

# Inkjet printing of biosensors for medical diagnostic devices

L. Lin<sup>1,2</sup> and W. He<sup>2</sup>

<sup>1</sup>Digital Print Centre of Industrial Collaboration, The University of Leeds, Leeds LS2 9JT, UK

<sup>2</sup>Department of Colour & Polymer Chemistry, The University of Leeds, Leeds LS2 9JT, UK

## Abstract

*Inkjet printing is an ideal technology for delivering a small quantity of fluid in a precise fashion, with minimum ink wastage. Biosensors tend to contain relatively more costly ingredients, such as enzymes and antibodies, in precise, optimised proportions. As such, inkjet printing is an ideal technology for the manufacturing of biosensors. This paper reports a study of the feasibility of using inkjet to print biosensor strips for use in medical diagnostic devices. In particular, the paper will describe properties of the biosensor strips prepared, in relation to the “ink” formulations and to the sequence of printing. The effects of each “ink” ingredient on the performance of the resulting sensor strip will also be detailed. For a successful manufacturing process and a commercially viable product, the inks prepared needed to be able to print efficiently and reproducibly. The sensor strips prepared needed to be capable of producing a linear response to the analyte in a wide range of concentration (i.e. large dynamic range). The performance of the printed sensor strips needed to be stable over a considerable length of time under various storage conditions. All these parameters were characterised and optimised.*

## Author Biography

Long obtained his BSc and MSc in Polymer Science and Engineering and his PhD in Colour & Polymer Chemistry. He has collaborated, as an academic, with reprographics and related industries for over 20 years. He became the Field Group Lecture in 1995; the Field Group Senior Lecturer in 2000 and the Professor in Reprographics Science & Technology in 2006. Long is also a Visiting Professor at University of Arts London and Heilongjiang University. In 2005, Long became the Director of the Digital Print Centre of Industrial Collaboration, accredited and funded by Yorkshire Forward. He is also the Editor of Pigment & Resin Technology (Emerald Publishing Ltd., UK) and of China Coatings Journal (SinoStar International Ltd., Hong Kong), and an invited columnist for a number of reprographics journals. His specialty is in digital printing and anti-counterfeit technologies. He is passionate for reprographics industry and is a regular speaker at international conferences.