Huber H.  Rubin A. E.  Wasson J. T.

*Bulk Compositions and Petrographic Characteristics of Ten Unusual Carbonaceous Chondrites [#2381]*

We used INAA to determine the bulk compositions of 10 carbonaceous chondrites of uncertain classification. Thin sections were examined microscopically. Averaged results of duplicate analysis and Mg- and Cr-normalized abundance patterns show clear identifications for four specimens.

Chizmadia L. J.  Bendersky C. N.

*Asuka-881632: The First CO3.1? [#2255]*

AOAs in the CO3 chondrite, A-881632, contain forsteritic olivine (Fa1.4) and 0.8 µm Fe-olivine veins. The olivine composition and vein thicknesses in AOAs is intermediate between 3.0 and 3.2 and is consistent with what was predicted for a 3.1 by Chizmadia et al. (2002).

Berlin J.  Jones R. H.  Brearley A. J.

*Determining the Bulk Chemical Composition of Chondrules by Electron Microprobe: A Comparison of Different Approaches [#2370]*

In this abstract, we point out problems with various electron microprobe methods that have been used to determine bulk chemical compositions of chondrules.


*Studies of Minor Phases in Primitive Chondrite Matrix [#1714]*

We use large, high-resolution ED maps of primitive chondrites to constrain the nature of trace and minor element carrier phases in matrix. These data are relevant to understanding condensation, and volatile depletion in the early solar system.

Fries M.  Butterworth A.  Snead C.  Steele A.

*Complementary STXM and Confocal Raman Imaging of Murchison CM2 Particle Embedded in Sulfur [#2419]*

Scanning transmission X-ray microscopy (STXM) and confocal Raman imaging have been utilized on a sample of the Murchison CM2 meteorite in order to examine the structure and composition of carbonaceous material with a minimal degree of alteration due to sample preparation.

Ivanova M. A.  Lorenz C. A.  Greenwood R. C.  Franchi I. A.  Nazarov M. A.  Morris A. A.  Baker L.  Brandstaetter F.

*Experimental Study of Laboratory-heated CM2 Chondrites Mighei and Murchison [#1086]*

We conducted experimental heating of two CM2 chondrites, Murchison and Mighei, to study changes in their oxygen isotopic compositions and mineralogy and explore possible genetic relationships between MCCs and normal CMs.

Komatsu M.  Fagan T.  Miyamoto M.  Krot A. N.  Mikouchi T.

*Amoeboid Olivine Aggregates in the Yamato-86009 CV3 Chondrite [#1523]*

Based on the mineralogical study of AOAs in Y-86009, we infer that AOAs in Y-86009 were originally similar to those in reduced CVs, and subsequently experienced low-temperature aqueous alteration; they largely escaped Fe-alkali metasomatic alteration.

Sugiura N.  Miyazaki A.  Hiyagon H.  Kimura K.  Petaev M. I.

*Nebular History of Amoeboid Olivine Aggregates [#1266]*

Trace element (Ca, Cr and Mn) concentrations were measured in amoeboid olivine aggregates in Acfer 094 and Yamato 81020. Cr and Mn concentrations are negatively correlated with Ca concentrations.

Butterworth A. L.  Benedix G. K.  Tamura N.  Menzies O. N.  Bland P. A.

*Chondrule Olivine: Relationship Between Structure and Composition Using Synchrotron X-Ray Laue Microdiffraction [#2144]*

The composition, crystal orientation and strain of a chondrule zoned olivine in EET 83389 (CM2) was mapped using microfocus, white beam synchrotron XRD.
Neff K. E. Righter K. 
*Opaque Assemblages in CK and CV Carbonaceous Chondrites [#1320]*

Using the oxide, metal and sulfide assemblages of CK and CV chondrites, constraints can be placed on the temperature and oxygen fugacity at which the meteorites equilibrated, which can be compared in order to help define their formation history.

Nakamura T. M. Sugiura N. Kimura M. Miyazaki A. Krot A. N. 
*Condensation and Accretion of Corundum and Corundum-Hibonite Grains in the Solar Nebula [#1267]*

Accretion of corundum aggregates in the solar nebula was investigated. In a monotonically cooling nebula with a solar composition, formation of such aggregates is difficult because hibonite is formed on corundum grains before formation of aggregates.

Tronche E. J. Hewins R. H. MacPherson G. J. 
*Formation Conditions of Aluminium-rich Chondrules [#1159]*

Dynamic crystallization experiments have been performed with five synthetic Al-rich chondrules compositions. For natural Al-rich chondrules, peak temperatures of ~1400°–1500°C (up to 1600°C for Al-rich BO) and cooling rates of 50°–1000°C/hr are appropriate.

Paque J. M. Burnett D. S. Beckett J. R. Hutcheon I. D. Weber P. K. 
*Origin of Trace Elements in Spinel from Ca-Al-rich Inclusions: Constraints from NanoSIMS Analyses of Spinel and Enclosing Melilite [#1823]*

Ti valence state changes during initial crystallization appears to be the most plausible explanation for the center peaked Ti zoning profiles in spinel. Preliminary NanoSIMS analysis did not reveal any direct evidence for diffusion of trace elements from spinel to the melilitite.

Hiyagon H. Sasaki M. 
*Rare Earth Element Abundances in Refractory Inclusions from Y-81020 (CO3.0) Chondrite: Evidence of REE Fractionation Under Variable Conditions [#1514]*

REE analyses were performed for refractory inclusions from Y-81020 chondrite. One inclusion shows HREE-depletion with large positive anomalies in Eu and Yb. Fractionation conditions to produce such REE patterns are discussed.

Krot A. N. Ulyanov A. A. Ivanova M. A. 
*Refractory Inclusions and Aluminum-rich Chondrules in the CB/CH-like Carbonaceous Chondrite Isheyevo [#1226]*

The CAIs and Al-rich chondrules in Isheyevo are texturally and mineralogically similar to those in other previously studied CH chondrites and to a lesser degree to those in the CB chondrites and different from those in CO, CM, CR, and CV chondrites.

Plagge M. Ott U. Hoppe P. 
*Search for Extinct Chlorine-36 in an Allende CAI [#1287]*

Using the Nano-SIMS, we have searched for enhanced 36S abundances due to decay of shortlived 36Cl (T½ = 0.3 Ma) in sodalite grains from a fine-grained Allende CAI. With 35Cl/34S ranging up to ~30,000, no evidence was found.

Ushikubo T. Guan Y. Leshin L. A. 
*10Be-10B Systematics of Hibonite-bearing Inclusions from Murchison (CM2) and Kainsaz (CO3) [#2368]*

10Be-10B systematics of hibonite inclusions were measured. Although their δ10Ti range from -20‰ to +20‰, all the samples tend to show 10B-excesses.

Fuji T. Moynier F. Telouk P. Albarède F. 
*Mass-independent Isotope Fractionation of Molybdenum and Ruthenium in Murchison [#1656]*

We propose that isotopic anomalies of Mo and Ru found in Murchison (CM2) may be due to the nuclear field shift effect. This shift results from a mass-independent character via the nuclear charge distribution.

Quitté G. Zanda B. Halliday A. N. Latkoczy C. Günther D. 
*Search for 60Fe in Chondrules from Allende and Tieschitz [#1856]*

A new technique using MC-ICPMS permits to measure Ni isotopes with high precision in individual chondrules. Allende (CV3.7) and Tieschitz (H3.6) chondrules generally show no 60Ni-excess because Fe and Ni have been redistributed during metamorphism.
Sugiura N. Krot A. N.  
Al-Mg Dating of Ca-Al-rich Inclusions in Acfer 094 Chondrite [#1265]
Al-Mg dating of Ca-Al-rich inclusions in Acfer 094 chondrite was made. Out of 14 CAIs, 11 show nearly canonical initial 
$^{27}\text{Al}/^{27}\text{Al}$ ratios, whereas 3 show no resolvable excesses in $^{26}\text{Mg}$.

Schoenbeck T. W. Kleine T. Irving A. J.  
Chemical and Hf-W Isotopic Composition of CV Metachondrite NWA 3133 [#1550]
We present petrographic features, mineral composition, oxygen isotopes, bulk chemistry and Hf-W data of the metachondrite 
NWA 3133. This data suggests that NWA 3133 formed from a CV chondrite precursor and was metamorphosed early in the 
solar system.

Shahar A. Young E. D.  
Silicon Isotope Ratios in CAIs: In-Situ Laser-Ablation MC-ICPMS Measurements and Comparisons with Magnesium 
Isotope Ratios [#1493]
In-situ Si isotope ratios were measured in an Allende CAI using LA-MC-ICPMS and the results were compared with Mg 
isotope ratios. The new Si isotope data constrain parameters related to the diffusion of Si isotopes in CAI liquids.

de Leuw S. Wasson J. T. Rubin A. E. Papanastassiou D. A.  
Petrographic Search for the Carriers of Isotopically Anomalous Chromium in Carbonaceous Chondrites [#1352]
Electron probe studies were performed on a thin section from the Kainsaz meteorite in order to identify phases for Cr isotopic 
studies with the purpose of identifying the carrier phase of the observed $^{54}\text{Cr}$ anomalies in carbonaceous chondrites.

Jogo K. Shih C.-Y. Reese Y. D. Nyquist L. E.  
$^{53}\text{Mn}-^{53}\text{Cr}$ Systematics of R-Chondrite NWA 753 [#1518]
We report the study of the Mn-Cr systematics of the R-chondrite NWA753. The conclusions are an initially heterogeneous 
distribution of $^{53}\text{Mn}$ in the early solar system, or variations in initial Cr-isotopic compositions, possibly correlated to 
O-isotope variations.

Koiwa Y. Shirai N. Ebihara M.  
Fractionation of Platinum Group Elements in Carbonaceous Chondrites [#1928]
We analyzed platinum group elements (PGEs: Os, Ir, Ru, Pt, Rh and Pd) in carbonaceous chondrites. We consider whether 
the PGEs data indicate the record of nebula conditions and processes.

Yamamoto Y. Nakamura T. Noguchi T. Okazaki R. Nagao K.  
Temperature Dependence of Mineralogical and Noble Gas Compositional Changes During Experimental Aqueous Alteration 
of Ningqiang [#1520]
Aqueous alteration experiment of Ningqiang carbonaceous chondrite at 100°C and 200°C shows that mineralogical and noble 
gas compositional changes during aqueous alteration greatly depend on the temperature of alteration.

Bonal L. Rouzaud J.-N. Quirico E.  
Metamorphic Control of Noble Gas Abundances in Pristine Chondrites [#1792]
The structure and texture of IOM was studied by HRTEM in Kaba, Leoville, Mokoia, Allende,Tieschitz. We revisit the 
question of the metamorphic control of the Q (P1), P3 and P6 components, the carrier of the Q phase.

Yabuta H. Cody G. D. Alexander C. M. O’D.  
Quantitative Study of Ether Group Molecules in Insoluble Organic Matter from Carbonaceous Chondrites by CuO-NaOH 
Selective Degradation [#1820]
CuO-NaOH degradation of the insoluble organic matter (IOM) from the Murchison meteorite was conducted. A variety of 
carboxylic acids were indentified. Oxalic acid was most abundant. It was estimated that approximately ~30% of the IOM 
including ether groups containing molecules.

Derenne S. Rouzaud J.-N. Robert F. Pizzarello S.  
Polyaromatic Units from Tagish Lake Insoluble Organic Matter [#1251]
Aromatic units in Tagish Lake insoluble organic matter are of similar size as those of Orgueil and Murchison in spite of a 
higher aromaticity.
Huang Y. Alexandre M. R. Wang Y. Brearley A. J. Cody G. Alexander C. M. O’D.
*Molecular and Isotopic Distributions of Aliphatic Side Chain Carbonaceous Chondrites [#2122]*
The aim of this work is to understand the chemical structures and isotopic variations of the aliphatic side chains in the Insoluble Organic Matter (IOM) of different meteorites.

Okazaki R. Nakamura T.
*Mineralogy and Oxygen Isotopes of Unmelted Antarctic Micrometeorites [#1510]*
We report mineralogical characteristics and oxygen isotope compositions determined for unmelted micrometeorites collected from Kuwagata Nunataks in Antarctica.