Journal of Nanomaterials

Special Issue on

Low-Dimensional Carbon Nanomaterials: Synthesis, Properties, and Applications

Call for Papers

Carbon has long been known to exist in three forms: amorphous carbon, graphite, and diamond. However, the discovery of buckyballs in 1985 has created an entirely new branch of carbon chemistry. The subsequent discovery of carbon nanotubes in 1991 has opened up a new era in materials science and nanotechnology. The wonder of the carbon world remains with the successful isolation of monolayer graphene from graphite simply using adhesive tape in 2004. Over the last decades, carbon nanotechnology has been evolved into a truly interdisciplinary field, encompassing chemistry, physics, materials science, and mechanics. The research excitement was largely driven by the unique properties and diverse applications of these low-dimensional carbon nanomaterials. For example, because of their high strength, high stiffness, nanoscale carbon materials are promising nanofillers to strengthen polymeric composites; due to its exceptional electrical properties, graphene may replace silicon as the next-generation electronic materials. Because of their biocompatibility, tiny size, large specific surface area, and ease to be biofunctionalized, carbon nanotubes and nanodiamonds are attractive for various biomedical applications including bioimaging, biosensing, drug delivery, and protein separation.

This special issue will be focused on the fundamental physics, synthesis, and technical applications of low-dimensional carbon materials (buckyballs, nanodiamond, carbon nanotubes, and graphene). Correspondingly, we intend to solicit research and review papers that cover a wide range of recent progresses on the studies of low-dimensional carbon materials, including their mechanical, thermal, and electronic properties, the roles of defects of various kinds on their materials properties, their fabrications and large-scale patterning, their interactions with other materials, and their mechanical, electrical, and biomedical applications. Papers detailing theoretical, computational, and experimental studies are equally welcome.

Topics of interests include, but not limited to the following areas:

- Synthesis
- Modeling and/or measurement of materials properties
- Defects in low-dimensional carbon materials
- Patterning
- Mechanical, thermal, and biological applications

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