Tuesday, March 2, 2010
SPECIAL SESSION: WATER IN THE SOLAR SYSTEM: MOON
1:30 p.m. Waterway Ballroom 6

Chairs: **Francis McCubbin**
Richard Elphic

1:30 p.m. Clark R. * Pieters C. M. Green R. O. Boardman J. Buratti B. J. Head J. W. III Isaacson P. J. Livo K. E. McCord T. B. Nettles J. W. Petro N. E. Sunshine J. M. Taylor L. A.
Water and Hydroxyl on the Moon as Seen by the Moon Mineralogy Mapper (M^3) **[#2302]**
A new water+hydroxyl map was constructed using M^3 data which shows that the water and hydroxyl detected by M^3 is more extensive than first reported and in better agreement with the VIMS and Deep Impact results.

1:45 p.m. McCord T. B. * Taylor L. A. Orlando T. M. Pieters C. M. Combe J.-Ph. Kramer G. Sunshine J. M. Head J. W. Mustard J. F.
Origin of OH/Water on the Lunar Surface Detected by the Moon Mineralogy Mapper **[#1860]**
We present characteristics of the M^3 3-µm OH/H_2O spectral feature across the observed Moon and explore solar-wind induced surface chemistry as the source.

2:00 p.m. Farrell W. M. * Killen R. M. Delory G. T. NLSI-DREAM Team
The Case of Reactive Surface Geochemistry at the Moon **[#2228]**
There is a mounting body of evidence suggesting that there are active geochemical processes occurring at the lunar surface.

2:15 p.m. Hurley D. *
Surficial OH/H_2O on the Moon: Modeling Delivery, Redistribution, and Loss **[#1844]**
We model the solar wind interaction with the lunar regolith to understand the observations of OH on the lunar surface and what they imply for the migration of water to the lunar poles.

2:30 p.m. Burke D. * Dukes C. A. Famá M. Kim J. Shi J. Baragiola R. A.
Negligible Contribution of Solar Wind Protons to Surficial Lunar Water: Laboratory Studies **[#2567]**
We performed a series of laboratory simulations irradiating lunar simulants with low and high energy protons and examined the results of infrared reflectance absorption spectroscopy (IRAS) for signs of the O-H absorption band for water.

2:45 p.m. Zent A. P. * Ichimura A. I. McCord T. B. Taylor L. A.
Production of OH/H_2O in Lunar Samples via Proton Bombardment **[#2665]**
We report on a laboratory simulation of solar-wind lunar implantation, and demonstrate that we are able to dehydrate/dehydroxylate lunar samples, expose them to moderately energetic H plasma, and detect the presence of newly formed OH/H_2O.

3:00 p.m. Elphic R. C. * Paige D. A. Siegler M. A. Vasavada A. R. Eke V. R. Teodoro L. F. A. Lawrence D. J.
South Pole Hydrogen Distribution for Present Lunar Conditions: Implications for Past Impacts **[#2732]**
We compare the inferred hydrogen distribution at the Moon's south pole to what might be expected after deposition from a large, volatile-rich impact, as the deposits evolve with time under model temperatures.

3:15 p.m. Mazarico E. * LOLA Science Team
Illumination of the Lunar Poles From Lunar Orbiter Laser Altimeter (LOLA) Topographic Data **[#1828]**
LOLA data enable precise modeling of polar illumination conditions over timescales relevant to mission planning. At 10 m above the surface, an area near the South Pole offers 95% average illumination, and continuous sunlight ~200 days in most years.

3:30 p.m. Greenwood J. P. * Itoh S. Sakamoto N. Taylor L. A. Warren P. H. Yurimoto H.
Water in Apollo Rock Samples and the D/H of Lunar Apatite **[#2439]**
Hydrogen isotopes of lunar water in apatite are measured in Apollo rock samples for the first time. The Moon has a unique D/H.

3:45 p.m. McCubbin F. M. * Steele A. Nekvasil H. Schnieders A. Rose T. Fries M.
Carpenter P. K. Jolliff B. L.
Detection of Structurally Bound Hydroxyl in Apatite from Apollo Mare Basalt 15058,128 Using TOF-SIMS **[#2468]**
Using TOF-SIMS, we have shown that hydroxyl is present within apatite in lunar mare basalt 15058,128. This is the first find of water in a lunar magmatic mineral, and this result holds important implications for the water content of the lunar interior.

4:00 p.m. Liu Y. * Boyce J. W. Rossman G. R. Guan Y. Eiler J. Taylor L. A.
Water in Lunar Mare Basalt: Confirmation from Apatite in Lunar Basalt 14053 **[#2647]**
We present direct analyses of H (presumably OH) in apatite through ion microprobe measurements of apatite in Apollo 14 basalt 14053 (1640 ± 180 ppm H_2O by weight), with implications to water in the primary melt.

4:15 p.m. Elkins-Tanton L. T. *
Water in the Lunar Mantle: Results from Magma Ocean Modeling **[#1451]**
Modeling lunar magma ocean solidification including a small amount of initial water produces predictions for the locations and quantities of water that should be found in the lunar interior, and which would have been de-gassed and possibly interacted with the lunar surface.

4:30 p.m. Grieves G. * Hibbitts C. A. Dyar M. D. Orlando T. M. Poston M. Johnson A.
Mobility and Subsurface Redistribution of Volatiles Through Regolith Materials **[#2552]**
Increasing evidence supports the notion that water is present on the Moon. We report here on development of models to assess the mobility of volatiles such as hydrogen (as H_2O and OH) on grain surfaces within the top meter of a regolith.