Wednesday, March 21, 2012
AIRLESS BODIES EXPOSED:
SPACE ENVIRONMENT CONDITIONS AND SURFACE INTERACTIONS
8:30 a.m. Waterway Ballroom 4

Chairs: **Roy Christoffersen**
William Farrell

8:30 a.m. Hurley D. M. * Killen R. M. Sarantos M.
Monte Carlo Model Insights into the Lunar Sodium Exosphere **[#1594]**
We model the sodium exosphere of the Moon and compare the distribution to telescope data to determine how sodium interacts with the lunar regolith. We investigate sticking, thermal accommodation, and reemission.

8:45 a.m. Farrell W. M. * Zimmerman M. I. Poppe A. Halekas J. S. Delory G. T.
The Lunar Photoelectron Sheath: A Change in Trapping Efficiency During a Solar Storm **[#1816]**
We examine the trapping efficiency of the photoelectric sheath at the Moon when the local environmental plasma is undergoing an extreme event: a solar storm.

9:00 a.m. Horanyi M. * Sternovsky Z. Lankton M. James D. Szalay J. Drake K. Shu A. Colette A. Gruen E. Kempf S. Srama R. Mocker A.
The Dust Environment of the Moon: Expectations for the Lunar Dust Experiment (LDEX) **[#2635]**
The lunar dust exosphere is sustained by interplanetary dust bombardment and by electromagnetic effects induced by the solar wind and UV radiation. We present the expectations for the observations by LDEX to be launched onboard the LADEE mission.

9:15 a.m. Spence H. E. * Blake J. B. Case A. W. Golightly M. J. Kasper J. C. Looper M. D. Mazur J. E. Schwadron N. A. Townsend L. W. Zeitlin C. J.
Energy Spectral Properties and Implications of the Lunar Energetic Proton Albedo **[#2692]**
We use CRaTER observations to quantify the energy spectrum of the newly-discovered lunar energetic proton albedo. We discuss aspects of this unanticipated albedo, including implications for similar interactions with other airless planetary objects.

9:30 a.m. Jordan A. P. * Stubbs T. J. Zeitlin C. Spence H. E. Schwadron N. A. Zimmerman M. I. Farrell W. M.
On the Interaction Between Highly Energetic Charged Particles and the Lunar Regolith **[#2619]**
In this study we explore how galactic cosmic rays and solar energetic particles contribute to deep dielectric charging within the lunar regolith and how these particles affect lunar surface charging in tenuous plasma environments.

9:45 a.m. Noble S. K. * Keller L. P. Christoffersen R. Rahman Z.
Space Weathering of Lunar Rocks **[#1239]**
Like lunar soils, exposed rocks also incur the effects of space weathering. A TEM study of the space-weathered patina of three Apollo 17 rocks provides a glimpse into the similarities and differences between soil and rock weathering.

10:00 a.m. Thompson M. S. * Christoffersen R. Noble S. K. Keller L. P.
Comparative Mineralogy, Microstructure and Compositional Trends in the Sub-Micron Size Fractions of Mare and Highland Lunar Soils **[#2384]**
Analytical TEM methods have been used to systematically compare and contrast the microstructure and mineralogy of the smallest grains in highland and mare lunar soils.

10:15 a.m. Wang K. * Moynier F. Podosek F. A. Foriel J.
Iron Isotope and the Origin of Nanophase Iron in Lunar Regolith **[#1148]**
We report the iron-isotopic composition of nanophase iron in lunar regolith. It is highly enriched in heavy isotopes of Fe (δ^{56}Fe up to 0.71‰). It is due to the preferential loss of light isotopes to space during vaporization by micrometeorite impacts.

10:30 a.m. Hemingway D. * Garrick-Bethell I.
Insights into Lunar Swirl Morphology and Magnetic Source Geometry: Models for the Reiner Gamma and Airy Anomalies **[#1735]**
We use Lunar Prospector and Clementine data along with our own equivalent source models to support the solar wind deflection model for swirl formation and to show how magnetic field direction influences small-scale swirl morphology.

10:45 a.m. Rout S. S. * Stockhoff T. Moroz L. V. Hofsäss H. Dohmen R. Zhang K. Baither D. Schade U. Bischoff A. Hiesinger H.
High Temperature, Nanoscale Changes in Films Produced by Irradiation of Iron Bearing Silicates: Laboratory Simulations of Space Weathering in Hermean Environment **[#1998]**
Thin film on a silicon substrate was deposited by Ar-ion irradiation of the San Carlos olivine. This silicate film contains nanoinclusions of Fe, Cu, and Ni that increased in size when heated to 450°, relevant to Mercury.

11:00 a.m. Bradley J. P. * Ishii H. A. Aguiar J. Borg L. E. Shearer C. K.
Amorphous Silicates Produced During Space Weathering: Insight from Monochromated Valence Electron Energy-Loss Spectroscopy **[#1941]**
Monochromated valence electron energy-loss spectroscopy enables distinction between otherwise indistinguishable amorphous silicates in lunar regolith soils and interplanetary dust particles formed by different mechanisms during space weathering.

11:15 a.m. Poppe A. R. * Halekas J. S. Delory G. T. Farrell W. M.
Particle-in-Cell Simulations of Plasma Interaction with Lunar Crustal Magnetic Anomalies **[#1526]**
We present results from a kinetic plasma simulation on the interaction of ambient plasma with lunar crustal magnetic anomalies. We discuss implications of this work for physical phenomena at the Moon, such as lunar swirls and proton implantation.

11:30 a.m. Noguchi T. * Kimura M. Hashimoto T. Konno M. Nakamura T. Nakato A. Ogami T. Ishida H. Sagae R. Tsujimoto S. Tsuchiyama A. Zolensky M. E. Tanaka M. Fujimura A. Abe M. Yada T. Mukai T. Ueno M. Okada T. Shirai K. Ishibashi Y. Okazaki R.
Space Weathering Products Found on the Surfaces of the Itokawa Dust Particles: A Summary of the Initial Analysis **[#1896]**
We report a summary of the initial analysis of space weathering of the Itokawa particles. In addition to the two-layered nanoparticle-bearing rims, we found vesicular rims with nanoparticles and quite thin vapor deposition layers on intact minerals.