

**Monday, March 23, 2009**  
**PRESOLAR GRAINS: STRUCTURES AND ORIGINS**  
**2:30 p.m. Waterway Ballroom 5**

**Chairs:** Manavi Jadhav  
 Tom Zega

- 2:30 p.m. Vollmer C. \* Brenker F. E. Hoppe P. Stroud R. M.  
[Transmission Electron Microscopy of Silicate Stardust Detected by NanoSIMS Imaging in Acfer 094](#) [#1262]  
 We report on combined NanoSIMS/TEM results of eight presolar silicates from the Acfer 094 meteorite. The mineralogical information will be compared to silicate dust properties obtained from infrared spectra and formation mechanisms in circumstellar outflows.
- 2:45 p.m. Stroud R. M. \* Floss C. Stadermann F. J.  
[Structure, Elemental Composition and Isotopic Composition of Presolar Silicates in MET 00426](#) [#1063]  
 We investigated two presolar silicates from MET 00426 by TEM, Auger and NanoSIMS. The finely nanocrystalline microstructures and the non-stoichiometric compositions together indicate that these grains condensed under complex, non-equilibrium conditions.
- 3:00 p.m. Zega T. J. \* Alexander C. M. O'D. Nittler L. R. Stroud R. M.  
[Transmission Electron Microscopy Analysis of a Presolar Spinel Grain](#) [#1342]  
 We report the first microstructural analysis of a presolar spinel. The data are consistent with equilibrium condensation and show that O-rich AGB stars can condense single-crystal spinel grains.
- 3:15 p.m. Gyngard F. \* Morgand A. Nittler L. R. Stadermann F. J. Zinner E.  
[Extreme Oxygen and Magnesium Isotopic Anomalies in Presolar Spinel Grains from the Murray Carbonaceous Meteorite](#) [#1386]  
 We report here the extremely anomalous O and Mg isotopic compositions of some newly discovered presolar spinel grains from the Murray meteorite.
- 3:30 p.m. Hynes K. M. \* Amari S. Croat T. K. Mertz A. F. Bernatowicz T. J.  
[An Analysis of Presolar SiC X Grains and Mainstream Grains Using Transmission Electron Microscopy](#) [#1398]  
 We report the results of a coordinated NanoSIMS and TEM study of seven SiC X grains and two mainstream grains from the same size fraction in order to compare the isotopic and microstructural results of formation in two very different stellar environments.
- 3:45 p.m. Jadhav M. \* Amari S. Zinner E. Maruoka T.  
[Continued Isotopic Studies of Low-Density Graphite Grains from Orgueil](#) [#2394]  
 We report C, N, O, Si, Al-Mg, K and Ca isotopic ratios in low-density presolar graphite grains from Orgueil. Some inferred  $^{26}\text{Al}/^{27}\text{Al}$  ratios are as high as those seen in SiC-X grains - much larger than those previously observed in low-density graphites.
- 4:00 p.m. Croat T. K. \* Jadhav M. Lebsack E. Bernatowicz T. J.  
[Low-Density Presolar Graphite Spherules from the Orgueil Meteorite](#) [#2175]  
 TEM studies of two Orgueil low-density SN graphites reveal internal SiCs and TiAl-rich grains, phases not seen in Murchison SN graphites. Metallic RuOs-rich grains in a  $^{13}\text{C}$ -rich graphite indicate that the source of  $^{13}\text{C}$ -rich graphites is s-process enriched.

- 4:15 p.m. Daulton T. L. \* Bernatowicz T. J. Croat T. K.  
[\*Alteration of TiC in Supernovae Outflows: Transmission Electron Microscopy Study of TiC Subgrains in Supernovae Graphite\*](#) [#1996]  
TiC and metal subgrains within supernovae graphites often exhibit rims suggesting alteration prior to encapsulation in the graphite. Detailed TEM microcharacterizations of the rimmed grains are performed to determine the mechanism of rim formation.
- 4:30 p.m. Fedkin A. V. \* Meyer B. S. Grossman L. Desch S. J.  
[\*Condensation in Supernova Ejecta at High Spatial Resolution\*](#) [#1699]  
<sup>44</sup>Ti-rich TiC condenses before graphite in SN ejecta only if thin sub-layers of the main burning zones mix together; such mixing is also needed to form Fe-olivine. High-T phases change from carbides to oxides along composition gradients within the He/N zone.
- 4:45 p.m. Levine J. Savina M. R. Dauphas N. Davis A. M. Isselhardt B. H. Knight K. B. Lewis R. S. Pellin M. J. Stephan T.  
[\*First Four-Isotope Measurements of Chromium in Presolar SiC Grains\*](#) [#1982]  
We report measured abundances of all four chromium isotopes in presolar SiC grains, obtained by resonance ionization mass spectrometry.