Composition of Cometary Dust Particles Families of Comet 67P/ Churyumov-Gerasimenko

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COSIMA, the COmetary Secondary Ion Mass Analyzer, is one of the three in-situ dust instruments onboard the Rosetta spacecraft, the ESA mission to comet 67P/Churyumov-Gerasimenko. From August 2014 to September 2016, Rosetta has been escorting the comet nucleus on its journey inwards and outwards the inner solar system. The instrument COSIMA collected cometary dust particles on metal targets in the inner coma, from 10 to hundreds of kilometers off the cometary nucleus. The targets are imaged and identified with an optical microscope and a selection of the collected particles are analyzed by secondary ion mass spectrometry (SIMS). Thousands of dust particles have been collected and the sizes of the identified particles and particle agglomerates range from 10 um up to sub-millimeter sizes. The mass spectra contain either positive or negative ions revealing both, mineral and organic, components. We will discuss the cometary dust particle composition and heterogeneity.