

Tentative Outline
Special Issue for Current Organic Chemistry
Guest Editor(s): Rajeev Jain and Nimisha Jadon

**TITLE: Electrochemical Impedance Biosensors for the
detection of Biomolecules**

Aims & Scope:

Electrochemical impedance biosensors are a class of label-free sensors that promise assay of small molecules. Sensing materials are of great importance for fabricating a sensitive impedance biosensor. Polyaniline (PANI) is attractive due to its simple synthesis, low cost, high conductivity and excellent environmental stability. Application and the ability to characterize and communicate with conducting polymers using emerging technologies highlight the versatile, dynamic, yet controllable, nature of these materials. For instance to achieve improved electrochemical performance as a super capacitor electrode, graphene-reinforced PANI composites have been reported by chemical oxidation synthesis and electrochemical synthesis. Electrochemical synthesis approaches include cyclic voltammetry, galvanostatic, potentiostatic and pulse current methods. There have also been reports available on the investigation of polyaniline/graphene nanocomposites as a sensing material for an impedance biosensor. Important applications of electrical biosensors are low cost, small instrument size and speed of analysis where a measurement and diagnosis at a bedside, in an ambulance, or during a clinic visit – are a promising application. If the cost and time per data point are reduced, screening for various disease markers using an electrical biosensor could become part of routine medical checkups. Other applications include bio-warfare agent detection, consumer test kits, bioprocess monitoring, and water quality testing. Another potential application is the label-free determination of bio-molecular affinity coefficients, in which pure target samples are used. Overall impedance biosensors have potential for simple, rapid, label-free, low-cost detection of biomolecules.

Furthermore, the synthesis of Conducting Polymers to produce different forms that enable integration of all the functions for intelligent operation or that allow incorporation into a larger structure. For too long, the implications of the inherent dynamic properties of polymers have been ignored. A more sophisticated approach to its understanding and manipulating these dynamic properties may revolutionize polymer science in its own right.

Subtopics:

- Paper based electrode for detection of Biomolecules.
- Microfluidic paper based devices for detection of biomolecules.
- Articles based on the application of Electrochemical Impedance Biosensors.
- Polymer-Graphene composites as electrode material for the detection of pharmaceuticals/antioxidants.
- Composite screen printed electrodes for the detection of biomolecules/pharmaceuticals.
- Paper based electrochemical impedance biosensors for the detection of biomarkers
- Natural products and dental caries prevention

Approximate Schedule:

Manuscript Submission Deadline: December 31, 2015

Peer Review Due: February 15, 2016

Revision Due: March 31, 2016

Notification of Acceptance by the Guest Editor: April 30, 2016

Final Manuscript Due: May30, 2016