

U-bent Optical fibers - sensors for all

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Date: 28 August 2019 (Wednesday)
Time: 12:15 – 13:45 pm (Reception with light sandwiches at 12:10pm, talks start at 12:15 pm. To facilitate the order of sandwiches, please register through email pearllam2@cityu.edu.hk.)
Venue: G6302, Yeung Kin Man Acad. Bldg., City University of Hong Kong

Abstract

Optical sensors is probably the most engaging areas of research at present, given the number of publications that come out in this area. Starting with simple optical fiber sensors for physical parameters such as temperature, strain, etc. to the more complex biosensing strategies, optical sensors promise immunity to electrical interferences, ease of manufacturing and easy acceptance from the user community. Although various complex bio/chemical sensors have been developed riding on the wave of nanotechnology, there are simple strategies to exploit nanoscale phenomena to develop powerful bio/chemical sensors by modifying the geometry of optical fibers. The sensitivity of these can be improved by incorporating nanostructures (e.g. gold nanospheres, dendrimers, etc.) and polymers on the surface of the fibers. This talk will concentrate on sensors developed using multimode optical fibers for detection of bacteria in water (down to 10 bacteria per ml, which translates to a volume ratio of 100 parts per trillion), proteins (down to 10-s of picomolars), TNT explosive vapor (down to parts per billion or even less), heavy metals in a variety of substrates, etc.

About the speaker

Soumyo Mukherji did his B.Tech. in Instrumentation Engineering, Indian Institute of Technology (Kharagpur), MS in Mechanical Engineering, Colorado State University (Fort Collins, USA) and Ph.D. in Biomedical Engineering, University of North Carolina (Chapel Hill, USA). After his PhD he joined IIT Bombay in 1997, where he is now an Institute Chair Professor in the Department of Biosciences and Bioengineering. He was the Head of the Centre for Research in Nanotechnology and Sciences at IIT Bombay from 2010 to 2013 and the Dean of Student Affairs from 2015 to 2019. His research interests are in sensors and instruments for widescale deployment in resource constrained locales for medical and environmental applications, mobile health, security, etc.

Prof. Mukherji has been associated with research in Biosensors and Bioinstrumentation and delivered numerous invited talks in conferences, seminars, symposia and workshops in that area. He has over 75 journal publications and over 90 conference publications to his credit and is named in 20+ patent applications. He has guided / is guiding about 30 doctoral students and about 70 Masters students.