

Green synthesized gold nanoparticles and CuO-based nonenzymatic electrochemical sensor for saliva glucose monitoring

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Supplementary Information

Green synthesis process for gold nanoparticle (AuNPs)

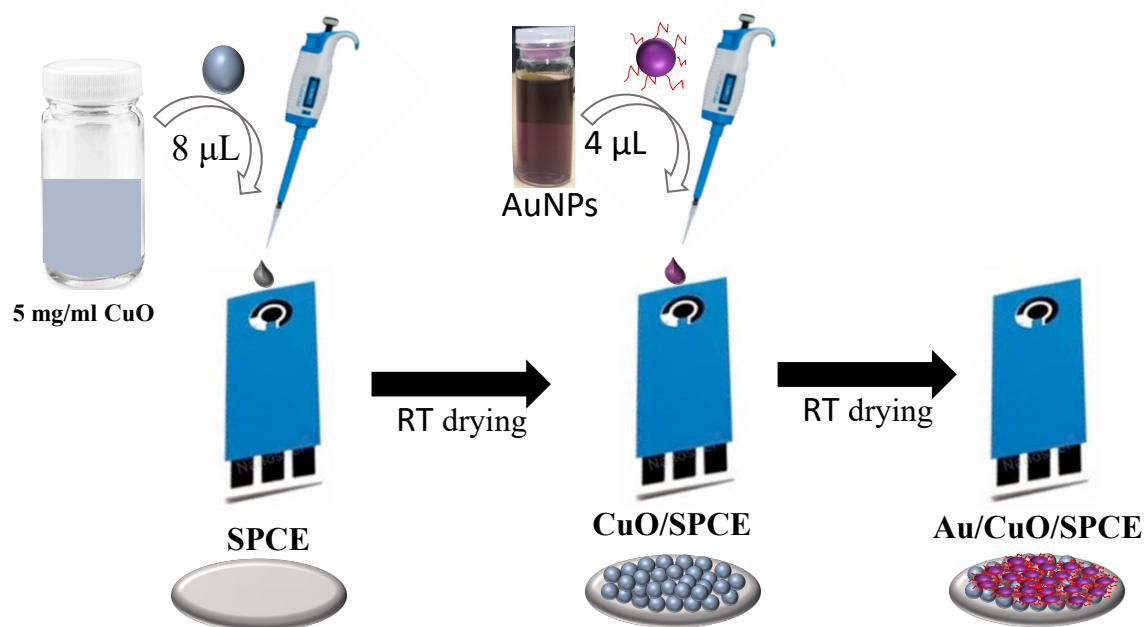


Fig.S1 . Schematic of preparation of Au/CuO/SPCE

AuNPs synthesis

Effect of precursor concentration and synthesis time

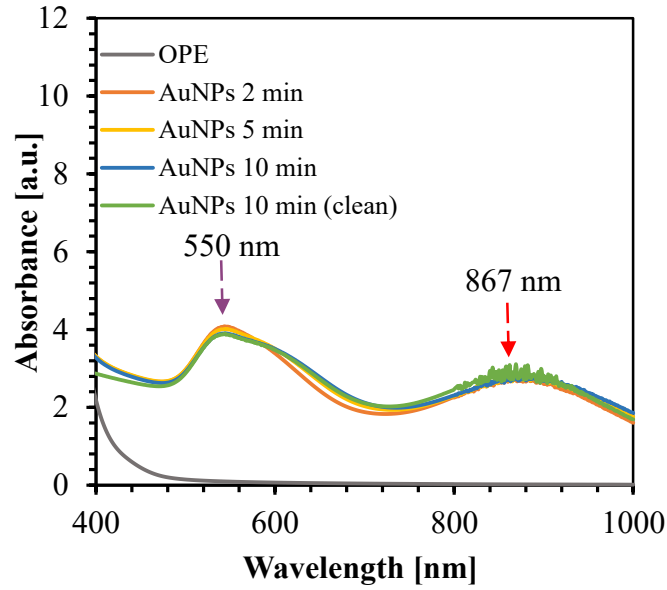


Fig. S2. UV-Vis absorption spectra of AuNPs using 125 ml of 1 mM HAuCl₄ where 40 ml of orange peel extract (OPE) were added drop-wise.

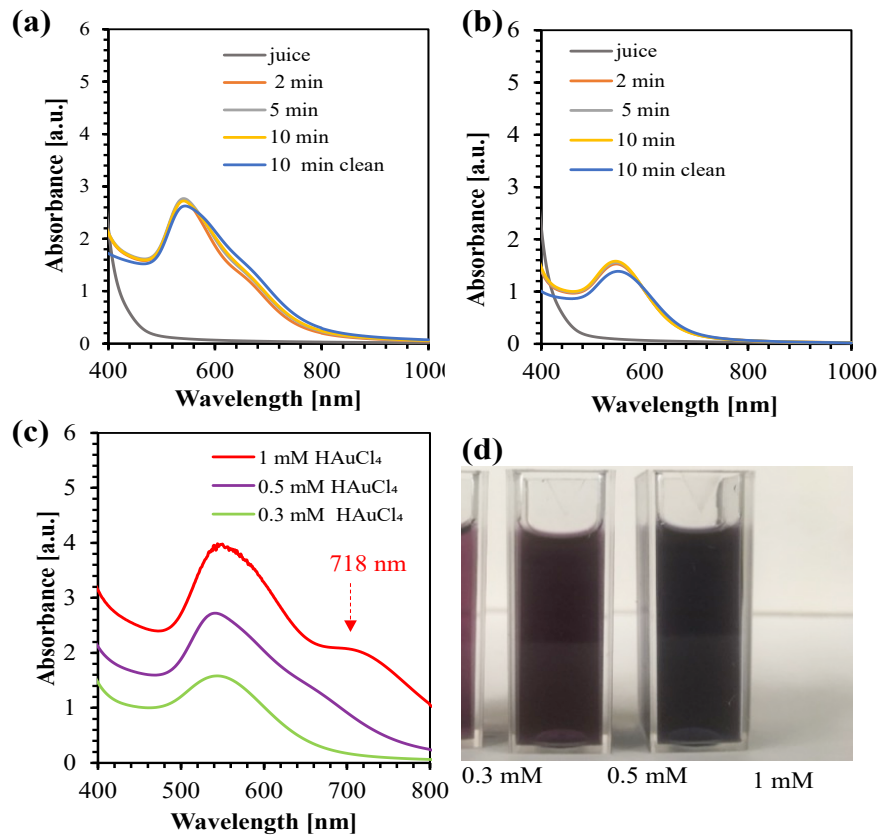


Fig. S3. UV-Vis absorption spectrum of AuNPs synthesis from (a) 0.5 M HAuCl₄, (b) 0.3 M HAuCl₄ at 100° C, (c) adsorption spectra of AuNPs for different concentration of HAuCl₄ for two minutes synthesis, (d) color after 10 minutes synthesis (from pink to dark pink).

Effect of pH on AuNPs synthesis

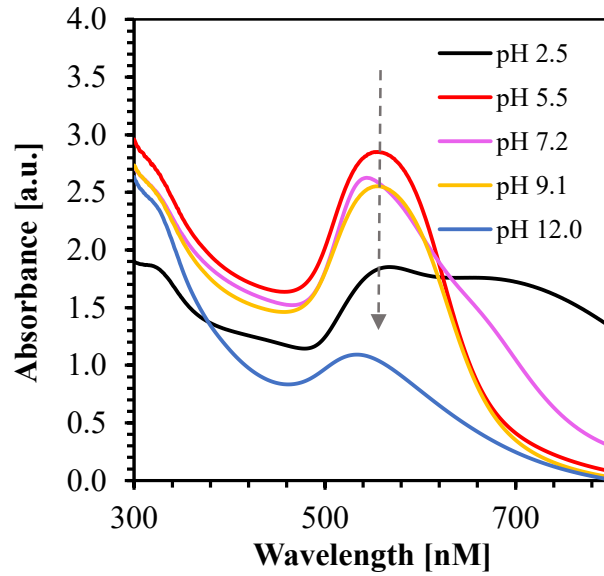


Fig.S4. UV-Vis absorption spectrum of AuNPs synthesis using 125 ml 0.5 mM HAuCl₄ and 40 ml OPE at 100° C for 10 min with different pH.

Effect of temperature on AuNPs synthesis

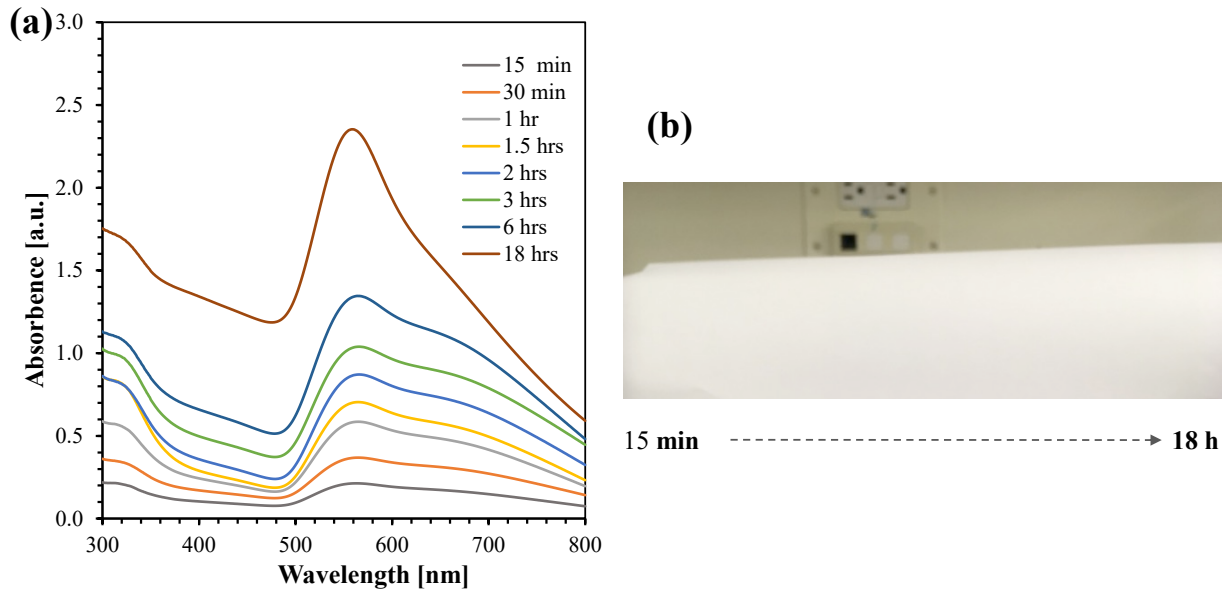


Fig. S5. Room temperature synthesis of AuNPs using 0.5 mM HAuCl₄, (a) UV-Vis absorption spectrum and (b) AuNPs' colloidal color at different synthesis time.

Electrochemical performance of Au/SPCE

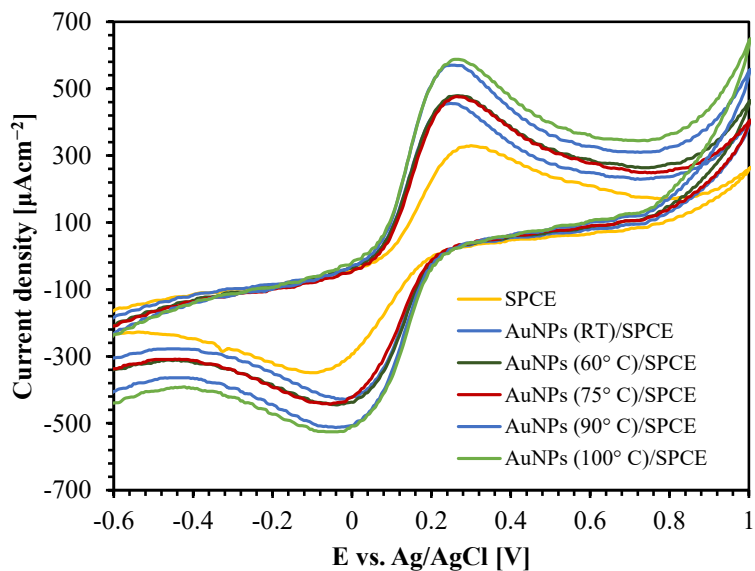


Fig. S6. CV responses of different AuNPs electrode in 5 mM $\text{K}_4[\text{Fe}(\text{CN})_6]$ with 100 mM KCl at scan rate 60 mV/s. AuNPs were synthesised at different temperature (temperature (RT= $20 \pm 2^\circ \text{C}$, 60°C , 75°C , 90°C and 100°C) using 0.5 mM HAuCl_4 and orange peel extract.

Effect of concentration of NaOH

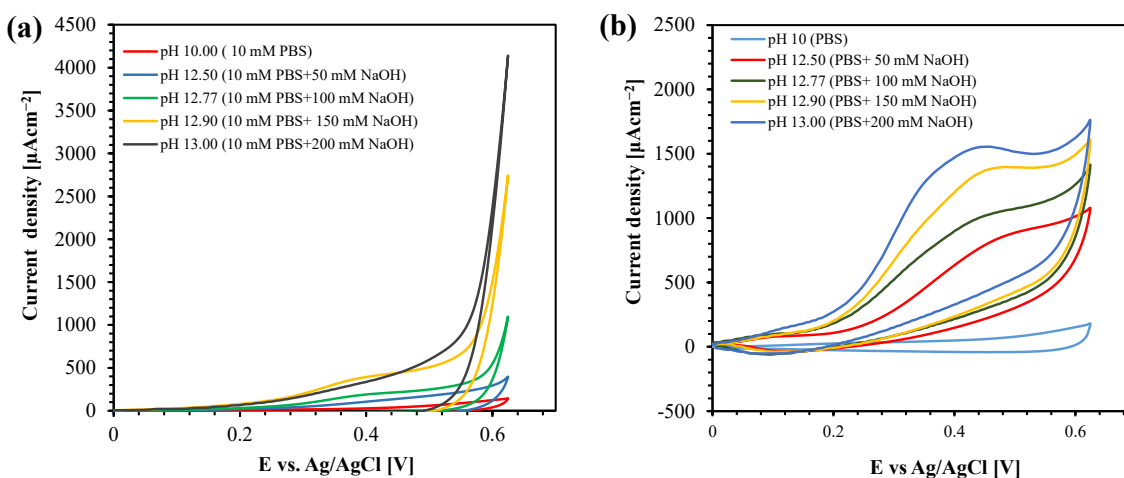


Fig. S7. Effect of pH and NaOH concentration (a) in the absence of glucose and (b) in the presence of 1 mM glucose at a scan rate of 60 mV/s

Effect of scan rate

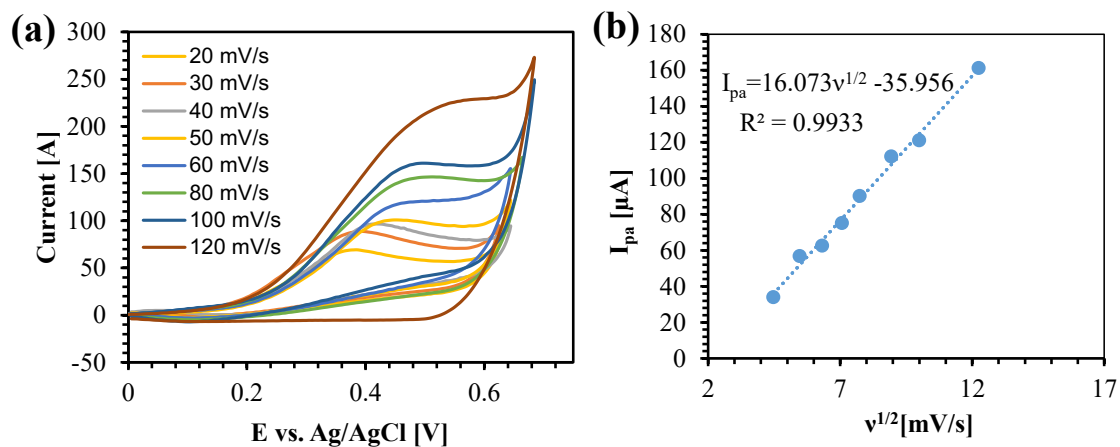


Fig. S8. (a) CV response of Au/CuO/SPCE in the presence of 1 mM glucose and 100 mM NaOH at different scan rate, (b) relationship between square root of scan (v) and peak oxidation current I_{pa} .

Reproducibility and stability of the sensor

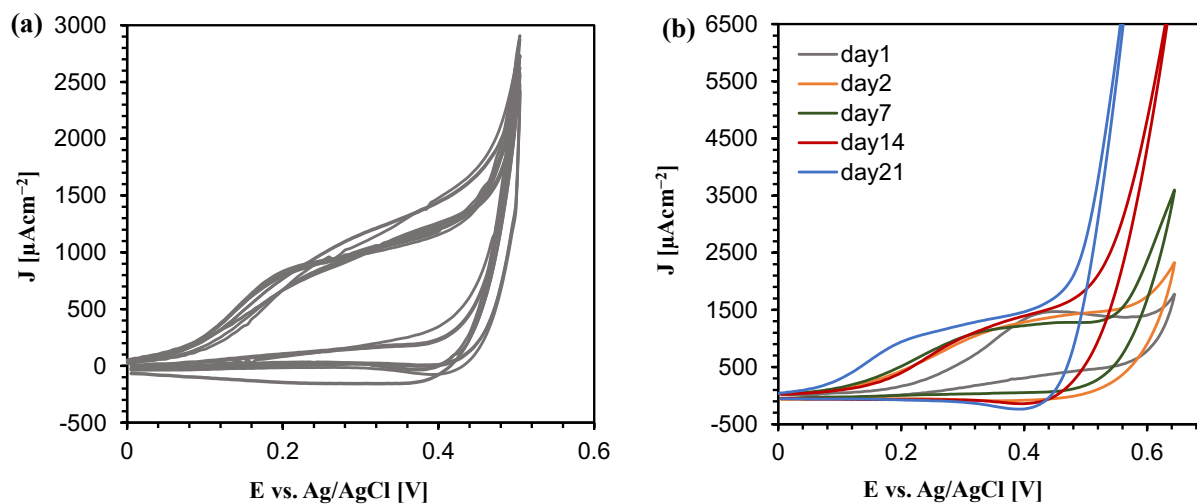


Fig. S9. (a) CV response of 10 Au/CuO/SPCEs on the same day after the synthesis (b) CV response of Au/CuO/SPCEs electrodes at different days in the presence of 1 mM glucose in 0.1NaOH at scan rate 60 mV/s.