Tuesday, March 8, 2011
UNRAVELING THE ORIGINS OF PRESOLAR GRAINS
8:30 a.m. Waterway Ballroom 4

Chairs: Larry Nittler
          Ernst Zinner

8:30 a.m. Zinner E. *  Jadhav M.  Gyngard F.  Nittler L. R.
          * Bonanza, a Huge Presolar SiC Grain of Type X [#1070]
Bonanza is a 30 µm large presolar SiC grain of Type X. This large size allows isotopic analysis of many elements. We report Al-Mg, Ca, Ti, Fe and Ni isotopic measurements.

8:45 a.m. Hoppe P. *  Fujiya W.
          * Titanium-44 and Light Sulfur in Presolar Silicon Carbide Grains with Heavy Silicon: Proof of a Supernova Origin [#1059]
We report here on C, Mg-Al, Si, S, and Ca-Ti isotope measurements on presolar SiC grains with heavy Si. Heavy Si together with light S and large excesses in ^44Ca, resulting from in situ decay of ^44Ti, are a proof for a SN origin of these grains.

9:00 a.m. Meyer B. S. *  Bojazi M. J.
          * Production of Nitrogen-15 in Explosive Helium Burning and Supernova Presolar Grains [#2376]
Production of nitrogen-15 in explosive helium burning occurs by sequences of alpha and neutron capture reactions. Shocks stronger than in current supernova models increase the rates for these reactions and may help explain the N isotopes in presolar-grain SiC-X grains.

9:15 a.m. Croat T. K. *  Jadhav M.  Lebsack E.  Bernatowicz T. J.
          * A Unique Supernova Graphite: Contemporaneous Condensation of All Things Carbonaceous [#1533]
We report a supernova graphite that contains internal subgrains of TiC, SiC, Fe and Ni silicides, and iron metal. These phases comprise a complete list of the phases predicted by equilibrium calculations to condense from C-rich supernova zones.

9:30 a.m. Stadler F. J.  Isheem D.  Zhao X.  Daulton T. L.  Floss C. *  Seidman D. N.
          * Discovery of Glassy Carbon in Meteoritic Nanodiamond Residues: Implications for Nanodiamond Origins [#1940]
Aberration corrected electron microscopy shows that Allende and Murchison nanodiamond residues contain glassy carbon in addition to diamond. The glassy carbon is a potential carrier of isotope anomalies indicative of supernova nucleosynthesis.

9:45 a.m. Stadermann F. J.  Isheem D.  Zhao X.  Daulton T. L.  Floss C. *  Seidman D. N.
          * Atom-Probe Tomographic Characterization of Meteoritic Nanodiamonds and Presolar SiC [#1595]
We have carried out atom-probe tomography on individual presolar nanodiamonds and a presolar SiC. Al in the SiC shows a banded structure and may be segregated along planar defects, possibly in solid solution as AlN. Additional data will be presented.
10:00 a.m. Zega T. J. * Nittler L. R. Stroud R. M. Alexander C. M. O’D. Kilcoyne A. L. D. 
**Ti-XANES of Solar and Presolar Hibonite** [#1465]
We report Ti-XANES measurements on solar and presolar hibonite grains. The data suggest that the redox conditions under which a presolar supernova grain condensed may have been more reducing than that of the solar grain and a presolar AGB grain.

10:15 a.m. Nittler L. R. * Gyngard F. Zinner E. Stroud R. M. 
**Mg and Ca Isotopic Anomalies in Presolar Oxides: Large Anomalies in a Group 3 Hibonite Grain** [#1872]
Large Mg and Ca isotopic anomalies in a Group 3 presolar hibonite grain are difficult to explain by models of supernovae or low-metallicity AGB stars, proposed sources of such grains. A highly $^{18}$O-rich grain points to selective mixing in supernovae.

10:30 a.m. Nguyen A. N. * Messenger S. Ito M. Rahman Z. 
**Fe and Mg Isotopic Analyses of Isotopically Unusual Presolar Silicate Grains** [#2711]
Fe and Mg isotopes are measured in presolar silicates having unusual O isotopic compositions to help identify the grains’ stellar sources and the source of Fe. These grains were first isolated by FIB milling to reduce contaminating signal.

10:45 a.m. Gyngard F. * Nittler L. R. Zinner E. Jose J. Cristallo S. 
**New Reaction Rates and Implications for Nova Nucleosynthesis and Presolar Grains** [#2675]
We report the discovery of four new O-rich presolar nova candidate grains and compare their compositions to stellar models calculated with updated nuclear reaction rates.

11:00 a.m. Pepin R. O. * Palma R. L. Gehrz R. D. Starrfield S. 
**Presolar Grains from Novae: Evidence from Helium and Neon Isotopes in Interplanetary Dust Particles (IDPs) from Comet Dust Stream Collections** [#1477]
Particles from stratospheric collectors flown to sample comet dust streams carry noble gas signatures pointing to origin in nova explosions.

11:15 a.m. Hynes K. M. * Amari S. Bernatowicz T. J. Lebsack E. Gyngard F. Nittler L. R. 
**Combined TEM and NanoSIMS Analysis of Subgrains in a SiC AB Grain** [#2332]
We report the results of NanoSIMS and TEM analysis, including isotopic, structural, chemical, and subgrain data, on a SiC AB grain. This grain contains the first oldhamite subgrains observed in a presolar grain, as well as TiC- and Fe-rich subgrains.

**Morphology of Presolar Corundum Grains from Unequilibrated Ordinary Chondrites** [#2599]
Detailed observations of morphology and crystallography of nine presolar corundum grains (seven Group I and two Group III grains) showed that presolar corundum grains commonly have a fluffy and fine-structured shape.