

Thursday, March 10, 2011
POSTER SESSION II: A PRE-DAWN PERSPECTIVE — VESTA AND THE HEDs
6:00 p.m. Town Center Exhibit Area

Wilson L. Keil K. McCoy T.

[*Explosive Volcanism on Asteroids Re-Visited: Sizes of Pyroclasts Lost or Retained*](#) [#1362]

We calculate the sizes expected for pyroclasts from explosive eruptions on large and small asteroids and specify the sizes of clasts that should be retained on the asteroid surfaces.

Hammergren M. Gyuk G. Solontoi M. Puckett A. W.

[*Basaltic Asteroids in the Middle and Outer Main Belt Observed by the AVAST Survey*](#) [#2821]

We present the preliminary results of reflectance spectroscopy of basaltic asteroids obtained in the Adler V-Type Asteroid (AVAST) survey. In particular, we note several basaltic asteroids in the middle and outer main belt, including 105041 (2000 KO41) and 63085.

Raymond C. A. Russell C. T. Rayman M. D. Mase R. A. Dawn Team

[*Dawn's Exploration of Vesta*](#) [#2730]

The Dawn spacecraft will reach Vesta in mid-2011 and begin a comprehensive geological and geophysical characterization to investigate the geologic history, interior structure, and evolution of this minor planet in the main asteroid belt.

Jaumann R. Pieters C. M. Neukum G. Mottola S. DeSanctis M. C. Russell C. T.

Raymond C. A. McSween H. Y. Roatsch T. Nathues A. Preusker F. Scholten F.

Blewett D. Buczkowski D. L. Hiesinger H. McCord T. Rayman M. Schenk P.

Stephan K. Turrini D. Yingst R. A. Dawn Science Team

[*Geoscientific Mapping of Vesta by the Dawn Mission*](#) [#1213]

The geologic objectives of the Dawn mission (orbiting Vesta in 2011/2012) are to derive Vesta's shape, map the surface geology, understand the geological context, and contribute to the determination of the asteroids' origin and evolution.

Stubbs T. J. Wang Y.

[*Solar Illumination Conditions at 4 Vesta: Predictions Using the Digital Elevation Model Derived from HST Images*](#) [#2506]

The illumination/shadowing conditions at 4 Vesta are predicted using the *Thomas et al.* (1997) HST-derived DEM. Due to the coarse resolution and large axial tilt, no permanently shadowed regions are predicted.

McCord T. B. Combe J.-Ph.

[*OH and Water on Vesta?*](#) [#1493]

The possibility that OH is formed on Vesta by solar wind proton-induced hydroxylation as is proposed for the Moon is being explored in preparation for the Dawn spacecraft's arrival at Vesta.

Coradini A. De Sanctis M. C. Ammannito E. Capria M. T. Capaccioni F. Filacchione G. Fonte S.

Magni G. Tosi F. DAWN Team

[*VIS-IR Spectral Imaging of Vesta: The VIR Experiment*](#) [#1353]

VIR onboard the Dawn mission is designed to characterize the composition of the Vesta surface. VIR performs imaging spectroscopy in the range from the near UV (0.25 μm) through the near IR (5 μm) and has imaging capabilities.

Hicks M. D. Buratti B. J. Reddy V. Lawrence K. J.

[*The Photometric and Spectral Properties of Vestoids: Preparations for the Dawn Encounter at Vesta*](#) [#2036]

In anticipation of the Dawn mission to 4 Vesta, a campaign to study the spectrophotometric properties of vestoids is underway. We present a phase curve of the V-type NEO 4055 Magellan and discuss results from our spectral survey of 16 vestoids.

Gaffey M. J.

[*Space Weathering on Asteroid \(4\) Vesta: Waiting for Dawn*](#) [#2079]

Dawn spacecraft data will provide significant insights into space weathering processes on the surface of Vesta. It seems likely that the space weathering processes on Vesta will differ from those on the Moon and S-asteroids 243 Ida and 433 Eros.

Tkalcec B. J. Brenker F. E.

[*EBSD Study of Lattice Preferred Orientation \(LPO\) of HEDs \(Howardite NWA 2696, Eucrite Camel Donga, Olivine-Diogenite NWA 5480\)*](#) [#1845]

Results of structural analysis performed on HED meteorites (NWA 2696, Camel Donga, NWA 5480) using electron backscatter diffraction (EBSD), to measure the crystallographic orientation of each crystal to discover any lattice preferred orientation.

Mann P. Cloutis E. A. Reddy V.

[*The Effect of Changing Viewing Geometry on Pyroxene and Eucrite Reflectance Spectra*](#) [#2268]

Changing angles of incidence and emission while collecting diffuse reflectance spectra of Vesta relevant materials can affect the band center positions, depth, area, absolute reflectance, and spectral slope.

Satake W. Buchanan P. C. Mikouchi T. Miyamoto M.

[*Redox State of Some Eucrites as Inferred from Iron Micro-XANES Analyses of Plagioclase*](#) [#2590]

We analyzed plagioclase in four eucrites — ALHA76005, EETA87520, Petersburg, and Piplia Kalan — by Fe-XANES. We found that EETA87520 plagioclase had high Fe³⁺ ratio compared to others, and discussed its origin related to their crystallization on Vesta.

O'Brien D. P. Sykes M. V. Tricarico P.

[*Collision Probabilities and Impact Velocity Distributions for Vesta and Ceres*](#) [#2665]

We calculate the collision probabilities and impact velocity distributions for Vesta and Ceres, and discuss the implications for the current rate of impacts on their surfaces.

Reddy V. Nathues A. Gaffey M. J.

[*Fragment of Vesta's Mantle Detected in Near-Earth Space*](#) [#2045]

We have discovered the first diogenite-rich asteroid, 1999 TA10, in the NEA population. This provides us with a source for diogenites, constraining Vesta's crustal thickness, its internal structure, and starting material. Our findings could be verified by the Dawn mission.

Beck P. Barrat J.-A. Quirico E. Grisolle F. Schmitt B. Moynier F. Gillet P. Beck C.

[*Bi-Directional Reflectance Spectra of HED Meteorites: Crystal Field Bands, the 3 Micron Region and the Signature of Vesta's Mantle*](#) [#2056]

We discuss the bi-directional reflectance spectra of 10 HED meteorites in the 0.4–4.6 μm range.

Garber J. M. Righter K.

[*A Howardite-Eucrite-Diogenite \(HED\) Meteorite Compendium: Summarizing Samples of Asteroid 4 Vesta in Preparation for the Dawn Mission*](#) [#2141]

The howardite-eucrite-diogenite (HED) suite of meteorites, thought to originate from asteroid 4 Vesta, has been summarized into a compendium; it will be made available prior to the planned arrival of the Dawn mission at Vesta in August 2011.

Combe J.-Ph. Le Mouélic S. Launeau P. Irving A. McCord T. B.

[*Imaging Spectrometry of Meteorite Samples Relevant to Vesta and the Moon*](#) [#2449]

Reflectance spectral images of Vestan meteorites (howardite, eucrite, diogenite) and lunar meteorite samples have been measured with the imaging spectrometer now set up at the LPG in Nantes. We report on the first results from spectral analysis.

Delaney J. S. Lindsay F. Turrin B. Swisher C. Herzog G.

[*Stratigraphy in Basaltic Achondrites: Kapoeta Revisited*](#) [#2284]

Kapoeta lithologies sampled as clasts are being systematically documented petrographically, chronologically, and isotopically by microsampling protocols to constrain in detail the history of the source regolith.

Mittlefehldt D. W. Johnson K. N. Herrin J. S.

[*Fluid-Mediated Alteration on 4 Vesta — Evidence from Orthopyroxene Clasts in Howardites*](#) [#1834]

We find evidence that 4 Vesta may be wet and wild (well maybe damp and delirious.) Orthopyroxene grains in some howardites indicate that localize fluid-mediated metasomatism occurred on Vesta. We will discuss the evidence and implications.

Bunch T. E. Barrat J.-A. Wittke J. H. Rumble D. III Irving A. J.

[*Northwest Africa 5721: A Vesicular, Eucrite-Like, Ungrouped Mafic Achondrite from an Unrecognized Parent Body*](#) [#1615]

This eucrite-like specimen has significant petrological and compositional features which make an origin from 4Vesta doubtful.

Irving A. J. Kuehner S. M. Seda T. Herd C. D. K. Gellissen M. Rumble D. III

[*Sayh al Uhaymir 493: An Unusual Hematite-Bearing, Eucrite-Like Mafic Achondrite with Ferric Pyroxenes*](#) [#1614]

This very unusual eucrite-like specimen contains phases with appreciable ferric iron, implying oxidative processes on its parent body.

Singerling S. A. Modi A. L. Taylor L. A. McSween H. Y.

[*Polymict Eucrites NWA 6105A and 6105B: Paired HEDs*](#) [#1207]

The purpose of this study is to provide petrographic descriptions for two newly discovered polymict eucrites from Morocco (NWA 6105A and 6105B) and determine whether they are paired. Pairing meteorites allows researchers to increase sample size.

Balta J. B. Beck A. W. McSween H. Y.

[*Magmatic Cumulate Textures Preserved by Trace Elements in Diogenite Meteorites*](#) [#1107]

We report spatially correlated trace-element variations in both olivines and pyroxenes from diogenite meteorites. P-zoning in olivines and Cr- and Al-zoning in pyroxenes defines primary magmatic cumulate textures in several meteorites.