



Title of Talk: Biosensors for Environmental Analysis

Speaker: Prof. Sunil Bhand

Department of Chemistry

BITS Pilani, KK Birla Goa Campus



Date: 12 August 2021

Time: 1600 hrs to 1700 hrs IST

Meeting Link : https://teams.microsoft.com/l/meetup-join/19%3ameeting_Yjk2MTMyY2QtNjlyOC00MTRiLWl4ODItMGU0NzFjZmVINDg2%40thread.v2/0?context=%7b%22Tid%22%3a%22b867f20e-8a9c-4603-b5ab-39c3840dfb64%22%2c%22Oid%22%3a%2273b76e63-bca6-4117-850c-76e004a3f5a6%22%7d

Summary of the Talk

The increasing load of various chemical and biological contaminants in the environment particularly in water bodies is posing a serious threat to human health. The presence of low concentration of contaminants such as heavy metal ions (specifically lead, cadmium and mercury), bacteria such *E Coli* (as indicator of faecal contamination) and other emerging contaminants such as endocrine disruptors in water, fish, clam and mussels poses a serious threat to the consumers. There is an immense need to identify these contaminants and ensure their presence within permissible limits as recommended by WHO, BIS and FSSAI and thus reduce risk to public health. Chemical contaminants such as heavy metal ions specifically dissolved metals need to be detected not only in water but also for their potential accumulation in fish or mussel tissues. Biosensors provide a promising alternative for ultrasensitive and low level detection of such contaminants for field detection and regulatory compliance. Specific examples of heavy metal ion detection using nanomaterial integrated enzyme nano-probes, microfluidics devices developed by our group will be presented. In addition to heavy metals ions, an ultrasensitive electrochemical bio sensing platform developed for the detection of bacteria and other related analytes will be presented.

About the Speaker

Prof Bhand obtained his Ph.D. in Chemistry in 1996. During 2000-2002, he worked as post-doctoral associate at Lund University Sweden under an Indo-Swedish Project. He has more than 18 years of teaching and 25 years of research experience. In Dec 2002, he joined Department of Chemistry BITS Pilani and became Professor in 2013. During 2006-2013 he was heading the department at Goa Campus. Since 2013 he is Institute wide dean, Sponsored Research and Consultancy. His area of research is Biosensors, Bioanalytical Chemistry, BioMEMS, Nanotechnology and Environmental Chemistry. He has published 65 research papers, authored 5 book chapters and inventor in 13 patent applications (03 granted). Prof. Bhand has supervised 11 PhD students and currently



supervising 4 (02 as co-supervisor). He has delivered more than 40 invited lectures. He extensively collaborated with reputed groups in Sweden, France and UK. Prof Bhand has secured more than 20 externally funded projects worth Rs 35 cr. from national and International agencies (The World Bank USA, Swedish Research Council, RD Tata Trust, Tea Board, Birla Carbon, ICAR, BRNS, ICMR, CSIR, UKIERI-DST, SPARC-MHRD). He is also Project Director of recently established BITS BioCyTiH Foundation funded under NM-ICPS by DST Govt of India with a funding of Rs. 125 cr. Prof Bhand is recognized as expert reviewer by The Swiss National Science Foundation (SNSF, Switzerland), Innovate UK, French Embassy, DBT, DST, BIRAC etc. He is currently the member RAC of ICAR-CIPHET Ludhiana and expert member of DSIR, TOCIC- Tirupati. He is also Technical Director, BITS-BIRAC-BioNEST incubator. Nominated expert member of Goa State Innovation Council for last 3 years and Ex-Chairman of Indian Institute of Metals -IIM Goa Chapter. He is life member of the Biosensor Society of India, IIM Kolkata, Association of Environmental Analytical Chemistry of India (AEACI). Prof Bhand has organized several international conferences and bilateral workshops at Goa Campus as Co-Chair or convener.

