

Thursday, March 22, 2012
PRESOLAR GRAINS: INSIGHT INTO STELLAR PROCESSES
1:30 p.m. Montgomery Ballroom

Chairs: **Philipp Heck**
Christine Floss

- 1:30 p.m. Hoppe P. * Zinner E.
[*Sulfur-Isotopic Signature of Presolar SiC Grains of Type X*](#) [#1414]
 We report here results of S-isotope measurements on presolar SiC X grains made in order to gain further insights into the S-isotopic signature of SN dust and the chemical and physical processes taking place in SNII ejecta.
- 1:45 p.m. Orthous-Daunay F.-R. * Gyngard F. Moynier F. Zinner E.
[*Multi-Element Isotopic Compositions of Presolar SiC Grains from the Indarch Meteorite*](#) [#2679]
 We present a NanoSIMS study of grains isolated from Indarch with sizes between 0.4 and 1 μm . Si and C isotopic compositions of more than thousand particles were measured. Grains with extreme anomalies were selected for multi-element investigation.
- 2:00 p.m. Heck P. R. * Hoppe P. Huth J.
[*Sulfur Isotopic Analysis of 24 Sulfur-Rich Dust Impact Craters from Comet Wild 2*](#) [#1794]
 All but one crater have normal S-isotopic compositions indicative of a solar system origin. A small anomaly in one crater could be a mixture between a presolar supernova sulfide and a normal sulfide; or due to fractionation or a statistical outlier.
- 2:15 p.m. Trappitsch R. * Savina M. R. Willingham D. G. Liu N. Pellin M. J.
 Dauphas N. Davis A. M.
[*Iron Isotopic Abundances in Presolar Grains*](#) [#2497]
 Iron-isotope abundances in 12 presolar grains were measured using RIMS. Our data do not show isotope anomalies predicted by AGB star models. Contamination with solar system material or galactic chemical evolution might mask AGB contribution.
- 2:30 p.m. Ávila J. N. Ireland T. R. * Lugaro M. Gyngard F. Zinner E. Mallmann G. Holden P.
[*U-Th-Pb Isotopic Compositions in Stardust SiC Grains from the Murchison Meteorite*](#) [#2709]
 U-Th-Pb isotopic compositions have been measured from presolar SiC grains from Murchison. Pb isotopic compositions are dominated by an s-process component. U and Th concentrations are quite variable.
- 2:45 p.m. Zinner E. * Jadhav M.
[*Internal "Isochrones" Within Presolar Dust Grains*](#) [#1122]
 NanoSIMS depth profiles of parent and daughter isotopes of radioactive nuclides in presolar graphite grains let us construct isochrone-type plots. The perfect correlation of such plots indicates quantitative retention of the daughter isotopes.
- 3:00 p.m. Groopman E. * Wopenka B. Bernatowicz T. J. Zinner E.
[*Heterogeneous Distributions of C, N, and O Isotopes and Raman Signatures in Low-Density Supernova Graphite Grains from Orgueil*](#) [#2126]
 We observe heterogeneities in the C-, N-, and O-isotopic compositions of low-density graphite grains from Orgueil. We make the first observations of highly anomalous and spatially-correlated hotspots in $^{18}\text{O}/^{16}\text{O}$ and $^{15}\text{N}/^{14}\text{N}$ delta values.

- 3:15 p.m. Daulton T. L. * Bernatowicz T. J. Croat T. K.
[Electron Energy Loss Spectral Imaging of TiC Formed by Supernovae: A Scanning Transmission Electron Microscopy Study of Grain Formation and Alteration Mechanisms](#) [#2247]
Micrometer-sized spherules of graphite formed by supernovae contain numerous TiC and Fe-Ni subgrains. These subgrains often have disordered surface rims. The mechanism(s) of rim formation on these subgrains is studied by transmission electron microscopy.
- 3:30 p.m. Croat T. K. * Berg T. Bernatowicz T. J. Jadhav M.
[Presolar Refractory Metal Nuggets](#) [#1503]
Presolar RMN microstructures show they are primary high T circumstellar condensates, which are then encapsulated in graphite at 1580–1815 K. Similarities between presolar RMNs and isolated RMNs suggest the latter are among the first primary solar system condensates.
- 3:45 p.m. Nguyen A. N. * Keller L. P. Rahman Z. Messenger S.
[Mineralogical Studies of a Highly ¹⁷O-Depleted and a ¹⁷O-Rich Presolar Grain from the Acfer 094 Meteorite](#) [#2755]
We report the mineralogical characterization by transmission electron microscopy (TEM) of two presolar O-rich grains that have different stellar origins.
- 4:00 p.m. Floss C. * Noguchi T. Yada T.
[Ultracarbonaceous Antarctic Micrometeorites: Origins and Relationships to Other Primitive Extraterrestrial Materials](#) [#1217]
Isotopic analyses of micrometeorite TT54B397 show the presence of abundant presolar grains, but normal N (and C) isotopic compositions. The carbonaceous matter in this (and other) UCAMMs may have a solar nebular, rather than interstellar, origin.
- 4:15 p.m. Nittler L. R. * Wang J. Alexander C. M. O'D.
[Confirmation of Extreme ⁵⁴Cr Enrichments in Orgueil Nano-Oxides and Correlated O-Isotope Measurements](#) [#2442]
We confirm extreme ⁵⁴Cr enrichments previously inferred for Orgueil nano-oxides. Normal O in the same grains rules out direct formation in supernovae. Hundreds of new presolar grains were also found, including the most ¹⁷O-rich sample ever measured.
- 4:30 p.m. Zega T. J. * Nittler L. R. Stroud R. M. Alexander C. M. O'D. Kilcoyne A. L. D.
[Measurement of the Oxidation State of Ti in Solar and Presolar Hibonite](#) [#2338]
We report measurement of the oxidation state of Ti in solar and presolar hibonite. We infer the oxygen fugacity under which the grains formed or last equilibrated.