CERES UNVEILED: DAWN EXPLORES A NEW WORLD

Monday, March 21, 2016

8:30 a.m. Waterway Ballroom 4

Chairs: Carol Raymond
        Thomas Prettyman

8:30 a.m. Russell C. T. * Raymond C. A. Ammannito E. Buczkowski D. L. De Sanctis M. C. et al.
        * Dawn Arrives at Ceres: Exploration of a Small Volatile-Rich World [#1275]
        Dawn arrives at Ceres, finding evidence for a desiccated, porous lag layer, a rigid crust over a weak asthenosphere above a rocky core.

8:45 a.m. Prettyman T. H. * Yamashita N. Castillo-Rogez J. C. Feldman W. C. Lawrence D. J. et al.
        Elemental Composition of Ceres by Dawn’s Gamma Ray and Neutron Detector [#2228]
        Elemental mapping of Ceres by Dawn’s Gamma Ray and Neutron Detector reveals a hydrogen-rich regolith and evidence for near-surface water ice at high latitudes.

9:00 a.m. De Sanctis M. C. * Ammannito E. Ciarniello M. Carozzo F. G. Frigeri A. et al.
        Ceres Composition by VIR on Dawn: Highlights of the First Year of Observation [#1832]
        VIR on Dawn confirmed previous observation of bands at 3.1, 3.3–3.5, and 3.9 µm and clearly identified a band at 2.72 µm distinctive of OH-bearing minerals.

        Age-Dependent Morphological and Compositional Variations on Ceres [#1455]
        Extended smooth spectrally blue young plains cover the interior of a number of craters on Ceres including multiple flows, pits, fissures and cracks.

9:30 a.m. McSween H. Y. * Castillo-Rogez J. Emery J. P. De Sanctis M. C. Dawn Science Team
        Rationalizing the Composition and Alteration of Ceres [#1258]
        Ceres mineralogy is consistent with a more pervasively altered CM/CI chondrite, as appropriate for its large size.

9:45 a.m. Neveu M. * Desch S. J.
        Geochemistry, Thermal Evolution, and Cryovolcanism on Ceres with a Muddy Ice Mantle [#1384]
        Mud throughout Ceres / Liquid even now at depth / Cryovolcanoes?

10:00 a.m. Marchi S. * O’Brien D. P. Schenk P. Fu R. Ermakov A. et al.
        Cratering on Ceres: The Puzzle of the Missing Large Craters [#1281]
        Dawn revealed that Ceres surface is rich in small craters (<100 km), while lacks large craters (>300 km). This is odd, and we discuss possible explanations.

        Impact Cratering on the Small Planets Ceres and Vesta: S-C Transitions, Central Pits, and the Origin of Bright Spots [#2697]
        Craters big and small on planets mostly small. Is Ceres icy or is it not? The pictures say perhaps, but craters do not disappoint: Bright Spots resolved.

        Evidence for Limited, Laterally Heterogeneous Ice Content on Ceres from Its Deep (and Not-So-Deep) Impact Craters [#1267]
        Craters of great depth / Pure ice will not maintain them / Rock. Salt. Little ice.
Loss of Ceres’ Icy Shell from Impacts: Assessment and Implications [#3012] 
Dawn observations revealed Ceres’ outer shell is dominated by rock, not ice. We model the removal of a
50 km ice shell via impact-induced sublimation.

11:00 a.m. Park R. S. * Konopliv A. S. Bills B. Castillo-Rogez J. Asmar S. W. et al. 
Gravity Science Investigation of Ceres from Dawn [#1781] 
The Dawn gravity science investigation utilizes the DSN radio tracking and on-board images to
determine the global shape and gravity of Ceres.

Evaluation of Ceres’ Compensation State [#1708] 
We evaluate Ceres’ topography compensation state based on the Dawn gravity and shape data. This
helps constrain Ceres’ internal structure and evolution.

Evidence for Large-Scale Heterogeneity in Ceres’ Subsurface [#3016] 
Ceres surface exhibits morphologic variations that may indicate compositional and/or rheological
variability in the volatile-rich outer shell.