

Friday, August 17, 2012
SUTTER'S MILL: A NEW CARBONACEOUS CHONDRITE FALL
(SESSION DEDICATED TO BRIAN MASON)
8:30 a.m. MR 1/2

This session, dedicated to Brian Mason, discusses recovery and characterization (mineralogy, petrography, and isotope chemistry) of Sutter's Mill, a new carbonaceous chondrite fall (April 22, 2012)

Chairs: Qing-Zhu Yin
Petrus Jenniskens

- 8:30 a.m. Jenniskens P. * Girten B. Sears D. Sandford S. Cooper G. Ehrgott A. Koop M. Albers J. Fries M. Klotz D. Hankey M. Schmidt G. Worden P.
[Recovery of the Sutter's Mill Meteorite](#) [#5376]
 On April 22, 2012, a small asteroid scattered carbonaceous chondrites near Sutter's Mill. Peter Jenniskens recovered one fragment pre-rain. NASA Ames Research Center's Lunar Science Institute followed up with organized searches.
- 8:45 a.m. Ebel D. S. * Yin Q-Z. Friedrich J. M. Jenniskens P. Fries M. Hill M. G.
[X-Ray Tomographic Study of the Sutter's Mill CM Chondrite Breccia](#) [#5380]
 High resolution (13 and 24 μm /voxel edge) three-dimensional X-ray tomography at AMNH yields density of 2.2 (same as CM chondrites), pervasive fracturing, low-Z chondrules, rare unaltered metal grains, and two lithologies in SM3 and SM9 (14.185 g total).
- 9:00 a.m. Yin Q.-Z. * Wimpenny J. Yamakawa A. Roeske S. Verosub K.
[Sutter's Mill CM Chondrite: Mineralogy, Petrography, Bulk Chemistry, Isotopes and Magnetic Susceptibility](#) [#5276]
 Initial characterization of mineralogy, petrography, bulk chemistry, isotopes, and magnetic susceptibility results will be reported for Sutter's Mill meteorite.
- 9:15 a.m. Beauford R. E. * Arnold S. K. Sears D.
[The Macrostructure of the Sutter's Mill Meteorite](#) [#5091]
 Photographs and photomicrographs of 11 slices of a 5.1-gram Sutter's Mill individual suggest a complex history on the impact plowed surface of a volatile-rich body.
- 9:30 a.m. Zolensky M. * Mikouchi T. Hagiya K. Ohsumi K. Komatsu M. Jenniskens P. Le L. Ross D. K. Yin Q.-Z.
[Sutter's Mill: Possible Mixing of C and E Asteroids](#) [#5264]
 Petrographic and mineralogic analysis of two components of the Sutter's Mill chondrite.
- 9:45 a.m. Nagashima K. Yin Q.-Z. * Krot A. N. Oglione R. C.
[Mineralogy, Petrography, and Oxygen-Isotope Compositions of Carbonates and Olivines in Sutter's Mill, CM Chondrite Breccia](#) [#5160]
 The Sutter's Mill sample we studied has two CM-like lithologies, CM2.0 and CM2.1. O-isotope compositions of chondrule and AOA olivines plot along CCAM line. Dolomites and calcites plot below TF line. Calcites show a spread in $\delta^{18}\text{O}$ values, +13 to +39%.
- 10:00 a.m. Cournede C. Gattacceca J. Rochette P. * Elmaleh A. Jenniskens P.
[Magnetic Properties of Sutter's Mill Compared to CM2, C2 and C3](#) [#5146]
 We will present a detailed study of the magnetic properties of Sutter's Mill (SM#2,12) and compare it to meteorites of related classification.

- 10:15 a.m. Sears D. W. G. *
[*Thermoluminescence Characterization of the Sutter's Mill Meteorite*](#) [#5098]
The Sutter's Mill meteorite is an anomalous CM chondrite regolith breccia that has suffered aqueous alteration and metamorphism. Induced TL data are used to inform us on the metamorphic and brecciation history of this meteorite.
- 10:30 a.m. Hamajima Y. Caffee M. W. * Yin Q.-Z. Nishiizumi K.
[*Cosmogenic Radionuclides in Sutter's Mill Carbonaceous Chondrite Fall*](#) [#5354]
We measured cosmogenic radionuclides in two fragments of Sutter's Mill to investigate the cosmic ray exposure age, preatmospheric size, and relationship with other CM chondrites.
- 10:45 a.m. Grady M. M. Verchovsky A. B. Gilmour I. Yin Q.-Z.
[*Carbon and Noble Gases in Sutter's Mill: Relationship to CM Chondrites*](#) [#5253]
Sutter's Mill fell in California in April 2012. Because of its fresh state, we are interested in the light-element history of this meteorite, for comparison with other carbonaceous chondrites, particularly CM chondrites and the unusual Tagish Lake.
- 11:00 a.m. Cooper G. Jenniskens P. *
[*Water Soluble Organic and Inorganic Anions in Sutter's Mill*](#) [#5399]
We have begun a study of soluble organic and inorganic components of the Sutter's Mill carbonaceous chondrite. Preliminary results show species such as formate, acetate, chloride, and sulfate.
- 11:15 a.m. Pizzarello S. * Monroe A. Jenniskens P.
[*Sutter's Mill Soluble Organic Composition*](#) [#5386]
We present preliminary analyses of the soluble organic composition of a fragment of the Sutter's Mill meteorite. Only a few hydrocarbons were found to be present at above nanomole amount.