Tuesday, July 25, 2017
ASTEROID DIFFERENTIATION: BY DEGREES
8:30 a.m. Sweeney B

From brachinites to ureilites and all your favorite primitive achondrites in between, this session walks through differentiation by degrees (Celcius).

Chairs: **Hilary Downes**
Alison Santos

8:30 a.m. Hasegawa H. * Mikouchi T. Yamaguchi A.
Petrological and Petrofabric Study of Roberts Massif 04239 Compared to Tafassasset and Brachinites **[#6169]**
The petrology and petrofabrics of Roberts Massif 04239 suggests that it has experienced differentiation processes similar to those of brachinites although it preserves chondritic signatures (e.g., relict chondrules).

8:45 a.m. Rai N. Downes H. *
Ureilites Provide a New Model for Planetesimal Formation **[#6067]**
Modelling shows that ureilite parent planetesimal formed from a mixture of Mg- and Fe-rich chondrules with a primary layered structure (Mg-rich centre; Fe-rich outer regions) and then underwent core-mantle differentiation and silicate volcanism.

9:00 a.m. Kita N. T. * Defouilloy C. Goodrich C. A. Zolensky M. E.
Oxygen Isotope Ratios of Magnetite in CI-Like Clasts from a Polymict Ureilite **[#6153]**
Magnetites in CI-like dark clasts in polymict ureilite show significant depletion in ^{16}O with $\Delta^{17}O$=+5‰. They are either xenolitic materials to UPB that are not known as meteorites, or represent hydrated precursors of ureilites.

9:15 a.m. Goodrich C. A. * Fioretti A. M. Zolensky M. Fries M. Shaddad M. Kohl I. Young E. Jenniskens P.
A Breccia of Ureilitic and C2 Carbonaceous Chondrite Materials from Almahata Sitta: Implications for the Regolith of Ureilitic Asteroids **[#6214]**
We report the first sample from Almahata Sitta that consists of both ureilitic and chondritic (C2) lithologies. It is a breccia representing well-gardened regolith from an ureilitic asteroid.

9:30 a.m. Sanborn M. E. * Yin Q.-Z. Goodrich C. A. Zolensky M. Fioretti A. M.
A Case for Nebula Scale Mixing Between Non-Carbonaceous and Carbonaceous Chondrite Reservoirs: Testing the Grand Tack Model with Chromium Isotopic Composition of Almahata Sitta Stone 91A **[#6277]**
We present new Cr isotopic composition results for Almahata Sitta stone 91A. Based on the Cr isotope results, we discuss the provenance of the chondritic material in 91A and the implications for the Grand Tack model of nebula wide mixing.

9:45 a.m. Budde G. * Burkhardt C. Kleine T.
The Distinct Genetics of Carbonaceous and Non-Carbonaceous Meteorites Inferred from Molybdenum Isotopes **[#6271]**
Mo isotope systematics manifest a fundamental dichotomy in the genetic heritage of carbonaceous and non-carbonaceous meteorites. We discuss its implications in light of the most recent literature data and new isotope data for primitive achondrites.

10:00 a.m. Yang J. * Lin Y. T.
Reactions Along the Boundaries Between Plagioclase and Diopside of Ungrouped Achondrite Northwest Africa 7325 **[#6240]**
In order to clarify the late-stage processes after the crystallization of NWA 7325, we analysed chemical compositions and SAED patterns of the micron textures in plagioclase in contact with diopside or olivine based on FIB-TEM technique.

10:15 a.m. Srinivasan P. * Agee C. B. McCubbin F. M. Ziegler K.
Andesitic-Dacitic Achondrite Northwest Africa 11119: Evidence for Extraterrestrial Silica-Rich Magmatism **[#6129]**
Petrologic and isotopic results for ungrouped achondrite Northwest Africa 11119 shows a possible genetic link to NWA 7325, however, this unique andesitic-dacitic rock displays characteristics of silica-rich volcanism in an oxidized environment.

10:30 a.m. Vaci Z. * Agee C. B. Ziegler K. Polyak V. J. Humayun M.
Primitive Achondrite Northwest Africa 11042: Melting of the L Chondrite Parent Body **[#6161]**
NWA 11042 is an igneous primitive achondrite whose oxygen isotopes plot within the L chondrite field. It most likely represents the first discovery of a melt originating within the L chondrite parent body.

10:45 a.m. Wu Y. * Hsu W.
Petrology, Mineralogy and In Situ U-Pb Dating of Northwest Africa 11042 **[#6190]**
NWA 11042 was classified as a unique achondrite. Its mineralogy and petrology resemble those of martian meteorites, but the oxygen isotopic compositions are similar to L-chondrites. So we present U-Pb dating analysis to better understand its origin.

11:00 a.m. Ray S. * Rai V. K. Hines R. Romaniello S. Wadhwa M.
Iron Isotope Compositions of Achondritic Meteorites **[#6400]**
Here, we report the iron isotope compositions of three ungrouped achondrites, North West Africa (NWA) 8777, NWA 10503, NWA 7325, an angrite NWA 4590 and mineral separates from Norton County and Bishopville aubrites.

11:15 a.m. Santos A. R. * Agee C. B. Bell A. S. Shearer C. K.
Northwest Africa 10463: A New Angrite Meteorite **[#6313]**
NWA 10463 is a new angrite meteorite with several interesting textural characteristics that may reflect a different set of processes than those seen by other angrites.