

Thursday, July 27, 2017
MELTED ASTEROIDS: CRUST TO CORES
1:30 p.m. Sweeney C

This session addresses the geochemical and mineralogical processes that lead to the evolution of the crust, mantle, and cores of differentiated asteroids.

Chairs: Paul Warren
Nicole Lunning

- 1:30 p.m. Mittlefehldt D. W. * Le L. Berger E. L.
[Excess Silica Substitution in Plagioclase Grains in the Pasamonte Eucrite](#) [#6282]
 Pasamonte anomalous eucrite contains plagioclases with excess silica, which is not commonly observed for eucrites. Hey, Pasamonte fell in New Mexico! An abstract about a native son.
- 1:45 p.m. Shissh T. * Chennaoui Aoudjehane H. Boudouma O.
[Mineralogy and Petrography of Tirhert \(Morocco\) Eucrite Fall](#) [#6286]
 Tirhert is an unbrecciated eucrite. The eucrites were formed as lava flows and they are perceived as the upper crust samples of their parent body. The mineralogy and the petrography of this meteorite can help to modelize and understand its evolution.
- 2:00 p.m. Basu Sarbadhikari A. * Mahajan R. R. Das P. Chakraborty S. Babu E. V. S. S.K.
 Vijaya Kumar T. Sisodia M. S.
[New Constraints of the Petrogenesis of Piplia Kalan Eucrite](#) [#6207]
 Different clasts of Piplia Kalan eucrite provide various chemical and stable isotopic compositions, indicating heterogeneity of the source composition of Piplia Kalan eucrite vis-à-vis the clan of eucrites than inferred by previous studies.
- 2:15 p.m. Hidaka H. * Yoneda S.
[Systematic REE Isotopic Studies of Eucrites](#) [#6091]
 Ce, Nd, Sm and Gd isotopic compositions of eight eucrites were determined for better understanding of differentiation on the parent body by La-Ce and Sm-Nd chronometers and of cosmic-ray exposure records by neutron-captured Sm and Gd isotopic shifts.
- 2:30 p.m. Ono H. * Takenouchi A. Mikouchi T. Yamaguchi A.
[Silica Polymorphs in the Millbillillie Eucrite: Implications for Their Formation Conditions](#) [#6184]
 We analyzed silica polymorphs in the Millbillillie eucrite. Quartz and monoclinic tridymite have been found. The presence of monoclinic tridymite indicates that Millbillillie would have been cooled slowly after high temperature thermal metamorphism.
- 2:45 p.m. Utas J. A. * Isa J. Warren P. H.
[Diverse Variants of Volatile/Redox Driven Late Alteration in Eucrites](#) [#6382]
 NWA 11040 exemplifies hitherto-unknown forms of volatile/redox driven late alteration in eucrites, including diminished FeO in pyroxene, corroded pyroxene rims, and a “grout” texture of silica dissected by thin veins of anomalously Ca-poor pyroxene.
- 3:00 p.m. Pang R. L. * Harries D. Pollok K. Zhang A. C. Langenhorst F.
[Discovery of a New Modular Structured Titanium Oxide in Shock Melt Pockets of the Eucrite Northwest Africa 8003](#) [#6051]
 We report the composition, structure, and significance of a new Ti oxide together with corundum in unusual melt pockets in a shocked eucrite. It formed through crystallization from shock-induced melts generated between ilmenite-tissintite interfaces.

- 3:15 p.m. Roszjar J. * Moser D. E. Hyde B. C. Chanmuang C. Tait K. T.
[*A Comparison of MicroStructures Among some of the Earliest-Formed Zircons*](#) [#6217]
We compare the microstructures and chemical zoning of some martian, eucrite and early Earth zircon using non-destructive spatially high-resolution techniques.
- 3:30 p.m. Donohue P. H. * Hill E. Huss G. R. Drake M. J.
[*Pallasite Olivine-Metal Equilibrium: Insights from New Partition Coefficients*](#) [#6053]
The early thermal histories of pallasite precursors are potentially recorded by minor- and trace-element zonation in olivine. Experimentally derived partition coefficients for Ni, Co, Cr, and Mn yield environmental constraints.
- 3:45 p.m. Sio C. K. I. * Shahar A.
[*Cooling Rates and Metal-Olivine Iron Isotope Fractionations in Pallasites*](#) [#6336]
We modeled elemental zoning profiles in olivines to obtain new cooling rates, and measured metal-olivine iron isotope fractionations to obtain apparent equilibration temperatures in 11 main-group pallasites.
- 4:00 p.m. Lunning N. G. * Waters L. E. McCoy T. J. Corrigan C. M.
[*Size Influences Core Composition of Oxidized Planetesimals*](#) [#6366]
Higher pressure, greater sulfur retention, and higher Fe-concentrations in core forming FeNiS liquids. Variations in pressure appears to affect the phase chemistry of spinel-group minerals.
- 4:15 p.m. Righter K. * Pando K. M. Ross D. K.
[*Effect of Silicon on Activity Coefficients of P, Bi, Cd, Sn, and Ag in Liquid Fe-Si, and Implications for Differentiation and Core Formation*](#) [#6314]
We determine activity coefficients for volatile siderophile elements Bi, Cd, Sn, Ag and P, and apply them to core formation in various achondrite and planetary bodies.
- 4:30 p.m. Chabot N. L. * Beck A. W. Cueva R. H. Ash R. D.
[*Composition of Schreibersite in IIG Iron Meteorites*](#) [#6099]
By comparing the trace element compositions measured in schreibersite in IIG irons and in laboratory experiments that formed schreibersite, we seek to evaluate the formation history of the IIG irons.
- 4:45 p.m. Wiens R. C. * Meslin P. -Y. Wellington D. F. Johnson J. R. Fraeman A. Gasnault O. Maurice S. Forni O. Beck P. Cohen B. A. Newsom H. E. Bridges J. C. Sautter V. Gasda P. Lanza N. Ollila A. Johnstone S. E. Fairen A.
[*Composition and Morphology of Iron Meteorites Found in Gale Crater, Mars*](#) [#6168]
Two iron meteorites including a possible ataxite (~17 wt. % Ni) have been analyzed by MSL/ChemCam on Mars. Two other large and several small candidate iron meteorites have been observed by Mastcam. Finds observed so far appear relatively unweathered.