, multi-grain, and porous samples.

Craig M. A. Flemming R. L. Osinski G. R. Cloutis E. A. Izawa M. R. M. et al. *POSTER LOCATION #175*[*XRD Patterns of Glassy Impactites: Amorphous Curve Fitting and Composition Determination with Implications for Mars*](#) [#2319]

The XRD pattern of amorphous glasses can be used identify source/composition despite lack of crystalline phases. This is particularly relevant for MSL and Mars.

Chanou A. Osinski G. R. Grieve R. A. F. Ames D. E.

POSTER LOCATION #176[*Exploring the Physical Diversity of Impact Breccias*](#) [#2869]

Macroscopic study of the diverse physical character of impact breccias. Intra- and inter-crater variability and its meaning in terms of geological processes.

Shu A. J. Bugiel S. Grün E. Hillier J. Horányi M. et al.

POSTER LOCATION #177[*Cratering Studies in Thin Polyvinylidene Fluoride Films*](#) [#2490]

Using 3-D stereophotogrammetry, a new crater scaling law in PVDF is being determined to expand capabilities of PVDF dust detectors.

Okamoto T. Nakamura A. M. Hasegawa S. Kurosawa K. Ikezaki K. et al.

POSTER LOCATION #178[*Penetration Depth of Dust Grains into Highly Porous Primitive Bodies*](#) [#1824]

To investigate the penetration depth of dust into small primitive bodies, we conducted impact experiments and obtained a deceleration model of dust penetration.

Sommer F. D. Hoerth T. Poelchau M. H. Kenkmann T. Deutsch A.

POSTER LOCATION #179[*Fragmentation and Ejection Behavior in Impact Experiments — The MEMIN Project*](#) [#2279]

We analyze and compare the ejecta behavior for experiments on dry and water-saturated sandstone and characterize the material for different ejection stages.

- Fujira Y. Arakawa M. Yasui M. Hasegawa S. Shimaki Y. **POSTER LOCATION #180**
[Experimental Study on Impact Disruption of Rocky Rubble-Pile Bodies: Effect of Disruption of Constituent Boulders on Reaccumulation Process](#) [#1682]
Laboratory impact experiments of rubble-pile bodies clarified that most of the impact energy was consumed by the disruption of constituent boulders.
- Goldberg D. Schultz P. H. Hermalyn B. **POSTER LOCATION #181**
[Effect of Projectile Density and Impact Angle on Ejecta-Thickness Decay Relations](#) [#2716]
Ejecta-thickness decay relations for different impact conditions (vertical, oblique) are related to cylindrical, rather than volumetric, final crater growth.
- Drake K. D. Horányi M. **POSTER LOCATION #182**
[Ejecta from Hypervelocity Dust Impacts](#) [#1577]
We measured the time characteristics and intensities of light flashes produced on a quartz disc from primary and secondary hypervelocity impacts.
- Collette A. Mocker A. Drake K. Sternovsky Z. Munsat T. et al. **POSTER LOCATION #183**
[Four-Color Temperature and Power Measurements in Hypervelocity Dust Impact](#) [#2805]
We present time-resolved, four-color measurements of the light flash caused by hypervelocity dust impact across a variety of target materials.
- Miljkovic K. Price M. C. Wozniakiewicz P. J. Mason N. J. Zarnecki J. C. **POSTER LOCATION #184**
[Impact-Induced Devolatilization of Natural Gypsum and Plaster of Paris: An Infra-Red and Raman Spectroscopic Study](#) [#1940]
IR and Raman spectroscopy are able to quantify degree of devolatilization that occurs in an impact. IR appears to be a more sensitive tracer of water loss than Raman.
- Buhl E. Poelchau M. H. Dresen G. Kenkmann T. **POSTER LOCATION #185**
[Particle Size Distribution in a Hypervelocity Impact Experiment on Dry Sandstone](#) [#1463]
The subsurface particle size distribution of an experimental impact crater was systematically determined to study and quantify impact-induced fragmentation.
- Ormö J. Housen K. R. Melero-Asensio I. Rossi A. P. **POSTER LOCATION #186**
[Target Influence in Gravity Dominated Cratering: The Case for Concentric Craters](#) [#1939]
We use 1G and 150G impact experiments to show how the target may influence the crater morphology also at gravity dominated cratering.
- Hoerth T. Kuder J. Nau S. Schäfer F. Thoma K. et al. **POSTER LOCATION #187**
[In Situ Measurements of Impact-Induced Pressure Waves in Sandstone Targets](#) [#1992]
We present a method for the measurement of impact-induced pressure waves within the target material that was applied to an impact experiment on sandstone.
- Stickle A. M. Kimberley J. Ramesh K. T. **POSTER LOCATION #188**
[Dynamic Strength Experiments on Basalt with Applications to Cratering on Mercury](#) [#3021]
New models of material behavior based on dynamic strength experiments for basalt could provide clues into puzzling observations of Mercury's cratering record.
- Dahl J. M. Schultz P. H. **POSTER LOCATION #189**
[Stress Wave Rise Time Asymmetries in Experimental Oblique Impacts](#) [#2388]
Measurements of shock rise times show that they are a function of both peak particle velocity and location relative to impact. This may affect fragmentation.

Richardson J. E. Kedar S. **POSTER LOCATION #190**
[*An Experimental Investigation of the Seismic Signal Produced by Hypervelocity Impacts*](#) [#2863]

We conducted a series of impact experiments at the NASA AVGR to explore the seismic signal produced by impacts at various speeds, angles, and target materials.

Jogi P. Paige D. **POSTER LOCATION #191**
[*Two Body Dynamics and the Velocity Structure of Ejecta Ballistics in Antipodal and General Trajectory Reconnections*](#) [#2703]

We contrast antipodal ballistic connections with those of less spatial symmetry using Tycho Crater on the Moon as an example.

Korycansky D. G. **POSTER LOCATION #192**
[*Energy Conservation and Partition in CTH Impact Simulations*](#) [#1370]

We examine the energy conservation and partition of energy into different forms (kinetic, internal, gravitational) for simulations using the CTH hydrocode.

Plesko C. S. **POSTER LOCATION #193**
[*Exploring the Effects of Pre-Existing Target Faults on Crater Morphology*](#) [#2896]

I explore the effects of preexisting tectonic features on impact cratering, and whether modification happens in the excavation or modification phase.

Kendall J. D. Melosh H. J. **POSTER LOCATION #194**
[*Impacts into Laterally Heterogeneous Surfaces*](#) [#2845]

Numerical simulations of impacts into vertically separated surfaces allows us to examine small crater morphology along mare and highland boundaries on the Moon.

Shuvalov V. Dypvik H. **POSTER LOCATION #195**
[*Ejecta Distribution from Small Impacts*](#) [#1054]

The numerical simulations presented demonstrate that impact scale has a considerable influence on ejecta expansion and deposition.

Rovny J. Owen J. M. Howley K. M. Wasem J. V. **POSTER LOCATION #196**
[*Modeling Impact Cratering on Phobos*](#) [#1076]

We present 3-D modeling results of the impact creating Stickney crater on Phobos, and discuss effects of resolution, impactor properties, and physics model.

Ramsley K. R. Head J. W. III **POSTER LOCATION #197**
[*Mars Impact Ejecta in the Regolith of Phobos: Bulk Concentration and Distribution*](#) [#1251]

We predict that recent ejecta deposits from Mars in the regolith of Phobos have a bulk concentration of ~150 ppm and are uniformly distributed across Phobos.

Martellato E. Benkhoff J. Preusker F. Cremonese G. Foing B. H. et al. **POSTER LOCATION #198**
[*Numerical Modeling of Raditladi and Rachmaninoff Basins*](#) [#1405]

We modeled with iSALE code the formation of Raditladi and Rachmaninoff, two peak-ring basins on Mercury. We compare modeling results and MESSENGER DTM profiles.

Elbeshhausen D. Wünnemann K. **POSTER LOCATION #199**
[*Crater Formation in the Transition from Circular to Elliptical Impact Structures*](#) [#1916]

We studied numerically how both circular and elliptical impact structures form and propose a consistent concept of crater formation for arbitrary impact angles.

Richardson J. E.

POSTER LOCATION #200

[Three-Dimensional Modeling of Crater Degradation via the Effects of Impact Induced Seismic Shaking, with Comparison to Crater Count Data](#) [#2397]

Utilizing a 3-D numerical model that computes the local slope degradation resulting from individual impacts, the cratering record of 433 Eros can be reproduced.

Kenkmann T. Zwiessler R. Krietsch H.

POSTER LOCATION #201

[Formation and Kinematic Evolution of Crater Pits: Analog Modeling](#) [#1531]

Low-velocity impacts into granular glass beads targets were analyzed with PIV technology to investigate the formation of penetration holes and their collapse.

Lock S. J. Stewart S. T.

POSTER LOCATION #202

[Atmospheric Loss During High Angular Momentum Giant Impacts](#) [#2608]

High angular momentum giant impacts may allow the large atmospheric loss fractions inferred for the early Earth from noble gas isotopic measurements.

Swift D. C. Mulford R. N. Chen L. Milathianaki D. El-Dasher B. et al.

POSTER LOCATION #203

[Atmospheric Breakup of Meteoroids and the Strength of Fe-Ni](#) [#3090]

Meteoroid breakup depends on the material strength and the flow field. We have measured new Fe-Ni strengths, and performed hydrosimulations of the flow.

Kuwahara H. K. Sugita S. S.

POSTER LOCATION #204

[Methan-Rich Impact-Induced Atmospheres on Mars and Post-Accretion Earth](#) [#1982]

We modeled chemistry within adiabatically expanding impact-induced vapor, and found the atmospheres of Mars and post-accretion Earth may have been rich in CH₄.