



# Environmental and safety implications of emerging airborne nanoscale pollutants and their emission control

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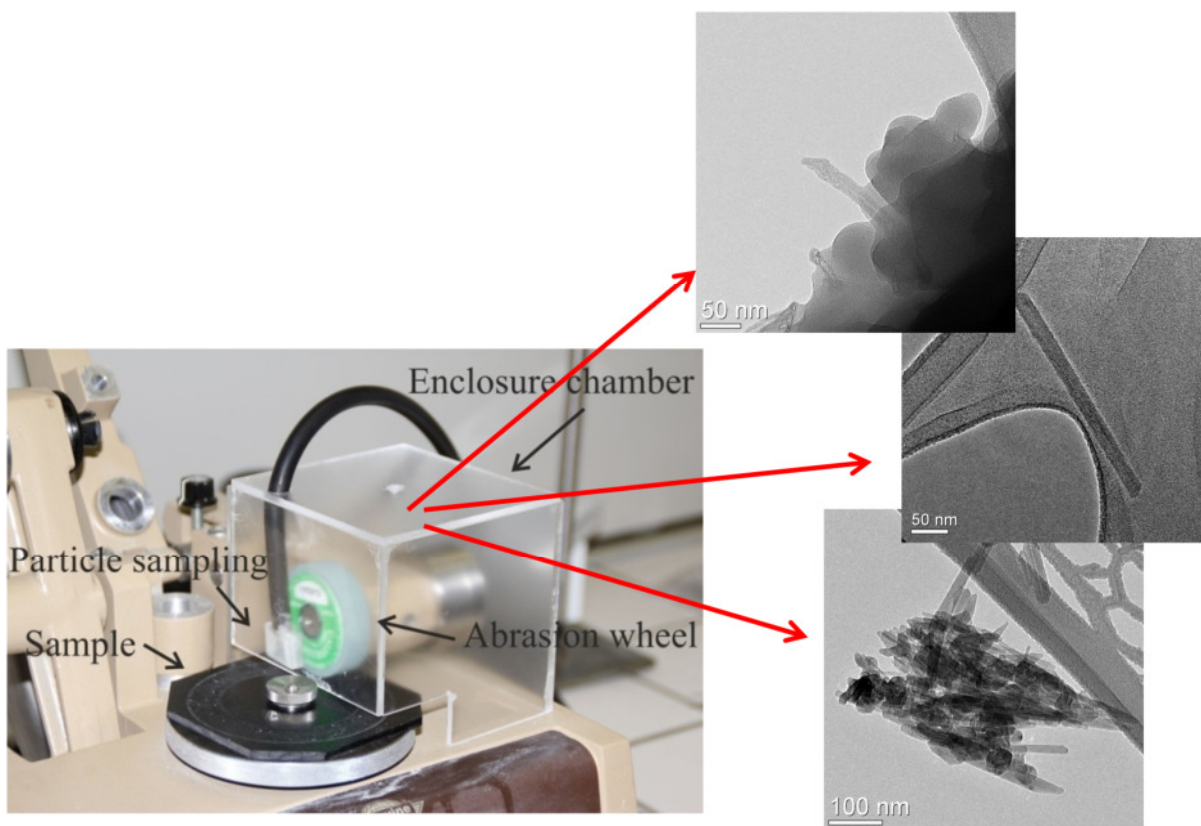


Figure. Release of CNTs from abrasion of a nanocomposite

Release of anthropogenic nanoscale pollutants into the environment could lead to negative impact on the human health, ecological system and climate. I will present results from studies of emission of nanoparticles from aircraft engines, carbon nanotube (CNT) release from nanocomposites and filtration control using nanofibers. The International Civil Aviation Organization approved a preliminary standard governing the emission of particulates by aircraft engines in Feb 2016. We have built up a world unique system at the Zürich airport and our work gave major contribution to the new standard. We developed a new analytical method to quantify the amount of released CNTs from polymer-based nanocomposites. It is the first method which can differentiate exposed CNTs and CNTs which are embedded in the polymer matrix. Toxicity studies of the particles released by the nanocomposites showed no acute toxic effects. We have used electrospinning to create nanofiber webs with fiber diameters down to 15 nm and tested the filtration capability of them.