

Friday, March 11, 2011
PRIMITIVE METEORITES II:
THERMAL AND AQUEOUS ALTERATION, SHOCK, AND AWE
1:30 p.m. Waterway Ballroom 4

Chairs: Mark Tyra
 Thomas Sharp

- 1:30 p.m. Tyra M. A. * Brearley A. J. Guan Y.
[Oxygen Isotopic Composition of Secondary Carbonates in CR1 Chondrite GRO 95577](#) [#1639]
 CR1 chondrite GRO 95577 carbonates may be anomalously young. To verify that carbonate is extraterrestrial and interpret oxygen isotopic evolution during aqueous alteration, we report SIMS oxygen isotopic compositions of Ca-carbonate and siderite.
- 1:45 p.m. Abreu N. A. * Singletary S.
[Alteration History of CR2 Chondrite GRA 06100: FE-EPMA and TEM Analysis](#) [#2659]
 FE-EMPA/TEM study of CR2 GRA 06100 showing evidence of aqueous alteration and thermal metamorphism, probably driven by impact event.
- 2:00 p.m. Yokoyama T. * Alexander C. M. O'D. Walker R. J.
[Evaluation of Parent Body Processes on Presolar Components in Chondrites: Osmium Isotopes in Acid Residues from CM and CR Chondrites](#) [#1194]
 We present evidence recorded in the Os-isotope compositions of acid residues from CM and CR chondrites with a variety of petrologic grades, that aqueous alteration in the meteorite parent bodies has preferentially destroyed some presolar phases.
- 2:15 p.m. Lee M. R. * Sofe M. R. Lindgren P.
[Evolution of Carbonate Mineralization in the CM2 Carbonaceous Chondrites](#) [#1710]
 The CM2 carbonaceous chondrites contain multiple generations of carbonate minerals including aragonite, breunnerite, calcite and dolomite. The mineralization sequences recorded in different meteorites can elucidate genetic relationships between CM2s.
- 2:30 p.m. Brearley A. J. *
[Alteration of Coarse-Grained Fe and Fe,Ni Sulfides in the Mighei CM2 Carbonaceous Chondrite: Evidence for the Instability of Primary Pyrrhotite-Pentlandite Grains During Aqueous Alteration](#) [#2233]
 SEM and TEM studies of composite pyrrhotite-pentlandite grains from the Mighei CM2 chondrite show the earliest stages of replacement during aqueous alteration.
- 2:45 p.m. Berger E. L. * Zega T. J. Laurretta D. S.
[Low-Temperature Concentration of Nickel in CI-Chondrite Pyrrhotite Grains](#) [#1163]
 We discuss the chemistry, crystal structure, and genesis of CI-chondrite pyrrhotite grains with atypical nickel concentrations.
- 3:00 p.m. Fujiya W. * Sugiura N. Sano Y.
[Mn-Cr Age of Dolomite in the Ivuna CI Chondrite](#) [#1397]
 Dolomite in the Ivuna CI chondrite shows a Mn-Cr age of 4562.5 Ma. This is comparable to Mn-Cr ages of calcite and dolomite in CM chondrites and older than those of breunnerite in Orgueil, indicating that aqueous alteration lasted at least 10 Ma.

- 3:15 p.m. Zolotov M. Yu. *
[*Fluid Chemistry of Aqueous Alteration of CI-Type Chondritic Materials: Thermodynamic Assessment* \[#1988\]](#)
Alkaline NaCl rich solutions are common in closed water-chondrite systems (without H₂ removal) while Mg-Na-SO₄-Cl fluids form in H₂-repleted high-temperature conditions.
- 3:30 p.m. Jogo K. * Krot A. N. Nagashima K.
[*Heavily-Metamorphosed Clasts in the CV Carbonaceous Chondrite Mokoia: Evidence for Strong Thermal Metamorphism on the CV Parent Asteroid* \[#1613\]](#)
The mineralogy and O-isotope compositions of heavily-metamorphosed clasts from the Mokoia CV breccia are consistent with those of CV chondrites, suggesting an origin of the clasts in the interior of the CV parent asteroid.
- 3:45 p.m. Davidson J. * Laurretta D. S. Schrader D. L.
[*Compositional Variations in Opaque Phases Within the CV and CK Carbonaceous Chondrites* \[#1886\]](#)
We present compositional data for opaque assemblages in a number of CV and CK chondrites. Data illustrate a large diversity; systematic study of these assemblages will enable us to understand larger scale processes on the parent asteroid(s).
- 4:00 p.m. Ganguly J. * Chakraborty S.
[*Thermal History of H-Chondrite Parent Asteroid: An Integrated Model Satisfying Thermometric, Diffusion Kinetic and Thermochronometric Data* \[#2155\]](#)
We present a model of the thermal history of the H-chondrite parent Asteroid integrating new thermometric data, diffusion kinetic analysis of resetting of mineral compositions and available thermochronometric constraints.
- 4:15 p.m. Dobrica E. * Brearley A. J.
[*Widespread Hydrothermal Alteration Minerals in the Fine-Grained Black Matrix of the Tieschitz Unequilibrated Ordinary Chondrite* \[#1889\]](#)
The black matrix of Tieschitz ordinary chondrite show the presence of widespread voids filled with amphibole and elongated Fe-rich olivines providing definitive evidence of the importance of hydrothermal processes in the metamorphic evolution.
- 4:30 p.m. Sharp T. G. * Tricky R. Hu J. Xie Z. De Carli P. S.
[*Silicate-Perovskite in Acfer 040: A Very High Shock Pressure of only 26 GPa* \[#2820\]](#)
Here we use the mineralogy and microstructures of high-pressure minerals in Acfer 040 to show that the the shock veins crystallized at a pressure (~26 GPa) that is high relative to other highly shocked L6 chondrites.