Tuesday, March 2, 2010
RADIONUCLIDES AND EARLY SOLAR SYSTEM CHRONOLOGY
8:30 a.m. Waterway Ballroom 1

Chairs: Harold C. Connolly Jr.
Ming-Chang Liu

8:30 a.m. Amelin Y. * Kaltenbach A. Iizuka T. Stirling C. H. Ireland T. R. Petaev M. Jacobsen S. B.
*Importance of Uranium Isotope Variations for Chronology of the Solar System’s First Solids [#1648]
We report combined U-Pb age for Allende CAI SJ101, and U isotopic composition of that CAI and Allende chondrules and bulk meteorite. The CAI-chondrule formation time interval is revised considering the difference in U isotope composition.

8:45 a.m. Brennecka G. A. * Wadhwa M. Janney P. E. Anbar A. D.
Towards Reconciling Early Solar System Chronometers: The 238U/235U Ratios of Chondrites and D’Orbigny Pyroxenes [#2117]
A new 238U/235U ratio for the pyroxene fraction of the D’Orbigny angrite adjusts the previously reported Pb-Pb age of ~0.6±0.3 Ma. This adjustment affects all short-lived chronometers anchored to D’Orbigny and reconciles some discrepancies in early solar system materials.

9:00 a.m. Chakrabarti R. * Jacobsen S. B.
The Isotopic Composition of Magnesium in the Inner Solar System [#1415]
We have accurately determined the Mg isotopic composition of the bulk silicate Earth, chondrites, Mars, Moon and pallasites and show that the Earth is chondritic in Mg isotopes; the stable Mg isotopic composition of inner solar system is homogeneous.

9:15 a.m. Makide K. * Nagashima K. Krot A. N. Huss G. R.
Variations of Initial Abundance of 26Al Among the Micron-sized 16O-rich, Solar Corundum Grains from Ordinary and Carbonaceous Chondrite [#2283]
Magnesium isotopic compositions measured in µm-sized 16O-rich, solar corundum grains from UOCs and unmetamorphosed CCs revealed lack of resolvable 26Mg excess in 43% of them, suggesting heterogeneous distribution of 26Al in the early solar system.

9:30 a.m. Connolly H. C. Jr. * Young E. D. Huss G. R. Nagashima K. Beckett J. R. McCoy T. J.
To Be or Not To Be Canonical, What’s New? The Search for the Initial 26Al Abundance of the Solar System [#1933]
We report on our confirmation by SIMS analyses of the initial 26Al/27Al data by LA-MC-ICMPS of Young et al. (2005) for Leoville 144A. The major question we explore is how the initial 26Al/27Al of inclusions became disturbed.

9:45 a.m. Kita N. T. * Ushikubo T. Davis A. M. Knight K. B. Mendybaev R. A.
Richter F. M. Fournelle J. H.
Initial 26Al Abundance in a Type B CAI: Remelting of Pre-Existing Refractory Solid [#2154]
High precision SIMS internal isochron of Leoville 3535-1 type B1 CAI indicates that it melted 30–40 k.y. after the formation of first solids in the solar system from refractory precursor solids and possibly it melted multiple times.

10:00 a.m. MacPherson G. J. * Kita N. T. Ushikubo T. Bullock E. S. Davis A. M.
High-Precision 26Al/27Al Isochron Microchronology of the Earliest Solar System [#2356]
High precision SIMS Mg-isotopic measurements of 6 diverse Vigarano CAIs yield values for initial 26Al/27Al that resolvably differ, with primitive CAIs consistently near 5.2 × 10⁻⁵ but melted CAIs extending over a range 4.2–5.2 × 10⁻⁵.
10:15 a.m.  Davis A. M. *  Kita N.  T.   Ushikubo T.  MacPherson G. J.  Bullock E. S.  Knight K. B.  
*Magnesium Isotopic Evolution of CAIs* [#2496]
Mg isotopic evolution of CAIs is used to infer the timing of Mg/Al fractionation of CAIs, which, for most melted CAIs, occurred earlier than melting. New CAI data are consistent with uniform $^{26}$Al/$^{27}$Al ratio and initial Mg isotopic composition in the solar system.

10:30 a.m.  Krot A. N. *  Nagashima K.  Hutcheon I. D.  Ishii H. A.  Jacobsen B.  Yin Q.-Z.  
Davis A. M.  Simon S. B.  
Mineralogy, Petrography, Oxygen and Magnesium Isotopic Compositions and Formation Age of Grossular-bearing Assemblages in the Allende CAIs [#1406]
Large excesses of $^{26}$Mg corresponding to the canonical $^{26}$Al/$^{27}$Al in grossular veins crosscutting åkermanite-poor melilite mantles in Type B1 CAIs ratio were inherited from melilite and do not require early formation of grossular in the solar nebula.

*Distribution and Origin of $^{36}$Cl in Allende CAIs* [#2631]
We present $^{36}$Cl-$^{36}$S isotope data from wadalite and sodalite in Allende CAIs to investigate the origin and distribution of $^{36}$Cl in early solar system materials.

11:00 a.m.  Liu M.-C. *  Nittler L. R.  Alexander C. M. O’D.  Lee T.  
*Boron Isotopic Compositions in CM Hibonites: A NanoSIMS Approach* [#1277]
We developed a technique to analyze the $^{10}$Be-$^{11}$B short-lived system in hibonite grains extracted from the Murchison meteorite.

11:15 a.m.  Ito M. *  Messenger S.  
*Fe-Ni Systematics in Fe-rich Olivine and Enstatite Chondrules in Semarkona Chondrite Utilizing a NanoSIMS 50L Ion Microprobe* [#1724]
We report results of Ni isotopic measurements in Fe-rich olivine and Fe-rich enstatite chondrules in Semarkona ordinary chondrite utilizing the JSC NanoSIMS 50L ion microprobe, and calculated the inferred $^{60}$Fe/$^{56}$Fe of $(6.2 \pm 2.2) \times 10^{-7}$.

11:30 a.m.  Steele R. C. J. *  Elliott T.  Coath C. D.  Regelous M.  Russell S. S.  
Correlated Neutron Rich Ni Isotope Anomalies in Chondritic and Iron Meteorites [#1984]
Correlated $^{62}$Ni and $^{64}$Ni in bulk chondritic and iron meteorites suggests a variable contribution from a type Ia supernova component in the early solar system.