# Organic Compounds in Stardust

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The successful return of the STARDUST spacecraft provides a unique opportunity to investigate the nature and distribution of organic matter in cometary dust particles collected from Comet 81P/Wild-2. Analysis of individual cometary impact tracks in silica aerogel using the technique of two-step laser mass spectrometry ($L^2MS$) demonstrates the presence of complex aromatic organic matter. While concerns remain as to the organic purity of the aerogel collection medium and the thermal effects associated with hypervelocity capture, the majority of the observed organic species appear indigenous to the impacting particles and are hence of cometary origin. While the aromatic fraction of the total organic matter present is believed to be small, it is notable in that it appears to be *N*-rich. Spectral analysis in combination with instrumental detection sensitivies suggest that *N* is incorporated predominantly in the form of aromatic nitriles (*R*-*C*≡*N*). While organic species in the STARDUST samples do share some similarities with those present in the matrices of carbonaceous chondrites, the closest match is found with stratospherically collected interplanetary dust particles. These findings are consistent with the notion that a fraction of interplanetary dust is of cometary origin. The presence of complex organic N-containing species in comets has astrobiological implications since comets are likely to have contributed to the prebiotic chemical inventory of both the Earth and Mars.