MATERIALS FOCUS

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A Special Issue on

"Laser and Its Applications for Material Science and Nanotechnology"

Call for Paper

An important attribute of nanotechnology stems from the fact that properties of a variety of materials undergo drastic changes when one of the dimensions is reduced to nanometre scale. Research in the field, of late, has generated profound interest in the scientific community to understand this size reduction and property improvement correlation which will potentially help formulate strategies for developing generation-next new materials. The field broadly encompasses studies related to synthesis, characterization, quantification of property-enhancement, and the end-use of such nanoscale materials. The intriguing fact that so designed nanomaterials have got properties fundamentally different from both the constituent atoms or molecules and their bulk counterparts has rendered such nanoparticles and nanoparticle-based assemblies or functional materials important from both the theoretical and experimental point of view. A great deal of interest in field has emanated from the use of lasers. As such lasers and laser-based technologies have widely been used in material synthesis and characterization. Interaction of laser with materials, in particular has contributed substantially to the growth of the field and significant advances have been made in the last few decades including the widespread use of advanced laser sources with ultrahigh intensity and short pulses (in the femtosecond regime and beyond). Recent advances in the field have opened-up opportunities for applying laser and laser-based processing and fabrication techniques for designer materials, novel approach to diagnostics and analysis, and other applications in the niche areas of nanoscience and nanotechnology, photonics, biology, medicine, and sensors, among others.

The apparent need to publish a special issue on "***Laser and Its Applications for Material Science and Nanotechnology***" is to comprehend and report the on-going research and developments in the niche area of Material Sciences and Nanotechnology focussed at the use and applications of lasers. Works related to applications of laser in Nanofabrication and other linked fundamental principles behind laser ablation are also invited. Scope of the

special issue covers different aspects of applications of laser radiation ranging from fabrication, melting, and evaporation of nanoparticles into changing their shape, structure, size, and size distribution through the study of their dynamics and formation of periodic arrays and various structures, hierarchies and assemblies. The chronological development of research on nanoparticles and nanomaterials involving application of lasers in nanotechnology across different disciplines of science and engineering are also invited.

Contributions of all the above type of materials systems will be considered in the form of original articles, short communications and review. The articles will be assessed based on their originality, uniqueness and scientific merit and contribution towards advancements in computational methods and theory in the field.

Topics include (but not limited to):

- Fundamental and Recent Developments in Lasers for applications related to Material Science and Nanotechnology.
- Plasmonics and near field effects for laser micro- and nanoprocessing.
- Two-Dimensional/Three-Dimensional (2D/3D) nanofabrication with advanced laser techniques, laser-aided synthesis and design of nanoparticles, multiple photon polymerization and others.
- Deposition of thin films and coatings of functional materials for solar and display technologies, and for devices and heterostructures in spintronics, multiferroics, magnetism and optoelectronics.
- Laser nanofabrication of soft materials.
- Applications of Lasers in Nanophotonics and Biophotonics.
- Laser ablation for chemical analysis.
- Fundamentals and modeling of laser materials interactions.
- Use and Advancement of Laser-Induced Breakdown Spectroscopy (LIBS) for chemical analysis and chemical imaging.
- Use and Applications of LIBS in Nanotechnology

Manuscript Preparation and Submission

Prospective authors must submit a single file having text, figures and tables etc., in MS Word format directly to the Guest Editor via e-mail. It is also mandatory that authors must send a graphical abstract for each submitted manuscript. All manuscripts will be peer-reviewed to ensure high quality of publication. Please also indicate in your cover letter that

the submitted manuscript is original and has not been published earlier and is not currently submitted to any other journal and will not be submitted elsewhere before a final decision is made by this journal. An early submission will get preference in terms of review and the process of publication. Author guidelines for preparation of manuscript as per the journal requirements are available at http://www.aspbs.com/mat/.

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