

Extraterrestrial materials as messengers of Solar System processes

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Major collisions among asteroids, impacts on planets and moons, or breakups of comets release extraterrestrial material into space. The debris varies in size, and reaches the Earth's surface as meteorites (including ablation spheres), micrometeorites (MMs), or interplanetary dust particles (IDPs). These easily accessible materials can provide much insight on the composition and evolution of our Solar System.

MMs and IDPs presumably better represent the diversity of Solar System objects than meteorites alone, partially because comets, being fragile, volatile-rich objects, disintegrate completely in the Earth's atmosphere [1]. MMs in particular are easily accessible due to their high fall rate and have even been collected from flat rooftops of buildings since the past few years [2]. However, heterogeneous parent bodies, atmospheric alteration and terrestrial weathering complicate the association of individual extraterrestrial particles to their parent bodies [3].

This talk will give an overview of the research on extraterrestrial materials focusing on advances made in recent years on the identification of the parent bodies of dust particles in the Solar System.

[1] Folco & Cordier (2015), *EMU Notes in Mineralogy* 15, 253–297.

[2] Suttle, Hasse & Hecht (2021), *Meteoritics & Planetary Science* 56, 1531–1555.

[3] Genge et al. (2008), *Meteoritics & Planetary Science* 43, 497–515.