

SUPPORTING INFORMATION

Single-Walled Carbon Nanotubes-Based Chemiresistive Affinity Biosensors for Small Molecules: Ultrasensitive Glucose Detection

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Materials:

Single wall carbon nanotubes (P3-SWNTs) were purchased from Carbon Solutions Inc (Riverside, CA, USA). Dimethyl formamide (DMF), Tween 20, dextran (MW 70,000), 1,2-epoxy-3-phenoxypropane, Concanavalin A (ConA), glucose and human plasma were obtained from Sigma Aldrich (St. Louis, MO, USA). Phenoxy dextran (DexP) was synthesized using previously reported protocol¹². In brief, 4 g of dextran was dissolved in 32 mL 1 N NaOH at 40⁰C under constant stirring. After 24 h the product was flocculated with ethanol and collected by vacuum filtration. The flocculated product is then dissolved in nanopure water and dialyzed against the same for 24 h to remove any impurities. The purified product after measuring the absorbance at 269 nm to determine phenoxy content is then lyophilized.

SWNT suspension

A uniform suspension of SWNTs in DMF (10 µg/ml) was prepared by subjecting the mixture to repeated cycles of sonication (power level 9) and centrifugation (10,000) with decreasing time for each cycle (90, 60, 30 min).

Instrumentation:

The conductivity/resistance was measured at room temperature and in ambient air from the I-V plots obtained using a semiconductor parameter analyzer (HP 4155A Hewlett Packard). The VWR sonicator at the highest power level and Beckman centrifuge were used for SWNTs suspension preparation. Wavetek function generator was the AC voltage source for SWNT alignment.