

The Bergveld lecture is a yearly lecture organized *by the BIOS/Lab-on-a-Chip group in honour of Professor Piet Bergveld.*

The lecture of 2017 will be given at October 16th 2017, 15.30 hrs Waaier 3
by Joseph Wang, University of California, San Diego



Wearable Electrochemical Sensors: Toward Lab on the Skin

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Wearable sensors have received a major recent attention owing to their considerable promise for monitoring the wearer's health [1,2]. The medical interest for wearable systems arises from the need for monitoring patients over long periods of time. These devices have the potential to continuously collect vital health information from a person's body and provide this information to them or their healthcare provider in a timely fashion. Such sensing platforms provide new avenues to continuously and non-invasively monitor individuals and can thus tender crucial information regarding a wearer's health and performance in real time. This presentation will discuss recent developments in the field of wearable electrochemical sensors integrated directly onto both textile materials and on the epidermis for various non-invasive monitoring applications [3-6]. Particular attention will be given to non-invasive monitoring of metabolites and electrolytes using flexible amperometric and potentiometric sensors, respectively. The preparation and characterization of such textile-based and skin-worn electrochemical sensors will be described, along with their performance and the influence of the stretching and bending. Such mechanical stress studies indicate that tattoo and textile-based printed electrochemical sensors survive large deformations. Technical challenges and prospects for using textile- and tattoo-based electrochemical sensors for monitoring the wearer's health, fitness, or surrounding environment will be discussed, along with several demonstrations and prospects for future healthcare applications.

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J. Wang- Biosketch

Joseph Wang is Distinguished Professor, SAIC Endowed Chair and Chair in Department of Nanoengineering at University of California, San Diego (UCSD). He is also the Director of the UCSD Center of Wearable Sensors. He served as the director of Center for Bioelectronics and Biosensors of Arizona State University (ASU) before joining UCSD. Prof. Wang has published more than 1000 papers, 11 books and he holds 12 patents (H Index=119, >60,000 citations). He received 2 American Chemical Society National Awards in 1999 (Instrumentation) and 2006 (Electrochemistry) and 4 Honorary Professors from Spain, Argentina, China and Slovenia. Prof. Wang is the Editor-in-Chief of *Electroanalysis* (Wiley). His scientific interests are concentrated in the areas of bioelectronics, biosensors, bionanotechnology, nanomachines, and electroanalytical chemistry.