

## DEPARTMENT OF BIOELECTRONICS AND BIOSENSORS

### Department Achievements

The Department is actively engaged in the design and development of novel electrochemical and gas sensors for applications in the fields of medicine, environment & food technology. During the period of this report, research articles were published in leading international journals like- Materials Science and Engineering C (IF: 3.088), Nanotechnology (IF: 3.446), Applied Catalysis B: Environ.(IF: 7.435), Phys. Rev.

Lett. (IF: 7.512), RSC Advances (IF: 3.84), and Electrochim. Acta (IF: 4.504).

### Invited Lectures Delivered by the Faculty



Dr. C. Sekar, Professor and Head of the Department, attended an International Conference on Sensing, Information and Decision at the Cellular Level held at International Centre for Theoretical Physics (ICTP), Trieste, Italy from 14<sup>th</sup> to 17<sup>th</sup> July 2015. The conference was inaugurated on July 14, with a brief introduction about ICTP and the theme of the conference. In total, there were 67 participants from various countries including India, USA, Germany, Moldova, Iran, Spain, Italy, Egypt, etc. The opening ceremony lasted just for 10 minutes which was followed by a Keynote Speech by Prof. Marsilio Matteo of ICTP, Trieste. Dr. Sekar presented a research paper entitled "Metal oxide semiconductor based biosensors for medical diagnostic applications". The work was well received and appreciated by the participants due to its significance in the area of medicine. Dr. Sekar received the financial assistance from ICTP-Trieste and CICS-Chennai for travel, registration and local hospitality. Prof. Sekar delivered a speech on 4<sup>th</sup> December 2015 at Bhaarath Public School, Aaravayal-Karaikudi on the eve of National Energy Conservation Day-2015. He also delivered an invited lecture at the National Seminar on Photonics and its Applications (NSPA- 2015) held at University of Kerala, Thiruvananthapuram from 9<sup>th</sup> to 11<sup>th</sup> December 2015. He has received a research project worth Rs. 49.00 Lakhs from DST-SERB for the work relevant to the development of biosensors for detection of neurotransmitters.

Dr. V. Dharuman, Assistant Professor, has been awarded with research projects; (i) Studies on membrane proteins interactions on liposome-DNA-gold nanoparticle composite tethered on gold transducer for biosensing (DST-SERB) worth Rs. 44.70 lakhs, and (ii) Development of novel graphene and metal nanocomposite films and characterization for label free electrochemical DNA-protein sensing (UGC) worth Rs. 14.69 lakhs respectively. Dr. Dharuman and his group presented papers at the International Conference on Recent Advance in Materials and Chemical Sciences (ICRAMCS-2015) held at Gandhigram Rural Institute, Dindugul, Tamilnadu, on December 14-15, 2015.

Dr. J. Wilson, Assistant Professor, has received two research projects; (i) Fabrication and characterization of irradiated polypyrrole-polyaniline nanotubes (ppy-pani) doped with bimetallic nanoparticles (UGC) worth Rs.10.50 lakhs and (ii) Irradiation of polypyrrole-poly 3,4 diethylenedioxythiophene nanotubes (ppy-pedot) doped with bimetallic nanoparticles for biomolecules sensing using microelectrodes (DST-SERB) worth Rs. 30.46 lakhs.

### Achievements by a Research Scholar



Ms. N. Lavanya, Senior Research Fellow (DST-SERB Project) visited the Department of Electronic Engineering, Chemistry and Industrial Engineering, University of Messina, Italy as a Visiting Researcher for three months during April - July 2015. She worked under the supervision of Prof. Giovanni Neri, Professor of Chemistry and Chair person of Gas Sensor Lab and also a member of the Directive Board of AISEM (Italian Association of Sensors and Microsystems). His laboratory is well known for its