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Electrochemical sensing of analytes using conducting polymers

M V Sangaranarayanan

Indian Institute of Technology, India

The electrochemical sensing of biologically important compounds is a frontier area of research in analytical, medicinal and environmental chemistry. The electrochemical sensing techniques using conducting polymers are robust and versatile.

Among various sensing applications of conducting polymers, enzymatic and non-enzymatic sensing of glucose, urea, dopamine etc deserve mention [1]. Conducting polymers extensively investigated in this context encompass polyaniline and polypyrrole. These can be prepared using various types of surfactants so as to yield impressive nanostructures, with improved sensitivity and selectivity. The sensing of glucose using polyaniline nanofibers has been demonstrated using cyclic voltammetric, amperometric and impedimetric analysis [2] with impressive detection limits and calibration range. The potentiodynamic polymerization of pyrrole on Pt is shown to yield non-enzymatic sensors of urea [3]. The sensing of other compounds such as Levo-thyroxine[4], dopamine etc will also be highlighted.

Biography

M V Sangaranarayanan obtained his PhD from the Indian Institute of Science Bangalore and was an Alexander von Humboldt Fellow with Prof. Dr. Wolfgang Schmickler subsequently. He is presently employed as a Professor at the Department of Chemistry, Indian Institute of Technology Madras, Chennai. He has published nearly 120 papers in refereed Journals and co-authored two textbooks. His research interests are in electron transfer theories, conducting polymers, electrochemical supercapacitors and biosensors.

sangara@iitm.ac.in

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