Tentative Outline

Special Thematic Issue for the journal Current Material Science

Title of the Thematic Issue: "Functional Materials for Advance Engineering Applications"

Sectional Editor: Dr. Vikas Dubey
Co-Guest Editor: Dr. S.J. Dhoble

- **Scope of the Thematic Issue:**

Advanced functional materials consist of two or more materials prepared using various manufacturing processes. They are used in automotive, aerospace, marine, and defense applications due to their light weight, high strength to weight ratio, high stiffness to weight ratio, better resistance to wear and corrosion, and excellent properties at elevated temperature. Advanced functional materials can be prepared by casting processes, powder metallurgy, and surface modification techniques, and their properties can be evaluated by mechanical and other testing methods. In addition, the machinability and welding of advanced welding techniques are essential to manufacture these components for end applications.
Conventional materials used in industry often lead to failure because of their poor mechanical properties, lower strength to weight ratio, and poor resistance to wear and corrosion. The lack of interface bonding between the matrix and reinforcements causes fibers or particles to pull out of the matrix. In addition, there are challenges faced in the weldability and machinability of functional materials when using conventional welding and machining techniques. Hence, significant attention has been given to developing advanced functional materials and the advanced welding and machining techniques needed to best produce various products for end applications.
The aim of this Special Issue is to bring together original research and review articles focused on recent advances in advanced functional materials and engineering approaches for designing, synthesizing, and characterization of these materials. We will focus on research in the fields of advanced composite materials, additive manufacturing and metal forming of functional materials, surface modification techniques, conventional and advanced welding methods, non-traditional machining processes, and micro- and nano-machining processes.

The Thematic issue on Functional MATERIALS for advance engineering application will be an excellent international forum for sharing knowledge and results in theory, methodology and applications impacts and challenges of Materials Science Engineering and Technology. The goal of this thematic issue is to highlight the current research in the thrust areas of materials science, engineering and technology. Original research papers, state-of-the-art reviews are invited for publication in all areas of Materials Science Engineering and Technology.

Keywords: Nanomaterial, Material synthesis, and processing, Phosphors, Ceramic, Composites, Metal Alloys

Sub-topics:

- Advances in construction materials
- Materials for electronics & photonics
- Advances in renewable energy.
- Advanced materials: fuel cell technology, engines & turbines
- Eco-friendly & Sustainable materials
- Materials for Energy Harvesting and Storage

Tentative titles of the articles:

- Understanding the influence of electrolyte aging in electrochemical anodization of titanium
- Upconversion based temperature sensing ability phosphor

- Origin of the red emission in zinc oxide nanophosphors
- OLED fabrication and applications
- TL studies in geological samples
- MEMS and NEMS devices fabrication

Schedule:

- Thematic issue submission deadline: **March, 2023**

Contacts:

Sectional Editor Name: Dr. Vikas Dubey
Affiliation: Dean Research and Development Associate Professor & Head Department of Physics BIT Raipur
Email: jsvikasdubey@bitraipur.ac.in

Co-Guest Editor: Dr. S.J. Dhoble
Affiliation: Department of Physics RTM Nagpur University Nagpur
Email: sjdhoble@gmail.com