Monday, March 14, 2005
PRESOLAR GRAINS
8:30 a.m. Marina Plaza Ballroom

Seats: L. R. Nittler
T. K. Croat


**Discovery of Abundant Presolar Silicates in Subgroups of Antarctic Micrometeorites [#1227]**

Six presolar silicates have been discovered in three Antarctic micrometeorites based on oxygen isotopic analyses with a NanoSIMS. Four of them were classified as Group 1 grains, and two as Group 4 grains.

8:45 a.m. Hoppe P. * Mostefaoui S. Stephan T.

**NanoSIMS Oxygen- and Sulfur-Isotope Imaging of Primitive Solar System Materials [#1301]**

We report results from an O- and S-isotope imaging survey of the Acfer 094 meteorite and of eleven microtome sections from two non-cluster IDPs. Based on large O-isotopic anomalies, 7 presolar grains, silicates and spinel, were found in Acfer 094.

9:00 a.m. Nguyen A. N. * Zinner E. Stroud R. M.

**Continued Characterization of Presolar Silicate Grains from the Acfer 094 Carbonaceous Chondrite [#2196]**

We have identified 11 additional presolar silicates and 8 presolar oxides from the Acfer 094 meteorite. The Si isotopic compositions of ten presolar silicates are reported. TEM study of one grain identified it as an amorphous silicate containing large amounts of Mg and Fe.

9:15 a.m. Stadermann F. J. * Floss C. Bland P. A. Vicenzi E. P. Rost D.

**An Oxygen-18 Rich Presolar Silicate Grain from the Acfer 094 Meteorite: A NanoSIMS and ToF-SIMS Study [#2004]**

Accidental discovery of a presolar Fe-rich olivine in a study of micro-CAIs.

9:30 a.m. Kobayashi S. * Tonotani A. Sakamoto N. Nagashima K. Krot A. N. Yurimoto H.

**Presolar Silicate Grains from Primitive Carbonaceous Chondrites Y-81025, ALHA 77307, Adelaide and Acfer 094 [#1931]**

The abundances of presolar silicates are different among the least metamorphosed and altered chondrites. This may indicate heterogeneous distribution of presolar silicates among chondrite forming regions in the solar nebula.

9:45 a.m. Nittler L. R. * Alexander C. M. O’D. Stadermann F. J. Zinner E. K.

**Presolar Al-, Ca-, and Ti-rich Oxide Grains in the Krymka Meteorite [#2200]**

We report the isotopic data (O, Mg-Al, K, Ca and Ti) for 46 new presolar oxide grains from the Krymka meteorite, including 15 Hibonite and 2 TiO2 grains. The grains show a wide range of isotopic anomalies including evidence for extinct 41Ca.

10:00 a.m. Bernatowicz T. J. * Akande O. W. Croat T. K. Cowsik R.

**Constraints on Grain Formation Around Carbon Stars from Laboratory Studies of Presolar Graphite [#1509]**

Realistic models of mass outflows from AGB stars (1.1-5 solar masses) show that graphite grains grow over a 2—10 y time interval at radii of 2.3—3.7 A.U. Pressure constraints require that grains form in clumps or jets with enhanced density.
10:15 a.m.  Amari S.  *  Zinner E.  Lewis R. S.  
*Presolar Graphite and Its Noble Gases [#1867]*
Of four graphite-rich fractions from the Murchison meteorite, the three low-density fractions including KFB1 (2.10–2.15 g/cm³) contain 18O-rich grains with 20 < ¹²C/¹³C < 200. Populations of grains that carry Kr-S and Ne-G in KFB1 are still uncertain.

10:30 a.m.  Jadhav M.  Maruoka T.  Amari S.  Zinner E.  
*Finally: Presolar Graphite Grains Identified in Orgueil [#1976]*
We report the successful isolation of presolar graphite grains from Orgueil. Carbon and oxygen isotopic data for these grains are presented, and the isotopic characteristics of Orgueil graphite are found to be similar to those of Murchison graphite.

10:45 a.m.  Heck Ph. R.  *  Marhas K. K.  Baur H.  Hoppe P.  Wieler R.  
*Presolar He and Ne in Single Circumstellar SiC Grains Extracted from the Murchison and Murray Meteorites [#1938]*
We present new He and Ne analyses on single presolar SiC grains from the Murchison and Murray carbonaceous chondrites. We find that about a third of all studied grains contain nucleosynthetic ⁴He and/or ²²Ne above our detection limits.

11:00 a.m.  Gilmour J. D.  *  Turner G.  
*Reconsideration of the Constraints on Nucleosynthetic Sources of Xenon in Presolar Material [#1630]*
We re-examine the constraints imposed on nucleosynthetic processes by xenon isotopic data from presolar material.

11:15 a.m.  Stroud R. M.  *  Bernatowicz T. J.  
*Surface and Internal Structure of Pristine Presolar Silicon Carbide [#2010]*
We report results from transmission electron microscopy studies of the surface and internal structure of two pristine presolar SiC grains, including definitive evidence of an oxide rim on one grain, and the presence of internal TiC and AlN grains.

11:30 a.m.  Croat T. K.  *  Stadermann F. J.  Bernatowicz T. J.  
*Internal Grains Within KFC Graphites: Implications for Their Stellar Source [#1507]*
TEM and NanoSIMS investigations find high s-process element enrichments in internal carbides, suggesting an AGB origin for most Murchison KFC presolar graphites. Other rare phases (iron phases and metallic osmium) are consistent with a SN origin.