Cosmic Dust

Sutton S. R.   Flynn G. J.   Rivers M.   Eng P.   Newville M.
Trace Element Analyses of L2011 Cluster Particles with the New X-Ray Microprobe at the Advanced Photon Source [#1656]
We report here our first use of the new x-ray microprobe at the Advanced Photon Source (APS), Argonne National Laboratory, for trace element analyses of IDPs. The APS microprobe has a sensitivity enhancement of about a factor of 100 over the NSLS microprobe.

Landgraf M.   Liou J.-C.   Zook H. A.   Grün E.
Multi Spacecraft Data on Dust in the Outer Solar System [#1427]
Dust data from Pioneer 10/11, Ulysses, and Galileo is used to find physical sources of dust in the outer Solar System. Dust from Kuiper belt objects is needed to explain the Pioneer 10 measurements and it is not in contradiction with the data from the other spacecraft.

Feng H.   Jones K. W.   Stewart B.   Herzog G. F.   Schnabel C.   Brownlee D. E.
Internal Structure of Two Type-I Deep-Sea Spherules by X-Ray Computed Microtomography [#1209]
X-ray tomographs of two submillimeter type-I deep-sea spherules reveal the presence of oxide rims, intergrown oxides in the interior, branched holes emanating from the surface, and micrometer-size nuggets rich in platinum-group elements.

Residues from Hypervelocity Mineral Shots into Brittle and Ductile Substrates [#1629]
Back-scattered electron images and X-ray maps of craters from light-gas-gun hypervelocity impacts of natural mineral grains on solar cells and aluminum sheets show distinctive residue textures and composition, comparable to those in LEO impacts.

Yano H.   Arakawa M.   Michikami T.   Fujiwara A.
Sub-Millimeter-sized Ice Grain Impacts on Aerogels: Implications to a Cometary Dust Sample Return Mission [#1961]
Hypervelocity impacts of a sub-millimeter ice grains on aerogels at −10°C demonstrated distinctive morphological differences between “stubby” by ice and classic, long “carrot” by glass beads at the same impact condition.

Phelps A. W.
Interstellar Diamond. II. Growth and Identification [#1753]
Opinions regarding the formation mechanism(s) of meteorite and interstellar diamond grains have changed over the years as new methods of making synthetic diamond were developed.

Földi T.   Ezer R.   Bérczi Sz.   Tóth Sz.
Creating Quasi-Spherules from Molecular Material Using Electric Fields (Inverse EGD Effect) [#1266]
We made spherules from gaseous phase, in isothermal conditions, using strong electrostatic fields. The electrostatic field coagulated the molecular components which behaves like cosmic powders, therefore our experiments may have consequences on the origin of cosmic powders.