Tuesday, March 18, 2003
DIGGING DEEPER: IMPACT EXPERIMENTS AND THEORY
8:30 a.m. Salon C

Chairs: O. S. Barnouin-Jha
S. T. Stewart

Housen K. R. *
Material Motions and Ejection Velocities for Impacts in Porous Targets **[#1300]**
Experiments were conducted using a quarter-space fixture to observe the cratering flow field during impact events in porous target materials. The experiments show that the craters form mostly by compaction, in contrast to the usual excavation observed in materials with low porosity.

Schultz P. H. *
Transient Crater Growth in Low Density Targets **[#2067]**
Hypervelocity impacts into low-density targets produce deep transient craters and evolve non-proportionally. Cratering efficiency also increases with decreasing impact angle, in contrast with typical gravity-controlled cratering.

Yamamoto S. * Kadono T. Sugita S. Matsui T.
Measurements of Ejecta Velocity Distribution from Regolith Targets in Oblique Impacts **[#1272]**
We performed impact experiments on sand targets for various impact angles, in order to measure the ejecta velocity distribution of high-velocity ejecta component from regolith targets for oblique impacts.

Colwell J. E. * Sture S.
Experimental Studies of Low-Velocity Microgravity Impacts into Regolith **[#1904]**
We describe impact experiments into simulated planetary regolith at speeds below 2.5 m/s in microgravity conditions. We measure coefficient of restitution, ejecta velocities, and ejecta masses as a function of a variety of impact parameters.

Richardson J. E. Jr.* Melosh H. J. Greenberg R.
An Impact Ejecta Behavior Model for Small, Irregular Bodies **[#1241]**
A dynamical simulator is described which models the ejecta plume behavior, ejecta blanket placement, and impact crater area resulting from a specified impact on an irregularly shaped target body (modeled in three-dimensional polygon fashion).

Hart S. D. * Asphaug E. Durda D. D. Flynn G. J.
Modeling Asteroid Impact Dynamics: Catastrophic Disruption of Three Distinct Structure Types **[#2064]**
This paper reports the outcome of high-speed collisional experiments in three distinct structure types. The results illustrate the importance of structure type in the outcome of catastrophic disruption impact events.

Sugita S. * Kadono T. Ohno S. Hamano K. Matsui T.
Does Laser Ablation Vapor Simulate Impact Vapor? **[#1573]**
Many laser experiments have been done to simulate hypervelocity impact vaporization. However, few quantitative comparisons have been made between the two kinds of vapor. This study quantitatively assesses the validity of laser simulation of impact.

Eberhardy C. A. * Schultz P. H.
Looking Inside the Early-Time Radiation Plume for Hypervelocity Impacts **[#2039]**
Testing of a new experimental method to measure spectroscopically the vapor plume contained inside transient crater cavities.

Hamano K. * Sugita S. Kadono T. Matsui T.
A New Method to Measure the Pressure of Impact-Induced Vapor Clouds **[#1647]**
Impact vaporization is thought to have played an important role in the evolution of planetary atmospheres. However, little has been understood about impact-induced vapor clouds. The purpose of this study is to measure pressure of the vapor clouds.

Ernst C. M. * Schultz P. H.
Effect of Initial Conditions on Impact Flash Decay **[#2020]**
Impact flash decay is shown to depend on target properties and may provide a useful new remote sensing tool for active planetary missions.

Siret D. * Robin E.
Spinel Formation in an Impact Plume: A Thermodynamic Approach **[#1865]**
Thermodynamic modeling is used to determine the condensation sequence that occur in plume generated by meteorite impact and to study the formation of Ni-rich spinel.

Stewart S. T. * Ahrens T. J.
Hugoniots and Shock-Melting Criteria for Solid and Porous H_2O Ice **[#1622]**
Shock wave measurements in solid and porous H_2O ice between 100 and 150 K detail complicated low-pressure behavior and define new Hugoniots and critical shock pressures for shock-induced melting during impact cratering events.