

Thursday, March 22, 2012

## POSTER SESSION II: PRESOLAR GRAINS: INSIGHT INTO STELLAR PROCESSES

6:00 p.m. Town Center Exhibit Area

Jadhav M. Nagashima K. Huss G. R. Ogliore R. C.

[Nitrogen Isotopic Compositions of Mainstream SiC Grains from Chondrites with a Range of Cosmic Ray Exposure Ages](#) [#2826]

We present and compare N isotopic data of mainstream SiC grains from chondrites with varying CRE ages in an attempt to explain low  $^{14}\text{N}/^{15}\text{N}$  ratios. The N isotopic probability distributions overlap considerably making any correlation with CRE ages irresolvable.

Henkel T. Sattaur A. Lyon I. C.

[Deconvoluting TOFSIMS Depth Profiles of Presolar SiC Grains](#) [#2135]

The sputtering process of presolar grains is simulated to deconvolute TOFSIMS depth profiles. This helps to determine the interior structure, which provides clues about the history of the grains like shockwave implantation of trace elements.

Liu N. Savina M. R. Davis A. M. Shkrob I. Marin T. Pellin M. Willingham D.

[Development of a Resonance Ionization Method for Isotopic Analysis of Neodymium at Trace Levels in Presolar SiC Grains](#) [#2401]

We developed a resonance ionization method with enough precision for isotopic analysis of neodymium in single presolar silicon carbide (SiC) grains. We analyzed two standards and agreement between both results indicates that the method is robust.

Amari S. Zinner E. Gallino R.

[Presolar Graphite from the Murchison Meteorite: Puzzles Related to Its Origins](#) [#1031]

Carbon, O and Al isotopic ratios of many low-density grains are hard to reproduce by supernova mixing if C-rich conditions are necessary to form grains. Many grains from high-density fractions most likely formed in low-metallicity AGB stars.

Xu Y. C. Amari S. Gyngard F. Zinner E. Lin Y.

[Isotopic Studies of Presolar Graphite Grains from the Murchison Meteorite](#) [#1094]

Isotopic ratios of C, N, and O are compared to morphology and density of presolar graphite grains from the Murchison meteorite.

Heck P. R. Pellin M. J. Davis A. M. Isheim D. Seidman D. N. Hiller J. Mane A. Elam J.

Savina M. R. Auciello O. Stephan T. Larson D. J. Lewis J. Floss C. Daulton T. L.

[Atom-Probe Tomographic Analysis: Towards Carbon Isotope Ratios in Individual Nanodiamonds](#) [#1790]

We successfully analyzed individual meteoritic and synthetic nanodiamonds with highly improved sample stability. The mass spectra have a low background and display well-defined C peaks. Tomographic reconstructions to ~100 nm depth were performed.

Lewis J. B. Isheim D. Floss C. Daulton T. Seidman D. N. Heck P. R. Davis A. M. Pellin M. J.

Savina M. R. Hiller J. Mane A. Elam J. Auciello O. Stephan T.

[Meteoritic Nanodiamond Analysis by Atom-Probe Tomography](#) [#2192]

We are using atom-probe tomography to clarify the origin of meteoritic nanodiamonds. We report new data and revised analytical protocols in our continuing efforts to quantitatively determine the C-isotopic ratios of individual ~3 nm nanodiamonds.

Takigawa A. Tachibana S. Nagahara H. Ozawa K.

[Anisotropic Evaporation and Condensation of Circumstellar Corundum](#) [#1875]

We experimentally showed the evaporation and condensation anisotropy of corundum under circumstellar conditions. Calculated infrared spectra of anisotropically condensed corundum well reproduce the 13- $\mu\text{m}$  peaks observed from O-rich AGB stars.

Ong W. J. Floss C. Gyngard F.

[Negative Secondary Ion Measurements of  \$^{54}\text{Fe}/^{56}\text{Fe}\$  and  \$^{57}\text{Fe}/^{56}\text{Fe}\$  in Presolar Silicate Grains from Acfer 094](#) [#1225]

We measured  $^{54}\text{Fe}/^{56}\text{Fe}$  and  $^{57}\text{Fe}/^{56}\text{Fe}$  as negative secondary ions of Fe oxide in eight presolar grains. One AGB grain is enriched in  $^{54}\text{Fe}$  and  $^{57}\text{Fe}$ . Another grain is depleted in  $^{57}\text{Fe}$ ; such deficits cannot be explained by current nucleosynthetic models.

Stephan T. Davis A. M. Pellin M. J. Savina M. R. King A. J. Liu N. Rost D. Trappitsch R. Yokochi R.

[CHILI — Approaching the Final Frontiers in Lateral Resolution and Sensitivity — A Progress Report](#) [#2660]

CHILI, a new RIMS instrument, presently under construction at the University of Chicago, will achieve unprecedented sensitivity and lateral resolution. It will be applied to the analysis of samples from the Stardust mission and presolar dust.

McLeod A. S. Dominguez G. Gainsforth Z. Kelley P. Andreev G. Thiemens M. Keilmann F. Basov D. N.

[Infrared Phonon Fingerprinting of Nanocrystals Through Broadband Near-Field Spectroscopy](#) [#1828]

Near-field infrared spectroscopy is applied to the study of nanometer-scale crystals of  $\text{SiO}_2$  and  $\text{SiC}$ , revealing the spectral signatures of size effects and lattice disorder. This technique holds great promise for the analysis of returned samples.

Leitner J. Heck P. R. Hoppe P. Huth J.

[The C-, N-, and O-Isotopic Composition of Cometary Dust from Comet 81P/Wild 2](#) [#1839]

We investigated the C-, N-, and O-isotopic compositions of small ( $d < 2 \mu\text{m}$ ) impact crater residues on Stardust Al foils. Focusing on the small crater population allows a more reliable estimate of the abundance of presolar material in 81P/Wild 2.