

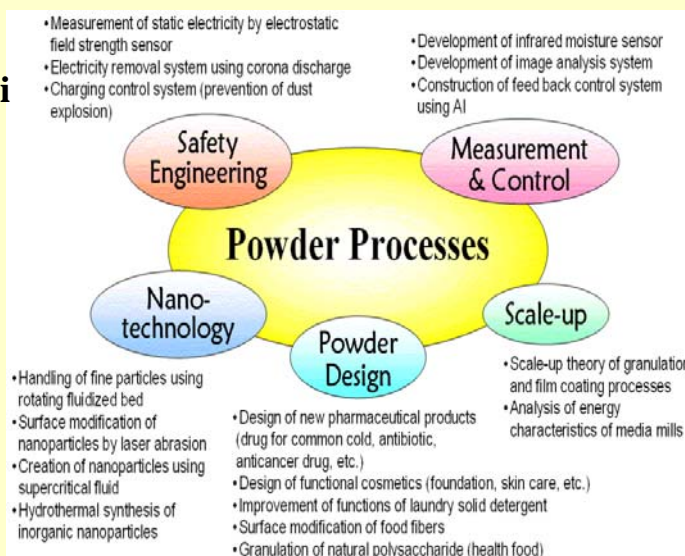
Process Systems Engineering Group

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Research Topics

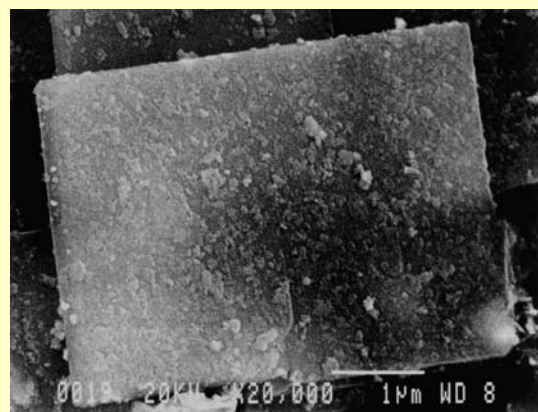
Powder is an assembly of small solid particles, which is used in many products such as food, medicine, cosmetics, etc., and is classified as a solid. However, it sometimes behaves more like a gas or liquid, depending on the handling method. Therefore, creation of products using powder is not easy. Recently, in particular, the size of particles used in generation of products have become increasingly smaller, and because of the increased need of products which function and perform at higher levels, it becomes necessary to create new particulate materials by combining different kinds of powders. As a result, the development of powder processing techniques, including the analysis and evaluation, has become very important. Therefore, with the intent of creating functional particulate materials, our research group is engaged in comprehensive research concerning various powder processing ranging from basic to application to practical use taking into perspective various angles and viewpoints. More specifically, one of our principle research objectives is the development of environment-friendly powder processing techniques using nanotechnology. For example, we are conducting the syntheses of nanoparticles using supercritical fluid and hydrothermal reaction field, and the development, scale-up, model analysis and computer simulation of various powder processing for the production of highly functional pharmaceutical products and cosmetics.



Outline of research objects



Novel nanoparticle fluidization device for granulation and film coating using a centrifugal field



High-performance UV-attenuating SiO₂-ZnO composite particle synthesized by a mechano-chemical treatment