

Tuesday, March 11, 2008

POSTER SESSION I:

METEORITES: TECHNIQUES, EXPERIMENTS, AND PHYSICAL PROPERTIES

6:30 p.m. Fitness Center

Dyar M. D. Klima R. L. Pieters C. M.

Reflectance and Mössbauer Spectroscopy of Synthetic Pyroxenes: I. Implications for Interpreting Cooling Rates of Remote-Sensed Surfaces [#2248]

Results of an integrated Mössbauer and reflectance spectroscopy study of a large suite of synthetic pyroxenes are presented. Effects of differential recoil-free fractions on cooling rate calculations are discussed.

Klima R. L. Pieters C. M. Dyar M. D.

Reflectance and Mössbauer Spectroscopy of Synthetic Pyroxene: II. Characterizing the Cooling Histories of HEDs Using Reflectance Spectroscopy [#2289]

We integrate Mössbauer and NIR studies of synthetic pyroxenes to provide a framework for accurately assessing the site occupancy of pyroxenes. NIR spectra offer the prospect of estimating the thermal history of pyroxene-dominated units remotely.

Hoffman E. J. Jones R. Hammond E.

Magnetic Phases in Carbonados by Mössbauer Spectroscopy: Possible Clues to Post-Formation History [#2144]

The pores of carbonados, polycrystalline diamonds of possible extraterrestrial origin, contain magnetic materials, presumably post-formation contaminants. This study is more definitely identifying magnetically-characterized phases.

Garvie L. A. J.

A Nanometer-Scale View of Primitive Meteorites Using Electron Energy-Loss Spectroscopy (EELS) [#2098]

Electron energy-loss spectroscopy (EELS) coupled with a transmission electron microscope is necessary for the characterization of early solar system materials.

Sedaghatpour F. Craig J. P. Sears D. W. G.

A Study of the Thermal History of Antarctic Micrometeorites by Thermoluminescence: A First Look [#1161]

The thermoluminescence properties of four Antarctic micrometeorites showed little or no TL, as expected for samples related to CI and CM chondrites. However, three showed properties that relate them to the metamorphosed CM, CO and CV chondrites.

Pourmand A. Dauphas N.

Distribution Coefficients of Elements on TODGA Resin in HNO₃, HCl and HF: Application to Determination of Lu/Hf Ratio and Hf Isotopic Composition in Meteorites [#1367]

Distribution coefficients for 60 elements on TODGA resin are presented along with a robust single-column protocol for separation of HSFE, lanthanides and actinides in meteorites and terrestrial rocks for high-precision isotope analysis.

Zhang X.-Y. Ganguly J. Ito M.

Self Diffusivities of Ca and Mg in Clinopyroxene: Experimental Studies and Planetary Applications [#2049]

We determined Ca and Mg diffusion coefficients in diopside, and discussed the implications of these data on the modeling of compositional zoning in natural clinopyroxenes, specifically those in (001) exsolved lamellae of non-cumulate eucrites.

Kreft J. W. Strait M. M. Flynn G. J. Durda D. D.

Investigation of Methodologies for the Hydration of Bulk Meteorite Samples [#2360]

Description of experimental methods to hydrate bulk meteorites for use in impact disruption studies.

Thaisen K. G. Taylor L. A.

Fusion Crusts on Meteorites: Simple Melting or Petrogenetic Signature? [#1374]

This study explores the premise that averaged EMP analyses of a meteorite's fusion crust represent the bulk composition of the rock. We have found that fusion-crust compositions are not the same as the bulk rock, and should be used with caution.

Jones S. F. Hildebrand A. R.

The Effects of Porosity and Pore Geometry on Acoustic Velocities (and Elastic Moduli) in Ordinary Chondrites: Preliminary Results [#2340]

Ordinary chondrite acoustic velocity, bulk density and porosity data confirm previously documented trends. Three pore geometries exist; fracture porosity is variably and randomly developed suggesting origin as a secondary process.

Consolmagno G. J. Britt D. T. Macke R. J.

What Density and Porosity Tell Us About Meteorites [#1582]

Most meteorites have similar porosities (~10%) regardless of chemistry, metamorphic grade, shock state, or brecciation. Carbonaceous chondrites are the exception; most are more than 20% porous. This has implications for formation and lithification histories.

Macke R. J. Britt D. T. Consolmagno G. J.

Analyzing Systematic Error in "Bead Method" Measurements of Meteorite Bulk Volume and Density [#2048]

We attempt to measure the systematic error in the "bead method" of measuring meteorite bulk volume and density under different methods of bead deposition and settling. We used zero-porosity quartz crystals in a range of masses as density standards.

King D. T. Jr. Petruny L. W.

The Weston Meteorite (1807) — Impact Sites in Fairfield County, Connecticut [#2163]

Weston meteorite, which fell in Fairfield County, Connecticut, was the first such scientifically verified meteorite fall in the New World.

Aleksandrov A. B. Bagulya A. V. Goncharova L. A. Ivliev A. I. Kalinina G. V. Kashkarov L. L. Konovalova N. S. Polukhina N. G. Rusetskii A. S. Starkov N. I. Tsarev V. A. Wladimirov M. S.
Determination of the Charge Spectrum of Heavy Cosmic Ray Nuclei: New Results from the OLIMPIYA Program [#1064]

New results on the spectrum of cosmic ray nuclei obtained in the framework of the OLIMPIYA program are presented.

Parnell J. Thackrey S. Muirhead D. K. Wright A. J.

Transient High-Temperature Processing of Silicates in Fulgurites as Analogues for Meteorite and Impact Melts [#1286]

A fulgurite from the Sahara yielded petrographic data valuable as an analogue for highly reduced meteorite and impact melts, including iron silicide formation, devolatilization features, zircon melting and extreme melt heterogeneity.

McCoy T. J. Marquardt A. E. Vicenzi E. P. Ash R. D. Wasson J. T.

Meteoritic Metal Beads from the Havana, Illinois, Hopewell Mounds: A Source in Minnesota and Implications for Trade and Manufacture [#1984]

Meteoritic metal beads from an Illinois Hopewell burial mound (~350 BCE) are pieces of the Anoka, Minnesota, iron, which were worked in Ohio or Michigan and transported to Illinois as a finished product.