

Variations in cometary dust compositions from Giotto to Rosetta, clues to their formation mechanisms

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The composition of cometary dust has been measured by in situ and remote sensing instruments in the last decades, each analysis adding pieces to the puzzle of how and where comets formed. Giotto analyses of comet 1P/Halley dust particles have shown the presence of CHON and mixed particles. Astronomical observations showed that olivine and pyroxene are present in comets. Laboratory analyses of comet 81P/Wild 2 samples brought back by Stardust suggested the existence of a continuum between asteroids and comets. Some interplanetary dust particles and micrometeorites collected at the Earth surface could also have a cometary origin and constitute well preserved comet samples to be analyzed in the laboratory. We will present the implications of these results for the formation of cometary dust particles.

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