Monday, March 12, 2007
IMPACT CRATERING FROM EXPERIMENTS AND MODELS
8:30 a.m. Amphitheater

Chairs: **G. S. Collins**
T. Kenkmann

8:30 a.m. Stewart S. T. * Seifter A. Kennedy G. B. Furlanetto M. R. Obst A. W.
Measurements of Emission Temperatures from Shocked Basalt: Hot Spots in Meteorites **[#2413]**
Measured shock temperature distributions directly illustrate the heterogeneous nature of shock processing in natural materials. Melt pockets form as a result of pore collapse.

8:45 a.m. Ogilvie P. Gibson R. L. * Reimold W. U. Deutsch A.
Experimental Investigation of Shock Effects in a Metapelitic Granulite — New Results, Raman Spectroscopy and Mineral Chemistry **[#1551]**
Shock experiments were performed on a metapelite at 12, 25, 30, 40 and 60 GPa at 25°C, and 17 GPa and 25 GPa at 400°C. Results better constrain shock pressures in large impact structures that penetrated mid- to lower crustal levels.

9:00 a.m. Kenkmann T. * Patzschke M. Thoma K. Schäfer F. Wünnemann K.
Deutsch A. MEMIN Team
Deformation of Sandstone in Meso-Scale Hypervelocity Cratering Experiments **[#1527]**
The size of experimentally produced craters in sandstone depends on the volume of shocked and cataclastically deformed rocks. The transition from localized brittle faulting to pervasive grain crushing is influenced by the presence of pore space water.

9:15 a.m. Yamamoto S. * Barnouin-Jha O. S. Toriumi T. Sugita S. Matsui T.
Direct Observation of Transient Crater Growth in Granular Target **[#1452]**
We observed the transient crater growth for glass sphere targets with different material properties to study how the impact cratering is affected by target material properties.

9:30 a.m. Wünnemann K. * Collins G. S.
The Effect of Porosity on Impact Melt Production **[#1514]**
We present numerical modeling results of melt production in porous rocks during an impact event. The results show that the presence of pore space significantly reduces the critical pressure required for melting and thus enhances the amount of generated melt.

9:45 a.m. Collins G. S. * Wünnemann K.
Numerical Modeling of Impact Ejection Processes in Porous Targets **[#1789]**
We show the effect of porosity and friction on excavation and ejection processes using numerical impact models. An increase in porosity and friction results in a decrease in ejection angle and velocity, cratering efficiency and excavation efficiency.

10:00 a.m. Ormö J. * Sturkell E. Lindström M. Lepinette A.
Resurge Dynamics at the Lockne and Tvären Marine-Target Impact Craters Analysed with Sedimentological and Numerical Methods **[#1540]**
A swift (economical) core logging method is applied to analyze resurge sediments in two marine-target craters. Numerical simulation complements the analysis of the flow dynamics.

10:15 a.m. Elbeshausen D. * Wünnemann K. Collins G. S.
Three-Dimensional Numerical Modeling of Oblique Impact Processes: Scaling of Cratering Efficiency **[#1952]**
By using 3D-numerical simulations we study the effect of the impact angle and direction on structural characteristics of real impact craters. Here we demonstrate the influence of obliquity on crater growth and present some scaling relationships.

10:30 a.m. Plesko C. S. * Coker R. F. Wohletz K. H. Asphaug E. Gittings M. L.
Validation of the RAGE Hydrocode for Impact Modeling **[#2115]**
We compare RAGE hydrocode impact model results against laboratory data and analytical crater scaling models. Results to date show good correspondence to experimental data and analytical estimates of shock wave properties.

10:45 a.m. Pierazzo E. * Artemieva N. Asphaug E. Cazamias J. Coker R. Collins G. S. Gisler G. Holsapple K. A. Housen K. R Ivanov B. Johnson C. Korycansky D. G. Melosh H. J. Taylor E. A. Turtle E. P. Wünnemann K.
The Impact Hydrocode Benchmark and Validation Project: Initial Results **[#2015]**
This work presents initial results of a validation and benchmarking effort from the impact cratering and explosion community. Several impact codes routinely used to model impact and explosion events are being compared using simple benchmark tests.

11:00 a.m. Richardson J. E. *
Improving the Modeling of Impact Ejecta Behavior: The Effects of Gravity and Strength near the Crater Rim **[#1345]**
Impact ejecta models often have difficulty near the crater rim, where gravity and strength effects dominate ejecta production and velocity. We present a new method for including these forces and modeling ejecta plume behavior across the crater rim.

11:15 a.m. Poelchau M. H. * Kenkmann T. Scherler D. Quart S.
Attempts at Defining an Impact Vector in the Rims of Simple Craters **[#1698]**
Structural data from the Wolfe Creek Crater rim is examined. Bedding data which was quantified with new techniques shows deviation from pure concentric orientation relative to the crater center, and may be indicative for an impact vector.

11:30 a.m. Bart G. D. * Melosh H. J.
Boulders Untangle Primary from Secondary Craters **[#1501]**
We discovered that primary craters differ from distant secondary craters in their median ejecta fragment size. This trait will aid determination of primary production rates of small craters and improve surface ages based on small craters.