

Thursday, March 22, 2012

POSTER SESSION II: DAWN OVER VESTA: COMPOSITION OF A TRANSITIONAL WORLD
6:00 p.m. Town Center Exhibit Area

Srinivasan P. Delaney J. S.

[*The Significance of Fe Exchange Between Metal and Silicate Minerals in Mafic Clasts from the Howardites Kapoeta and Winterhaven*](#) [#2668]

Fe in metal and silicate minerals of mafic clasts from howardites reflects original metal composition and subsequent modifications by post igneous processes. The sequence of exchange reactions in howardites will elucidate the regolith history of Vesta.

Righter M. Shaulis B. J. Lapen T. J.

[*U-Pb and ²⁰⁷Pb-²⁰⁶Pb Age of Zircons from Polymict Eucrites and Howardites*](#) [#2562]

We have analyzed zircon and baddeleyite grains from polymict eucrites and howardites. Preliminary results shows those ages are slightly younger than those of unbrecciated eucrites reported before.

Patzner A. McSween H. Y. Jr.

[*Gabbroic vs. Cumulate Eucrites: Extending the Diversity of Eucritic Lithologies*](#) [#1227]

In addition to the established subgroups of basaltic and cumulate eucrites, we propose the definition of a third subclass: gabbroic eucrites. This proposition is based on petrographic data from our ongoing investigation of new Antarctic howardites.

Strashnov I. Nottingham M. Llorca J. Gilmour J. D.

[*⁸¹Kr-Kr Cosmic Ray Exposure Age of the Puerto Lapice \(and Other\) Eucrites*](#) [#1813]

⁸¹Kr-Kr cosmic-ray exposure ages of several eucrites including of the new fall Puerto Lapice have been determined. The Akaike information criterion has been used to assign them into “clusters” representing the impacts on parent body.

Claydon J. L. Crowther S. A. Gilmour J. D.

[*Xenon in the Anomalous Eucrites Bunburra Rockhole and Ibitira*](#) [#1884]

Samples show Pu-Xe ages consistent with normal eucrites but higher ¹²⁹I/²⁴⁴Pu ratios indicating they formed on a more volatile-rich (or less-devolatilised) parent body.

Castle N. C. Irving A. J. Tanaka R. Bachmann O.

[*Major and Trace Element Characterization of Pyroxenes in Polymict Eucrite Northwest Africa 6475: Contrasts with Juvinas, Stannern and Igdi, and Evaluation of Models for Eucrite Magmatic Evolution*](#) [#2647]

We examined the range of pyroxene major, minor and trace element chemistry in the three eucrite trends, and compared them with clasts in NWA 6475, a polymict eucrite. Existing models relating the three chemical trends were examined with this new data.

van Drongelen K. D. Tait K. T. Gregory D. A.

[*Polymict Eucrite Northwest Africa 5232: Composition and Classification of Clasts*](#) [#2056]

The study of NWA 5232 aims at describing this 18.5 kg polymict eucrite and classifying its constituents. Six polished sections were examined with a petrographic microscope, electron microprobe, scanning electron microscope, and Raman spectrometer.

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

[*Redox States of Some HED Meteorites as Inferred from Iron Micro-XANES Analyses of Plagioclase*](#) [#1725]

We analyzed plagioclase in HED meteorites by Fe-XANES. The Fe³⁺ ratio of a cumulate eucrite was high (~0.9), while those of basaltic eucrite and diogenite were low (~0). This may be related to the heterogeneous redox environment of Vesta's crust.

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

[Trace Elements Reveal Complex Histories in Diogenites](#) [#1189]

We report relict trace-element zoning in diogenite meteorites. Trace elements in otherwise homogeneous OPX record histories of both magmatic and impact processes. These patterns suggest previously unrecognized long thermal histories for diogenites.

Ek M. Quinn J. E. Mittlefehldt D. W.

[In Situ Analysis of Orthopyroxene in Diogenites Using Laser Ablation ICP-MS](#) [#2096]

In situ analysis of orthopyroxene in diogenites shows that the variation of trace elements are several times larger than for the minor elements, and in GRO 95555 and MET 00425 the trace element concentrations increase in proximity to a silica phase.

Tarduno J. A. Cottrell R. D.

[Single Crystal Paleointensity Analyses of Olivine-Diogenites: Implications for a Past Vestan Dynamo](#) [#2663]

Preliminary rock magnetic and paleointensity analyses of olivine-diogenite meteorites are presented. These data indicate that olivine hosting magnetic inclusions is a suitable magnetic recorder, and suggest Vesta once had a dynamo.

Greenwood R. C. Barrat J.-A. Scott E. R. D. Janots E. Franchi I. A. Hoffman B.

Yamaguchi A. Gibson J. M.

[Has Dawn gone to the Wrong Asteroid? Oxygen Isotope Constraints on the Nature and Composition of the HED Parent Body](#) [#2711]

Oxygen isotope analyses for 122 HED samples are used to examine whether Vesta is a viable source for the HEDs. The levels of isotopic heterogeneity within the HED parent body are assessed and the origin of anomalous HED meteorites re-examined.

Lawrence D. J. Prettyman T. H. Feldman W. C. Bazell D. Mittlefehldt D. W.

Peplowski P. N. Reedy R. C.

[Geochemistry at 4 Vesta: Observations Using Fast Neutrons](#) [#1837]

Fast neutrons provide a measure of the average atomic mass of planetary surface material. The GRaND instrument on the Dawn spacecraft is measuring fast neutrons from 4 Vesta and will provide constraints of Vesta's surface composition.

Zambon F. De Sanctis M. C. Ammannito E. Capria M. T. Capaccioni F. Carraro F. Fonte S.

Frigeri A. Magni G. Marchi S. Palomba E. Tosi F. Blewett D. T. Raymond C. A.

Russell C. T. Titus T. N.

[Classification of Dawn VIR hyperspectral Data of Vesta](#) [#1964]

The analysis of the whole disk of Vesta gives a global overview of its surface. We have classified the whole disk image of Vesta normalized at 550 nm with an ISODATA classifier and we have compared this result with a RGB image (R: 0.44 μm , G: 0.75 μm , B: 1 μm).

Li S. Milliken R. E.

[Estimating Mineral Abundances of HED Meteorites from VIS-NIR Spectra and Implications for Dawn at Vesta](#) [#1459]

A new implementation of Hapke modeling for simultaneously quantifying minerals and particle sizes of eucrite and olivine diogenite meteorites.

Cloutis E. A. Reddy V. Le Corre L. Pompilio L. Mann P. Nathues A. Hiesinger H.
[*Spectral Reflectance Properties of HED Meteorites as a Function of Grain Size and Presence of CM2 Material*](#) [#1571]

The spectral reflectance properties of low-albedo areas on Vesta can be attributed to either larger grain sizes of HED meteorites or the presence of CM2-type chondrites. However, these two mechanisms lead to differences in band depths vs. albedo.

Reddy V. Le Corre L. McCoy T. J. Nathues A. Mayne R. G. Sunshine J. Gaffey M. J.
Becker K. J. Cloutis E. A.

[*Testing the Magma Ocean Model Using Distribution of Chromium on Vesta's Surface from Dawn Framing Camera Color Images*](#) [#1588]

We are attempting to test partial melting vs. magma ocean models for Vesta petrogenesis by detecting and quantifying the 0.6- μm chromium feature in Dawn Framing Camera color images. Initial investigation suggests this feature is rare on Vesta.