Wednesday, March 9, 2011
EARLY SOLAR SYSTEM RESERVOIRS AND PROCESSES I:
REFRACTORY MATERIALS, ISOTOPIC ANOMALIES, AND THEIR SOLAR ORIGINS
8:30 a.m. Waterway Ballroom 4

Chairs: **Denton Ebel**
Justin Simon

8:30 a.m. Heber V. S. * McKeegan K. D.
Towards Understanding Mass-Dependent Fractionation of Solar Wind Isotopic Compositions **[#2789]**
The isotopic composition of the solar nebula for most highly-volatile elements is best deduced from solar wind. We show that isotopic fractionation of solar wind is basically quantifiable based on oxygen and noble gas data from Genesis.

8:45 a.m. Brennecka G. A. * Borg L. E. Wadhwa M.
Barium, Neodymium and Samarium Isotope Composition of Allende CAIs **[#1302]**
Ba, Nd, and Sm isotope compositions of Allende CAIs indicate r-process excesses in Ba isotopes, and *p*-, and *r*-process depletions in Nd and Sm isotopes. These compositions are clearly distinct from the variations seen in bulk meteorites.

9:00 a.m. Akram W. M. * Schonbachler M. Williams H. M. Halliday A. N.
The Origin of Nucleosynthetic Zirconium-96 Heterogeneities in the Inner Solar System **[#1908]**
Nucleosynthetic anomalies in the neutron-rich isotope zirconium-96 for bulk carbonaceous chondrites are reported, which are shown to be correlated with the presence of calcium-aluminum-rich inclusions.

9:15 a.m. Lee T. * Chen W. H. Chen J. C.
Ca-43 Isotopic Anomaly in CAI and the Astrophysical Origin of Ca Isotopes **[#1828]**
We have detected a 0.3 ε (5 σ) ^{43}Ca shift in five Allende CAIs, which are known to have anomalies 2–5 σ in ^{48}Ca. Correlation between different Ca isotopes potentially could provide many insights toward late stage evolution of massive stars.

9:30 a.m. Burkhardt C. * Kleine T. Oberli F. Pack A. Bourdon B. Wieler R.
Nucleosynthetic Mo Isotopic Anomalies in Planetary Materials as Tracers of Circumstellar Disk Processes **[#2554]**
New Mo-isotopic data of CAIs, chondrites, achondrites, and iron meteorites is presented. Implications for the distribution of nucleosynthetic carriers, genetic relations of planetary bodies, and the homogenization of the solar nebula are discussed.

9:45 a.m. Huang S. * Farkas J. Yu G. Jacobsen S. B.
Correlated Stable Calcium Isotopic Ratio and Thulium Anomaly in Refractory Inclusions **[#1925]**
We report mass dependent and non-mass dependent Ca-isotopic compositions, and rare Earth element abundances in refractory inclusions from Allende CV3 carbonaceous chondrite.

10:00 a.m. Harries D. * Berg T. Palme H. Langenhorst F.
The Structure of Refractory Metal Alloys, Condensates from the Early Solar Nebula **[#1837]**
We present FIB-TEM investigations on the structural state of ultrarefractory Os-Ir-Mo-Ru alloys retrieved from acid resistant residues of the Murchison meteorite. Our results support direct condensation from the solar nebula into a single hcp alloy.

10:15 a.m. Bullock E. S. * MacPherson G. J. Nagashima K. Krot A. N. Petaev M. Jacobsen S. B.
Forsterite-Bearing Type B Refractory Inclusions: Evolution from Aggregates to Volatilized Melt Droplets **[#2312]**
Here, we demonstrate how chemical, mineralogical, and isotopic patterns show a well-defined evolutionary sequence among the forsterite-bearing Type B CAIs — an unusual group of refractory inclusions.

10:30 a.m. Frank D. * Zolensky M. Martinez J. Mikouchi T. Ohsumi K. Hagiya K. Satake W. Le L. Ross D. Peslier A.
A CAI in the Ivuna CI1 Chondrite **[#2785]**
We report mineralogical details for the first well-preserved CAI found in a CI1 chondrite, draw a comparison to other CAIs, and discuss possible implications.

10:45 a.m. Paque J. M. * Burnett D. S. Beckett J. R. Guan Y.
Refractory Lithophile Element Concentrations in Melilite from a Type B1 CAI: The Role of Relict Phases **[#2096]**
Refractory lithophile-element concentrations in melilite from the Leoville Type B1 Ca-Al-rich inclusion 3537-2 cannot be explained by fractional crystallization but are almost certainly controlled by relict carrier phases for these elements.

11:00 a.m. Richter F. M. * Mendybaev R. A. Janney P. E. Ziegler K. Young E.
Experimental Test of Using Si and Mg Isotopes to find the Precursor of CAI-Like Evaporation Residues **[#1757]**
Laboratory evaporation residues are used to test the proposition that combining the measured bulk and isotopic composition of the residues allows one to accurately determine the composition of the precursor.

11:15 a.m. Ebel D. S. * Richter F. M. Young E. D.
CAI Precursor Compositions Computed from Si and Mg Isotope Measurements **[#2787]**
We demonstrate how original, pre-evaporation compositions of Ca-, Al-rich inclusions can be calculated from experimentally constrained parameterizations of heavy-isotope enrichment during evaporation of Mg and Si from molten precursors.

11:30 a.m. Krot A. N. * Nagashima K. Bizzarro M.
Recycling of CAIs in an ^{16}O-Depleted Reservoir: Evidence from CAIs in Metal-Rich Carbonaceous Chondrites **[#1226]**
We report on mineralogy, petrography, and O-isotope compositions of ~30 CAIs from the CH chondrites Acfer 182, Acfer 214, and Isheyevo, which were remelted to varying degrees in an ^{16}O-depleted gaseous reservoir during chondrule formation.