Shengwei Tan et al., J Biosens Bioelectron 2016, 7:2 (Suppl)
http://dx.doi.org/10.4172/2155-6210.C1.027

Sequence-specific recognition of DNA oligomer by DNA/DNA hybridization in silicon nitride nanopores

Shengwei Tan and **Quanjun Liu**
Southeast University, P R China

Nanopores have been proven to be novel and versatile single-molecule sensors for individual unlabeled biopolymer detection and characterization. In the present study, a relatively large silicon nitride (Si_3N_4) nanopore with a diameter of approximately 60 nm was fabricated successfully using a focused Ga ion beam (FIB). We demonstrated a simple *ex situ* silanization procedure to control the size and functionality of solid-state nanopores. The presented results show that by varying the silanization time, it is possible to adjust the efficiency of probe molecule attachment, thus shrinking the pore to the chosen size, while introducing selective sensing probes. The functionalization of nanopores was verified by analysis of field-emission scanning electron microscopy (FESEM), energy-dispersive X-ray spectroscopy (EDS), and electrical measurements. Based on this study, we envision that the functionalized silicon nitride nanopores with the DNA probe might provide a biosensing platform for the detection and discrimination of a short single-stranded DNA oligomer of unknown sequences in the future.

Biography

Shengwei Tan obtained her PhD in Biomedical Engineering from State Key Laboratory of Bioelectronics, School of Biological Science and Medical Engineering, Southeast University, P R China in 2016, MESc in Applied Chemistry from College of Chemistry and Chemical Engineering, Guangxi University for Nationalities, P R China in 2011 and BE in Chemical Engineering and Technology from Department of Chemistry, Dezhou University, P R China. Prior to registering for PhD, she was engaged in the scientific research work at Zhejiang University, Hangzhou, PR China, and the main research interest was in Analytical Chemistry.

sw-tan@seu.edu.cn

Notes: