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Continuous glucose monitoring using ZnO nanowire biosensor chip

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Abstract

Zinc oxide (ZnO) nanowires have found many potential applications, ranging from sensors to optoelectronics, due to its unique chemical, electrical, optical and piezoelectric properties. Furthermore, the biocompatibility and high isoelectric point of ZnO nanowire means that the nanomaterial is an excellent candidate for biosensing application. Here we discuss the development of glucose biosensor chip based on ZnO nanowires. The device can be used in the continuous monitoring of blood glucose that is of paramount importance in managing chronic disease, such as diabetes. In this talk, the use of flexographic printing technique and hydrothermal growth of nanowires that enable high-volume low-cost production of these devices will be presented. Such fabrication technique would significantly reduce the production cost of these devices and hence rendering them commercially viable.

Biography

Jonathan S Lloyd is a post-doctoral researcher in the Nanoelectronics Research Group within the Multidisciplinary Nanotechnology Centre in the College of Engineering. He completed his PhD. in physics in 2011 after gaining a 1st class honours master's degree in physics both at Swansea University, UK. His PhD. focused on optical characterisation of nanostructures and in particular nano-Raman spectroscopy. Since then his research interests have centred on the integration of nano-materials into sensors for biological and chemical sensing applications.

Kar Seng (Vincent) Teng is a Senior Lecturer at Swansea University and he is the Head of the Nanoelectronics Research Group within the Multidisciplinary Nanotechnology Centre in the College of Engineering. His research interest is in the application of nanotechnology in electronic materials and devices, which have major impacts in healthcare, energy and information technologies. His current funded research projects include nanobiosensors for continuous monitoring of chronic diseases, nanoplasmonics for photovoltaic and fabrication of nanowires devices using printing technology.