This session examines the organic components of meteorites and planetary materials

Chairs: Simon Clemett
Marc Fries

2:00 p.m. Asaduzzaman A. M. * Muralidharan K. Runge K. Zega T.
First Principles Investigation of Adsorption of Organic Molecules on Planetary Materials [#5397]
A computational study has been carried out on the adsorption of organic molecules on the planetary materials to gain the understanding of bonding of organics to interstellar dust grains.

2:15 p.m. Nuth J. A. III * Johnson N. M.
Transformation of Graphitic and Amorphous Carbon Dust to Complex Organic Molecules in a Massive Carbon Cycle in Protostellar Nebulae [#5070]
Organic constituents of meteorites are the end product of a massive carbon cycle that first converted inorganic forms of carbon to CO, then converted this CO into the diversity of organic molecules found in nature.

2:30 p.m. Peeters Z. * Changela H. Stroud R. H. Alexander C. M. O’D. Nittler L. R.
Organic Carbon Inclusions in CR2 Chondrite Graves Nunataks 95229 [#5283]
We report coordinated XANES, TEM, and nanoSIMS analysis of two large, carbon-rich veins in CR2 chondrite GRA 95229. The variability in morphological, isotopic, and chemical properties is compared to previous results on C-rich veins in CR3 QUE 99177.

2:45 p.m. Charon E. Aléon J. Rouzaud J. N. *
Multiscale Organization and Isotopic Composition of Carbons in Acapulco and Lodran as Fingerprints of Their Parent Body Story [#5055]
New structural and isotopic data recorded on carbon components of Acapulco and Lodran meteorites allow to propose a scenario of their parent body thermal story, with an impact induced introduction of CI-CM like IOM.

3:00 p.m. Kebukawa Y. * Zolensky M. E. Cody G. D. Kilcoyne A. L. D. Rahman Z.
Characterization of Carbonaceous Xenolithic Clasts in Sharps (H3.4) Meteorite: Implications for Their Origin [#5085]
We report organic analyses of the Sharps clasts using STXM-XANES, with mineralogical observation using a TEM. We found two types of carbonaceous material with different thermal history.

In Situ Mapping of the Organic Matter in Carbonaceous Chondrites and Mineral Relationships [#5330]
Using a laser microprobe instrument equipped with a new vacuum ultraviolet laser ionization source we have been able to map in situ the distribution of organic matter in fresh fracture surfaces of carbonaceous chondrites.

3:30 p.m. Vollmer C. * Leitner J. Busemann H. Spring N. Ramasse Q. Kepaptsoglou D. M.
Gentle Aberration-Corrected STEM Analysis of 15N- and D-Hotspots in Chondritic Samples [#5061]
We applied aberration-corrected scanning transmission electron microscopy to characterize four 15N- and D-anomalous hotspots from a CR chondrite and a chondritic porous interplanetary dust particle.

A 10-µm-sized organic material of coexisting nitrogen-rich and -poor regions was identified in the ultracarbonaceous Antarctic micrometeorite. Some of the organic features were similar to those of several Comet Wild 2 particles and CR3 chondrite.

4:00 p.m. Gasda P. J. * Taylor G. J. Misra A. Sharma S. K. Mapping Organic Materials in Carbonaceous Chondrites [#5148]

We present two new techniques that, together, constitute a quick first-order method to characterize the insoluble organic matter (IOM), shedding light on the heterogeneity of the IOM both in its composition and its distribution in meteorites.

4:15 p.m. Bonal L. * Hily-Blant P. Faure A. Quirico E. Highly Variable 15N-Enrichments in Solar System Reflect Different Routes of Interstellar N Isotopic Fractionation [#5226]

Based on our new astronomical observations, the absence of significant 15N-enrichments in interstellar clouds, as previously assumed, is no longer a valid argument to reject an interstellar origin of organic precursors in primitive cosmomaterials.

4:30 p.m. Pizzarello S. * Extractable HCN in Carbonaceous Chondrites [#5088]

We report here on the finding of HCN in the Murchison meteorite. We analyzed 250 mg of the meteorite and detected the HCN by evolving it as a gas from the water extract.

4:45 p.m. Fries M. D. * Steele A. Zolensky M. Halogen-Substituted Methane in Monahans Halite [#5381]

We report the discovery of partially halogen-substituted methane present in Monahans halites. The methane is associated with carbonaceous inclusions from the halite parent body and preserves light organics distributed through the early solar system.

5:00 p.m. Goodyear M. D. * Gilmour I. Pearson V. K. Chemical Modification of Organics in Meteorites as an Aid to Easier Detection: Preliminary Results [#5221]

Samples of unprocessed meteorite, and of demineralized insoluble organic material, were treated with ozone to introduce new functionality, capable of further reaction. The results from these treatments will be discussed.

5:15 p.m. Ott U. * Keppler F. Vigano I. McLeod A. Frücht M. Röckmann T. UV-Radiation Induced Methane Emission from Murchison — Possible Implications for Methane in the Martian Atmosphere [#5133]

Exposure of the Murchison meteorite to UV radiation releases large quantities of methane. Acting on meteoritic debris on the martian surface, the process may be of importance for the martian atmosphere.