World Academy of Science, Engineering and Technology
International Journal of Biotechnology and Bioengineering
Vol:9, No:09, 2015

Highly-Sensitive Nanopore-Based Sensors for Point-Of-Care Medical Diagnostics

Authors : Leyla Esfandiari

Abstract : Rapid, sensitive detection of nucleic acid (NA) molecules of specific sequence is of interest for a range of diverse health-related applications such as screening for genetic diseases, detecting pathogenic microbes in food and water, and identifying biological warfare agents in homeland security. Sequence-specific nucleic acid detection platforms rely on base pairing interaction between two complementary single stranded NAs, which can be detected by the optical, mechanical, or electrochemical readout. However, many of the existing platforms require amplification by polymerase chain reaction (PCR), fluorescent or enzymatic labels, and expensive or bulky instrumentation. In an effort to address these shortcomings, our research is focused on utilizing the cutting edge nanotechnology and microfluidics along with resistive pulse electrical measurements to design and develop a cost-effective, handheld and highly-sensitive nanopore-based sensor for point-of-care medical diagnostics.

Keywords : diagnostics, nanopore, nucleic acids, sensor
Conference Title : ICBB 2015 : International Conference on Biotechnology and Bioengineering
Conference Location : London, United Kingdom
Conference Dates : September 25-26, 2015