

An inter-instrumental view on Rosetta dust results

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During the two years with Rosetta at comet 67P/Churyumov-Gerasimenko, several instruments studied the comets dust coma and its individual particles. The strength of Rosetta is the number of instruments and their complementary designs, which is particularly the case for dust studies. The classical dust instruments COSIMA, GIADA, and MIDAS studied the dust in situ by direct imaging, mass spectroscopy, light scattering, impact monitoring, and atomic force microscopy. For the remote sensing instruments, OSIRIS studied the properties and dynamics of individual particles as well as the light scattered from small, unresolved particles. This scattered light was also studied by VIRTIS, augmented by the thermal emission and detailed spectral information. We will, for the moment, focus on these five Rosetta instruments but also consider Stardust results and knowledge from ground based observation from other comets.

The aim of this inter-instrumental approach is first of all to review current knowledge of dust in the coma of comet 67P. The focus is on the dust size distribution, porosity of the aggregates, their mechanical properties, and the identification of their constituent refractory grains. We will draw a comparison between instruments to first identify overlaps where our knowledge is consistent and consolidated. However, we have also identified apparent contradictions between instruments, which can either be due to different interpretation or modeling of measured results or due to different instruments' capabilities to determine certain physical parameters. The overall aim is thus to unify our language and our view on 67P's dust (and cometary dust in general) and to identify synergies arising from the complementary instrument designs.
