

Thursday, March 10, 2011
POSTER SESSION II: PRIMITIVE METEORITES I: DIVERSITY
6:00 p.m. Town Center Exhibit Area

Berlin J. Salge T. Falke M. Goran D.

[Recent Advances in EDS and EBSD Technology: Revolutionizing the Chemical Analysis of Chondritic Meteorites at the Micro- and Nanometer Scale](#) [#2723]

Recent (revolutionizing!) advances in EDS and EBSD technology are discussed using specific examples relevant to chondrite research.

Strait M. M. Lipman M. D. McCausland P. J.

[Visualization of Porosity](#) [#2052]

Comparing methods of looking at the porosity in meteorite and other geological samples.

Alwmark C. Schmitz B. Holm S. Marone F. Stampanoni M.

[A 3-D Study of Inclusions in Extraterrestrial Chromite Using Synchrotron Radiation X-Ray Tomographic Microscopy](#) [#1954]

We describe a method for imaging in three-dimension the interiors of chromite grains and their inclusions using synchrotron radiation X-ray tomographic microscopy. We show that inclusions are a crucial tool in reconstructions of the past meteorite flux.

Levine J. Segreti M. A. Heylman K. D.

[Weathering of H-Chondrite Roosevelt County 037](#) [#1241]

We examine the weathering of Roosevelt County 037 and the implications of weathering for measurements of the long terrestrial age of this meteorite.

Cartwright J. A. Herzog G. F. Herrmann S. Shankar N. McCausland P. J. A. Ott U.

[The Grimsby H Chondrite: Combined Noble Gas and Radionuclide Analysis](#) [#2686]

We report combined noble gas and radionuclide data from the Grimsby H chondrite, with particular attention on cosmogenic gases for calculating CRE ages and estimating the pre-meteoroid size.

Higgins M. D. Herd C. D. Walton E. L.

[Micro-XRF Study of the Buzzard Coulee Meteorite](#) [#1944]

A 50 by 50 mm slice of the Buzzard Coulee H4 breccia was examined using optical and micro-XRF methods. Fragments are clearly revealed which have contrasting compositions and fabrics. Fabric was developed early during accretion.

Fry C. Samson C. McCausland P. J. A. Herd R. K.

[Bulk Density and Magnetic Susceptibility of the Buzzard Coulee Meteorite](#) [#1427]

Taken before snow / Fresh Buzzard Coulee chondrites / Physical response.

Matsuda S. Okazaki R. Nagao K. Lee J. I. Lee M. J. Ahn I. S.

[Noble Gas Study on 19 Ordinary Chondrites of the KOREAMET Antarctic Meteorite Collection](#) [#1718]

The Korea Polar Research Institute (KOPRI) collected 29 meteorites during the 2006, 2007, and 2008 field expeditions in Antarctica. We measured noble gas concentrations and isotopic ratios for 19 ordinary chondrites from the 29 meteorites.

Wittmann A. Swindle T. D. Greshake A. Rumble D. III Kring D. A.

[Geological Context of Ordinary Chondrite Impact Melt NWA 4150](#) [#1419]

NWA 4150 is a clast-rich impact melt rock whose metallographic characteristics suggest it formed in a ≥ 5 -km-diameter crater on the L-chondrite asteroid.

Dobrică E. Brearley A. J.

[Earliest Stages of Metamorphism and Aqueous Alteration Observed in the Fine-Grained Materials of Two Unequilibrated Ordinary Chondrites](#) [#2092]

We performed TEM analysis on the matrix of two very unequilibrated ordinary chondrites. Our observations reveal the response of fine-grained matrix materials to weak thermal metamorphism in the presence of an aqueous fluid.

Alwmark C. Meier M. M. M. Schmitz B. Baur H. Maden C. Wieler R.

[Variations in the Abundance of Regolith Derived Micrometeorites with Time, Following the L-Chondrite Parent Body Disruption at 470 Ma](#) [#2004]

Noble gas analyses of Chinese and Swedish mid-Ordovician fossil micrometeorites show that the influx of regolith-derived material to Earth, following the L-chondrite parent body disruption at 470 Ma, decreases over time.

Udry A. McSween H. Y. Jr. Taylor L. A.

[Petrology of a New L4 Chondrite NWA 6513](#) [#2001]

A new ~4.1 kg L4 ordinary chondrite NWA 6513 has been recovered from the Morocco desert. NWA 6513 displays a very uncommon amount and variety of preserved chondrule textures compared to other ordinary chondrites.

Kita N. T. Valley J. W. Spicuzza M. J. MacPherson G. J. Welzenbach L. Davis A. M. Heck P. R. Nakashima D. Tenner T. J. Ushikubo T.

[Fall of the Mifflin L5 Chondrite](#) [#1464]

The Mifflin meteorite fell as a shower at night on April 14, 2010, in Wisconsin, USA. Petrology, mineral chemistry, and oxygen-isotope data indicate Mifflin is a L5 chondrite showing a brecciated texture of light clasts and a dark matrix.

Welten K. C. Meier M. M. M. Caffee M. W. Laubenstein M. Heck P. R. Wieler R. Nishiizumi K.

[Cosmic-Ray Exposure History and Pre-Atmospheric Size of the Mifflin L5 Chondrite](#) [#2707]

Noble gases and cosmogenic radionuclides in the Mifflin L5 chondrite fall yield a CRE age of ~20 Ma with possible evidence of a complex exposure history. Despite the light-dark brecciation texture, Mifflin is not a regolith breccia.

Nagy Sz. Gyollai I. Józsa S. Bérczi Sz.

[Observation of Colouration of Ringwoodite in the NWA 5011 L5-6 Chondrite](#) [#1285]

In this abstract we are doing a proof to summarize our observation about the colours of the ringwoodite aggregates, and we propose a possible new idea for the origin of the colorless parts in blue aggregates.

Corrigan C. M. Fries M. D. Welzenbach L. C. McCoy T. J. Fries J.

[The Lorton, Virginia, USA, Meteorite Fall](#) [#1332]

This abstract describes the recently approved Lorton, VA, USA, meteorite and the conditions surrounding its fall and recovery. We also examine the use of Doppler weather radar to detect falling debris and how these data may predict a meteorite strewn field for this event.

Weirich J. R. Isachsen C. E. Swindle T. D.

[Ar-Ar Age of the L Chondrite Northwest Africa 091: More Evidence that Multiple Isochrons Reveal a Link to Fossil Meteorites](#) [#1910]

The multiple isochron approach on NWA 091 reveals impacts at 472 ± 6 and 799 ± 71 Ma, with different trapped components at different release temperatures. Two trapped components $>1000^\circ\text{C}$ suggests multiple high temperature K domains.

Swindle T. D. Isachsen C. E. Weirich J. R. Kimura M.
[⁴⁰Ar-³⁹Ar Studies of the Shocked L6 Chondrites Allan Hills 78003, Yamato 74445, and Yamato 791384](#) [#1897]

Three heavily shocked L6 chondrites clearly record resetting of their K-Ar systems in the last ~1000 Ma. However, their Ar systematics are complicated enough that it is not obvious whether they were involved in the 475 Ma L-chondrite event.

Hauver K. L. Ruzicka A. M.
[Cohenite in NWA 5964 \(L3-6 Melt Breccia\): A Possible Product of Shock-Induced Contact Metamorphism](#) [#2627]

NWA 5964 (L3-6 melt breccia) contains cohenite that could have formed as the result of shock-induced contact metamorphism.

Hu J. Kent B. H. Sharp T. G.
[High-Pressure Minerals in LL6 NWA 757 Suggest S6 Shock Stage and a Shock Pressure of 22-25 Gpa](#) [#2744]

This abstract is about high-pressure minerals assemblages from LL6 NWA 757 meteorite and the shock event constraint they provide. Polarized light microscopy, Raman spectroscopy, and SEM analysis are performed to the minerals and shock melt vein matrix of NWA 757.

Yokoyama T. Misawa K. Okano O.
[Alkali-Rich Fragments in LL-Chondritic Breccias](#) [#1941]

Alkali-rich igneous fragments were identified in brecciated LL-chondrites, Kraehenberg (LL5), Bholu (LL3-6), and Yamato 74442 (LL4). These alkali-rich fragments might be formed from identical precursor materials with related processes.

Dreeland L. Jones R. H.
[Origin and Development of Phosphate Minerals in Metamorphosed LL Chondrites](#) [#2523]

We describe the occurrence of chlorapatite and merrillite in metamorphosed LL chondrites, including grain size distributions, mineral associations, and compositions. Development of phosphate minerals appears to postdate the peak of metamorphism.

Jones R. H. McCubbin F. M. Dreeland L. Guan Y.
[Phosphate Minerals in Type 4-6 LL Chondrites: The Nature of Fluids on the LL Chondrite Parent Body](#) [#2464]

Apatite in the LL chondrites is Cl-rich and extremely dry, with H₂O contents <100 ppm. We suggest that this apatite may have a significant oxyapatite component. We infer that very dry, halogen-rich fluids pervaded the LL chondrite parent body.

Min K. Reiners P. W. Shuster D. L.
[Low-T Thermochronology of St. Severin LL6 Chondrite Revealed from Single-Grain Phosphate \(U-Th\)/He Ages](#) [#2683]

Low-T thermal history of St. Severin LL6 chondrite was constrained from single-grain (U-Th)/He dating for 5 chlorapatite and 14 merrillite aggregates. We also present the new He diffusion data for merrillite from Guarena chondrite.

Friend P. Zipfel J. Gellissen M. Kleinschrodt R. Muenker C. Pack A. Schulz T. Stracke A. Palme H.
[Northwest Africa 5492: An Extremely Reduced Chondritic Meteorite with Low Volatile Element Contents](#) [#1095]

We report on the petrology, bulk and mineral chemistry, and O- and W-isotopes of NWA 5492. This ungrouped chondrite is old and has an enstatite-rich mineralogy and a chondritic bulk chemistry enriched in FeNi metal and depleted in volatiles.

Komatsu M. Fagan T. J. Ozaki N. Mikouchi T. Miyamoto M.

[*Petrographic and Chemical Variation Among the EH3 Chondrites*](#) [#1764]

We studied 5 EH3 chondrites in order to assess variations in texture and mineral compositions among the EH3s. Three distinct subgroups (primitive, low degree of metamorphism, and moderately metamorphosed) were identified from this study.

Lehner S. W. Buseck P. B. McDonough W. F.

[*Trace Element Distribution Among Matrix, Chondrules, Metal, and Sulfides in Sahara 97072 EH3*](#) [#1430]

Trace- and major-element data is presented for Sahara 97072, a primitive EH3 chondrite. The results indicate that the silicate proportion of the matrix must have formed from material more depleted in refractory elements than the chondrule precursors.

Jamsja N. Ruzicka A.

[*Presence of Hydrous Phases in Two R Chondrites, Northwest Africa 6491 and 6492*](#) [#2324]

Data presented in this abstract describes two hydrous phases of pre-terrestrial origin that are present in two newly classified R chondrites, NWA 6491 and 6492.