

Supplementary Information

New Detector Based on Composite of Carbon Nanotubes with Nanoparticles of Cobalt Oxide for Carbohydrates Analysis by HPLC with Reverse Pulsed Amperometric Detection

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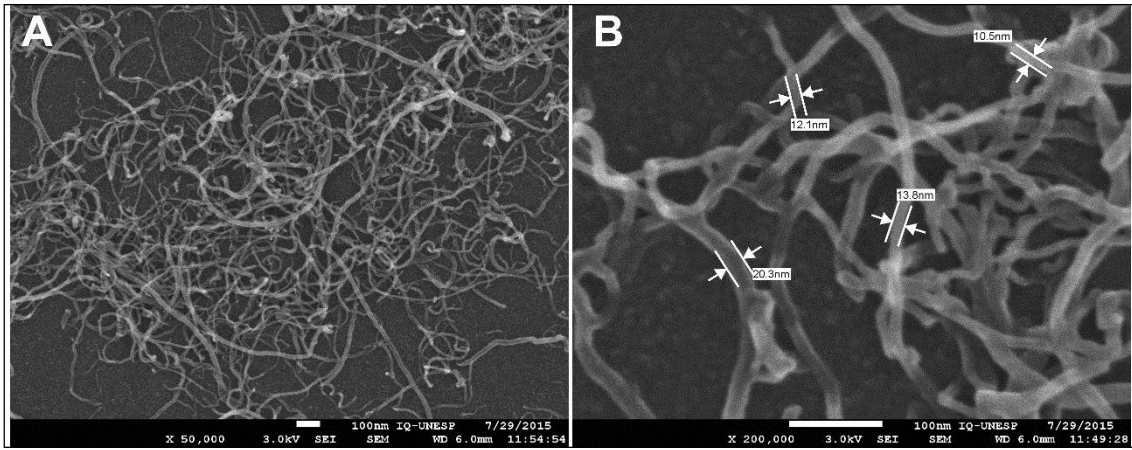


Figure S1. Scanning electron microscopy (SEM) image of glassy carbon electrode modified with multi-walled carbon nanotubes (GCE/MWCNT) with a magnification of (A) 50.000 times; (B) 200.000 times.

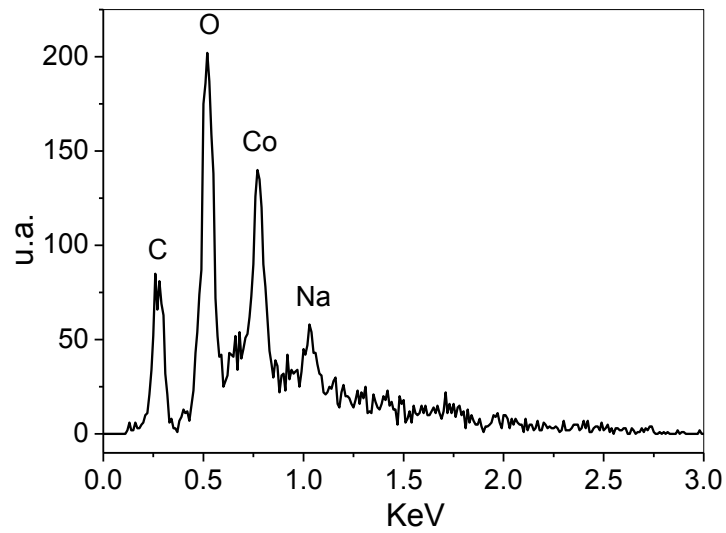


Figure S2. Dispersive energy spectra (EDS) of the glassy carbon electrode modified with multi-walled carbon nanotubes containing cobalt oxide nanoparticles (GCE/MWCNT/CoOOH).

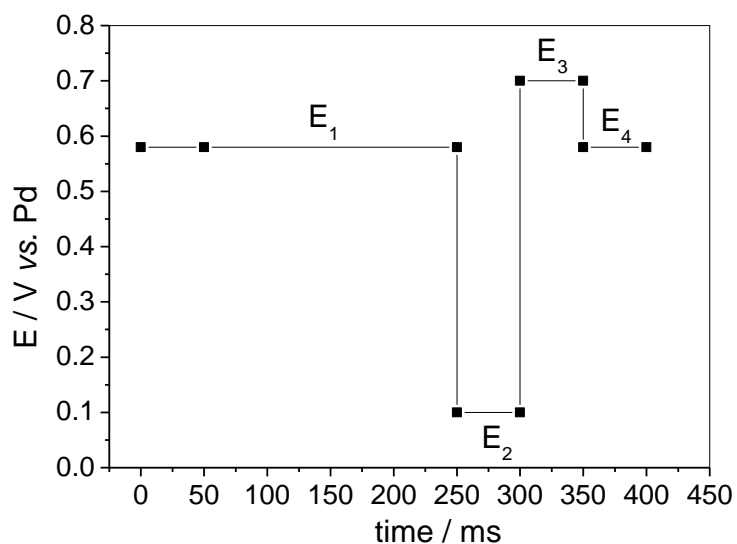


Figure S3. Pulse sequence used for analysis of sugars with reverse pulsed amperometric detection (RPAD) using the GCE/MWCNT/CoOOH electrode.

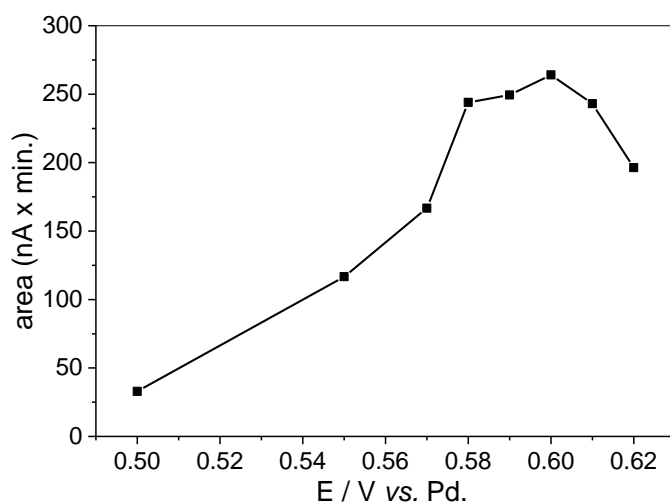


Figure S4. Studies of the effect of oxidation potential applied to the GCE/MWCNT/CoOOH electrode as a function of arabinose peak area, mobile phase composition: 9% of 0.1 mol L⁻¹ NaOH and 91% of H₂O flow of mobile phase of 1.0 mL min⁻¹, column oven temperature of 25 °C and detector temperature of 35 °C.

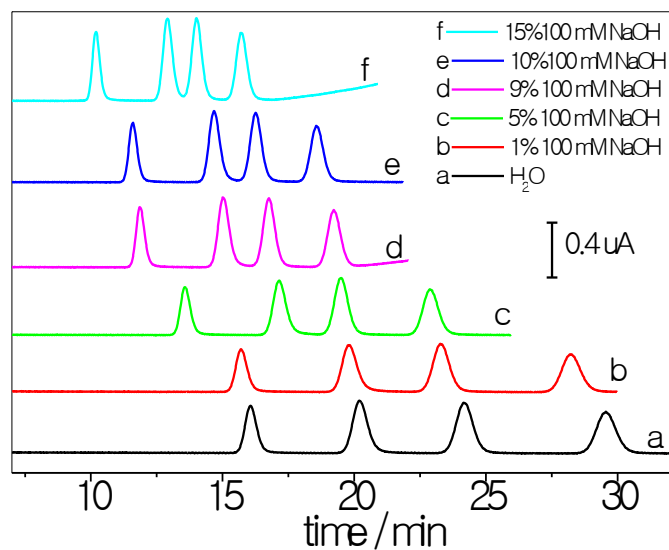


Figure S5. Chromatograms for studies of mobile phase concentration in the separation of carbohydrates according to the following proportions of H₂O and NaOH (a) 100% H₂O; (b) 1% of 0.1 mol L⁻¹ NaOH and 99% of H₂O; (c) 5% of 0.1 mol L⁻¹ NaOH and 95% of H₂O; (d) 9% of 0.1 mol L⁻¹ NaOH and 91% of H₂O; (e) 10% of 0.1 mol L⁻¹ NaOH and 90% of H₂O and (f) 15% of 0.1 mol L⁻¹ NaOH and 85% of H₂O; Containing 3.3×10^{-5} mol L⁻¹ of arabinose, galactose, glucose and xylose. The flow of mobile phase 1.0 mL min⁻¹, column oven temperature 25 °C, detector temperature 35 °C, detection potential 0.58 V *versus* Pd for GCE/MWCNT/CoOOH electrode.