Thursday, March 18, 2004
POSTER SESSION II: ACHONDRITE MISHMASH
7:00 p.m. Fitness Center

Vogel N. Renne P. R.
Constraining the Formation and Evolution of IAB Irons — High Precision $^{40}Ar/^{39}Ar$ Ages on Plagioclase Separates from Silicate Inclusions of the Campo Del Cielo Meteorite **[#1170]**
We present first high precision $^{40}Ar/^{39}Ar$ ages on plagioclase of Campo del Cielo silicate inclusions to constrain the thermal history of IAB irons. Using different size fractions should help to clarify miscalibration issues of the $^{40}Ar/^{39}Ar$ system.

Meshik A. Kurat G. Pravdivtseva O. Hohenberg C. M.
Radiogenic 129-Xenon in Silicate Inclusions in the Campo Del Cielo Iron Meteorite **[#1687]**
Clear excesses of radiogenic ^{129}Xe and virtual absence of trapped Xe were found in diopside and albite grains during in-situ laser extraction of the silicate-graphite-metal inclusion from Campo del Cielo iron.

Poitrasson F. Levasseur S. Teutsch N.
Significance of Iron Isotope Mineral Fractionation in Pallasite and Iron Meteorites **[#1634]**
The iron isotope compositions of minerals from pallasites, iron meteorites, and of bulk chondrites are presented. The significance of these data regarding pallasite parent bodies and planetary mantle-core differentiation is then explored.

Boesenberg J. S. Ebel D. S. Hewins R. H.
An Experimental Study of Phosphoran Olivine and Its Significance in Main Group Pallasites **[#1366]**
Experiments were run to determine the $f(O_2)$, T and compositional stability fields of phosphoran olivine and its significance in pallasites. It is a disequilibrium phase that forms during rapid crystallization from P-rich, SiO_2 depleted melt.

Hillebrand J. T. McDonough W. F. Walker R. J. Piccoli P. M.
Characterization of the Distribution of Siderophile and Highly Siderophile Elements in the Milton and Eagle Station Pallasites **[#1278]**
Metal-silicate distribution coefficients for some siderophile and highly siderophile elements were determined for Milton and Eagle Station pallasites.

Mullane E. Russell S. S. Gounelle M. Mason T. F. D.
Relationships Between HED and Mesosiderite Meteorites: An Iron Isotope Perspective **[#1015]**
HED and mesosiderite iron isotope compositions lie on a mass fractionation line, and are similar to each other. Of the HED group, eucrites show the greatest range and howardites the least. The mesosiderite range is similar to the eucrites.

Reedy R. C. Kim K. J.
Production Rates for Noble-Gas Isotopes in Eucrites **[#1357]**
Production rates were calculated for basaltic and cumulate eucrites using the MCNPX code and existing cross sections. Rates and ratios vary with shielding and composition. Improved cross sections are needed for making noble-gas isotopes.

McCallum I. S. Schwartz J. M. Mullen E. K.
Evidence for Subsolidus Metasomatism in the Eucrite Parent Body **[#1218]**
Metamorphism of eucrites was accompanied by pervasive metasomatism by a dry Fe-rich vapor. Metasomatic Fe-enriched zones have formed along internal fractures in pyroxenes. Vapor may be an ubiquitous metasomatizing agent in the upper crust of Vesta.

Buchanan P. C. Kaiden H.
Possible Contact Metamorphism of the Polymict Eucrite Petersburg **[#1502]**
Fragments of diogenitic orthopyroxene in the Petersburg polymict eucrite have edges that are altered to more Fe-rich compositions. These alteration rims are consistent with heating of the breccia for 1000–10000 years by contact metamorphism.

Sideras L. C. Domanik K. J. Lauretta D. S.
Early and Late Stage Metals and Sulfides in Diogenites **[#1752]**
Pentlandite and Cu bearing sulfides occur in a number of different diogenites. The composition of pentlandite indicates that it formed between 400° and 550°C. Textures indicate that metal and troilite formed primarily from early immiscible sulfide liquids.

Bjonnes E. E. Delaney J. S.
Constraints on the Lithological Variation near the Surface of the HED Planetoid from the Petrology of 91 & 92 Series Antarctic Achondrites **[#1030]**
Petrology of EET and PCA 91 and 92 series achondrites is used to assess variability of parent body surface lithologies. Clasts in polymict eucrites and howardites reveal more surface rock types on 4 Vesta than are represented in monomict meteorites.

Wakefield K. Bogard D. Garrison D.
Cosmic Ray Exposure Ages, Ar-Ar Ages, and the Origin and History of Eucrites **[#1020]**
New cosmic ray exposure ages for cumulate and unbrecciated basaltic eucrites, along with Ar-Ar ages recently reported, indicate a common parent body for all HED types. If this parent is a vestoid, it most likely was ejected from Vesta ~3.5 Gyr ago.

Domeneghetti M. C. Molin G. M. Zema M. Tazzoli V.
Trace Elements Abundances Vs Closure Temperature in Orthopyroxenes from Howardites **[#1146]**
Trace elements abundances, measured by LAM-ICP-MS on orthopyroxene from Kapoeta, Old Homestead 001 and Hughes 004 howardites, were related with the closure temperature of Fe-Mg exchange reaction.

Rosing M. T. Haack H.
The First Mesosiderite-like Clast in a Howardite **[#1487]**
The first discovery of a metal-rich mesosiderite-like clast in a howardite. How did it form and where did it come from?

Bogard D. D. Garrison D. H.
^{39}Ar-^{40}Ar Dating of Unusual Eucrite NWA 011: Is it from Vesta? **[#1094]**
^{39}Ar-^{40}Ar ages for samples of NWA 011 WR and feldspar, treated to remove weathering products, suggest the last major impact degassing time was 3.15 Gyr ago. This age is slightly younger than Ar-Ar ages of most eucrites, which derived from Vesta.

Floss C. Taylor L. A. Promprated P.
Trace Element Systematics of Northwest Africa 011: A "Eucritic" Basalt from a Non-Eucrite Parent Body **[#1153]**
Like eucrites, the NWA 011 basalt originated from a source with chondritic proportions of the REE and may have experienced some trace element redistribution. However, its parent body is more oxidized than the eucrite parent body.

Rai V. K. Jackson T. L. Thiemens M. H.
^{33}S Anomaly in Acapulcoites and Lodranites **[#1329]**
Five meteorite samples from the acapulcoite-lodranite achondrite group have been studied for S isotopic composition. Here we report the ^{33}S anomaly observed in these samples and their possible origin have been discussed.

Rauschenbach I. Weber I. Stephan T. Jessberger E. K. Schröder C.
Magnetic Force Microscopy of Primitive Achondrites **[#1541]**
MFM was applied for the first time to investigate primitive achondrites. In particular, preliminary results of the magnetic domain structure of meteoritic pyrrhotite and Fe-hydroxide and their response to weathering are presented.

Singletary S. J. Grove T. L.
Experimental Constraints on Ureilite Petrogenesis **[#1902]**
A detailed experimental study was conducted to quantify ureilite petrogenesis in the context of smelting. We propose a model of heterogeneous accretion followed by differential heating and diapirism on the ureilite parent body.

Cloutis E. A. Hudon P.
Reflectance Spectra of Ureilites: Nature of the Mafic Silicate Absorption Features **[#1257]**
The reflectance spectra of ureilites exhibit absorption features consistent with the major mafic silicates present in them (olivine, pyroxene). The overall spectral shape is consistent with graphite being the dominant opaque phase.

Rai V. K. Murty S. V. S. Ott U.
Nitrogen and Noble Gases in Two Monomict Ureilites Acfer 277 and FRO 90036 from Hot and Cold Deserts **[#1180]**
In this paper, new nitrogen and noble gas results for bulk samples as well as their acid residues from two monomict ureilites, Acfer 277 and FRO 90036, from hot and cold deserts have been discussed.

Busemann H. Lorenzetti S. Eugster O.
Solar Noble Gases in the Angrite Parent Body — Evidence from Volcanic Volatiles Trapped in D'Orbigny Glass **[#1705]**
We compare the noble gases in D'Orbigny glass and bulk. The glass was formed after the bulk silicates and contains interior solar noble gases that may originate from early volcanic activity on the angrite parent body, trapped upon fast cooling.

Kurat G. Varela M. E. Zinner E. Hoppe P. Ntaflos T. Nazarov M.
Trace Element Distribution Between Phases of the D'Orbigny Angrite **[#1618]**
Trace element abundances in phases of D'Orbigny indicate a complex genesis and a relationship to CAIs.

Yanai K. Noda M.
Petrological Study of Six Angrites Including New Type **[#1028]**
Angrite 1154 (tentative name) shows a quite unique dendritic texture which differs from the other five known angrites. It is also different from those of mineral compositions of olivne kirschsteinite and pyroxene fassaite, and bulk chemical compositions.

Bogdanovski O. Lugmair G. W.
Manganese-Chromium Isotope Systematics of Basaltic Achondrite Northwest Africa 011 **[#1715]**
Mn-Cr data for NWA 011 show no relationship to HED PB or Mercury; it is a differentiation product from a parent body similar to CI or CM (or CR?) meteorites; its magma source is estimated to have differentiated from the parent body at ~4563Ma.