

Scale-up of nanomaterials: the Research perspective

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Nanotechnology involves the manufacture and the use of materials with a maximum size of up to 100 nm in one or more dimensions. Advanced nanomaterials have unique physical and chemical properties, such as optical, electrical, thermal, magnetic, and adsorption characteristics.

Nanoparticles, 1D and 2D nanomaterials also have a proportionally larger surface area than their microscale counterparts, which favors the improved performance of the resulting material in the area of energy storage and harvesting. Major studies over the last few decades have shown that nanoparticles could be used in green energy harvesting.

Liquid-phase processing of 1D and 2D nanomaterials has recently opened up a huge field of research where nanomaterials have truly become a possibility for real energy applications.

In order to progress from the lab to commercial applications it will be necessary to develop industrially scalable methods to produce large quantities of nanomaterials with their required properties preserved. This talk will discuss the state-of-the-art, possibilities and bottleneck issues to overcome.