

## Chemistry inside a comet coma: ROSINA/DFMS measurements onboard Rosetta

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As a comet nucleus approaches the Sun, solar illumination is responsible for the sublimation of volatile ices on the nucleus surface. Since the resulting gas is not gravitationally bound, it escapes and produces the gas coma. At the same time, dust and ice grains are released and are dragged along by the flow, forming a dust coma, from which sublimation still may occur to add to the gas coma. Solar ultraviolet radiation leads to photo-ionization and photo-dissociation. This triggers reactions that produce a zoo of neutral and ionized species. ESA's Rosetta spacecraft is currently sampling the environment of comet 67P/Churyumov-Gerasimenko. The ROSINA instrument package onboard Rosetta performs in-situ measurements of the coma gas using a pressure sensor COPS and two complementary mass spectrometers, RTOF and DFMS. The double focusing mass spectrometer DFMS has a high mass resolution and sensitivity. This contribution discusses DFMS measurements in the coma of 67P and highlights the need for accurate information about photo-chemistry and about chemical reactions that occur at low temperatures in the coma, but also about the fragmentation that takes place in the mass spectrometer ion source.