

Monday, July 27, 2015
DEVELOPMENTS IN ADVANCED TECHNIQUES FOR METEORITE
AND RETURNED SAMPLE ANALYSIS
8:45 a.m. Sibley Auditorium

Chairs: Derek Sears
Barbara Cohen

- 8:45 a.m. Yesiltas M. * Sedlmair J. Hirschmugl C. J. Peale R. E.
[Three-Dimensional FT-IR Tomography of Carbonaceous Chondrites](#) [#5043]
We have applied three-dimensional synchrotron-based FT-IR spectro-microtomography technique to carbonaceous chondrites in order to obtain signatures and spatial distributions of organic matter as well as mineral species.
- 9:00 a.m. Sears D. W. G. * Ebel D. S. Wallace S. Friedrich J. M.
[X-Ray Computed Tomography and the Radiation History of Meteorites](#) [#5156]
In a blind test, five samples of Bruderheim were placed in a CT scanner and five kept as controls. The samples that were placed in the scanner received a radiation dose comparable to the dose received by meteorites during their cosmic ray exposure.
- 9:15 a.m. Friedrich J. M. * Glavin D. P. Rivers M. L. Dworkin J. P.
[Effect of a Routine Synchrotron X-Ray Microtomography Scan on the Amino Acid Content of the Murchison CM Chondrite](#) [#5208]
We conducted experiments to examine if exposure to synchrotron radiation during a typical μ CT scan causes detectable changes in the amino acid content of a carbonaceous chondrite. We found a μ CT scan caused no change in the amino acid content.
- 9:30 a.m. Caplan C. E. * Huss G. R. Hammer J. E. Ogliore R. C. Nagashima K.
[Crystal Orientation Effects for Oxygen-Isotope Measurements of Magnetite and Chromite](#) [#5333]
We measured the oxygen isotopic compositions of terrestrial magnetite and chromite to investigate instrumental mass fractionation due to crystal orientation.
- 9:45 a.m. Cohen B. A. *
[The Potassium-Argon Laser Experiment \(KArLE\): In Situ Geochronology for Planetary Robotic Missions](#) [#5353]
The Potassium (K) - Argon (Ar) Laser Experiment (KArLE) will make in situ whole-rock noble-gas geochronology measurements with 10% uncertainty or better for rocks 2 Ga or older, sufficient to resolve the absolute age of many planetary samples.
- 10:00 a.m. Sapers H. M. * Laquerre A. Hill P. J. A. Phaneuf M. W. Osinski G. R.
[Large Area Imaging of Planetary Materials](#) [#5366]
Astromaterials are extremely limited necessitating advanced non-destructive analytical techniques to maximize data collection. Large area imaging allows for contiguous image acquisition at resolutions as high as 100 nm for areas approaching 25 cm².