Tuesday, February 4, 2014
VESTA ON THE INSIDE: CORE AND MANTLE
1:30 p.m. Lecture Hall

Chairs: **Walter Kiefer**
Harry McSween

1:30 p.m. Raymond C. A. * Park R. S. Asmar S. W. Konopliv A. S. De Sanctis M. C. Jaumann R. McSween H. Y. Prettyman T. H. Russell C. T. Smith D. E. Toplis M. Zuber M. T.
Constraints on Vesta's Interior Evolution from Dawn Geophysical Data **[#2051]**
Dawn gravity, topography and spectral data provide constraints on Vesta's origin and evolution. Surface heterogeneity supports evidence from the gravity field for intracrustal compositional variations consistent with discrete magmatic systems.

1:50 p.m. Ermakov A. I. * Zuber M. T. Smith D. E. Raymond C. A. Fu R. R.
Modeling Vesta's Internal Structure with Dawn Gravity and Shape Models **[#2019]**
We use Vesta gravity and topography in connection with the geochemically derived constraints to study Vesta's internal structure, rotational history and compensation state.

2:05 p.m. Marchi S. * De Sanctis M. C. Ammannito E. McSween H. Y. McFadden L. A. Raymond C. A. Elkins-Tanton L. T. Bottke W. F. Russell C. T.
New Insights on the Differentiation of Asteroid Vesta **[#2044]**
The detection of olivine on the surface of Vesta will be discussed in relation to the inferred collisional and geological evolution of the asteroid.

2:20 p.m. Kiefer W. S. * Mittlefehldt D. W.
Core Formation and Evolution of Asteroid 4 Vesta **[#2038]**
HED meteorite siderophiles require separation of metal and silicates prior to eucrite solidification. Core formation most likely occurred as a metallic rain in a magma ocean. Dynamo models are sensitive to the distribution of heat producing elements.

2:35 p.m. Toplis M. J. * Mizzon H. Forni O. Prettyman T. H. McSween H. Y. McCoy T. J. Mittlefehldt D. W. DeSanctis M. C. Raymond C. A. Russell C. T.
Bulk Composition of Vesta as Constrained by the Dawn Mission and the HED Meteorites **[#2033]**
Mass-balance and thermodynamics are used to constrain core size/density and mantle mineralogy of chondritic bodies with eucrite crust. Comparison with HED's and data from Dawn is most consistent with a Na-poor H-chondrite bulk composition for Vesta.

2:50 p.m. BREAK

3:05 p.m. Formisano M. * De Sanctis M. C. Federico C. Turrini D.
Thermal and Geophysical History of Vesta **[#2017]**
We analyze the thermal and geophysical history of Vesta by using a 1D conductive-convective-radiative model, investigating the link between the evolution of the internal structure and thermal heating due to short and long-lived radionuclides.

3:20 p.m. Tkalcec B. J. * Brenker F. E.
Early Dynamic Mantle Movements in the Young, Semi-Crystallized Vesta **[#2022]**
Structural studies of olivine-rich diogenites indicate that the solidification of the HED parent body was not a static progression, but involved large-scale dynamic mantle movements, not unlike those experienced by the early Earth.

3:35 p.m. Hoff C. Jones J. H. * Le L.
Experimental Constraints on a Vesta Magma Ocean **[#2046]**
Thermodynamic models of a Vesta magma ocean (MELTS) are inconsistent with experiments and with chemical analyses of natural eucrites. Therefore, there is currently no experimental evidence for a relationship between eucrites and diogenites.

3:50 p.m. Elkins-Tanton L. T. * Mandler B. E. Fu R. R.
Placing Vesta in the Range of Planetesimal Differentiation Models **[#2034]**
The HED meteorites are best modeled by melt extraction from a mush into shallow magma chambers, a model consistent with inefficient crystal settling in an interior magma ocean.

4:10 p.m. DISCUSSION AND PANEL