

Supporting Information for

A portable micro glucose sensor based on copper based nano-composite structure

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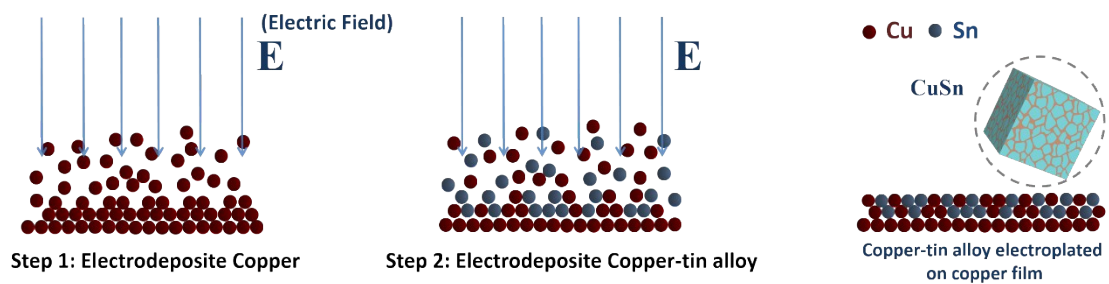
Table S1. Composition of copper plating solution

Component	Concentration (g/l)	Manufacturer
$\text{Cu}_2\text{P}_2\text{O}_7 \cdot 3\text{H}_2\text{O}$	65.00	Aladdin Industrial Corporation
$\text{K}_4\text{P}_2\text{O}_7 \cdot 3\text{H}_2\text{O}$	380.00	Fuchen Chemical Reagent Co., Ltd. (Tianjin , China)
$\text{C}_6\text{H}_5\text{O}_7 (\text{NH}_4)_3$	23.00	Aladdin Industrial Corporation
Citric acid	0.5	Guangzhou Chemical Reagent Factory

Table S2. Composition of copper tin plating solution

Component	Concentration (g/l)	Manufacturer
$\text{Cu}_2\text{P}_2\text{O}_7 \cdot 3\text{H}_2\text{O}$	19.00	Aladdin Industrial Corporation
$\text{Sn}_2\text{P}_2\text{O}_7$	15.60	Aladdin Industrial Corporation
$\text{K}_4\text{P}_2\text{O}_7 \cdot 3\text{H}_2\text{O}$	280.00	Fuchen Chemical Reagent Co., Ltd. (Tianjin , China)
$\text{K}_2\text{HPO}_4 \cdot 3\text{H}_2\text{O}$	80.00	Sinopharm Chemical Reagent Co., Ltd
H_3PO_4	3.95	Guangzhou Chemical Reagent Factory

Scheme S1. Process for modifying Cu-Sn alloy on working electrode.



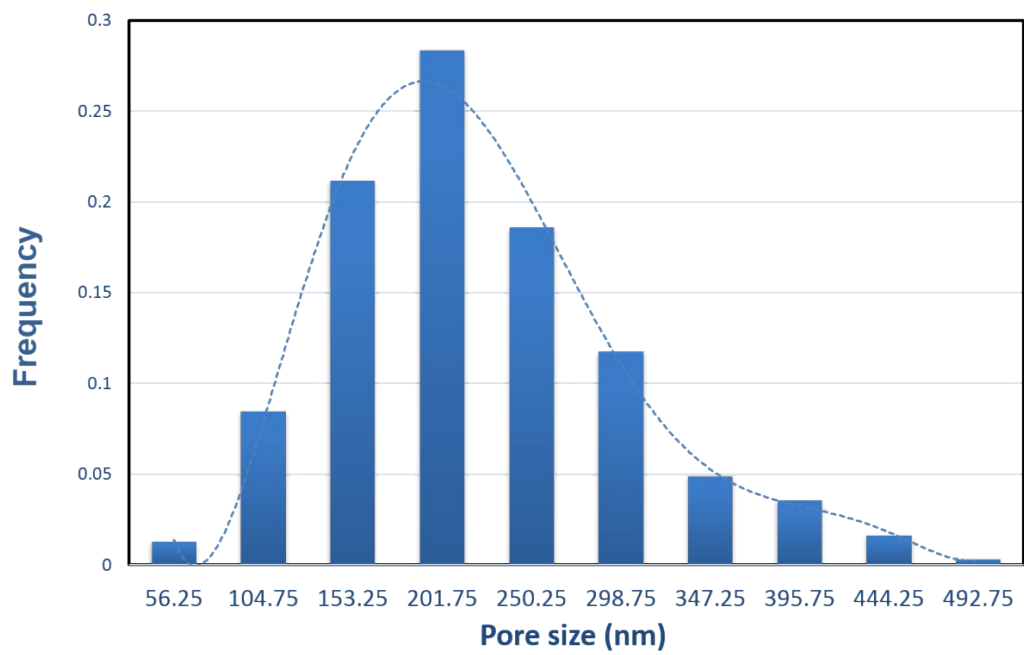


Figure S1 Pore size distributions of NPC

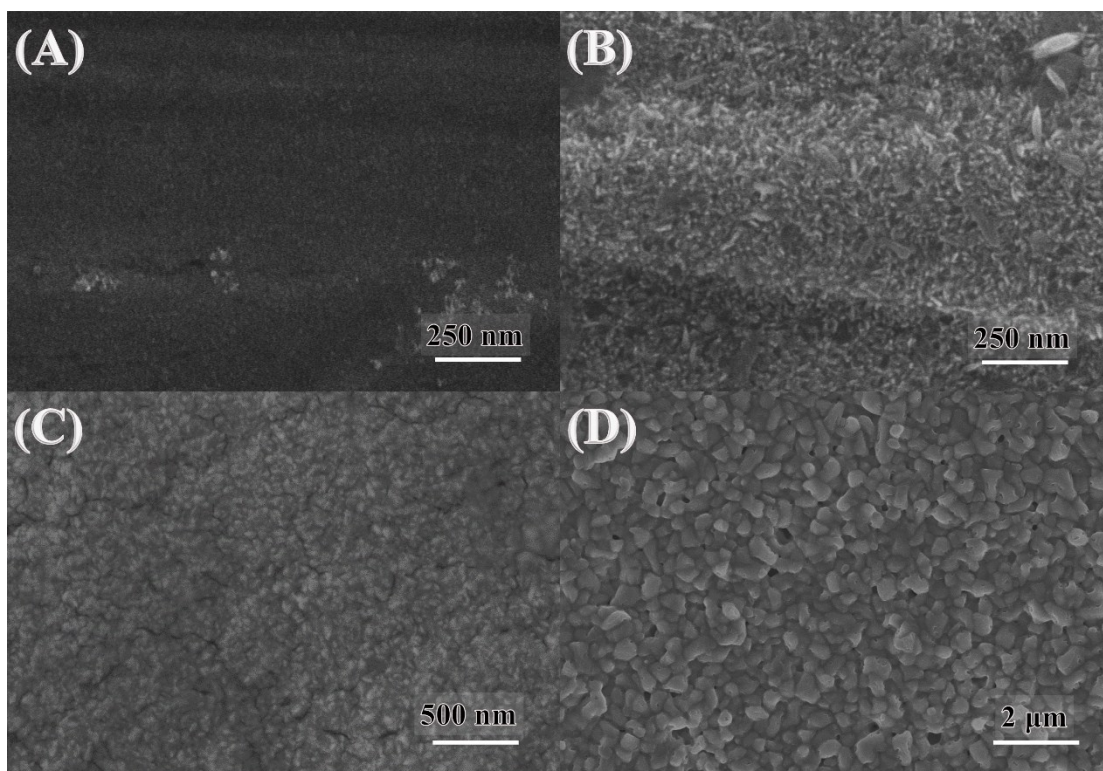


Figure S2. SEM images of (A) Cu substrate, (B) CuO fabricated on the substrate, (C) platinum and (D) Ag-AgCl electrode

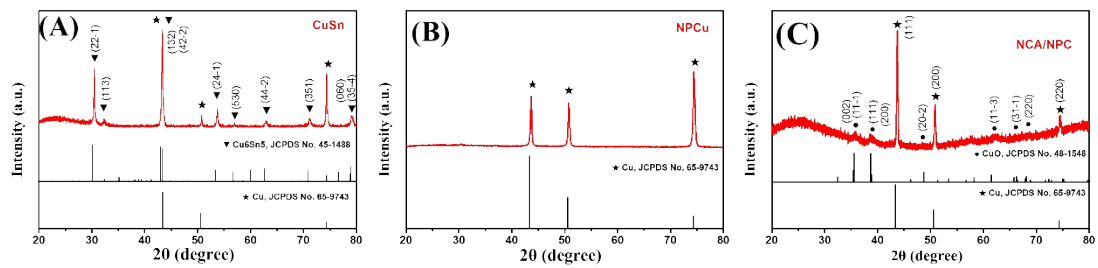


Figure S3. XRD patterns of (A) Cu-Sn, (B) NPCu and (C) NCA/NPC.

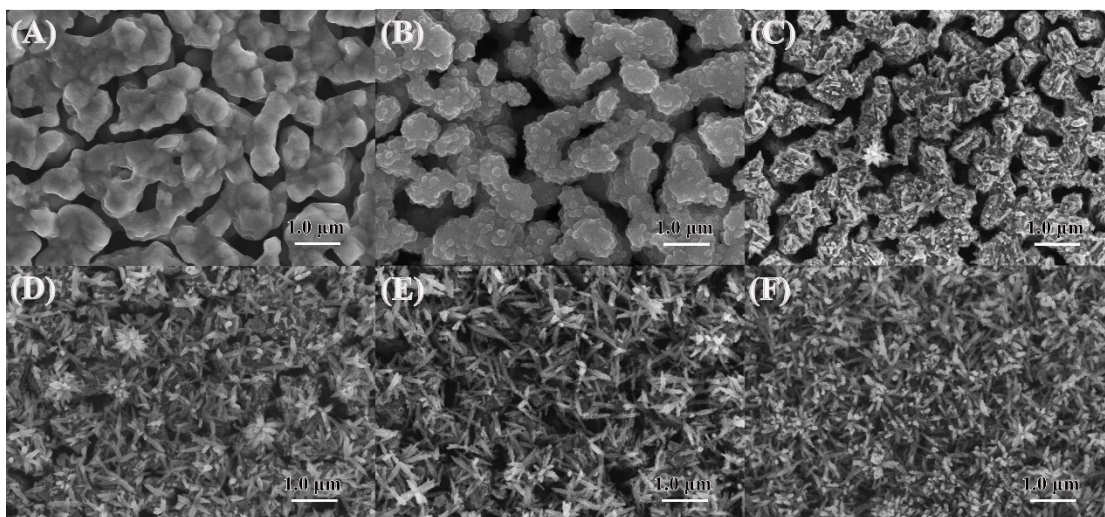


Figure S4. SEM images of NCA/NPC synthesized for (A) 0 s, (B) 120 s, (C) 240 s, (D) 360 s, (E) 480 s and (F) 600 s at 10 °C.

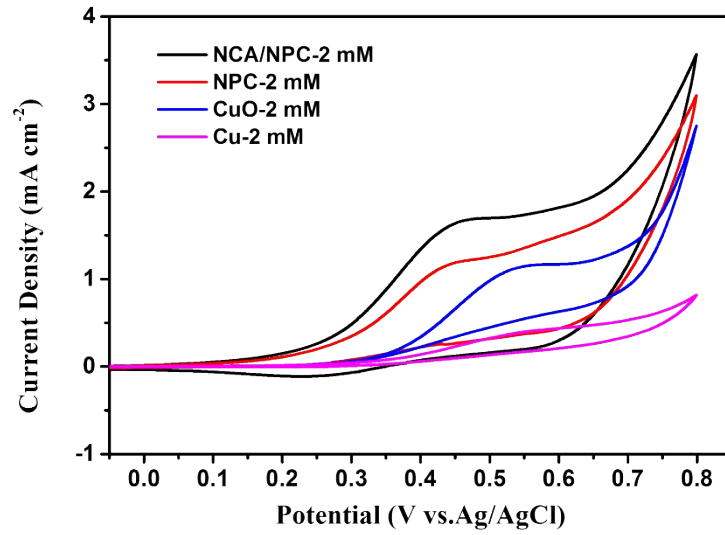


Figure S5. CV curves of Cu, CuO, NPC and NCA/NPC in 0.1 M KOH with 2 mM glucose at the scan rate of 50 mV s⁻¹.

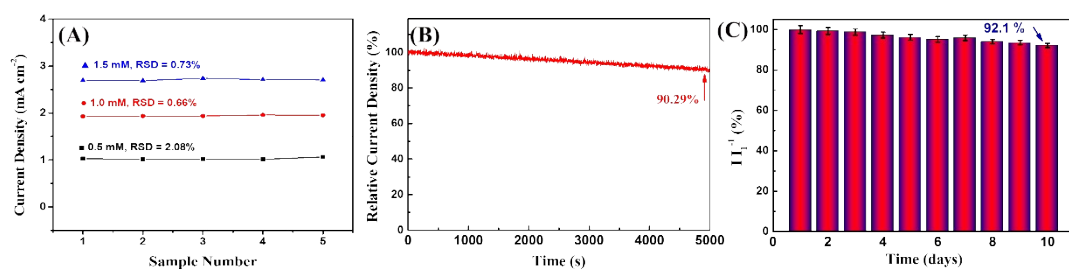


Figure S6. (A) Relative standard deviation of the response current for 5 pieces of modified electrode towards various glucose concentration. (B) Amperometric response of the electrodes to 1 mM glucose in 0.1 M KOH at 0.60 V for 5000 s. (C) The stability of the NCA/NPC glucose sensor device over a ten-day storage period.

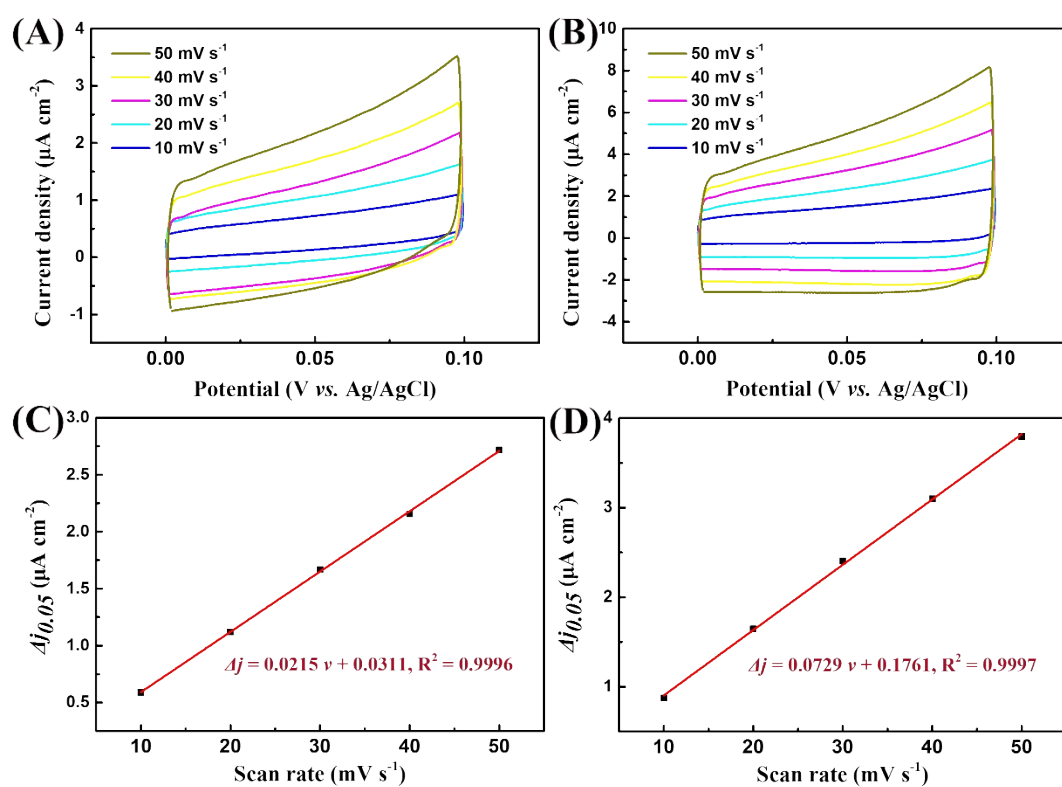


Figure S7. CVs for (A) Cu and (B) CuO electrode with different scan rates. The capacitive current-scan rate calibration plots of (C) Cu and (D) CuO at 0.05 V ($\Delta j_{0.05} = (j_a - j_c)/2$).