Direct electrochemical deposition of polyaniline nanowire arrays on reduced graphene oxide modified graphite electrode for direct electron transfer biocatalysis

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Optimization of polyaniline(PANI) nanowires array electrochemical polymerization.

The Morphology of PANI nanostructures obtained under different electrochemical polymerization conditions was investigated by SEM.

**Figure S1.** SEM image of PANI modified RGO/GE obtained under different electrochemical parameters (a) 0.006 mA.cm⁻²; (b) 0.02 mA.cm⁻²; (c) 0.08 mA.cm⁻² by a constant current technique, and (d) by constant potential method with an applied potential of 0.8V. Electrolyte solution was composed of 0.1M aniline and 1 M HClO4. Time performed is 40mins.
Figure S2. Cyclic voltammograms of GO/GE (black) and RGO/GE(red), the GO/GE was electrochemically reduced to RGO/GE by applying a -1.0V potential for 200 seconds.

Figure S3. Stability of the PANI nanowire arrays based glucose sensor. $I_t$ refers to the steady state current of the amperometric response of the same glucose sensor towards 5 mM glucose that tested at different time, $I_{im}$ refers to the steady state current obtained at the first test. $I_t/I_{im}$ indicates the response current remained.