

Supplementary Information

A Carbon-Based Antifouling Nano-Biosensing Interface for Label-Free POCT of HbA1c

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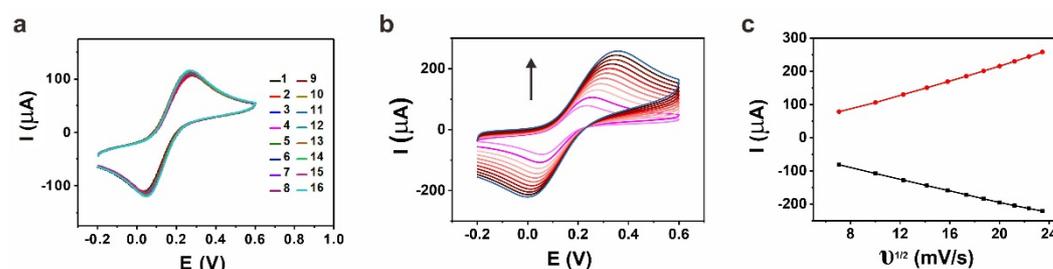


Figure S1. **a**, CV curves of 16-channel SPCE array. The number 1 to 16 represent 16 electrodes on the SPCE. **b**, CV curves of BSA/MWCNTs/GA layer of an equimolar solution of 5 mM ferri-/ferrocyanide at different scan rates 50-550 mV s^{-1} . **c**, extracted oxidation/reduction peak current (i_p) mean values from the CV shown in **b** plotted versus the square root of the scan rate. ($n=3$ independent electrodes).

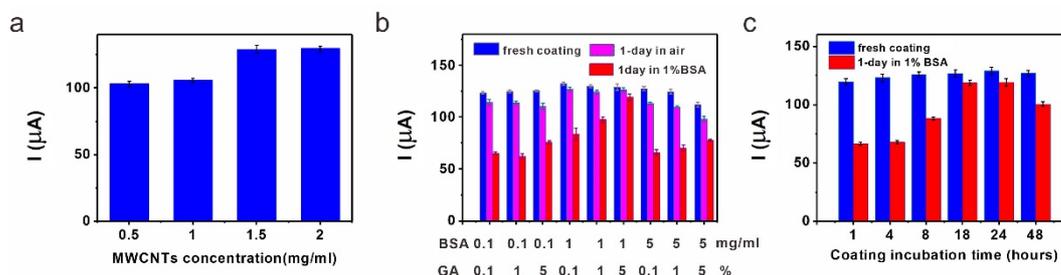


Figure S2. Optimization of the preparation of BSA/MWCNTs/GA layer in terms of **a**, MWCNTs concentration. **b**, BSA and GA ratio. **c**, incubation time. ($n = 3$, error bars represent the standard deviation of the mean).

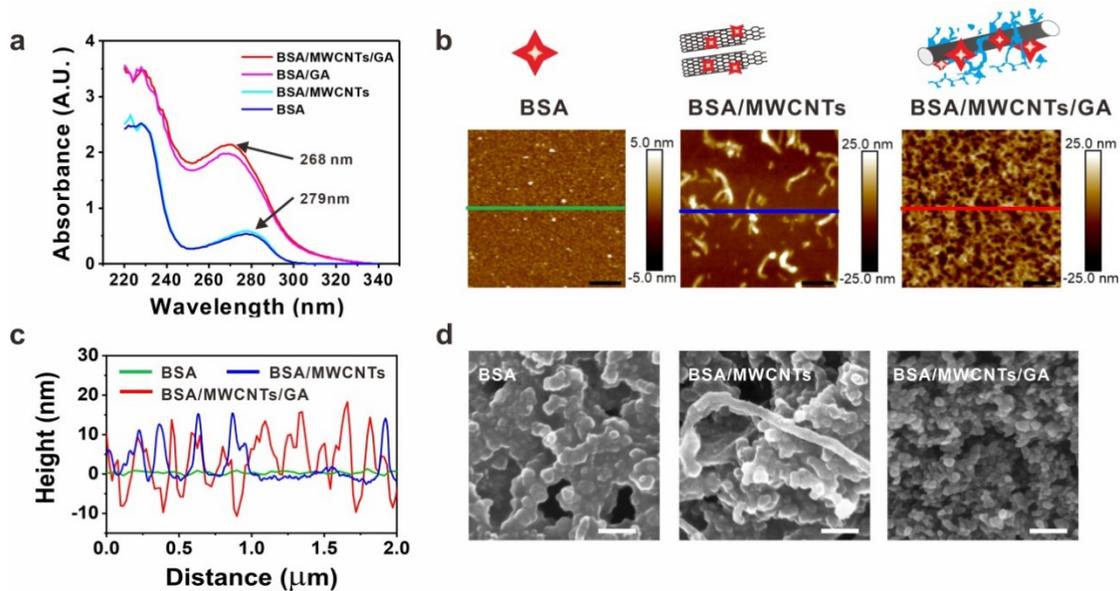


Figure S3. (a) UV-Vis absorption spectra of BSA, BSA/MWCNTs, BSA/GA and BSA/MWCNTs/GA ($n = 3$, only one UV-Vis absorption spectrum for each condition is shown). (b) AFM topographies of micas coated with BSA, BSA/MWCNTs and BSA/MWCNTs/GA (scale bar: 400 nm). This analysis was repeated twice on different samples. (c) Line profile based on BSA, BSA/MWCNTs and BSA/MWCNTs/GA coated micas. (d) SEM images of SPCEs coated with BSA, BSA/MWCNTs and BSA/MWCNTs /GA (scale bar: 100 nm). This analysis was repeated twice on different samples.

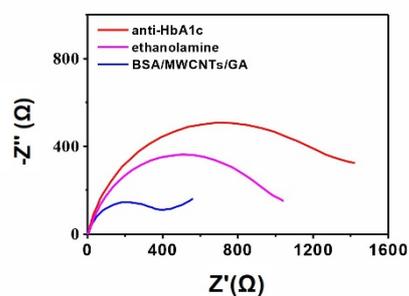


Figure S4. EIS curve of immobilization anti-HbA1c on BSA/MWCNTs/GA layer. ($n = 3$ independent electrodes, only one Nyquist plot for each condition is shown).

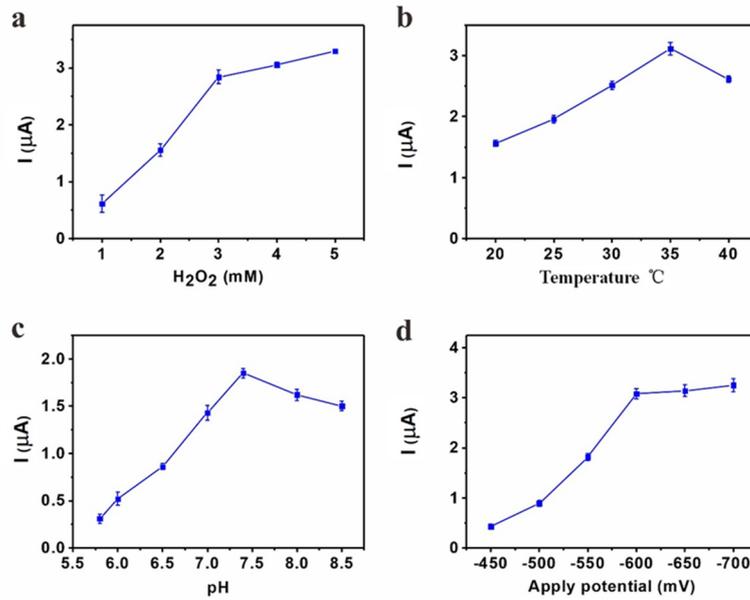


Figure S5. Optimization of the experiment parameters in terms of **a**, H₂O₂ concentration. **b**, temperature. **c**, pH. **d**, applied potential for catalytic H₂O₂ reduction. (n = 3, error bars represent the standard deviation of the mean).

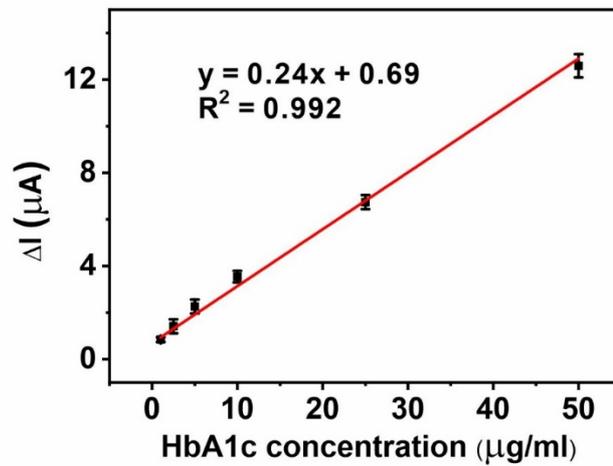


Figure S6. Calibration curves for detection of HbA1c for anti-HbA1c-BSA/MWCNTs/GA layer. (n = 3, error bars represent the standard deviation of the mean).