Tuesday, March 13, 2007
ACHONDRITES: EXPLORING OXYGEN ISOTOPES AND PARENT-BODY PROCESSES
8:30 a.m. Crystal Ballroom B

Chairs: **R. H. Hewins**
H. Downes

8:30 a.m. Greenwood R. C. * Franchi I. A. Gibson J. M. Benedix G. K.
Oxygen Isotope Composition of the Primitive Achondrites **[#2163]**
Primitive achondrites provide a record of the earliest stages of asteroidal melting. A detailed study of their oxygen isotope variation shows that these meteorites retain significant levels of primary oxygen isotope heterogeneity.

8:45 a.m. Irving A. J. * Bunch T. E. Wittke J. H. Kuehner S. M. Rumble D. III
Assessment of Multi-Component Mixing, Oxidation, Metamorphism and Partial Melting on the Acapulcoite-Lodranite Parent Body **[#2254]**
A correlation between mafic silicate compositions and oxygen isotopes for acapulcoites and lodranites may signify mixing of at least two components on this body.

9:00 a.m. Ziegler K. * Young E. D.
Pallasite, Mesosiderite, and HED $\Delta^{17}O$ Signatures: The Details **[#2021]**
$\Delta^{17}O$ average values of HEDs, mesosiderites, and pallasites are indistinguishable within uncertainties, but a bimodal $\Delta^{17}O$ structure of pallasites is apparent when sampling does not include homogenization and distinguishes this group from the others.

9:15 a.m. Hewins R. H. * Zanda B.
Application of the Oxygen Mixing Model to Non-Chondritic Meteorites **[#2388]**
The oxygen mixing model is based on the correlations between chondrite oxygen isotopes and the abundances of their various components. We find that correlation between Fa and $\Delta^{17}O$ in pallasites and ureilites, opposite in sign, can both be explained by precursor chondritic matrix abundance.

9:30 a.m. Lentz R. C. F. * Scott E. R. D. McCoy T. J.
Anomalous Eucrites: Using Fe/Mn to Search for Different Parent Bodies **[#1968]**
A recent study found some eucrites with anomalous O-isotopes. We measure Fe/Mn in these eucrites to test the likelihood of a distinct parent body. Preliminary results argue against this, suggesting instead heterogeneous O-isotopes on HED parent body.

9:45 a.m. Gardner K. G. * Lauretta D. S. Killgore M.
Petrology of Ungrouped Achondrites RBT 04239 and Tafassasset: A Comparison to Divnoe and the Brachinites **[#2086]**
We have analyzed the petrology and composition of two anomalous achondrites, RBT 04239 and Tafassasset. A comparison between these two with Divnoe and the brachinites indicates a genetic relationship between all these primitive achondrites.

10:00 a.m. Scott E. R. D. *
Impact Origin for Pallasites **[#2284]**
Pallasite properties are consistent with the Asphaug et al. model in which stony-irons formed in glancing impacts between protoplanets. Pallasites are impact-formed mixtures of core and mantle material but did not form at core-mantle boundaries.

10:15 a.m. Sanders I. S. * Scott E. R. D.
Vesta Comes of Age: An Appraisal of Eucrite Chronology and Petrogenesis **[#1910]**
We suggest that the ancient 4566.5 Myr Pb-Pb age for Asuka 881394 dates pre-accretion Pb-loss in a high energy impact, and that basalt erupted on Vesta about 3 Myr later.

10:30 a.m. Shukolyukov A. * Lugmair G. W.
The Mn-Cr Isotope Systematics of Bulk Angrites **[#1423]**
The ^{53}Mn-^{53}Cr systematics in bulk samples of angrites indicate that the last Mn/Cr fractionation and Cr isotope equilibration in the angrite parent body mantle occurred 4563.2±0.6 Ma ago. The angrite parent body is characterized by an anomalous ^{54}Cr/^{52}Cr ratio that is deficient in ^{54}Cr.

10:45 a.m. Humayun M. * Irving A. J. Kuehner S. M.
Siderophile Elements in Metal from Metal-rich Angrite NWA 2999 **[#1221]**
Our measurements show that metal introduced by chondritic impactors in angrite NWA 2999 may account for the volatile-siderophile elements in angrites, which are otherwise severely depleted in volatile-lithophile elements.

11:00 a.m. Kuehner S. M. * Irving A. J.
Grain Boundary Glasses in the Plutonic Angrite NWA 4590: Evidence for Rapid Decompressive Partial Melting and Cooling on Mercury? **[#1522]**
A plutonic igneous angrite with cumulate texture contains glasses that appear to have been formed by rapid melting and cooling on a large planet, perhaps Mercury.

11:15 a.m. Downes H. * Mittlefehldt D. W. Herrin J. S. Hudon P.
Accretion, Differentiation, and Impact Processing on the Ureilite Parent Body **[#1620]**
Ureilites represent the mantle of a planetesimal that accreted from the solar nebula, with intrinsic correlations in oxygen and carbon isotopes and Fe-Mg systematics. Regions of the body melted progressively until the planetesimal was disrupted by impact.

11:30 a.m. Goodrich C. A. * Fioretti A. M.
The Parent Magma of Ureilite Hughes 009 (Re-)Inferred from Melt Inclusions in Olivine: Implications for Petrogenesis of Augite-bearing Ureilites **[#1083]**
The parent magma of augite-bearing ureilite Hughes 009 is re-derived from melt inclusions in olivine. Methodological issues are discussed. The new result has implications for petrogenesis of augite-bearing ureilites.