

Tuesday, July 28, 2015

**EXPOSURE HISTORY AND DELIVERY OF METEORITES FROM ASTEROIDS, MARS,
AND THE MOON, FROM FALLS, FINDS, AND RECOVERIES**

1:30 p.m. Sibley Auditorium

**Chairs: Matthias Meier
Hisayoshi Yurimoto**

- 1:30 p.m. Smith T. * Leya I. Hofmann B. Merchel S. Rugel G. Pavetich S.
[*Exposure and Terrestrial Age of the Twannberg Meteorite Based on Cosmogenic Noble Gases and Radionuclides*](#) [#5201]
Here we study the cosmic ray exposure history of Twannberg meteorite using cosmogenic radionuclides and noble gases. We are especially interested in the terrestrial age to better understand its relation with the associated glacial sediments.
- 1:45 p.m. Harries D. * Yakame S. Uesugi M. Langenhorst F.
[*FIB-TEM Anatomy of a Sub-Micrometer Impact Crater on a Hayabusa Grain*](#) [#5095]
We investigated Hayabusa grain RA-QD02-0265, which was found to contain a cluster of sub-micrometer-sized crater-like features. The cluster of craters is most likely due to secondary impacts of particles generated by an nearby (micro-)impact event.
- 2:00 p.m. Yurimoto H. * Bajo K. Sakaguchi I. Suzuki T. T. Itose S. Matsuya M. Ishihara M. Uchino K.
[*Microdistribution of Solar Wind Helium on Itokawa Particle Surfaces*](#) [#5214]
We report three-dimensional distribution of solar wind He irradiated on asteroid Itokawa particles with a voxel resolution of $500 \times 800 \times 3 \text{ nm}^3$. The distribution is heterogeneous suggesting escape of He by diffusion and mechanical erosion of particle.
- 2:15 p.m. Ogiore R. C. * Nagashima K. Thomen A. Dobrica E.
[*An Impact-Vapor Condensate from Asteroid Itokawa: Evidence from O and Si Isotopes*](#) [#5166]
We measured O and Si isotopes in a porous adhering grain from asteroid Itokawa to test the hypothesis that it is a vapor condensate from a micrometeoroid impact.
- 2:30 p.m. Bowling T. J. * Johnson B. C. Melosh H. J.
[*Dwell Time at High Pressure of Meteorites Ejected from Mars*](#) [#5310]
We use high resolution impact models to relate the high pressure dwell time of martian meteorites to the size of their source craters.
- 2:45 p.m. Keller L. P. * Christoffersen R. Dukes C. A. Baragiola R. A. Rahman Z.
[*Fe and O EELS Studies of Ion Irradiated Murchison CM2 Carbonaceous Chondrite Matrix*](#) [#5354]
EELS measurements show that the $\text{Fe}^{3+}/\text{Fe}^{2+}$ ratio is reduced during He ion irradiation of Murchison matrix. These experiments are meant to simulate possible space weathering processes on primitive asteroids.
- 3:00 p.m. Wetteland C. J. * Sickafus K. E. Taylor L. A. McSween H. Y.
[*Proton Irradiation Processing of Early Solar System Solids*](#) [#5276]
High-flux protons from Young Stellar Objects may result in secondary processing of early solar system solids. Chondrule precursors may be subjected to heating (possibly melting), nuclear transmutation, comminution, and carbon deposition.
- 3:15 p.m. Riebe M. * Huber L. Wieler R. Metzler K. Maden C. Meier M. M. M. Busemann H.
[*A Regolith Origin of "Pre-Irradiation" of Murchison Chondrules*](#) [#5030]
Individual chondrules from a lithic fragment in Murchison all have similar CRE ages whereas chondrules from outside the fragment have variable ages, providing evidence that additional irradiation of chondrules occurred in the parent body regolith.

- 3:30 p.m. Meier M. M. M. * Bindi L. Busemann H. Heck P. R. Isch Neander A. Maden C. Spring N. H. Steinhardt P. J. Wieler R.
[Shedding Light on the Origin of the Quasicrystal-Bearing Khatyrka Meteorite](#) [#5035]
 We measure He, Ne in individual forsteritic olivine grains from the CV chondrite Khatyrka, the only known natural host of Al,Cu-alloys and quasicrystals, to reconstruct the cosmic history of this meteorite and its exotic materials.
- 3:45 p.m. Sansom E. K. * Bland P. A. Towner M. C. Paxman J. P. Howie R. M. Cupak M. Galloway M. J. Benedix G. K.
[Initial Results from the Expanded Desert Fireball Network](#) [#5172]
 The Desert Fireball Network doubled in size at the end of 2014. Over 90 multiple-station fireballs have been observed. Within this dataset we believe there are a number of meteorite-dropping events. Search areas and strategies will be discussed.
- 4:00 p.m. Artemieva N. A. * Shuvalov V. V.
[Recovery of Meteorites After Large Meteorite Falls — Mass Deficiency Problem](#) [#5089]
 We model an entry of large severely fragmented meteoroids with the atmosphere to demonstrate that they ablate much more intensely than 'casual' small meteoroids.
- 4:15 p.m. Utas J. A. * Baecker B.
[Meteorite-Concentrating Process Observed and Recorded on a Desert Playa](#) [#5356]
 Over the course of several days, we recovered ten meteorites from a densely rocky stretch of lake shore 0.8 km long and 1–2 m wide. We documented ice actively moving stones onto the shore and present clear evidence of the processes involved.
- 4:30 p.m. Zanda B. * Colas F. Bouley S. FRIPON Team
[Fripion, The French Fireball Network](#) [#5296]
 FRIPON is a fireball observation network to cover France with >100 all-sky cameras and 25 radio detectors. Orbits will be reconstructed to determine source regions, as well as fall locations for objects large enough to reach the ground.
- 4:45 p.m. Howie R. M. * Paxman J. Bland P. A. Towner M. C. Sansom E. K. Galloway M. J.
[How to Turn a DSLR into a High End Fireball Observatory](#) [#5196]
 A design for small, power efficient high end meteor cameras is presented focusing on the novel technique making it possible and the advantages over previous designs.
- 5:00 p.m. Pourkhorsandi H. * Rochette P. Gattacceca J. Mirnejad H. D'Orazio M.
[Terrestrial Weathering of Meteorites from Lut Desert \(Iran\): A Multimethod Approach](#) [#5055]
 Effects of terrestrial weathering on nine ordinary chondrites from Lut desert (Iran) were investigated. The chemical and mineralogical effects of meteorite weathering show considerable differences compared to other hot deserts.
- 5:15 p.m. Kohout T. * Gritsevich M. Lyytinen E. Moilainen J. Trigo-Rodríguez J. M. Kruglikov N. Ishchenko A. Yakovlev G. Grokhovsky V. Haloda J. Halodova P. Meier M. M. M. Laubenstein M. Dimitrev V. Lupovka V.
[Annama H5 Meteorite Fall: Orbit, Trajectory, Recovery, Petrology, Noble Gases, and Cosmogenic Radionuclides](#) [#5209]
 Annama is a new instrumentally recorded H5 fall with known heliocentric orbit and with a complex cosmic-ray exposure history.