

ANALYSIS OF SURFACE MATERIAL OF COMET 67P/CHURYUMOV-GERASIMENKO BY THE ROSETTA MISSION.

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Introduction: The Rosetta mission is examining comet 67P/Churyumov-Gerasimenko (hereafter 67P/C-G) since August 2014. The suite of instruments on Rosetta give insights in particular on the structure and composition of the surface and coma of 67P/C-G, to better understand the formation of the early solar system. The payload includes three dust analyzers, amongst which is COSIMA (the COmetary Secondary Ion Mass Analyzer). COSIMA is collecting cometary dust on metal targets, and is analyzing them with a time-of-flight secondary ion mass spectrometer [1]. The other two dust instruments on board (GIADA and MIDAS) give insights in the flux and fine scale morphology of the dust particles [2; 3]. Other instruments for compositional analysis, i.e. ROSINA, MIRO, VIRTIS and Alice on the orbiter, and COSAC and Ptolemy on the Philae lander [4], also give insights into the composition of the coma and of the surface of the comet.

Results: COSIMA targets are efficiently collecting dust from 67P/C-G [e.g. 5]. The low impact speed of the cometary particles with COSIMA targets is less than a few m/s, allowing the recovery of dust particles without cratering the target material [e.g. 6]. The morphology and composition of 67P/C-G dust particles are reminiscent of that of cluster IDPs collected by NASA in the stratosphere [7] and of micrometeorites recovered from polar snow [8; 9], highlighting the potential relationship between IDPs - micrometeorites and cometary dust particles.

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