

Tuesday, July 25, 2017
CHONDRITES: ORIGINS AND PROCESSING
OF CHONDRITES AND CHONDRITIC COMPONENTS I
8:30 a.m. Sweeney C

*This session examines the origins of chondrites and their components
and the record of solar nebular and asteroidal processes.*

Chairs: Bradley De Gregorio
Sarah Crowther

- 8:30 a.m. Scott E. R. D. * Krot A. N. Sanders I. S.
[Constraints from Isotopic Dichotomy of Meteorites and from a Trans-Jovian Origin for Carbonaceous Chondrites on the Origin of Chondritic Components](#) [#6395]
Formation of carbonaceous chondrites beyond Jupiter helps explain CAI abundances in chondrites, differences between chondrules and matrices in C and other chondrites. Early protoplanetary growth ensured that chondrites formed in distinct disk regions.
- 8:45 a.m. Melosh H. J. * Bland P. A. Collins G. S. Johnson B. C.
[A Speculative "Fiefdom" Model for Chondrite Origins](#) [#6239]
Distinct chondrite classes, complementarity of chondrules and matrix, and chondrule ages together argue for the existence of long-lasting, distinct domains ("fiefdoms") in the protoplanetary nebula during the chondrule-forming era.
- 9:00 a.m. Toth E. R. * Schönbachler M. Friebe M. Fehr M. A.
[Cadmium Isotope Variations in Bulk Chondrites: The Effect of Thermal Neutron Capture](#) [#6122]
Cadmium isotope data will be presented for bulk carbonaceous and enstatite chondrites, and acid leachates of Jbilet Winselwan (CM). Results of bulk samples show Cd isotope variations that are in good agreement with models of thermal neutron capture.
- 9:15 a.m. Crowther S. A. * Gilmour J. D. Ruzicka A. M.
[First I-Xe Age of a New Suite of Large Igneous Inclusions in Ordinary Chondrites](#) [#6284]
I-Xe data for an inclusion from Richfield, the first I-Xe data from a new suite of igneous inclusions, suggest it cooled rapidly and support the hypothesis that is an unusually large chondrule that formed around the same time as most other chondrules.
- 9:30 a.m. Almeida N. V. * Downes H. Smith C. L. Greenwood R. C. Hellmann J. L. Kleine T. Franchi I. A. Russell S. S.
[Igneous Inclusions in the Barwell L6 Chondrite](#) [#6116]
We present geochemical and isotopic data (oxygen and hafnium-tungsten systems) on igneous inclusions in the Barwell meteorite and question their connection to chondrules.
- 9:45 a.m. Zanetta P-M. * Leroux H. Le Guillou C. Zanda B. Hewins R. H. Lewin E. Pont S.
[A New Method for Modal Abundance, Chemistry and Density Determination of Fine Grained Matrices of Primitive Chondrites](#) [#6274]
Analyses of primitive chondrite matrices are not accurate enough to constrain their origin and evolution. We propose a new method to get the modal abundances, chemistry and density of each phase in order to determine matrix global chemistry.
- 10:00 a.m. Villalon K. L. * Floss C. Stephan T. Boehnke P. Koch I. Kööp L. Davis A. M.
[Strontium, Molybdenum, and Barium Isotopes in the Matrix of Acfer 094](#) [#6405]
The Sr, Mo, and Ba isotopic composition of 14 matrix Acfer094 grains has been measured using CHILI.

- 10:15 a.m. Bigolski J. N. * Weisberg M. K.
[*Fine-Grained Rims in Watonga \(LL3.1 Chondrite\): Records of Preaccretionary Processes*](#) [#6234]
Fine-grained rims are examined in the least equilibrated ordinary chondrites in order to assess preaccretionary processes.
- 10:30 a.m. De Gregorio B. T. * Stroud R. M. Nittler L. R. Alexander C. M. O'D. Davidson J. Moyano-Camero C. E. Trigo-Rodriguez J. M.
[*Visualization of Iron Oxidation as a Proxy for Aqueous Alteration of Primitive Components in Carbonaceous Chondrite Lapaz Icefield \(LAP\) 02342*](#) [#6322]
Fe-XANES can be used to quantify and visualize variations in Fe oxidation state. Using this method on a C-rich chondrite clast containing GEMS and presolar grains reveals alteration fluids were strongly influenced by local chemistry.
- 10:45 a.m. Pignatelli I. * Marrocchi Y. Mugnaioli E. Bourdelle F. Gounelle M.
[*Minerals as Markers of Fluid Alteration in Paris Chondrite*](#) [#6189]
This nanoscale study deals with tochilinite/cronstedtite intergrowths formed by pseudomorphism of anhydrous minerals in Paris chondrite. The structure, chemistry and redox state of secondary minerals are used to reconstruct the alteration conditions.
- 11:00 a.m. Vacher L. G. * Marrocchi Y. Villeneuve J. Verdier-Paoletti M. J. Gounelle M.
[*Petrographic and Isotopic C and O Survey of the Earliest Stages of Aqueous Alteration of CM Chondrites*](#) [#6031]
CM Paris shows two populations of carbonates: T1a and a new T0. Their $\delta^{13}\text{C}$ - $\delta^{18}\text{O}$ values suggest that they precipitated from different equilibrations of $^{17,18}\text{O}$ -rich water with the matrix and from variable contributions of different ^{12}C and ^{13}C -rich SOMs.
- 11:15 a.m. Dobrică E. * Nuth J. A. Brearley A. J.
[*Formation Mechanism of Iron-Rich Olivine: Experimental Constrains into Early Fluid-Assisted Hydration and Dehydration Processes on Asteroids*](#) [#6342]
We performed three new experiments in an attempt to synthesize FeO-rich olivine. This study shows that fayalite could form on the parent body of asteroids at low temperature during hydration-dehydration processes.