

Nanobiosensors

Cranfield University, 25th September 2009

Speaker Biographies

Professor Anthony P. F. Turner

Professor Anthony P. F. Turner has been at the forefront of biosensor research for over 25 years. His name is synonymous with the field of biosensors. In particular, his work has underpinned the development of many of the most commercially successful glucose biosensor products.

Formerly Principal of Cranfield University at Silsoe, Professor Turner is a very experienced manager who returned to full-time research in February 2006 and is now a Distinguished Professor of Biotechnology in the University. He has held a personal chair in Biosensor Technology at Cranfield since 1989 and has a number of honorary, and is a visiting Professor at Tokyo Institute of Technology and University of Florence.

He has been the Editor-In-Chief of a principal journal in the field, *Biosensors & Bioelectronics* (impact factor 5.061), since its foundation in 1985 and edited the first textbook on Biosensors in 1987. He played a key role in coordinating research activities in medical and environmental sensors in the European Union and led concerted actions and thematic networks since 1988. He founded the World Congress on Biosensors in 1990 and has chaired it since then.

In addition to his academic activities, Prof Turner has held a range of commercial positions continuously since 1982, commencing with Project Director for the MediSense in vitro diagnostics programme. In this role he led the team that invented, designed and developed the worlds' most successful type of biosensor, the mediated amperometric enzyme electrode for glucose. He continues this commitment to innovation today as a Director and Chairman of the Scientific Advisory Board for a USA company, a member of the International Advisory Board to the National Science and Technology Agency in Thailand. He has advised companies and governments worldwide in the general area of analytical biotechnology and he has served as an expert witness in patent litigations on three continents.

He was elected a Fellow of the Royal Society of Chemistry in 1996 and invited to Fellowship of the Institute of Biology in 1999 and of the Institute of Physics in 2006. He was awarded a higher doctorate for his exceptional contribution to Biosensors by the University of Kent in 2001 and admitted to the USA National Academy of Engineering in 2006 for his work on medical and environmental diagnostics and on synthetic receptors.

Professor Turner has over 600 publications and patents in the field of Biosensors and Biomimetic Sensors. He has won a number of prestigious scientific awards worth over £100,000 in personal prize money and presented well over 400 keynote and plenary lectures at a range of international meetings and honour ceremonies around the world.

Professor Sergey Piletsky

Prof. Piletsky is Professor of Bio-organic and Polymer Chemistry in Cranfield Health at Cranfield University and a former Wolfson-Royal Society Research Merit Award holder. Prior to joining Cranfield in 1997 he held the position of Science Secretary to the State Program on Biosensors in the Ukraine. He currently is Thematic Leader for Smart Materials. His group has gained an international reputation for its work in synthesis and design of functionally specific polymers. It is among the most successful and productive groups in the area with more than 120 papers and patent applications published over the last decade.

One of his research areas relevant to the present application is the development of molecule-sensitive polymeric materials for sensing and diagnostics. He also has extensive experience in the development of analytical instruments, "smart" materials for separation and micro-fabrication, optics and material characterisation. He has consulted for a number of national and multinational companies and government organisations in the field of functional and smart polymers and sensors, including GSK, the United States Department of Agriculture SBIR Program, BBSRC and the Government of Hong Kong.

Dr Sam Tothill

Dr Tothill has a PhD in Analytical Biochemistry from Cranfield University, where she conducted original research in enzyme catalysis and their application in biotechnology. She has an MSc in Microbial Biochemistry and was awarded the top student award for her BSc degree. She is a Director on the SWIG Ltd board (Sensors for Water Interest Group). She is now a reader in Analytical Biochemistry and leading a group of approximately eight doctoral students and one postdoctoral researcher. She is also the Associate Dean for research students in the School. Her main research interest includes: Molecular recognition, sensing and diagnostics; Nanotechnology/application in analytical and life sciences; The use of bioinformatics tools for novel artificial receptor design and discovery; and Enzymology/biocatalyst.

Dr Yi Ge

Dr Yi Ge is the Course Director for a new and unique Nanomedicine MSc at Cranfield University. After obtaining a PhD in Chemistry at the University of Sheffield, he was employed as a research scientist in a UK pharmaceutical company and was then a postdoctoral research associate at Imperial College London, before joining Cranfield Health as a member of academic staff in 2006. In addition, he is a key member of the Cranfield team delivering a series of successful short courses related to nanotechnology in collaboration with the Institute of Nanotechnology.

Professor Seamus Higson

Séamus Higson is the Dean of the Faculty of Medicine and Biosciences at Cranfield University and holds a chair in Bio- and Electroanalysis within Cranfield Health – one of five schools within the University. Professor Higson's career has spanned academic departments of Chemistry, Medicine and Materials Science and this is reflected in the research interests of the bio analytical and biosensor research group he now heads. Professor Higson also serves within an advisory and / or consultative capacity for a number of public bodies and acts as Technical Director for Microarray Ltd - a company formed upon science and patents originating from his group. Microarray Ltd manufactures micro-electrode arrays for use within chemical and biosensors - as well as licensing patented technology to third party manufacturers.

Current research interests are primarily focussed towards practical implementation of electro- analytical science for biomedical, environmental and industrial process control applications. This work has led to the development of a wide range of enzymatic, antibody, nucleic acid and synthetic receptor based sensors. Much of Professor Higson's recent work has been focussed towards the development of novel interrogation regimes based on, for example, ac impedance protocols, scanning electrochemical microscopy and other micro electrode based techniques. Séamus Higson is also author of a major Oxford University textbook 'Analytical Chemistry': (ISBN: 0 19-850289) and is currently preparing a further book, 'Analytical Biotechnology' to be published in June 2009.

Dr Jeff Newman Jeff is involved in the development of Microsystems Technology (MST), particularly for analytical applications. This involves microfluidics, biosensors, chemical sensors and various assay formats. He currently has a group of 3 PhD students. Jeff is currently managing a project which involves setting up a University Spin-Out Company in order to exploit some internally developed analytical technology.

He is involved in teaching on all of the internal, as well as several external MSc courses. He also runs an average of 4 to 5 Masters projects every summer. As a spin-off from these projects, Jeff has developed a contaminated water remediation technology based on electrochemical peroxidation. BSc Biochemical Engineering (Swansea University) PhD Biosensors (Cranfield University)