

3rd International Conference and Exhibition on **Biosensors & Bioelectronics**

August 11-13, 2014 Hilton San Antonio Airport, San Antonio, USA

Optoelectronic techniques in measurement of physiological parameters and their translation into handheld devices for better patient care

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The impact of the hand held devices in healthcare, particularly the blood glucose monitors, has been phenomenal in terms of the convenience and cost benefits they have brought to both patients and healthcare providers. Consequently, scientist and researchers both in academics and industry are developing technologies that enable handheld diagnostics for other physiological parameters. In this paper we briefly describe some of the recent techniques that we have been developing for measurement of parameters such as, erythrocyte sedimentation rate, erythrocyte deformability, blood glucose and serum bilirubin etc., using optoelectronics and microfluidics techniques. Essentially the available techniques have been re-engineered to obtain in-chip sample preparation and on-the-spot reading to enable easy, efficient and economic testing of the physiological parameter under question. Further we also provide trends, pros and cons of the popular known 'disposable model' of handheld devices and their significance in home healthcare and hub-spoke healthcare delivery models.

Biography

Sanjay Jayavanth is a Doctorate from the Indian Institute of Technology, Madras, India. With over 10 years of experience in engineering and equivalent expertise in healthcare technologies, he currently heads the Nanotechnology Department at King Saud University's Diabetes Center. Prior to the current position he has worked with Philips Research Bangalore, Chonbuk National University, South Korea and was a Professor at NIFT, a National Technological Institute in India. He has to his credit 09 US PATENTS disclosures and application, more than 25 publications, and several technology transfers. His interests include micro and nanotechnologies in medicine, Hand-held diagnostic devices, Digital pathology, next generation diabetic implements, etc.

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