

**Thursday, March 22, 2012**  
**SECONDARY PROCESSES IN CHONDRITES**  
**8:30 a.m. Montgomery Ballroom**

**Chairs: Jon Friedrich**  
**Alexander Ruzicka**

- 8:30 a.m. Ciesla F. J. \* Davison T. M. Collins G. S.  
[\*Combined Impact and Radiogenic Heating of Early Planetesimals\*](#) [#1676]  
 We investigate the thermal evolution of planetesimals heated by both impacts and <sup>26</sup>Al. Impacts affected all bodies in the first ~100 m.y. of the solar system, and had important consequences for the global thermal evolution of these bodies.
- 8:45 a.m. Ivanova M. A. \* Lorenz C. A. Bychkov A. Yu. Sevastyanov V. S. Franchi I. A.  
[\*Experimental Simulation of Formation Processes of Metamorphosed Carbonaceous Chondrites\*](#) [#1591]  
 We report results of experimental investigations of oxygen-isotopic composition of terrestrial olivine undergoing hydration-dehydration process to test the hypothesis of multiple processing of the metamorphosed CCs parent asteroid.
- 9:00 a.m. Ruzicka A. \* Hutson M. Floss C. Hildebrand A.  
[\*Large Silica-Rich Igneous-Textured Inclusions in the Buzzard Coulee \(H4\) Chondrite\*](#) [#1630]  
 Buzzard Coulee (H4) contains two types of large, igneous inclusions that are best explained by igneous differentiation, but which also show evidence for cooling and vapor phase phenomena consistent with transit through a space environment.
- 9:15 a.m. Bullock E. S. \* McCoy T. J. Corrigan C. M.  
[\*Discovery of Keilite in Type 3 Enstatite Chondrites: Influence of Metamorphic Temperature on Formation\*](#) [#2225]  
 The discovery of keilite, previously observed in type 4–6 enstatite chondrites, in shock- or impact-melted type 3 enstatite chondrites, constrains the post-shock equilibration temperatures experienced by these meteorites to the range of 400°–500°C.
- 9:30 a.m. Abreu N. M. \*  
[\*Low and High Temperature Aqueous Alteration of the Matrices of CR Chondrites: Nano-SEM, EPMA, and TEM Study\*](#) [#2739]  
 Composition of CR matrices are proposed to have evolved along two different tracks as a consequence of aqueous alteration. In Track 1, Fe content decreases via progressive formation of magnetite. In Track 2, Fe increases as metal dissolves.
- 9:45 a.m. Rubin A. E. \*  
[\*Impact-Induced Aqueous Alteration of CM and CV Carbonaceous Chondrites\*](#) [#1058]  
 CMs have a strong correlation between the degree of alteration and the extent of particle alignment; water was retained preferentially in rocks that experienced greater impact-induced shear. CV3s with petrofabrics are more shocked than those without.
- 10:00 a.m. Dobrică E. \* Brearley A. J.  
[\*Complex Heterogeneous Aqueous Alteration in the Matrices of Unequilibrated Ordinary Chondrites by Low Temperature Hydrothermal Solutions\*](#) [#2212]  
 Distinct, coarse-grained phyllosilicate-rich objects formed by aqueous alteration occur in the matrix of UOC, MET 00526. Rims and veins of ferroan olivine replace these phyllosilicates by low-temperature hydrothermal solutions.

- 10:15 a.m. Friedrich J. M. \* Ruzicka A. Ebel D. S. Thostenson J. Rudolph R. A. Rivers M. L. Macke R. J. Britt D. T.  
[\*Three Dimensional Petrography of Kernouvé: A Story of Vein Formation, Compaction, and Metamorphism\* \[#1197\]](#)  
 We use the 3D technique X-ray microtomography to investigate the structures of metallic veins in the Kernouvé H chondrite. The striking complexity of shape of these large (>1 cm) vein structures indicates a pre-metamorphic impact origin.
- 10:30 a.m. Matsumoto T. M. \* Tsuchiyama A. T. Gucsik A. G. Noguchi R. N. Matsuno J. M. Nagano T. N. Imai Y. I. Shimada A. S. Uesugi M. U. Uesugi K. U. Nakano T. N. Takeuchi A. T. Suzuki Y. S. Nakamura T. N. Noguchi T. N. Mukai T. M. Abe M. A. Yada T. Y. Fujimura A. F.  
[\*Micro-Structures of Particle Surfaces of Itokawa Regolith and LL Chondrite Fragments\* \[#1969\]](#)  
 In this study, observations of particle surfaces of Itokawa regolith and LL chondrites were made using a field emission-scanning electron microscope together with three-dimensional structures using X-ray microtomography to understand surface processes on Itokawa.
- 10:45 a.m. Tsuchiyama A. \* Uesugi M. Uesugi K. Nakano T. Noguchi R. Matsumoto T. Matsuno J. Nagano T. Imai Y. Shimada A. Takeuchi A. Suzuki Y. Nakamura T. Noguchi T. Mukai T. Abe M. Yada T. Fujimura A.  
[\*Three-Dimensional Structures of Itokawa Particles Using Micro-Tomography: Comparison with LL5 and LL6 Chondrites\* \[#1870\]](#)  
 Three-dimensional structures of Itokawa samples from the first sampling site show no difference from those from the second sampling site. Most of Itokawa samples are consistent with LL5 and 6 chondrites even if grain size, voids, and cracks are taken into consideration.
- 11:00 a.m. Ross D. K. \* Simon J. I. Simon S. B. Grossman L.  
[\*Ca-Fe and Alkali-Halide Alteration of an Allende Type B CAI: Aqueous Alteration in Nebular or Asteroidal Settings?\* \[#2466\]](#)  
 Petrographic and chemical observations of secondary alteration products in a CAI constrain the physical and temporal setting of the alteration. Andradite, hedenbergite, sodalite, and nepheline alteration pre-dated assembly of the Allende chondrite parent body.
- 11:15 a.m. Ziegler K. \* Zolensky M. Young E. D. Ivanov A.  
[\*Oxygen Isotope Compositions of the Kaidun Meteorite — Indications for Aqueous Alteration of E-Chondrites\* \[#2414\]](#)  
 The Kaidun microbreccia meteorite contains E-chondrite clasts with signs of pre-Kaidun aqueous alterations that vary in type and degree. Oxygen-isotope and mineralogical data attest to the presence of water in E-chondrite parent bodies.
- 11:30 a.m. Herd C. D. K. \* Sharp Z. D. Alexander C. M. O'D. Blinova A.  
[\*Oxygen Isotopic Composition of Tagish Lake Lithologies: Insights into Parent Body Alteration\* \[#1688\]](#)  
 Whole-rock oxygen isotope compositions of four Tagish Lake specimens define a mass fractionation trend with a greater range in variation than any other carbonaceous chondrite. The range is consistent with varying degrees of aqueous alteration.
- 11:45 a.m. Changela H. \* Stroud R. M. Peeters Z. Nittler L. R. Alexander C. M. O'D. De Gregorio B. T. Cody G. D.  
[\*Morphological Study of Insoluble Organic Matter Residues from Primitive Chondrites\* \[#2745\]](#)  
 By studying the morphologies of IOM residues from a range of CM and CR chondrites, we have identified a coarsening in the texture of IOM from the more altered chondrites. Thus, parent body alteration altered/formed IOM in the CM and CR chondrites.