

**Thursday, March 22, 2012**  
**SPECIAL SESSION: DAWN OVER VESTA I**  
**1:30 p.m. Waterway Ballroom 5**

**Chairs: Carol Raymond**  
**Ernesto Palomba**

- 1:30 p.m. Russell C. T. \* Raymond C. A. Jaumann R. McSween H. Y. Dawn Science Team  
[\*Dawn at Vesta: Accomplishments and Plans\*](#) [#1633]  
 The current discoveries and near-term plans of the Dawn mission are described and the following presentations introduced.
- 1:45 p.m. Jaumann R. \* Pieters C. M. Raymond C. A. Yingst R. A. Williams D. A. Schenk P. Buczkowski D. L. Denevi B. W. Neukum G. Mottola S. O'Brien D. P. Garry W. B. Blewett D. T. Roatsch T. Preusker F. Krohn K. Stephan K. Nathues A. Sykes M. V. De Sanctis M. C. McSween H. Y. Keller H. U. Schmedemann N. Hiesinger H. Marchi S. McCord T. B. Zuber M. T.  
[\*Mapping Vesta: A Geological Overview\*](#) [#1788]  
 Geomorphology and distribution of surface features provide evidence for impact cratering, tectonic activity, regolith, and probable volcanic processes on Vesta. In general, Vesta's geology is more like the Moon and rocky planets than other asteroids.
- 2:00 p.m. Raymond C. A. \* Asmar S. W. Konopliv A. S. Park R. S. Jaumann R. Preusker F. Russell C. T. Smith D. E. Toplis M. J. Zuber M. T.  
[\*Geophysical Exploration of Vesta\*](#) [#1007]  
 Dawn's data have determined the shape and gravity field of Vesta, revealing correlations between topography and gravity anomalies and providing evidence for a significant iron core.
- 2:15 p.m. Asmar S. W. \* Konopliv A. S. Park R. S. Bills B. G. Gaskell R. Raymond C. A. Russell C. T. Smith D. E. Toplis M. J. Zuber M. T.  
[\*The Gravity Field of Vesta and Implications for Interior Structure\*](#) [#2600]  
 Paper describes results from the Dawn gravity investigation at Vesta. When correlated with a shape model, these data can constrain the interior structure. Determination of GM is highly accurate for a gravity field of degree 8 with 140-km resolution.
- 2:30 p.m. Fu R. R. \* Weiss B. P. Li L. Suavet C. Gattacceca J. Lima E. A.  
[\*Magnetic Fields on 4 Vesta as Recorded in Two Eucrites\*](#) [#1946]  
 We conduct paleomagnetic studies on two eucrites, believed to originate from asteroid 4 Vesta. We find evidence of magnetic fields on Vesta most consistent with the existence of a past dynamo.
- 2:45 p.m. Solano J. M. Kiefer W. S. \* Mittlefehldt D. W.  
[\*Modelling the Thermal History of the Asteroid 4 Vesta\*](#) [#2063]  
 Modeling of Vesta has been undertaken to investigate its evolution from an unconsolidated chondritic body to a differentiated body. Both melt migration and heat transfer are modelled to investigate the evolution of Vesta into a differentiated body.
- 3:00 p.m. Toplis M. J. \* Mizzon H. Forni O. Monnereau M. Barrat J. A. Prettyman T. H. McSween H. Y. McCoy T. J. Mittlefehldt D. W. De Sanctis M. C. Raymond C. A. Russell C. T.  
[\*Chondritic Models of 4 Vesta: Comparison of Predicted Internal Structure and Surface Composition/Mineralogy with Data from the Dawn Mission\*](#) [#2152]  
 This work explores the consequences of different chondritic bulk compositions on the internal structure and surface mineralogy/composition of Vesta. This analysis provides a useful reference frame for interpretation of data from the Dawn mission.

- 3:15 p.m. Schenk P. \* Marchi S. O'Brien D. P. Buczkowski D. L. Jaumann R. Yingst A. McCord T. Gaskell R. Roatsch T. Keller H. E. Raymond C. A. Russell C. T.  
[\*Mega-Impacts into Planetary Bodies: Global Effects of the Giant Rheasilvia Impact Basin on Vesta\*](#) [#2757]  
 Vesta has been hammered by large impacts, including two large (400–500 km) basins at the South Pole, the largest basins in proportion to target radius so far seen in the solar system. Here we examine the global effects of impacts at planetary scales.
- 3:30 p.m. Vincent J.-B. \* Hoffman M. Nathues A. Sierks H. Gaskell R. W. Marchi S. O'Brien D. Schenk P. Fulchignoni M. Keller H. U. Raymond C. Sykes M.  
[\*Crater Depth-to-Diameter Ratio and Surface Properties of \(4\) Vesta\*](#) [#1415]  
 We report on the depth-to-diameter ratio of craters on the surface of Vesta, currently visited by the Dawn spacecraft. We discuss how d/D can be used to understand better the surface properties and evolution, and we compare with other small bodies.
- 3:45 p.m. Marchi S. \* McSween H. Y. O'Brien D. Schenk P. De Sanctis M. C. Gaskell R. Hiesinger H. Jaumann R. Mottola S. Preusker F. Raymond C. A. Roatsch T. Russell C. T. Yingst R. A.  
[\*Vesta Collisional History Revealed by Dawn: Building a Vesta Global Crater Catalog\*](#) [#1617]  
 This abstract presents a global catalog of craters on Vesta, as revealed by Dawn observations. Implications of these findings are discussed.
- 4:00 p.m. O'Brien D. P. \* Marchi S. Schenk P. Russell C. T. Raymond C. A.  
[\*The Impact History of Vesta: Developing and Testing an Absolute Cratering Chronology\*](#) [#2688]  
 With crater counts from Dawn imaging and topography data, along with insights provided by dynamical models and constraints from the HED meteorites, we are working towards developing an absolute cratering chronology for Vesta's surface.
- 4:15 p.m. Bottke W. F. \* Marchi S. Vokrouhlicky D. Cohen B. A.  
[\*Reconciling Asteroid Collision Ages with the Late Heavy Bombardment\*](#) [#2191]  
 Most main belt asteroids hit each other too slowly to produce much heat or reset Ar-Ar ages. Instead, we show LHB-era impact heating events likely came from asteroids pushed onto deep Earth-crossing orbits by late giant planet migration.
- 4:30 p.m. Schmedemann N. \* Kneissl T. Michael G. Neukum G. Nathues A. Sierks H. Wagner R. Krohn K. Reddy V. Hiesinger H. Jaumann R. Raymond C. A. Russell C. T.  
[\*Crater Size-Frequency Distribution \(CSFD\) and Chronology of Vesta — Crater Counts Matching HED Ages\*](#) [#2544]  
 We compare crater size-frequency distributions and chronologies between the Moon, Vesta, and smaller asteroids. The derived crater retention ages on Vesta match with high probable K/Ar-Ar ages of HED meteorites.