

## Tentative Outline

### Special Issue for Current Drug Metabolism

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### TITLE OF THE HOT TOPIC ISSUE

## Emerging Trends in Nanotechnology: Nanozymes, Imaging Probes and Biosensors and Nanocarriers

### **Aims & Scope:**

The integration of nanotechnology with biology is poised to address current biomedical and human health problems. Recent developments at such interfacial research has shaped novel concepts and products in the area of nanodevices and nanomedicines. It is well established that the advances in the areas of bio-mimetic/bio-inspired nanotechnology, bio-imaging, disease diagnosis and treatment, would progress with either improvement in existing methods or development of novel methods for the preparation of nanomaterials.

Recently, nanomaterials with intrinsic biological enzyme-like characteristics (Nanozymes) are one of the focus areas of the nanotechnology research. This could be due to the fact that these nanozymes can efficiently catalyze the conversion of substrates analogous to biological enzymes with similar kinetics but varying physiological conditions. These nanozymes are exploited to develop biosensors to detect biomolecules, disease markers, drug nanocarriers and imaging probes. Incorporation of nanomaterials has led to the construction of new sensors as well as increase in the sensitivity and performance of existing biosensors. Signal transduction based technologies using nanomaterials has allowed the invention of several novel biosensors. Additionally the nanoscale dimension further assists the development of nanosensors for rapid and simple detection in vivo. Due to these capabilities, nanotechnology is being looked as the potential technology to provide portable instruments capable of multiplexed analysis of components in extremely low concentrations.

Today's medical diagnostics research aims towards molecular imaging to facilitate early diagnosis, identification of disease type, stage of disease and provide fundamental information about pathological processes. The paradigm shift exploits nanomaterial based probes over traditional single molecule-based contrast agents. Although, quantum dots, fluorophore-doped nanomaterials and other metal-oxides hold excellent promise, development of nanomaterials as animal imaging probes such as molecular imaging with X-ray based computerized tomography, ultrasound and magnetic resonance imaging will be of great use for human health.

The proposed sections/topics outlined in this special issue depict the present status and future perspectives in the area by leading experts of the field. This comprehensive issue will be valuable asset for researchers from all fields which encompasses the expertise from materials science, medicines, engineering and radiologists together to make nanobiotechnology most rewarding.

**Key words:** Nanocatalysts, NanoBiosensor, Nanomedicine, Diagnostics, NanoBio interactions, Imaging, Drug delivery.

**Subtopics:** (Paper titles along with the Contributors complete name, affiliation and emails)

- Nanozymes: Current perspectives and future directions
- Nanomaterials as Imaging probes for mapping human diseases
- Enhancing the performance of biosensors through incorporation of nanomaterials
- Smart drug delivery systems: Realizing the clinical potential of cancer nanotechnology

**Schedule:**

Manuscript submission deadline: May 2018

Peer Review Due: July 2018

Revision Due: September 2018

Notification of acceptance by the Guest Editor: October 2018

Final manuscripts due: November 2018

Final date of Submission of Special issue: December 2018