

Utilizing digital innovation, optimization Strategies and Green Perspectives for the Selection of Nano material to Improve Quality of Health and Environmental impact

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ABSTRACT

The challenging task of effective and safe nanomaterials design is the most common bottleneck to wide commercialization. A shortcoming nowadays in commercial nanomaterials and nano reinforced composites is about the safety of nanomaterials. Thus designing of new materials for specific applications, is often crucial to control their size distribution, shape, surface properties, dispersion, and aggregation stability, as well as their elemental and nano crystalline composition.

Similarly, it can be possible to establish their toxicity profile using machine learning modeling. It is an emerging scientific field serving the modern multidisciplinary needs in the Materials. The taxonomy and mapping of nanomaterial properties based on data analytics is going to ensure safe and green manufacturing and their environmentally friendly utilization.

The developed engineered nanomaterials to predict the Nano- and eco-toxicology, safety, environmental impact is a challenging task. Nano informatics is a crucial field for providing methodologies to categorize nanomaterials based on their physicochemical behavior and (eco-) toxicological properties to increase the knowledge base and support the development of read across models.

Thus, design procedures can be used to maximize nanomaterial utility which aims to reduce adverse biological effects and support ethical science. Additionally, for several synthetic nanoparticle applications, potential nontoxicity and nano safety concerns have resulted in a growing number of nano-regulations.
