

Tuesday, July 30, 2013

AQUEOUSLY ALTERED CARBONACEOUS CHONDRITES: FROM STARDUST TO CERES**1:30 p.m. Alberta Ballroom Salon A**

This session explores the alteration of the CM and CR parent bodies at a variety of temperatures using a variety of techniques.

**Chairs: Philipp Heck
Tasha Dunn**

- 1:30 p.m. Heck P. R. * Floss C. Davis A. M.
[*Stardust in the Sutter's Mill Meteorite*](#) [#5070]
We present abundances and compositions of presolar grains found in different matrix areas of pre-rain and post-rain fragments of the Sutter's Mill meteorite. We aim to quantify the effect of different kinds of alteration in SM with presolar grains.
- 1:45 p.m. Barth M. * Vollmer C. Bischoff A. Horstmann M.
[*TEM Observations of Aqueously Altered Phases in Maribo \(CM2\) and Murchison \(CM2\)*](#) [#5090]
TEM observations of phases showing different types of aqueous alteration in two CM2 chondrites. In Murchison, some of these phases exhibit magnetite. In Maribo, a texturally unique phase reveals at least three different stages of aqueous alteration.
- 2:00 p.m. Lindgren P. * Sofe M. R. Starkey N. A. Franchi I. A. Mark D. F. Lee M. R.
[*Tracking the Oxygen Isotope Evolution of Aqueous Solutions During Alteration of CM2 Carbonaceous Chondrites*](#) [#5111]
Oxygen isotope analyses of calcite and aragonite in the LON 94101 CM2 carbonaceous chondrite demonstrate that the carbonates crystallized from two distinct generations of aqueous solutions.
- 2:15 p.m. Horstmann M. * Vollmer C. Barth M. Chaussidon M. Gurenko A. Bischoff A.
[*Tracing Aqueous Alteration in CM Chondrites: Implications from In-Situ Oxygen Isotope Measurements of Calcite*](#) [#5088]
Oxygen isotope compositions of calcite in three CM chondrites are reported. The results support a continuous fluid evolution model with certain carbonates tracking different precipitation events.
- 2:30 p.m. Alexander C. M. O'D. * Cody G. D.
[*Did CM and CI Chondrites get Hotter than We Think? The View from Tagish Lake*](#) [#5047]
We use organic trends in Tagish Lake to infer that all CM and CI chondrites experienced elevated temperatures during hydrothermal alteration.
- 2:45 p.m. Nakato A. * Brearley A. J. Nakamura T. Noguchi T. Ahn I. Lee J. I. Matsuoka M. Sasaki S.
[*Diversity of Thermal Evolution Processes in the Hydrous Asteroids Identified in Thermally Metamorphosed Carbonaceous Chondrite PCA 02012*](#) [#5282]
We report on mineralogy, petrography, chemical composition, and O-isotope compositions of a unique thermally metamorphosed carbonaceous chondrite PCA 02012. We discuss implications for a new insight into thermal evolution of CM chondrite group.
- 3:00 p.m. Jilly C. E. * Huss G. R. Nagashima K. Yin Q.-Z. Sugiura N. Krot A. N.
[*In Situ Radiometric Dating of Aqueously Formed Carbonates in Sutter's Mill*](#) [#5303]
We report Manganese-Chromium systematics for dolomite grains in the Sutter's Mill meteorite, section SM-51. Measurements yield a well-defined isochron with aqueous alteration ages comparable to CM and CI chondrites.

- 3:15 p.m. Garenne A. * Beck P. Montes-Hernandez G. Chiriac R. Toche F. Brissaud O. Quirico E. Bonal L. Schmitt B.
[*Aqueous Alteration of Carbonaceous Chondrites Determined by Thermogravimetric Analysis and Infrared Spectroscopy. Implications for Interpreting V-NIR Asteroidal Observation*](#) [#5169]
A relation is established between thermogravimetric analyses, infrared spectroscopy and the 3 μ m band by bidirectional reflectance to quantify the aqueous alteration of carbonaceous chondrite.
- 3:30 p.m. Zolotov M. Yu. * Mironenko M. V.
[*On the Formation of Brucite and Cronstedtite on Ceres*](#) [#5345]
Water-rock interactions have been modeled to constrain formation of brucite, cronstedtite, magnetite and Mg carbonates on one Ceres and two other large asteroids. Results suggest a lack of isocheimal alteration and fluid/gas motions on large bodies.
- 3:45 p.m. Abreu N. M. *
[*Similarities Between Aqueous Alteration of CR2 and CM2 Chondrites: MIL 07525, LAP 04516 and GRO 95577*](#) [#5214]
Two pathways of aqueous alteration of CRs were observed: (1) CI-like, containing FeO-rich phyllosilicates, magnetite, and FeNi-sulfides - e.g. GRO 95577 and (2) CM-like, containing tochilinite, cronstedtite, and smectite - e.g. MIL 07525 and LAP 04516.
- 4:00 p.m. Harju E. R. * Rubin A. E.
[*GRO 95577 and MIL 090292: The Most Aqueously Altered CR Chondrites*](#) [#5250]
The CR Chondrite group exhibits the full range of aqueous alteration. MIL 090292 is an aqueously altered chondrite with abundant phyllosilicate and oxides similar to GRO 95577. It appears to be the second fully altered CR2.0.