OMICS Group Conferences
Accelerating Scientific Discovery

International Conference and Exhibition on
Biosensors & Bioelectronics

May 14-16, 2012 Embassy Suites Las Vegas, USA

Application of aptamers for label-free all-polymer biosensors

Johannes Daprà and Noemi Rozlosnik

Department of Micro-and Nanotechnology, Technical University of Denmark, Denmark

Aptamers, which are artificial oligonucleic acids, having high affinity, specificity and selectivity to specific target molecules, are getting more and more attention in biosensors, as they are more robust molecules with long-term thermal stability compared to antibodies or enzymes. The coupling of electrochemical devices with these nanoscale materials offers a unique capability for label-free transduction realizing the easy-to-stock, easy-to-use applications. However, the technique requires the immobilization of reagents - namely the aptamers - directly to the surface of the electrodes allowing an intimate physical contact between the receptor and the transducer, which ensures an optimum signal transfer. Our research group has successfully developed an all-polymer electrochemical biosensor employing a conductive polymer as electrodes. In this paper we report a new transducer material for impedimetric sensing: aptamers, which are conjugated to a chemically modified conductive polymer (poly (3,4-ethylenedioxythiophene), PEDOT. In this paper the detection of antibiotics will be shown as an example. Antibiotics are heavily used in food industry and in aquaculture, and a selective and sensitive, field based detection system is essential for diagnostics of their harmful effect.

Biography

Johannes Daprà has received his master degree in chemistry at the Technical University of Munich, and now finishing his PhD in nanotechnology at the Technical University of Denmark. He has expertise in polymer chemistry and in conductive polymers. He is co-inventor of the patent “Biosensor for point-of-care diagnostic and on-site measurements”.

Johannes.Dapra@nanotech.dtu.dk