

Tentative Outline

Future Trends in biosensing for biomedical applications

Guest Editors: Dr. A. Elaissari & Prof. A. Errachid

Aims & Scope:

The demand for chemical and biological sensors to meet the needs of real-world applications in healthcare, food safety, environmental monitoring, defense, and multiple other sectors remains high, and biological and chemical market sales continue to grow globally at double levels. However, traditional instrumentation based on chemical and biosensors are expensive, bulky, and require a lot of time to detect, which also limited its application in resource-limited areas. In recent years, chemical and biosensors combined with Lab-on-chip technology, has been widely used in biomedical applications due to its high integration, personalized design, and easy mass production. Many research efforts have been made to develop such platforms by bringing together diverse fields, including chemistry, biotechnology, and nanotechnology. The integration of sensors in microsystems based on microfluidic or lab-on-a-chip, stimulates the developments of new and innovative micro and nanosensors functionalized using supported nanochemistry and microdevices. In fact, to develop sophisticated microsystems containing bionanosensors, new chemistry has been adapted to such challenge by using bottom-up or top-down based chemistry, molecular imprinted approach, 3D-printer and also the use of nanomaterials such as nanoparticles etc... Inorganic nanoparticles such as magnetic, quantum dots and some hybrid and composite submicron particles have been used, not only as general solid support, but also for surface modification, transport in microsystem and also in the detection step.

Based on different detection methods, different conceptions of microsystem and different geometry of the devices, numerous applications have been explored in medical field, mainly for rapid screening of diseases detection. Nowadays, smart, multi-detection and complex microsystems have been developed and also explored for blood sugar monitoring, detection of biomarkers of heart failure and cancer diagnosis, etc.

The aim of this special issue is to report and to update on of the most recent advances in chemical, biosensors and Lab-on-chip for medical applications by covering various aspect such as elaboration of challenging chemical and biological sensors, surface modification of sensors, integrated sensor in lab-on-a chip and also connected devices for cosmetic, environmental and biomedical analysis.

Keywords: Bionanosensor, Lab-on-Chip, Nanomaterials, Microsystem, Biomedical diagnosis

The subtopics to be covered within this issue are listed below:

- Elaboration of bio-chemical-sensors
- Molecular imprinted sensors.
- Sensors for in vivo use.
- Functional Nanomaterials in biosensors.
- Biosensors for quick biomedical analysis (Saliva, blood, breath, urine...).
- Integrated sensors in microsystems for biomedical use.

- ✧ Manuscript submission deadline: Jun 2021
- ✧ Peer Review Due: July
- ✧ Revision Due: August
- ✧ Announcement of acceptance by the Guest Editors: September
- ✧ Final manuscripts due: September

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