

**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  $\mu\text{m}$  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  $^{44}\text{Ca}$ , resulting from *in situ* decay of  $^{44}\text{Ti}$ , 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. Stroud R. M. \* Chisholm M. F. Heck P. R. Alexander C. M. O'D.  
[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. Isheim D. Zhao X. Daulton T. L. Floss C. \* Seidman D. N. Heck P. R. Pellin M. J. Savina M. R. Hiller J. Mane A. Elam J. Davis A. M. Stephan T. Amari S.  
[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 <sup>18</sup>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.
- 11:30 a.m. Takigawa A. \* Tachibana S. Nagashima K. Makide K. Huss G. R. Krot A. N. Nagahara H. Ozawa K.  
[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.