Wednesday, March 3, 2010
ORIGINS OF PRESOLAR GRAINS
1:30 p.m. Waterway Ballroom 1

Chairs: Michael Savina
        Tom Zega

1:30 p.m. Stadermann F. J. * Zhao X.  Daulton T. L.  Isheim D.  Seidman D. N.  Heck P. R.  Pellin M. J.  Savina M. R.  Davis A. M.  Stephan T.  Lewis R. S.  Amari S.  Atom-Probe Tomographic Study of the Three-Dimensional Structure of Presolar Silicon Carbide and Nanodiamonds at Atomic Resolution [#2134]
We present a promising new analytical approach for the study of presolar grains which makes it possible to reconstruct the full three-dimensional structure of an analysis volume and visualize elemental distributions in their spatial context.

1:45 p.m. Zinner E. * Gyngard F.  Lin Y.  Ti-44 and V-49 in SiC Grains of Type X Revisited [#1360]
$^{44}\text{Ti}/^{48}\text{Ti}$ and $^{49}\text{V}/^{51}\text{V}$ ratios inferred from $^{44}\text{Ca}$ and $^{49}\text{Ti}$ excesses as well as Ti isotopic ratios from presolar SiC grains of type X are compared with theoretical calculations of the interior compositions of Type II supernovae.

2:00 p.m. Hoppe P. * Gröner E.  Huth J.  Amari S.  Presolar SiC Grains from Supernovae with Unusual Silicon- and Sulfur-Isotopic Compositions [#1082]
A NanoSIMS ion imaging survey of small presolar SiC grains led to the identification of three SN grains with unusual Si- and S-isotopic ratios. These characteristics add to the complexity of SN grains and represent challenges for future SNII models.

2:15 p.m. Savina M. R. * Levine J.  Stephan T.  Dauphas N.  Davis A. M.  Knight K. B.  Pellin M. J.  Chromium Isotopes in Presolar SiC Grains [#2568]
The Cr isotopic composition of presolar SiC grains does not account for the anomalies noted in leachates of carbonaceous chondrites, nor does it agree with s-process nucleosynthesis models. It may be reflective of the origin material in the star that produced the grains.

2:30 p.m. Hynes K. M. * Amari S.  Bernatowicz T. J.  Lebsack E.  Microanalytical Investigations of Presolar SiC of Type AB [#2074]
We report the results of a coordinated NanoSIMS and TEM study, including isotopic, structural, chemical, and subgrain data, on four SiC AB grains. The stellar origin of these grains is believed to be both J stars and born-again AGB stars.

2:45 p.m. Croat T. K. * Jadhav M.  Lebsack E.  Bernatowicz T. J.  Microstructural Differences Among the Isotopic Groups of Low-Density Orgueil Graphites [#1867]
We find difference among the isotopic groups of low-density Orgueil graphites in terms of their structure and in the types of internal grains contained. TEM results are presented from one 13C-rich graphite, one nearly solar graphite, and two SN graphites.

3:00 p.m. Meier M. M. M. * Heck P. R.  Amari S.  Baur H.  Wieler R.  He-4 and Ne-22 in Individual High-Density Presolar Graphite Grains from the Murchison Meteorite [#1741]
We have analyzed 18 presolar graphite grains from the Murchison KFC1 density fraction. We confirm the low fraction (~7%) of 22Ne-rich grains found by Kehm et al. 1996 and report the first detection of $^4\text{He}$ in a graphite grain of this density fraction.
3:15 p.m. Gyngard F. * Nittler L. R. Stadermann F. J. Zinner E.  
*The Smoking Gun: 44Ti in an 16O-rich Presolar Spinel Grain* [#1152]
We report here the discovery of an extremely 16O-rich spinel grain from the Murray meteorite which also has radiogenic 44Ca from the decay of 44Ti, unequivocal evidence for origin in a supernova.

3:30 p.m. Zega T. J. * Alexander C. M. O’D. Nittler L. R. Stroud R. M.  
*The Microstructure of a Presolar Spinel Grain* [#2055]
We report TEM data on a third presolar spinel grain. It appears to be a non-stoichiometric single crystal and may have formed under non-equilibrium conditions.

3:45 p.m. Nittler L. R. * Qin L. Alexander C. M. O’D. Wang J. Carlson R. Staderman F. J.  
*Extreme Uncorrelated 54Cr, 17O, and 18O Enrichments in Sub-Micron Orgueil Grains* [#2071]
We report several sub-micron oxide grains in an Orgueil acid residue with extreme 54Cr enrichments but normal O, and numerous presolar oxide grains, some with extreme 17O or 18O enrichments. The origin of the 54Cr-rich grains is unresolved.

4:00 p.m. Nguyen A. N. * Messenger S. Ito M. Rahman Z.  
*Mg Isotopic Measurement of FIB-isolated Presolar Silicate Grains* [#2413]
The Mg isotopic compositions of rare presolar silicates are analyzed to assess their stellar sources. Surrounding grains of solar composition were removed prior to analysis by focused ion beam milling, resulting in isotopic measurements undiluted by neighboring materials.

*The Origin of Presolar Silica Grains in AGB Stars* [#1812]
We have found two presolar silica grains in ALH A77307, which exhibit excesses in 17O but are normal in 18O. Silicon-oxide grains probably form during rapid cooling under non-equilibrium conditions in O-rich AGB stars with low Mg/Si ratios.

4:30 p.m. Floss C. * Stadermann F. J.  
*Presolar Silicate and Oxide Grains in the Ungrouped Carbonaceous Chondrite Adelaide: Effects of Thermal Annealing* [#1251]
The Adelaide C chondrite has lower abundances of O-anomalous grains than other primitive meteorites. Fe contents in its presolar silicates are also distinctly elevated. Both are likely the result of thermal annealing experienced by this meteorite.