

Wednesday, March 17, 2004
FROM ANCIENT MISTS: PRESOLAR AND NEBULAR PROCESSES
1:30 p.m. Marina Plaza Ballroom

Chairs: H. Palme
G. J. MacPherson

- 1:30 p.m. Cameron A. G. W. * Lodders K.
Interpretation of the Meteoritic Extinct Radioactivity — Mean Life Relation [#1181]
 The paper by Lodders and Cameron showed that the abundances of extinct radioactivities in chondrites are proportional to the squares of their mean lives. These results are interpreted in terms of presolar galactic and solar nebula processes.
- 1:45 p.m. Yin Q.-Z. * Jacobsen S. B.
On the Issue of Molybdenum Isotopic Anomalies in Meteorites: Is It Still "FUN"? [#1942]
 Mo isotope anomalies in meteorites have generated some confusion. The issue need clarification through open discussion, to realize its full potential as a tool to study the scale and extent of heterogeneity in the solar nebula.
- 2:00 p.m. Galy A. * Hutcheon I. D. Grossman L.
(²⁶Al/²⁷Al)_o of the Solar Nebula Inferred from Al-Mg Systematic in Bulk CAIs from CV3 Chondrites [#1790]
²⁶Mg excess of bulk CAIs from Allende, Leoville and Efremovka are strongly correlated to their bulk Al/Mg ratios. The inferred ²⁶Al/²⁷Al ratio is greater than the canonical value. Implications will be discussed.
- 2:15 p.m. Hutcheon I. D. * Krot A. N. Marhas K. Goswami J.
Magnesium Isotopic Compositions of Igneous CAIs in the CR Carbonaceous Chondrites: Evidence for an Early and Late-stage Melting of CAIs [#2124]
 We have demonstrated that ¹⁶O-rich, igneous CAIs in CR chondrites are also ²⁶Al-rich, whereas ¹⁶O-poor igneous CAIs are ²⁶Al poor. This difference suggests the ¹⁶O-rich, igneous CAIs are contemporaneous with non-igneous inclusions, while ¹⁶O-poor igneous CAIs formed ~2 Ma later.
- 2:30 p.m. Kita N. T. * Lin Y. Kimura M. Morishita Y.
The ²⁶Al-²⁶Mg Chronology of a Type C CAI and POIs in Ningqiang Carbonaceous Chondrite [#1471]
 The ²⁶Al-²⁶Mg measurements of a type C CAI and POIs in Ningqiang carbonaceous chondrite indicate ²⁶Al ages of ~0 Myr and ~2.5 Myr, respectively. They also show isotopic disturbance in plagioclase which might occur on the parent body at >4 Myr after CAIs.
- 2:45 p.m. MacPherson G. J. * Petaev M. Krot A. N.
Bulk Compositions of CAIs and Al-rich Chondrules: Implications of the Reversal of the Anorthite / Forsterite Condensation Sequence at Low Nebular Pressures [#1838]
 Equilibrium nebular condensation at P(T) < 10⁻⁴ bars causes anorthite to condense prior to forsterite. The resulting bulk composition trend matches observed compositions of Types B and C CAIs, and Al-rich chondrules, better than previous results.
- 3:00 p.m. BREAK
- 3:15 p.m. Toppani A. * Libourel G. Robert F. Ghanbaja J. Zimmermann L.
Synthesis of Refractory Minerals by High-Temperature Condensation of a Gas of Solar Composition [#1726]
 For the first time, CAI minerals were condensed at high-temperature from a gas of solar composition in laboratory conditions.

- 3:30 p.m. Richter F. M. Davis A. M. *
Elemental and Isotopic Fractionation by Diffusion-limited Evaporation [#2047]
Diffusive isotopic fractionation leads to significant isotopic enrichment of residue in evaporation of volatile components from multicomponent systems under highly diffusion-limited conditions.
- 3:45 p.m. Janney P. E. * Mendybaev R. A. Dauphas N. Davis A. M. Richter F. M. Wadhwa M.
"Nonideal" Isotopic Fractionation Behavior of Magnesium in Evaporation Residues [#2092]
We present high-precision Mg isotope data for experimentally produced evaporation residues that confirms the nonideal kinetic isotopic fractionation behavior of Mg in silicate evaporation residues.
- 4:00 p.m. Simon S. B. * Grossman L. Hutcheon I. D. Williams R. W. Galy A. Fedkin A. V. Clayton R. N. Mayeda T. K.
Determination of Primordial Refractory Inclusion Compositions [#1684]
We use new Mg and Si isotopic data and data from the literature to extrapolate from measured bulk chemical compositions of CAIs to their original, pre-evaporation chemical compositions.
- 4:15 p.m. Burnett D. S. Paque J. M. * Beckett J. R.
Zoning Patterns in Spinel from Type B Ca-Al-rich Inclusions: Constraints on Sub-Solidus Thermal History [#1253]
Spinel from the Allende CAI TS-34 have been analyzed for Fe, V, and Ti to discern systematic zoning patterns that reflect crystallization, alteration and sub-solidus re-equilibration processes.
- 4:30 p.m. Yurimoto H. * Nagashima K. Emori H.
Radial Migration of Materials from Inner to Outer Solar Nebula: Evidence from Meteorite Matrix [#1649]
We report ¹⁶O-rich enstatite micro-objects coexisting with carbonaceous presolar grains in the matrix of a primitive meteorite using in-situ high-precision isotope imaging, indicating evidence of material migration from inner to outer solar nebula.
- 4:45 p.m. Palme H. * Pack A. Shelley J. M. G. Burkhardt C.
Refractory Forsterites in Chondritic Meteorites, a Link Between CAIs and Chondrules [#2023]
The siderophile elements Ni and Co and the moderately volatile element Mn have very low but well defined concentrations in refractory forsterites of CC and OC and thus formed under similar conditions, at high T and low fO₂.