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The composition of 67P/Churyumov-Gerasimenko cometary dust as seen by COSIMA on Board Rosetta

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Experiments on board in situ exploration missions Giotto and Vega and the recent Stardust sample return missions have shown that cometary grains consists of rock forming elements associated to organic matter [Kissel and Krueger, 1987]. Some of the grains analyzed in the atmosphere of comet 1P/Halley seem to consist essentially of a mixture of carbon, hydrogen, oxygen and nitrogen (CHON grains [Fomenkova, 1999]). Ultracarbonaceous Antarctic micrometeorites (UCAMMs) discovered in the Japanese and French micrometeorite collections could be representatives of these CHON particles [Nakamura et al., 2005; Duprat et al., 2010]. Since mid- August 2014, the dust mass spectrometer COSIMA on Rosetta analyzes dust grains from comet 67P/Churyumov-Gerasimenko collected on metallic targets. In the high mass resolution time-of-flight spectra of COSIMA, the inorganic compounds are generally resolved from the organic contributions. We will report on the first results of the cometary grains composition as captured, imaged and analyzed by COSIMA.
References :
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