Journal of Nanomaterials

Special Issue on Nanomaterial Properties: Size and Shape Dependencies

Call for Papers

Properties of solids determined by their shapes and sizes are indeed fascinating and form the basis of the emerging field of nanoscience and nanotechnology that has been recognized as the key driver of significance in science, technology, and economics in the current century. Nanoscaled materials are offering a variety of novel features. New physical and chemical properties are expected to occur in such systems, arising from the large fraction of the undercoordinated atoms at the surface and from the confinement of electrons to a rather small volume.

Understanding how materials behave at tiny length scales is crucial for developing future nanotechnologies. The advances in theories coupled with characterization tools are the key to study the properties and capabilities and then to design devices with desired functionalities. The study of size and shape effects on material properties has attracted enormous attention due to their scientific and industrial importance, since nanomaterials have different properties from the bulk due to their high surface area over volume ratio and possible appearance of quantum effects at the nanoscale. The determination of nanomaterials properties is still in its infancy and many material properties are unknown or ill characterized.

We invite researchers to contribute original as well as review articles that will stimulate the continuing efforts to understand how and why the properties of materials at the nanoscale depend on their size, and to develop new applications using nanoparticles, nanowires, and other structures at the nanoscale. Potential topics include, but are not limited to:

- Nanoparticles, nanowires, nanotubes, and so forth
- Simulation and theoretical calculation on nanosized materials
- Physical and chemical formation methods and characterization techniques
- Shape stability of nanostructures
- Quantum entrapment and confinement effect in nanomaterials
- The novel properties of nanosized materials
- Applications of nanomaterials especially in catalysis, sensors, and so forth

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