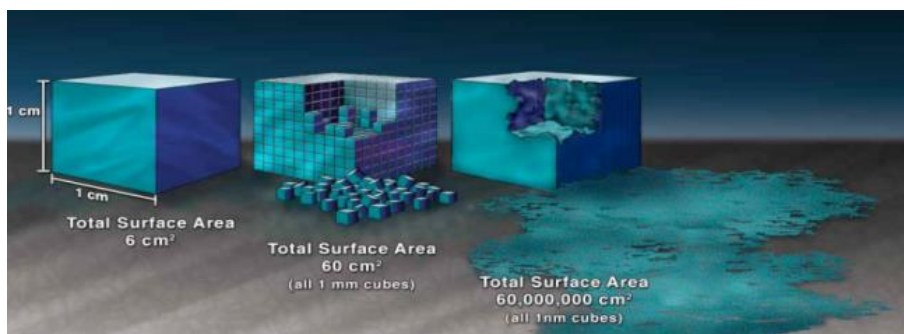


## MULTI-FUN underlines nanosafety and responsible innovation

**Nanomaterials are emerging as improved solutions for MAM materials**, as large benefits can be obtained due to outstanding material properties. The dimensions of the nanomaterials are between 1 – 100 nm, which comparing with a same volume or mass of the material (with a larger scale), a significantly higher surface area is achieved, as illustrated in the figure below. This is one of the features that makes the nanomaterials so interesting.



Source: <https://www.nano.gov/nanotech-101/special> (accessed on 29/07/2022)

Humans are exposed to nanomaterials through inhalation, dermal contact, ingestion, and injection. The major route is through inhalation due to the prominent number of emission sources of airborne nanosized particles. Thus, the lungs are effectively the main organ that can be impacted by this exposure. Nanomaterials are usually divided into 2 main categories: **natural** and **anthropogenic** (from human activities), according with their origin. The later are increasing in their abundance and released into the atmosphere, which raises concerns about the impacts in both human health and environment. Considering manufactured nanomaterials are mainly produced and released indoors, special efforts must be made to identify all the processes governing their distribution indoors-to-outdoors.

Recognizing that long and short-term **exposure to nanomaterials** has been correlated with toxicity and reduction of population's life expectancy, in MULTI-FUN project the consortium is jointly putting efforts on responsible development and innovation, addressing all questions related with the safety of the nano-enabled products. Additionally, this special issue intends to raise awareness for the importance of ensuring nanosafety, especially in occupational settings.

In MULTI-FUN a **risk assessment strategy** has been implemented by ISQ, where exposure and hazards of the new materials are assessed and the risks identified and prioritized in the early stage of development, to ensure the **best practices and the adequate control plan** to mitigate efficiently the exposure to nanomaterials, contributing to the safety of the developed MULTI-FUN's solutions and to facilitate the implementation into the market.

Examples of good practices can be: wash hands regularly to avoid intake by ingestion or dermal contact; use face masks and remove gloves when not handling directly with nanomaterials to avoid the contamination of objects; implementing visible labelling and signage; and use engineering controls such as those illustrated hereafter.



Glovebox




*Image gently authorised for publication in this special issue by the partner BCMaterials*



Local exhaust ventilation

*Image gently authorised for publication in this special issue by the partner RHP Technology*

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