

Tuesday, March 24, 2009

POSTER SESSION I: CAIs AND CHONDRULES: RECORDS OF EARLY SOLAR SYSTEM PROCESSES

6:30 p.m. Town Center Exhibit Area

Makide K. Nagashima K. Krot A. N. Huss G. R.

[*Oxygen Isotopic Compositions of Solar, Micrometer-sized Corundum, Hibonite and Spinel Grains in Acid-resistant Residues from Ordinary and Carbonaceous Chondrites*](#) [#2079]

We report O-isotope compositions of refractory oxide grains in acid-resistant residues from primitive chondrites using the UH ims-1280 ion microprobe. They are consistent with $\Delta^{17}\text{O}$ values of the solar nebular and the Sun, $\sim 25\%$, inferred from CAIs.

Craig J. Sears D. W. G.

[*Induced Thermoluminescence Properties of Forsterite and Implications for the History of Primitive Solar System Materials*](#) [#1169]

A study of micrometeorites and Semarkona matrix indicated forsterite is responsible for the TL. We examined forsterite from several terrestrial environments. Results indicated the forsterite in these materials may have an igneous origin, possibly from chondrule formation.

Ma C. Beckett J. R. Rossman G. R. Connolly H. C. Jr. Guan Y. Eiler J. M. Hofmann A. E.

[*In-Situ Discovery of a Cluster of Refractory Grains in an Allende Ferromagnesian Chondrule*](#) [#2138]

A unique corundum-rich cluster of irregular micrometer-sized refractory grains has been discovered in a type IA chondrule from Allende. The cluster also contains refractory phases of rutile, khamrabaevite, and a new mineral Ti_2O_3 .

Boesenberg J. S. Ebel D. S.

[*Experiments to Confirm Condensed Phase Assemblages Predicted by Equilibrium Thermodynamic Calculation in Dust-Enriched Systems: Preliminary Results*](#) [#2125]

Experiments were run to investigate Cr-bearing, Mg-, Al-spinel assemblages that are predicted to form during condensation in dust-enriched systems. The spinels are compared to natural Cr-rich spinels found in the carbonaceous chondrite, Allende.

Hood L. L. Ciesla F. J. Artemieva N. A. Marzari F. Weidenschilling S. J.

[*Chondrule Formation in Nebular Shock Waves Generated by Planetesimals Passing Through Jovian Resonances: Relative Importance of Bow Shocks and Impact Shocks*](#) [#1775]

We investigate (a) the relative importance for chondrule formation of planetesimal bow shocks and impact shocks; and (b) whether these shocks were numerous and widespread enough to explain the observed abundance of chondrules in chondrites.

Morris M. A. Desch S. J. Ciesla F. J.

[*Tying Up Loose Ends in Chondrule Formation by Shocks*](#) [#2300]

We discuss two unresolved issues in modeling nebular shocks: the appropriate input radiation boundary condition and the dust opacity. Resolving these issues and line cooling now allows a full calculation of shock-heated chondrule thermal histories.

Bouvier A. Wadhwa M. Simon S. B. Grossman L.

[*Magnesium Isotope Compositions of Chondrules from the Murchison and Murray Carbonaceous Chondrites*](#) [#2193]

We present new Mg isotope compositions of petrographically well-characterized chondrules from Murchison and Murray CM2 carbonaceous chondrites with the goal of understanding their formation processes and time scales.

Das J. P.

[*Fe/Mg-Fe/Mn Systematics of Chondrules and Their Host Chondrites: Clues for Their Evolution*](#) [#1497]

Fe-Mg-Mn diagram is used for chondrules and bulk of Semarkona (LL3.0), Chainpur (LL3.4), Allende (CV3), Renazzo (CR2) and Qingzhen (EH3) to understand effect of the major processes that have affected chondrites and chondrules during nebular and planetary stage evolution.

Fries M. Steele A.

[*Graphite Whiskers Discovered in CV3 Meteorites*](#) [#2514]

We report the serendipitous discovery of a small number of graphite whiskers (GWs), a rare polymorph of carbon, in a range of settings within several CV3 meteorites and present implications pertaining to meteoritics and astronomy for this finding.

Hewins R. H.

[*Minor Element Zoning of Olivine in Type IIA Chondrules in Semarkona*](#) [#1669]

P-rich zones, preserved because P diffuses slowly, mark periods of rapid growth and generally show continuous crystallization of olivine grains. They also mark onset of growth on resorbed relict grains. P X-ray maps can clarify the evolution of individual chondrules.

Varela M. E. Zinner E. Kurat G.

[*Chondrule Tieschitz IIIM: Clues to the Origin of Early Liquids?*](#) [#1390]

We report the results of an ASEM and SIMS study of Tieschitz IIIM, a porphyritic olivine chondrule that is very rich in microcrystalline mesostasis, from the Tieschitz (H3.6) unequilibrated ordinary chondrite.

Teitler S. A. Paque J. M. Cuzzi J. N. Hogan R. C.

[*Statistical Tests of Turbulent Concentration of Chondrules*](#) [#2388]

Statistical tests of several sets of chondrules support the hypothesis of sorting by an aerodynamic process, specifically the turbulent concentration mechanism. The tests rule out several other classes of sorting mechanisms.

Petaev M. I.

[*Revised Thermodynamic Properties of Ca Aluminates: Implications for the Condensation Sequences*](#) [#2407]

I provide a new dataset of thermodynamic properties of hibonite, grossite, and dmitryivanovite and discuss how it affects condensation sequences.

Jacobsen B. Matzel J. Hutcheon I. D. Ramon E. Krot A. N. Ishii H. A. Nagashima K. Yin Q.-Z.

[*The \$^{36}\text{Cl}\$ - \$^{36}\text{S}\$ Systematics of Wadalite from the Allende Meteorite*](#) [#2553]

The AJEF wadalite shows very large ^{36}S excesses correlated with the respective $^{35}\text{Cl}/^{34}\text{S}$ ratios. The slope of the best-fit line through the data yields an inferred $^{36}\text{Cl}/^{35}\text{Cl}$ ratio at the time of wadalite formation of $(17.2 \pm 2.5) \times 10^{-6}$.

Bullock E. S. MacPherson G. J.

[*A Pristine Amoeboid Olivine Aggregate Protolith from the Vigarano CV3 Chondrite*](#) [#2385]

A recently discovered amoeboid olivine aggregate from Vigarano CV3 chondrite contains a refractory, melilite-rich spherule that will allow high-precision Al-Mg isotopic dating, and will help to constrain the ages of these types of inclusion.

Farkaš J. Yu G. Huang S. Petaev M. I. Jacobsen S.

[*Formation of CAIs: Constraints from the Calcium Isotope Composition of CAI \(SJ101\) from the Allende CV3 Chondrite*](#) [#2036]

We present results of mass-dependent and non-mass-dependent calcium (Ca) isotope variations in the Ca-Al Rich Inclusion (CAI) from the Allende meteorite.