

Monday, March 7, 2011

ACHONDRITES

2:30 p.m. Waterway Ballroom 4

Chairs: Julia Cartwright
Paul Warren

- 2:30 p.m. Day J. M. D. * Ash R. D. Walker R. J. Liu Y. Rumble D. III Irving A. J. McDonough W. F. Tait K. Taylor L. A.
[*Volatile-Rich Asteroid Differentiation and Links Between Felsic Meteorites Graves Nunataks 06128 and 06129, Brachinites and 'Brachinite-Like' Achondrites* \[#1456\]](#)
We explore possible relations between recently discovered felsic achondrite meteorites with olivine-dominated "brachinites" as differentiation products of volatile-rich parent bodies.
- 2:45 p.m. Riches A. J. V. * Day J. M. D. Walker R. J. Liu Y. Taylor L. A.
[*Highly-Siderophile-Element and Osmium Isotope Constraints on the Evolution of Angrites* \[#2288\]](#)
Re-Os systematics of quenched- and slowly-cooled angrites suggests that Re behaved as an incompatible and compatible element during the genesis of each of these magma-groups. This difference potentially relates to variations in oxidation state.
- 3:00 p.m. Amelin Y. * Iizuka T. Huyskens M.
[*Mineral Chemistry of Angrite NWA 4590, and Its Potential Use for Inter-Calibration of Isotopic Chronometers* \[#2542\]](#)
LA-ICPMS analysis of trace elements in olivine, plagioclase, Fe-rich and Mg-rich pyroxene, ulvöspinel, merrillite, and silico-apatite from angrite NWA 4590 shows how these minerals can be used for short-lived and long-lived isotope chronometry.
- 3:15 p.m. Goodrich C. A. * Wilson L.
[*Oxygen Isotope and Siderophile Element Tests of Ureilite Petrogenesis Models* \[#1246\]](#)
Oxygen isotope and siderophile element characteristics of ureilites are difficult to reconcile with any petrogenetic model. We examine (1) homogeneous equilibrium smelting, (2) heterogeneous equilibrium smelting, (3) disequilibrium smelting, and (4) nonsmelting models.
- 3:30 p.m. Kita N. T. * Goodrich C. A. Zolensky M. E. Herrin J. S. Shaddad M. H. Jenniskens P.
[*Oxygen Isotope Systematics of Almahata Sitta* \[#1491\]](#)
We report high-precision SIMS oxygen-isotope analyses of six fragments of the Almahata Sitta polymict ureilite. A correlation between oxygen isotopes and Mg# indicates that the meteorite carries the source materials common to known ureilites.
- 3:45 p.m. Ross A. J. * Herrin J. S. Mittlefehldt D. W. Downes H. Smith C. L. Lee M. R. Jones A. P. Jenniskens P. Shaddad M. H.
[*Petrography and Geochemistry of Metals in Almahata Sitta Ureilites* \[#2720\]](#)
We present geochemical and petrographic data, including highly siderophile elements and EBSD mapping, for metal in seven ureilitic samples of Almahata Sitta. We find some samples are unique when compared with datasets for other ureilites.

- 4:00 p.m. Hartmann W. K. Goodrich C. A. O'Brien D. P. * Michel P.
Weidenschilling S. J. Sykes M. V.
[Breakup and Reassembly of the Ureilite Parent Body, Formation of 2008 TC₃/Almahata Sitta, and Delivery of Ureilites to Earth](#) [#1360]
2008 TC₃/Almahata Sitta provides clues not only to ureilite history but also to the dynamics and evolution of the asteroid belt, impact fragmentation, and delivery of meteorites to Earth. We discuss scenarios for its formation using petrologic and dynamical constraints.
- 4:15 p.m. Warren P. H. *
[Ureilites as the Moderate-SiO₂ Residue of Basaltic Melt Removal from a Diverse Aggregate of SiO₂-Rich Chondritic Parent Materials](#) [#2769]
Mass-balance modeling for average ureilite as an anatexis residue indicates the ureilite starting materials had far higher SiO₂/FeO ratio in comparison to any known type of carbonaceous chondrite.
- 4:30 p.m. Welten K. C. * Meier M. M. M. Caffee M. W. Nishiizumi K. Wieler R.
Jenniskens P. Shaddad M. H.
[Cosmogenic Nuclides and Noble Gas Evidence that Almahata Sitta Chondrites Represent Fragments of Asteroid 2008 TC₃](#) [#2667]
We present evidence that two ordinary chondrites from the Almahata Sitta strewnfield were part of asteroid 2008 TC₃ and may have been incorporated into the ureilitic host during a catastrophic collision ~3.8 Ga ago.