

Monday, July 29, 2013
SPECIAL SESSION: CHELYABINSK
1:30 p.m. Alberta Ballroom Salon A

Some of the first results of the study of the Chelyabinsk fireball and associated meteorites are presented.

Chairs: Rhian Jones
Natalia Bezaeva

- 1:30 p.m. Ivanova M. A. * Badyukov D. D. Ryazantsev K. M. Lorenz C. A. Demidova S. I.
 Sadilenko D. A. Artemieva N. Korochantsev A. V. Skripnik A. Ya.
 Ivanov A. V. Nazarov M. A.
[*Fall, Searching and First Study of the Chelyabinsk Meteorite*](#) [#5366]
 On the territory of Russian Federation the Chelyabinsk event was the biggest and the most dramatic observed LL5 chondrite meteorite fall since the Tunguska event. For a moment 99% of the main mass was not found and probably presents atmospheric loss.
- 2:00 p.m. Melosh H. J. *
[*The Chelyabinsk Fireball: A Simple Model of the Fragmentation Cascade*](#) [#5261]
 A simple “pancake” model of the Chelyabinsk bolide fits the observed events, but the required initial strength of about seven MPa suggests that the asteroid was not a rubble pile.
- 2:15 p.m. Kring D. A. * Swindle T. D. Zolensky M. E.
[*Brecciated Chelyabinsk Near-Earth Asteroid and its Catastrophic Air Burst*](#) [#5224]
 The 20-meter-diameter Chelyabinsk near-Earth asteroid (NEA) was a collisionally-modified brecciated projectile before it exploded. Details of that air burst will provided a critical calibration point for NEA impact hazard assessments.
- 2:30 p.m. Povinec P. P. Laubenstein M. Ferrière L. Brandstätter F. Sýkora I. Kováčik A.
 Jull A. J. T. * Topa D. Koeberl C.
[*The Chelyabinsk Meteoroid — What do We Learn from the Recovered Meteorite Fragments?*](#) [#5196]
 We report on a multi-disciplinary study (including cosmogenic radionuclides) of a dozen stones of the Chelyabinsk meteorite that allowed us to confirm its classification and especially to characterize the diameter of the initial meteoroid.
- 2:45 p.m. Nishiizumi K. * Caffee M. W. Huber L. Welten K. C. Wieler R.
[*Cosmogenic Radionuclides and Noble Gases in Chelyabinsk Meteorite*](#) [#5260]
 We measured cosmogenic radionuclides and noble gases in Chelyabinsk meteorite to investigate its exposure history and pre-atmospheric shielding conditions.
- 3:00 p.m. Jones R. H. * Boslough M. B. Ziegler K. Goldstein J. I. Brearley A. J.
[*Petrography of the Chelyabinsk Meteorite, and Thermal History of the Impact Melt Lithology*](#) [#5119]
 We describe the petrography of two Chelyabinsk stones. Using metallographic observations we can constrain thermal histories of the host chondrite and impact melt lithologies, and deduce burial depth history on the parent asteroid.
- 3:15 p.m. Liu Y. * Day J. M. D. Ma C. Hand K. P. Pokhilenko N. P. Taylor L. A.
[*Chelyabinsk: An Ordinary Chondrite from a Spectacular fall in Russia*](#) [#5103]
 Studies of the Chelyabinsk meteorite.

- 3:30 p.m. Richter K. * Fries M. D. Gibson E. K. Harrington R. Keller L. P. McCoy T. J. Morris R. V. Nagao K. Nakamura-Messenger K. Niles P. Nyquist L. Park J. Peng Z. X. Shih C.-Y. Simon J. I. Zeigler R. A.
[*Consortium Study of the Chelyabinsk Meteorite*](#) [#5235]
The aim of the consortium studies will be to determine the mineralogy, petrology, bulk composition, and age of both the unshocked (LL5) and shocked portions, and the time of exposure in space. The history of the meteorite will be reconstructed.
- 3:45 p.m. Flemming R. L. McCausland P. J. A. *
[*In Situ Micro XRD Study of the Chelyabinsk LL5 Chondrite*](#) [#5363]
Non-destructive in situ micro XRD analyses were done of broken surface, shock vein and fusion crust locations for fragments from the Chelyabinsk fall. Crystal structural data shows an LL classification, moderate shock and odd phases in fusion crust.
- 4:00 p.m. Kohout T. * Gritsevich M. Grokhovsky V. I. Yakovlev G. A.
[*Physical Properties of the Chelyabinsk Meteorite Fragments*](#) [#5273]
Bulk and grain density, porosity, and magnetic susceptibility of Chelyabinsk meteorite fragments do not differ significantly among bright and dark lithology. This suggests that the Chelyabinsk meteorite parent body was rather homogenous.
- 4:15 p.m. Bezaeva N. S. * Badyukov D. D. Nazarov M. A. Rochette P. Feinberg J.
[*Magnetic Characterization of the Chelyabinsk Meteorite*](#) [#5034]
We investigated the magnetic properties of the Chelyabinsk meteorite collection from the Vernadsky Institute, Moscow. Our analyses include low-field magnetic susceptibility data (174 samples, m>3g), hysteresis loops, thermomagnetic analyses and more.
- 4:30 p.m. Biswas R. H. Bhandari N. * Nazarov M. Singhvi A. K.
[*Thermoluminescence Studies on Meteorite Chelyabinsk*](#) [#5308]
The present study is aimed to determine thermal and metamorphic history of Chelyabinsk meteorite using thermoluminescence (TL). TL sensitivity suggests the meteorite belongs to type 5-6, and equivalent dose profile suggest perihelion of ~0.57 AU.
- 4:45 p.m. Hartmann W. K. *
[*Chelyabinsk, Tunguska, Zond IV, and the Road to Damascus*](#) [#5027]
Conception and reporting of fireball incidents depend on witnesses' culture. Zond entry event and an event from the book of Acts are discussed.