

CHAMBER DEVELOPMENT FOR THE EXPOSURE MEASUREMENT OF NANOPARTICLES RELEASED FROM PRODUCTS INCLUDING NANOMATERIALS

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Abstract

Nowadays, the number of consumer products including nanomaterials in many fields is increasing. Products properties (durability, electrical and thermal conductivity etc.) are efficiently improved by combining nanomaterials. On the other hand, it is reported that nanoparticles cause lung inflammations. However, regulations of exposure for handling of those products are still under development. For this reason, it is necessary to develop measurement method for the exposure to nanoparticles released by using products containing nanomaterials.

This study aims at developing chamber to distinguish the background concentration from nanoparticle concentration released. Especially, the goal of system is possible to measure exposure for workers simply and stably. It is currently difficult for the worker to measure this exposure because of complexity of nanoparticles behavior. Hence, we created a chamber which it is possible to crush nanomaterials or spray them sealed conditions. This chamber is equipped with working gloves, ventilation systems and a circulation system with a pipeline. To test our method, we used a standard particles (sucrose, size is approximately 10 nm) generated by generator. The air circulation is regulated with a controlled ventilation speed so that the particles do not agglomerate through the pipe. Due to the chamber, we can obtain a representative concentration value in the pipe. As a result, The agglomeration rate was confirmed under 5 %.

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