

## Tentative Outline

### Special/Thematic Issue for the journal "Recent Patents on Mechanical Engineering"

#### Title of the Thematic Issue: Green and Renewable Energy Materials: New Technologies and Applications

*Guest Editor: Dr. M. Anish*

- **Scope of the Thematic Issue:**

Since the time that nanomaterials were first discovered, there has been widespread anticipation regarding their potential to either perform new functions or improve the performance of devices in a variety of significant technical fields. This has been particularly the case in fields that are concerned with the interaction of light and matter. Scientists have invested a significant amount of time and effort into developing nanotechnology and techniques for characterization over the course of the past several years, and as a result, some of the functions that were initially envisioned have now been definitively evaluated and even implemented into practical settings. Concurrently, additional sensitivities have come to the surface, such as the need to find eco-friendly and long-term replacements for resources that are either harmful or in short supply, as well as concerns over the security of nanomaterials.

Within the scope of this area of study, there are a number of subfields of inquiry that call for more examination. This involves researching the qualities and manufacturing method of metallic nanocomposites that have a low thermal expansion as well as high electrical and thermal conductivities. Research must also be conducted on the performance of metal matrix composites at ambient temperature and at increased temperatures before these composites may be used in structural applications. It is necessary to do more research into the application of nanomaterials in the production of automobile bumpers, metal cutting tools, high energy density rechargeable batteries, solar cells, and fuel cells, among other potential applications

**Keywords:** Energy, Solar, Fuel, Nanomaterials, Nanocomposites and metals

#### Sub-topics:

- Nanomaterials for photovoltaic energy harvesting
- Nanostructured electrodes for solar cells
- Synthesis and characterization of novel nanomaterials respect to energy systems
- Nanofluids and nanocomposites for thermal energy storage and transport
- Nanomaterials for hydrogen storage
- Ecofriendly nanomaterials for lighting
- Nanomaterials for Heat Transfer.

#### Tentative titles of the articles:

- Effect of Temperature Sintering on Grain Growth and Optical Properties of TiO<sub>2</sub> Nanoparticles
- Tailoring of Ag<sub>3</sub>PO<sub>4</sub>-Anchored Hydroxyapatite Nanophotocatalyst with Tunable Particle Size by a Facile Ion-Exchange Method for Organic Textile Dyes Photodegradation
- Synthesis and Antimicrobial Activity Assay of Nanometal Oxide-Doped Liquid Crystal
- Preparation of Nanosize Bone Powder from Waste and Development of Al Composite through Squeeze Casting Process
- Synthesis and Characterization of Zinc, Iron, Copper, and Manganese Oxides Nanoparticles for Possible Application as Plant Fertilizers
- Self-Assembled Copolymeric Nanowires as a New Class of 3D Scaffold for Stem Cells Growth and Proliferation
- Toxicity, mechanism and health effects of some heavy metals
- Effects of Cr Addition on the Precipitation and Properties of Cryo-Rolled CuNiSi Alloys
- Influence of Pre-Milling on the Mn Solid Solubility in the Al-Mn-Cu Alloy during Mechanical Alloying

**Schedule:**

✧ Thematic issue submission deadline: July 2023

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