

# Analysis of Interplanetary Dust

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The notion that the space between the planets including their moons, the asteroids and the comets is filled with interplanetary dust particles as e.g. observed as the zodiacal light, and the notion that interplanetary dust may leave the solar system or may spiral into the sun, immediately led to the question: Which are the replenishing dust sources? Immediate answers were collisions of and impacts on asteroids and the developed comae and tails of comets. Thus, the scientific interest in interplanetary dust particles grew because they offered the only means to rather directly analyze their sources, asteroids and comets, celestial bodies, which are believed to have stored Early Solar System materials in various degrees of originality. Besides astronomical observation (these will not be covered here) analyses of interplanetary dust particles became possible (a) with modern in-situ space technologies as well as (b) with modern laboratory equipment after their capture in the stratosphere. This review will concentrate on the results obtained with both general methods putting emphasis on the chemical and isotopic composition of the interplanetary dust particles. It will cover early HELIOS results and those from the later Halley and recent Cassini and Stardust missions and will present an outlook to relevant aspects of the Rosetta mission. It then will illustrate the difficulties imposed on analyzing stratospheric IDPs in the laboratory, present some solutions and will highlight major findings.