



Cometary dust interactions in the coma: implications for MIRO and ROSINA observations onboard Rosetta

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Dust in the vicinity of comets covers a broad range of sizes, compositions and trajectories influenced by and interacting with the gas coma. Aside from the photo destruction of molecules in solar ultraviolet the release from dust grains is a likely secondary source for gas components generated within the coma and distant from the nucleus. The suggestion of an extended dust- related source being present in the coma was already made in order to explain neutral gas measurements carried out with Giotto at comet Halley.

Dust and ice sublimation directly releases species into the gas coma. Dust fragmentation events are also possibly accompanied by enhanced gas production. Fragmentation events change the dust size distribution, which in turn changes the gas production rates due to dust sublimation. Identifying the dust-generated coma constituents also is a step towards understanding the chemical appearance of the elements C, H, O, N in the cometary dust.

The Rosetta mission permits for the first time studying the cometary coma from close by and with a suite of different instruments for a long time. We discuss the potential secondary sources of coma gas generated by dust and their possible remote observation with Rosetta/MIRO in comparison to in-situ observations, e.g. with Rosetta/ROSINA.