Friday, October 24, 2014
FUTURE EXPLORATION: INSTRUMENTS, MISSIONS, AND TECHNIQUES
8:30 a.m. Bldg. 200, Room 100

Chairs: **Barbara Cohen**
Mark Robinson

8:30 a.m. Garry W. B. * Hughes S. S. Kobs Nawotniak S. E. Neish C. D. Haberle C. W. Heldmann J. L. Lim D. S. S. FINESSE Team
The Geology of Inferno Chasm, Idaho: A Terrestrial Analog for Lunar Rilles? **[#3047]**
We compare field observations at a rille-like channel (Inferno Chasm) at Craters of the Moon in Idaho to a rille in Marius Hills on the Moon.

8:45 a.m. Lawrence D. J. * Miller R. S. Peplowski P. N. Ozimek M. Scott C.
Lunar PLANE: Lunar Polar Low-Altitude Neutron Experiment for High-Spatial Resolution Hydrogen Concentration and Depth Measurements **[#3042]**
This presentation describes a low-cost, low-resource orbital mission that can obtain high-spatial resolution (<10 km) measurements of the hydrogen spatial and depth distributions for the lunar poles.

9:00 a.m. Cohen B. A. * Hayne P. O. Paige D. A. Greenhagen B. T.
Lunar Flashlight: Mapping Lunar Surface Volatiles Using a Cubesat **[#3031]**
The Lunar Flashlight mission will measure surface ice within the permanently shadowed regions of the lunar south pole in support of NASA's Strategic Knowledge Gap to understand water and other volatiles in lunar cold traps.

9:15 a.m. Zacny K. * Paulsen G. Chu P. Kleinhenz J. Smith J. Trautwein J. Quinn J.
Lunar Prospecting Drill **[#3048]**
We report on development and testing of a drill designed to capture volatile rich samples on the Moon from up to 1 meter depth. The drill was recently tested in lunar chamber at NASA GRC.

9:30 a.m. Clark P. E. * MacDowall R. Reuter D. Mauk R. Didion J. Patel D. Farrell W. Cox R.
Deep Space Cubesat Orbiter and Compact Broadband IR Instrument to Determine the Systematics of Lunar Water **[#3007]**
We have applied the CubeSat Paradigm to science requirements-driven deep space exploration mission, referred to as a LunarCube, and are developing a compact 'workhorse' instrument for a high priority science application.

9:45 a.m. Woerner D. F. *
Radioisotope Thermoelectric Generators (RTGs) for Lunar Exploration **[#3002]**
A Multi-Mission RTG (MMRTG) is powering the Curiosity rover and was designed as a compact, rugged power source capable of landing on other bodies. NASA is considering development of an enhanced MMRTG and Advanced RTG. More info presented here.

10:00 a.m. Nagihara S. * Zacny K. Hedlund M. Taylor P. T.
Modular Heat Flow Probe for Small Lunar Landers **[#3037]**
We report the latest on our effort for developing a modular lunar heat flow probe that can be accommodated on small landers.

10:15 a.m. BREAK

10:30 a.m. Carpenter J. D. * Barber S. Cerroni P. Fisackerly R. Fumagalli A. Houdou B. Howe C. Magnani P. G. Morse A. Monchieri E. Reiss P. Richter L. Rizzi F. Sheridan S. Waugh L. Wright I. P.
Accessing and Assessing Lunar Resources with PROSPECT **[#3018]**
PROSPECT is a package in development by ESA to assess the in-situ resource potential of lunar regolith. PROSPECT will: obtain sub-surface regolith samples, extract volatiles, identify chemical species, quantify abundances, and characterize isotopes.

10:45 a.m. Speyerer E. J. * Lawrence S. J. Stopar J. D. Robinson M. S. Jolliff B. L.
Optimized Traverse Planning for Future Lunar Polar Prospectors **[#3066]**
Ground-truth measurements are required to fully understand the resource potential of lunar volatiles. A mobile polar prospector that leverages persistently illuminated areas would address many outstanding questions by sampling multiple nearby PSRs.

11:00 a.m. Robinson M. S. * Thanga J. Wagner R. V. Hernandez V. A.
Arne — Sublunarean Explorer **[#3025]**
We propose a simple and cost effective reconnaissance of the Mare Tranquillitatis Pit with Arne, a small lander (<130 kg) that carries three flying microbots (or pit-bots) each with mass of 3 kg. Objectives serve key science and exploration needs.

11:15 a.m. Dhingra D. * Pieters C. M. Head J. W.
Copernicus Crater: Compelling Science Exploration Target Waiting for Future Missions **[#3054]**
Copernicus crater has several scientifically interesting locations that provide a strong motivation for its exploration. We provide a summary of new scientific insights, exploration objectives and potential targets.

11:30 a.m. Young K. E. * Bleacher J. E. Evans C. A. Arzoumanian Z. Gendreau K. Hodges K. V.
The Integration of Handheld Technologies into Planetary Surface Exploration **[#3043]**
Developing a suite of in situ geochemical instruments to assist in sample collection and high-grading is crucial in enhancing the efficiency and effectiveness of astronaut surface activities. We highlight several of these instruments here.

11:45 a.m. Bleacher J. E. * Eppler D. B. Tewksbury B. J. Helper M. A.
Astronaut Geology Training **[#3033]**
We discuss the current status of astronaut training.