Tuesday, March 13, 2001
REFRACTORY INCLUSIONS
1:30 p.m. Room A

Chairs: G. J. MacPherson
D. S. Ebel

Ebel D. S. * Grossman L.
Single Stage Evaporation of Solar Condensate Dust to Make CAIs [#2008]
Cooling rates and peak T are found, to predict observed chemical and isotopic compositions, and melilite zoning, of Type A and B CAIs, by cooling, evaporating, and crystallizing solar condensate precursors instantly heated in 1 microbar pure H2.

Richter F. M. * Davis A. M.
Effect of Diffusion on the Kinetic Isotopic Fractionation of Silicate Liquids by Evaporation [#1413]
The effects of diffusion on kinetic isotopic fractionation during evaporation of silicate liquids are modeled and applied to the evaporation of CMAS melts and to a recently published discussion of K isotopic fractionation during evaporation.

Ito M. * Yurimoto H. Morioka M. Nagasawa H.
25Mg Diffusion in Åkermanite, Gehlenite and Åk30Geh70 Solid Solution [#1518]
We have determined 25Mg diffusion coefficients in endmembers of melilite, Åkermanite and gehlenite, and Åk70-Geh30 solid solution crystals along the a-axis, and evaluated the compositional dependence of Mg diffusion coefficient in melilite.

Connolly H. C. Jr.* Burnett D. S.
Experimental Constraints on Type B CAI Formation: (1) fO2 Variations in Spinel Minor Element Partitioning, (2) Sub-Solidus Re-Equilibration Effects [#1149]
Our experimental results on an average type B CAI for spinel+liquid field at a range of fO2 conditions we show that observed abundances of Ti and V of spinels enclosed by fassaites may have been, at least in part, produced by sub-solidus re-equilibration.

Yutimoto H. * Rubin A. E. Itoh S. Wasson J. T.
Non-Stoichiometric Al-rich Spinel in an Ultra-Refractory Inclusion from CO Chondrite [#1557]
We describe a unique refractory inclusion having nonstoichiometric Al-rich spinel in the exceptionally pristine CO3.0 chondrite Yamato 81020. This inclusion was generated by two-stage heating events within a span of 0.2 million years.

Krot A. N. * McKeegan K. D. Russell S. S. Meibom A. Zipfel J. Keil K.
16O-poor Refractory Inclusions in CB Chondrites [#1229]
CAIs from Hammadah al Hamra 237 and QUE 94411 have 16O-poor compositions with Δ17O ranging from −6‰ to −10‰ for all analyzed minerals (grossite, hibonite, melilite, pyroxene, spinel), suggesting formation in an isotopically distinct reservoir.

Kunihiro T. * Nagashima K. Yurimoto H.
High Precision Mapping of O Isotopes of a CAI, HN3-1, Using SIMS with SCAPS [#1585]
We develop new isotope imaging technique using a two-dimensional solid-state ion detector. We succeed quantitative three O isotope mapping of a CAI, HN3-1, within micron resolution and permil accuracy.

Choi B.-G. * Yurimoto H. Wasserburg G. J.
Two Forsterite-bearing Refractory Inclusions in Allende Having Oxygen Isotopic Compositions Similar to Chondrules [#1591]
We report two forsterite-bearing refractory inclusions in Allende. They consist of spinel, olivine, pyroxene (and anorthite) and O-isotopic compositions of the minerals are similar to chondrules in carbonaceous chondrites.
Imai H. * Yurimoto H.
*Two Generations of Olivine-Growth in an Amoeboid Olivine Aggregate from the Allende Meteorite [1580]*
We present petrologic and oxygen isotopic studies of Mg-rich and Fe-rich olivines in an AOA from the Allende meteorite in order to constrain the formation processes of olivines.

Wasserburg G. J. * Huss G. R. Papanastassiou D. P.
*The Blue Angel Revisited [2031]*
The Blue Angel is a hibonite-rich calcite-bearing CAI from Murchison that has condensation textures. We have measured Al-Mg isotopic systematics by ion probe and find a good isochron with ($^{26}\text{Al}/^{27}\text{Al})_0 = 5 \times 10^{-5}$. Implications are discussed.

McKeegan K. D. * Chaussidon M. Krot A. N. Robert F. Goswami J. N. Hutcheon I. D.
*Extinct Radionuclide Abundances in Ca, Al-rich Inclusions from the CV Chondrites Allende and Efremovka: A Search for Synchronicity [2175]*
We report new Be-B data on 4 CAIs and initial comparisons to the Al-Mg record in the same inclusions.

MacPherson G. J. * Huss G. R.
*Extinct $^{10}\text{Be}$ in CAIs from Vigarano, Leoville, and Axtell [1882]*
Evidence for extinct $^{10}\text{Be}$ was found in three Type A, 1 Type B, and 1 FUN CAIs from Vigarano, Leoville, and Axtell. Initial $^{10}\text{Be}/^{9}\text{Be}$ is in the range $0.6 - 1.5 \times 10^{-3}$ and does not strictly correlate with $^{26}\text{Al}/^{27}\text{Al}$, so the two systems are decoupled.

Sugiura N. *
*Boron Isotopic Compositions in Chondrules: Anorthite-rich Chondrules in the Yamato 82094 (CO3) Chondrite [1277]*
Boron isotopic compositions and Be/B ratios were measured in anorthite in chondrules. B isotopic anomalies are small. But they appear to be correlated with Be/B ratios, suggesting the presence of live $^{10}\text{Be}$ at the time of chondrule formation.