

Thursday, March 22, 2012
POSTER SESSION II: SECONDARY PROCESSES IN CHONDRITES
6:00 p.m. Town Center Exhibit Area

Lindgren P. Lee M. R. Sofe M.

[*Evidence for Multiple Fluid Pulses in the CM1 Carbonaceous Chondrite Parent Body*](#) [#1949]

We have studied the two Antarctic CM1s, MET 01070 and SCO 06043, to determine if multiple episodes of fluids can be observed and if we can distinguish between pre- and postterrestrial alteration products.

Jilly C. E. Huss G. R.

[*Heterogeneous Aqueous Alteration in the CR2 Chondrite Renazzo*](#) [#1348]

We examine the aqueous alteration of CR2 chondrites and report on phosphates, sulfides, and other phases present in Renazzo. Various styles of alteration present in close proximity may suggest localized variations in conditions on the CR parent body.

Islam M. A. Ebihara M. Kojima H.

[*Chemical Compositions and Alteration of Primitive Carbonaceous Chondrites*](#) [#1974]

Chemical compositions of CI and CM/C2 chondrites were determined to study chemical alteration and thermal metamorphism experienced by them based on their volatile-element loss.

Mikouchi T. Zolensky M. Satake W. Le L.

[*The Valence of Iron in CM Chondrite Serpentine as Measured by Synchrotron XANES*](#) [#1496]

We report synchrotron XANES analysis of serpentines in CM chondrites to estimate their ferric/ferrous iron ratios. Although we selected samples showing wide ranges of alteration degrees, all samples gave ~80% ferric ratios.

Jones R. H. McCubbin F. M.

[*Phosphate Mineralogy and the Bulk Chlorine/Fluorine Ratio of Ordinary Chondrites*](#) [#2029]

Average Cl/F ratios in apatite from individual H and LL chondrites are much higher than bulk Cl/F ratios for ordinary chondrites. Either bulk F in OCs is poorly known, or F is present in other phases in addition to apatite.

Goreva Y. S. McCoy T. J.

[*Is the Difference Between CVox and CVred a Function of Oxygen Fugacity?*](#) [#2470]

Our results show that reduced and oxidized CV chondrites were altered under very similar oxygen fugacity as calculated from composition of metal-magnetite pairs.

Bunch T. E. Wittke J. H. Irving A. J. Kuehner S. M.

[*Estimation of Petrologic Subtypes of Unequilibrated Ordinary Chondrites from Systematics of Chromium Distribution in Ferroan Olivine*](#) [#2193]

We refine the systematics of fayalite and chromium contents of olivine within unequilibrated ordinary chondrites as a means of estimating petrologic subtypes and gauging their progressive thermal metamorphism.

Simon S. B. Sutton S. R. Grossman L.

[*Effects of Metamorphism on the Valence and Coordination of Titanium in Ordinary Chondrites*](#) [#2078]

We have undertaken a study of L and LL chondrites of grades 3–6 to see how Ti valence and coordination vary with grade and to see if the variations can be used to constrain conditions of chondrite metamorphism.

Ibrahim M. I. Hildebrand A. R.

[*The Elastic Properties of Carbonaceous Chondrites*](#) [#2859]

The elastic properties of carbonaceous chondrites indicate variation with petrologic type similar to that found in the ordinary chondrites, and apparently record damage from relatively frequent collisions with still weaker objects.

Izawa M. R. M. Moser D. E. Barker I. R. Flemming R. L. Gainsforth Z. Stodolna J.
Matveev S. Banerjee N. R.

[Exploring the Distribution and Nature of Shock Deformation in an Enstatite Chondrule at Submicron Resolution by a Combination of CL, Electron Backscatter Diffraction, EDS Mapping and EPMA](#) [#2735]

EBS, CL, EDS and EPMA investigations of shock-deformed enstatite in MET 00783 (EH4, S4) reveal microstructures including heterogeneous lamellar fabrics corresponding to subtle differences in Kikuchi band contrast, and amorphous feldspathic material.

Varga T. N. Bérczi Sz. Varga T. P.

[Study of Thermal Metamorphism of Chondrites by Diffusional Fading of Chondrule Rims of Antarctic NIPR Meteorite Samples](#) [#1558]

We studied the diffusion process in four Antarctic meteorite sample textures (L3, L4, L5, and L6 chondrites) by optical microscopy and diffusion calculations of diffusion length and times.

Miyamoto M. Kaiden H.

[Maximum Temperature of Parent-Body Thermal Metamorphism for ALH 77299 \(H3.7\) Chondrite by Analyzing Fe-Mg Zoning of Olivine](#) [#1082]

We studied maximum temperature of thermal metamorphism in the parent body for ALH77299 (H3.7) chondrite by fitting the calculated Fe-Mg zoning of olivine to observed one. The result for 600°C shows the best fit.

Friedrich J. M. Rubin A. E. Swindle T. D. Isachsen C. E. Beard S. P.

[Impact Histories of Incompletely Compacted Ordinary Chondrites from Petrographic Examination and \$^{40}\text{Ar}/^{39}\text{Ar}\$ Analysis](#) [#1199]

We show some petrographic evidence suggesting that incompletely compacted chondrites experienced some level of shock loading despite their poorly compacted nature. We use $^{40}\text{Ar}/^{39}\text{Ar}$ data to elucidate the timing of these shock episodes.

Hanna R. D. Ketcham R. A. Hamilton V. E.

[Inclusion Foliation in Murchison as Revealed by High Resolution X-Ray CT](#) [#1242]

Using high-resolution X-ray computed tomography we have found evidence for a preferred orientation, consistent with flattening, of a group of inclusions in a sample of CM2 Murchison chondrite.

Bérczi Sz. Nagy Sz. Gyollai I. Józsa S. Havancsák K. Dankházi Z. Varga G. Ratter K.
Pál-Molnár E. Fintor K. Gucsik A.

[EBS, CL, EDS and EPMA investigations of shock-deformed enstatite in MET 00783 \(EH4, S4\) reveal microstructures including heterogeneous lamellar fabrics corresponding to subtle differences in Kikuchi band contrast, and amorphous feldspathic material.](#) [#1332]

EBS, CL, EDS and EPMA investigations of shock-deformed enstatite in MET 00783 (EH4, S4) reveal microstructures including heterogeneous lamellar fabrics corresponding to subtle differences in Kikuchi band contrast, and amorphous feldspathic material.

Dyl K. A. Bland P. A. Muxworthy A. R. Collins G. S. Davison T. M. Prior D. J. Ciesla F. J.

[Compositional Effects of Low-Pressure Impacts in Chondritic Meteorites: Oxygen Isotope Homogenization and Mg-Fe Diffusion in Matrix Olivine and Presolar Grains](#) [#2251]

Recent work has explored the effects of low-intensity impacts into porous chondrite precursors. We show oxygen-isotope homogenization of presolar grains and Mg-Fe diffusion in fine-grained matrix are potential consequences of this process.

Xie Z. Li X. Sharp T. G. De Carli P. S.

[Shock-Induced Ringwoodite Rims Around Olivine Fragments in Melt Vein of Antarctic Chondrite GRV022321: Transformation Mechanism](#) [#2776]

We study the formation of ringwoodite via diffusion at high temperatures and shock pressures in GRV022321 chondrite by using FIB/TEM techniques. The result suggests transformation occurred by a solid-state mechanism, enhanced by extreme deformation.

Acosta T. E. Scott E. R. D. Sharma S. K.

[Micro-Raman Mapping of Mineral Phases in the Strongly Shocked Taiban Ordinary Chondrite](#) [#2725]

Micro-Raman mapping of a thin-section of the highly shocked Taiban meteorite revealed new minor phases around the ringwoodite grains. These phases include wadsleyite and olivine surrounded by pyroxene and majorite.

De Carli P. S. Xie Z. Trickey R. Hu J. Weaver C. A. Sharp T. G.

[High-Pressure Minerals in RC106 Provide Evidence for a Very Large Impact](#) [#2877]

Thermal analysis of a large vein in RC106 indicates that the vein solidified in about 3.3 sec at a pressure in the range of 15 to 25 GPa. Hydrocode calculations indicate that a very large impact with a 100 km diameter body is required.

Keller L. P. McKeegan K. D. Sharp Z. D.

[The Oxygen Isotopic Composition of MIL 090001: A CR2 Chondrite with Abundant Refractory Inclusions](#) [#2065]

The whole rock oxygen isotopic composition of MIL 090001 shows that it is a new member of the CR chondrite group. MIL 090001 is anomalous for a CR chondrite because of its high modal abundance of refractory inclusions compared to other members of the CR group.

Hoffmann V. H. Hochleitner R. Kaliwoda M. Torii M. Funaki M. Mikouchi T.

[Magnetic Signature of E Chondritic Lithologies of Almahata Sitta and Comparison with Neuschwanstein \(EL6\)](#) [#2342]

The aim of our investigations is to compare mineralogy/chemistry/petrology and specifically the magnetic signature of E-chondritic lithologies of Almahata Sitta with the properties of known E-chondrite falls such as Neuschwanstein.

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

[The Ghubara \(L5\) Regolith Breccia as a Sample of the Source-Rock of Fossil Micrometeoritic Chromite Found in Ordovician Sediments](#) [#1131]

Chromite grains extracted from the L chondrite regolith breccia Ghubara (L5, Ar-Ar-age: 470 Ma) show a similar ^{21}Ne -cosmic ray exposure (CRE) age distribution as fossil Ordovician micrometeorites. We report a new CRE age for Ghubara of only ~7 Ma.

Nishiizumi K. Caffee M. W.

[Exposure Histories of CI1 and CM1 Carbonaceous Chondrites](#) [#2758]

We have extended our investigation of the cosmic ray exposure age distribution of CM2 to those CI1 and CM1 meteorites that have a high degree of aqueous alteration.

Welten K. C. Caffee M. W. Nishiizumi K. Leya I. Dalcher N. Vogel N. Wieler R.

[Cosmogenic Radionuclides in Ordinary Chondrite Falls Selected for Calibration of the \$^{81}\text{Kr}\$ -Kr Method](#) [#2867]

We present cosmogenic radionuclide results in the metal and stone fractions of 14 ordinary chondrites to calibrate the ^{81}Kr -Kr exposure age method using independent ^{36}Cl - ^{36}Ar ages.

Strashnov I. Gilmour J. D.

[Cosmic Ray Exposure History of Individual Chondrules from Allegan H5 Ordinary Chondrite Probed by \$^{81}\text{Kr}\$ -Kr Chronometer](#) [#1820]

The chondrules of the Allegan H5 chondrite have been separated from matrix. ^{81}Kr -Kr cosmic ray exposure ages of individual chondrules and separately the matrix have been determined.

Kubovics I. Vizi P. G.

[Trajectory and Analysis of Fireball-Meteorite "2010.02.28 Kosice" from Security Cameras and from Electromicroscopic Examination](#) [#2816]

We show our investigation about the 2010.02.28. fireball and meteorite Košice. Included trajectory analysis from security cameras (meteorite cameras were off because of cloudy sky) and detailed electronmicroscopic examination of meteorite.