**Tuesday, March 24, 2009**
**POSTER SESSION I: INSTRUMENT CONCEPTS, SYSTEMS, AND PROBES FOR INVESTIGATING ROCKS AND REGOLITH**
**6:30 p.m. Town Center Exhibit Area**

El Shafie A. Ulrich R. Roe L.
*Penetration Forces for Subsurface Regolith Probes* **[#1205]**
Penetration and withdrawal forces have been measured for a variety of sizes and tip angles of penetrometers designed to carry instrumentation beneath the surface of a planetary body.

Pilgrim R. Ulrich R. Leftwich M.
*Subsurface Spectroscopic Probe for Regolith Analysis* **[#1219]**
A subsurface penetration probe is being developed for *in situ* FTIR analysis of the first 1/2 m of planetary bodies. The work describes the optical configuration.

Paulsen G. Zacny K. Maksymuk M. Wilson J. Mumm E. Craft J. Davis K. Kumar N.
*Drilling in Ice Bound Lunar Regolith Simulant* **[#1138]**
We describe drilling tests in frozen, water saturated lunar regolith simulant and present designs of the 3 m tall Mars chamber dedicated to 1 meter drilling tests.

Glass B. Thompson S. Hanagud S. Statham S. Cohen J. Lee P. Osinski G. Huffman S.
*Planetary Drill Prototype Testing at an Impact Structure Palaeo-Hydrothermal Site* **[#2197]**
A July 2008 field test effort updated and tested DAME drilling automation in a relevant planetary analog environment (a palaeo-hydrothermal chimney in permafrost inside Haughton Crater). Cores and cuttings were successfully retrieved and archived.

Johnson J. B. Mungas G. S. Zacny K. Albert D. G. Banerdt B. Buehler M. Elphic R. C. Lambert J. Sturm M. Johnson K.
*A Lunar Regolith Characterization Kit (LRoCK)* **[#1987]**
The Lunar Regolith Characterization Kit (LRoCK) project is a concept study to define a semi-autonomous instrument package for use by astronauts during future human lunar sortie missions.

Zacny K. Mungas G. Chu P. Craft J. Mumm E. Hedlund M. Paulsen G. Davis K.
*MarsVac: A Two Step Regolith Sampling System* **[#1068]**
A system for acquiring regolith consists of tubing embedded inside each leg of a lander. After landing, the tube will be pushed into regolith. With one puff of gas, the trapped regolith can be lifted/guided inside the tubing into a sample chamber.

Simionovici A. S. Lemelle L. Beck P. Ferroir T. Westphal A. Chazalnoel P. Debus A. M. Viso L. Vincze A. V. Solé Fihman F.
*Methodology and Sample Holder for Analyses Under Quarantine of Martian Return Samples* **[#2543]**
A method and a sample holder for analysis in quarantine conditions of Mars return samples is presented.

Scheeres D. J. Sánchez P. Dissly R. W. Asphaug E. I. Housen K. R. Swift M. R. Yano H. Roark S. E. Soto J. C.
*Extra Low-Gear: A Micro-Gravity Laboratory to Simulate Asteroid Surfaces* **[#2447]**
The conceptual design and application of a low-speed centrifuge for carrying out milli to micro-*G* gravity experiments to simulate the granular nature of the surface and interiors of asteroids and comets is described.

Bartlett P. W. Heys S. Drozdowski Z. Kennedy T. Wagner M.
*Vertical Exploration Using Tethers* **[#2146]**
Unobserved geologic features and epochs on multiple planetary bodies could be accessed using robotic tethers. Recent technology development shows the promise of tethers enabling steep slope mobility, downhole measurements and *in situ* sensing from aerial platforms.

Curtis S. A. Clark P. E. Minetto F. A. Calle C. I. Keller J. Moore M.
*SPARCLE: Creating an Electrostatically Based Tool for Lunar Dust Control* **[#1128]**
Here we present the results of our ongoing efforts to design and develop tools to remove dust on the lunar surface based on our characterization of the nature of dust particles and forces affecting them.

Anderson R. C. Peters G. H. Beegle L. Pounders E. Manatt K. Solitt L. Fleming G.
*Particle Transport on the Mars Science Laboratory Mission: Effects of Triboelectric Charging* **[#1648]**
One of the major challenges facing the 2009 Mars Science Laboratory (MSL) onboard analysis system is the ability to successfully transfer fine-grained powders from the sample acquisition unit to the analytical instruments that make the scientific measurements.

Brinckerhoff W. B. Zacny K. ten Kate I. L. Kusack A. Conrad P. G. Franz H. B. Eigenbrode J. Mahaffy P. R. Corrigan C. M. Onstott T. C.
*Precision Subsampling System for In Situ Analysis at Mars (and Beyond)* **[#2240]**
A new MIDP-supported effort seeks to develop a precision subsampling system (PSS) for Mars and other planetary bodies. The PSS will enable localized chemical and isotopic analyses of drill core layers and other small features in rock samples.

Dreyer C. Zacny K. Skok J. Steele J. Paulsen G. Szczesiak M. Nakagawa M. Schwendeman J.
*Progress on the Development of a Thin Section Sample Preparation Device for Space Exploration* **[#2463]**
We are researching the component step for thin section preparation with the aim of producing a device for space exploration. We show results of a prototype system that has produced a thin section adequate for petrographic analysis.

Furutani K. Ikeda E. Okada T. Saiki K. Ohue H.
*Prototype of Cutting Machine by Wire-sawing in Vacuum for In-Situ Investigation of Rocks* **[#1044]**
Cutting characteristics of rocks in air and vacuum were investigated for the preprocess of the scientific inspection. The machining amount of basalt with a wire saw in vacuum was saturated in a short time due to loading of pulverized debris.