Tuesday, March 11, 2008
POSTER SESSION I: LUNAR SCIENCE: DUST AND ICE
6:30 p.m. Fitness Center

Tankosic D. Abbas M. M.
Measurements on Charging of Apollo 11 and 17 Lunar Dust Grains by Low Energy Electrons **[#1202]**
The measurement technique of charging of lunar Apollo 11 and 17 dust grains by low energy electrons as well as some of the preliminary results is presented in this paper.

Götze J. Gucsik A.
In Situ Planetary Cathodoluminescence Spectroscopy of the Lunar Robotic Missions: Chemistry and Mineralogy of Plagioclase from the Lunar Regolith **[#1140]**
Basic knowledge about the composition and structure of the Moon would be provided by a robotic planetary exploration mission, which includes an *in situ* device of cathodoluminescence spectroscopy.

Chamberlin S. Christoffersen R. Keller L. P.
Space Plasma Ion Processing of the Lunar Soil: Modeling of Radiation-damaged Rim Widths on Lunar Grains **[#2302]**
Experimental ion irradiation data and a Monte Carlo-type ion-atom binary collision code have been used to numerically model the width of radiation-amorphized rims on lunar soil grains as a function of exposure time.

Taylor L. A. DiGiuseppe M. Heilbronn L. Miller J. Zeitlin C. Sanders G. B.
Heavy Charged Particle Transport and Dose Reduction in Lunar Regolith and Regolith Simulant **[#2377]**
Galactic and cosmic ray (GRC) radiation on the airless Moon will be life-threatening to astronauts. Experiments conducted with Apollo lunar soils have demonstrated that simulants are adequate substitutes for lunar samples in studies of radiation protection.

Schnare D. W. Liu Y. Eimer B. Taylor L. A.
Particle Size Distribution of Lunar Highland Dust and Preparation for Toxicity Studies **[#1156]**
A dry-aerosol-impactor size-separator was developed and successfully used to obtain the <3 μm fraction of lunar highland dust samples.

Marshall J. Mason L. Thompson P.
An Acoustic Particle Size Analyzer for Planetary Surfaces **[#1600]**
An acoustic particle size analyzer is reported that can determine grain size and grain hardness of loose granular materials on planetary surfaces without the need for sieving, settling, or other complex analytical approaches.

Kobrick R. L. Klaus D. M.
Characterizing Physical Properties and Induced Motion of Lunar Dust Affecting Surface Exploration Missions **[#1439]**
Fine-grained lunar dust is abrasive and led to problems during Apollo. To prevent similar issues, dust physical properties and induced motion forces must be characterized and accounted for in the design and operations of spacecraft and spacesuits.

Hirai Y. Kasai Y. Ozima M. Seda T. Seki K. Yamada A.
Terrestrial Oxygen Implanted on Lunar Soils by Earth Wind (EW) **[#1175]**
One-dimensional numerical model of isotopic composition of O^+ and GEOTAIL observation of the Earth-escaping O^+ amount suggest that the mass-independently fractionated O in lunar metals is attributable to terrestrial O transported from the ionosphere.

Jones L. Jacques S. Tranfield E. Rask J. Kerschmann R. Loftus D.
Skin Abrasion Effects of Lunar Dust Relevant to Astronauts **[#2541]**
Future astronauts exploring the Moon will need to consider the biological effects of lunar dust, including potential inhalation toxicity, ocular effects and skin effects. This paper will focus on skin abrasivity.

Lawrence J. A. Lindsay J. F. Noble S. K.
Forensic Analysis of Lunar Dust **[#1386]**
A study was performed by the author to analyze dust lifted from Jack Schmitt's EVA space suit from Apollo 17 for mineralogy and grain size distributions for the 1,200 sampled particles. This study yielded counterintuitive results to be discussed in this presentation.

Curtis S. A. Clark P. E. Minetto F. A. Moore M.
Plasma Based Tool for Dust Removal on the Moon **[#1309]**
We are developing the dust control tool SPARCLE which works through the use of oppositely charged particle particle beams to control tool surface potential in order to attract and remove dust from surfaces entering the airlock.

Stillman D. E. Grimm R. E.
Electrical Properties of Ice and Implications for Solar System Exploration **[#2277]**
Electrical-property measurements of ice and ice-silicate mixtures versus temperature show that EM geophysical exploration (dielectric spectroscopy, EM induction, and GPR) can be used on many planetary bodies to detect and characterize subsurface ice.

De Angelis G. Badavi F. F. Blattnig S. R. Clem J. M. Clowdsley M. S. Tripathi R. K. Wilson J. W.
Models for the Lunar Radiation Environment: Orbit, Surface, Subsurface, with an Application to Lunar Polar Locations **[#1621]**
Models of the lunar radiation environment due to galactic cosmic rays (GCR) and solar particle events (SPE) have been developed. Results have been obtained for orbital, surface and subsurface scenarios and polar locations for volatile studies.

Thompson T. W. Ustinov E. A. Heggy E.
Modeling Radar Scattering from Icy Lunar Regoliths **[#1023]**
We examine radar backscattering characteristics of the icy lunar regoliths for cases where a thin regolith covers the ice and where the ice occupies small patches within a larger radar pixel and where echoes result from blocky crater ejecta.

Gibson E. K. McKay D. S. Pillinger C. T. Wright I. P. Sims M. R. Richter L.
Beagle 2 the Moon: An Experimental Package to Measure Polar Ice and Volatiles in Permanently Shadowed Areas or Beneath the Lunar Surface **[#1270]**
The Gas Analysis Package and associated instruments from Beagle 2 is the ideal payload to measure the abundances and isotopic compositions of ice and volatiles found in the polar regions of the Moon. The hardware has already been flight qualified.

Glavin D. P. ten Kate I. L. Brinckerhoff W. Cardiff E. Dworkin J. P. Feng S. Fristad K. Gorevan S. Harpold D. Jones A. L. Mahaffy P. R. Martin D. Moore M. Patrick E. Roberts D. Roman P. Stephenson T.
Volatile Analysis by Pyrolysis of Regolith (VAPoR) on the Moon using Mass Spectrometry **[#1097]**
In situ composition and isotopic analyses of the lunar regolith will be required to establish the abundance and origin of water-ice or other volatiles at the lunar poles. The VAPoR instrument is one concept that should be considered for a future lunar mission.

Austin D. E.
A Mass Spectrometer for Complete Characterization of Volatile Outgassing and Meteorite Impact Vaporization on the Lunar Surface **[#1350]**
A miniature time-of-flight mass spectrometer uses imaging pattern analysis to determine the location, magnitude, and composition of transient gaseous events on the lunar surface, including meteorite impact vaporization and regolith outgassing.