

Special Issue on
**Application and Characterization of Nanomaterials for
Industrial and Environmental Processes**

CALL FOR PAPERS

The use of nanomaterials for industrial and environmental processes has recently had a substantial increase in the number of studies published on these topics, due to the ease at which the properties of nanomaterials can be fine-tuned for specific purposes. The highly specialized properties of both inorganic and organic nanomaterials strongly depend on their size distribution, surface, and morphological characteristics, as well as their composition and the imposed environmental conditions. In the last two decades, there have been promising developments in the applications of nanomaterials, such as molecularly tailored nanocatalysts in fuel cells to enhance electricity production and storage, nanostructured catalysts in steam reforming processes, and iron-based nanocatalysts for wastewater and soil remediation processes.

Assessments of the different structural and surface properties of individual nanomaterials are greatly important in order to obtain the required characteristics for the required, specific use. To this aim, microscopy techniques, such as scanning probe microscopy, electron microscopy, X-ray, and Infrared methods, as well as hyphenated techniques, represent useful tools not only for understanding the fundamental properties of the materials but also for exploring their functional and technical performances in tailored technological applications.

In recent years there has been an increasing demand for the exploration of the same samples of nanomaterial at different length scales and using different analytical methods, in order to generate a large range of information. Correlative microscopy enables researchers to continuously zoom in and out on the same sample using integrated microscopy techniques. The combination of several analysis methods applied to the same region of interest (ROI) leads to the generation of 2D and 3D images which provide complementary analytical information and, furthermore, by monitoring the material's changes over time, 4D images could be obtained.

In this special issue, we invite researchers to submit original research papers, as well as review articles, on any of the topics below, to improve the knowledge and efforts in the production, application, and characterization of novel organic and inorganic nanomaterials of great industrial and environmental interests. We especially welcome contributions dealing with novel green nanomaterials, particles, and composites with a chemical, structural, and morphological characterization by microscopy methods, followed by a discussion or experimentation about a possible application in any industrial or environmental sectors.

Potential topics include but are not limited to the following:

- ▶ Dynamic Light Scattering and UV-Vis methods in the synthesis, application, and characterization of nanomaterials
- ▶ The correlation of spectroscopy and microscopy techniques in the characterization of green-synthesized nanomaterials
- ▶ Correlative microscopy for characterization of nanomaterials
- ▶ The use and characterization of nanocatalysts in advanced oxidation processes (AOPs) and environmental processes
- ▶ Microscopy and spectroscopy for characterization of nanomaterials for use in energy storage and production applications
- ▶ Use of scanning microscopy techniques for the characterization of structural and morphological properties of nanomaterials

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/jnt/mcmep/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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