

Tuesday, March 8, 2011  
**COSMOCHEMICAL ORIGINS II:**  
**ISOTOPIC CONSTRAINTS ON EARLY SOLAR SYSTEM CHRONOLOGY**  
 1:30 p.m. Waterway Ballroom 4

**Chairs:** Audrey Bouvier  
 Dimitri Papanastassiou

- 1:30 p.m. Kruijer T. \* Sprung P. Kleine T. Leya I. Wieler R.  
[\*The Timing of Core Formation in Protoplanets Revisited: New Evidence from a Combined Tungsten — Noble Gas Isotope Study on Magmatic Iron Meteorites\*](#) [#1712]  
 Using noble gases we identified iron meteorite specimens whose W isotope budgets likely remained unaltered by cosmic rays. The Hf-W systematics of these samples indicate that their parent bodies segregated their cores within 0.5 Ma of each other.
- 1:45 p.m. Dauphas N. \* Pourmand A.  
[\*Very Rapid Accretion of Mars and Implications for its Magmatic Evolution\*](#) [#1040]  
 We present a new method to estimate the Hf/W ratio of the martian mantle from which we conclude that Mars was a stranded planetary embryo formed within a few million years of solar system formation.
- 2:00 p.m. Wimpenny J. B. \* Yin Q.-Z. Tollstrup D.  
[\*Constraining the Age of Partial Melting on the Brachinite Parent Body by Investigating Al-Mg Systematics in Brachina and Paired Achondrites GRA06128/9\*](#) [#2473]  
 We investigate Al-Mg systematics in the paired achondrites GRA06128/9 and Brachina. Both GRA meteorites have a resolvable excess of  $^{26}\text{Mg}$ , and a crystallisation age of 4564.9 Ma. This is ~0.5 Ma older than previous estimates for GRA.
- 2:15 p.m. Bouvier A. \* Brennecka G. A. Sanborn M. E. Wadhwa M.  
[\*U-Pb Chronology of a Newly Recovered Angrite\*](#) [#2747]  
 We present a preliminary Pb-Pb isochron age for a newly recovered angrite of  $4561.29 \pm 0.78$  Ma (using  $^{238}\text{U}/^{235}\text{U} = 137.84$ ; we are in the process of measuring the U isotope composition). This is identical to the reported age of the NWA 2999 angrite.
- 2:30 p.m. Sanborn M. E. \* Carlson R. W. Wadhwa M.  
 [\*\$^{147,146}\text{Sm}\$ - \$^{143,142}\text{Nd}\$  and  \$^{87}\text{Rb}\$ - \$^{87}\text{Sr}\$  Systematics of the Angrites Northwest Africa 4590, Northwest Africa 4801, and D'Orbigny\*](#) [#2369]  
 We report the initial results of an investigation of the Sm-Nd and Rb-Sr isotope systematics of the angrites Northwest Africa 4590, Northwest Africa 4801, and D'Orbigny.
- 2:45 p.m. Hans U. \* Kleine T. Bourdon B.  
[\*Strontium isotope Anomalies in Ca-Al-Rich Inclusions and the Rb-Sr Chronology of Volatile Depletion Revisited.\*](#) [#2672]  
 We present high precision Sr isotope data for basaltic achondrites and CAI that lead to timescales of accretion and volatile depletion significantly different from those calculated previously.
- 3:00 p.m. Mishra R. K. \* Chaussidon M. Luu Tu. H.  
[\*Petrographic and High precision Al-Mg Isotope Systematics of a type B CAI from Vigarano\*](#) [#2110]  
 High precision Al-Mg isotope systematics can allow us/one to establish the early solar system chronology.

- 3:15 p.m. Connolly H. C. Jr \* Huss G. R. Shahar A. Nagashima K. Young E. D. Ebel D. S. Weisberg M. K. Beckett J. R. Paque J. M. Ma C. Rossman G. R.  
[Diffusion Within the CAI Bocce Ball 1: The Redistribution of  \$^{26}\text{Mg}\$  \\* Correlated with Variation in Al/Mg Within a Type B2 Inclusion from Allende](#) [#1858]  
 We analyzed the CAI Bocce Ball 1 from Allende for  $^{26}\text{Al}$ - $^{26}\text{Mg}$  systematics by LA-MC-ICPMS and SIMS techniques and find variations in radiogenic Mg correlated with Al/Mg ratio of anorthites near the edge of the inclusion but not in the center or within other phases.
- 3:30 p.m. Shukolyukov A. \* Lugmair G. W. Irving A. J.  
[Mn-Cr Isotope Systematics and Excess of  \$^{54}\text{Cr}\$  in Metachondrite Northwest Africa 3133](#) [#1527]  
 We obtained a  $^{53}\text{Mn}/^{55}\text{Mn}$  ratio of  $(1.83 \pm 0.23) \times 10^{-6}$  at the time of isotope closure. This translates into an absolute age of  $4561.5 \pm 0.4$  Ma. The excess of  $^{54}\text{Cr}$  indicates that the precursor of this meteorite was a carbonaceous chondrite material.
- 3:45 p.m. Papanastassiou D. A. \* Chen J. H.  
[Revisiting Cr in the Eagle Station Pallasite and Its Suggested Affinities to Carbonaceous Chondrites](#) [#2195]  
 Mn-Cr in Eagle Station shows heterogeneous  $^{54}\text{Cr}$  abundance between chromite and olivine, with  $^{54}\text{Cr}$  elevated in olivine, potentially due to spallation. The  $^{54}\text{Cr}$  data do not support an affinity of precursors of Eagle Station and carbonaceous chondrites.
- 4:00 p.m. Ogliore R. C. \* Huss G. R. Nagashima K.  
[The Problem of Bias in Mass Spectrometry Ratio Estimation](#) [#1592]  
 We derive the expectation value of two ratio estimators: the mean of individual ratios and the ratio of total counts. We show that calculating isotope ratios by computing the mean of a number of ratios can result in significant positive bias.
- 4:15 p.m. Telus M. \* Huss G. R. Nagashima K. Ogliore R. C. Tachibana S. Jilly C. E.  
[Possible Heterogeneity of  \$^{60}\text{Fe}\$  in Chondrules from Primitive Ordinary Chondrites](#) [#2559]  
 We report the results of recent multicollection measurements of Fe and Ni isotopes in chondrules from primitive unequilibrated ordinary chondrites (UOCs). We also discuss the importance of using the correct data reduction method on initial ratios.
- 4:30 p.m. Spivak-Birndorf L. J. \* Wadhwa M. Janney P. E.  
 [\$^{60}\text{Fe}\$ - \$^{60}\text{Ni}\$  Chronology of the D'Orbigny Angrite: Implications for the Initial Solar System Abundance of  \$^{60}\text{Fe}\$](#)  [#2281]  
 We present a study of the  $^{60}\text{Fe}$ - $^{60}\text{Ni}$  chronometer in D'Orbigny and other angrites. Whole-rock samples and mineral separates from D'Orbigny define a precise  $^{60}\text{Fe}$ - $^{60}\text{Ni}$  isochron, which is used to estimate the initial solar system abundance of  $^{60}\text{Fe}$ .
- 4:45 p.m. Tang H. \* Dauphas N.  
[Constraints from Achondrites on the Initial  \$^{60}\text{Fe}/^{56}\text{Fe}\$  Ratio of the Solar System](#) [#1068]  
 We analyzed Fe-Ni systematics in eucrites and other types of achondrites, evidence of  $^{60}\text{Fe}$  presence was found in bulk eucrites and  $^{60}\text{Fe}/^{56}\text{Fe}$  initial ratio in the early solar system was estimated, which is identical to the results from bulk angrite data.