Electronic Supplementary Material (ESI) for Analytical Methods.


**Supplementary Data**

# Disposable non-enzymatic electrochemical glucose sensors based upon screen-printed graphite macroelectrodes modified via a facile methodology with Ni, Cu, and Ni/Cu hydroxides are shown to accurately determine glucose in real human serum blood samples

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**Table S1** The proposed surface modified SPEs as an impedimetric non-enzymatic sensor in comparison with previous reported

| Modified electrode | Sensitivity | Linear range (mM) | LOD (µM) | Reference |
|---|---|---|---|---|
| FTO/Nano-NiO/GOx | 4.45 kΩ/mM | 0.2 – 4 | 24 | [36] |
| $Ni(OH)_2$/AuNp/SPE | 0.073 $k\Omega^{-1}$/ mM | 0.1 – 2 | 40 | [37] |
| $Ni(OH)_2$/SPE | 0.137 $k\Omega^{-1}$/ mM | 0.1 – 2 | 315 | [38] |
| $EAuNi(OH)_2$ | 0.4847 kΩ/mM | 0.1 – 2 | 370 | [39] |
| $Ni(OH)_2$/SPE | 0.168 $k\Omega^{-1}$/ mM | 0.1 – 4 | 53 | This work |
| $Cu(OH)_2$/SPE | 0.475 $k\Omega^{-1}$/ mM | 0.2 – 10 | 51 | This work |
| $Ni(OH)_2/Cu(OH)_2$/SPE | 0.705 $k\Omega^{-1}$/ mM | 0.1 – 5 | 40 | This work |

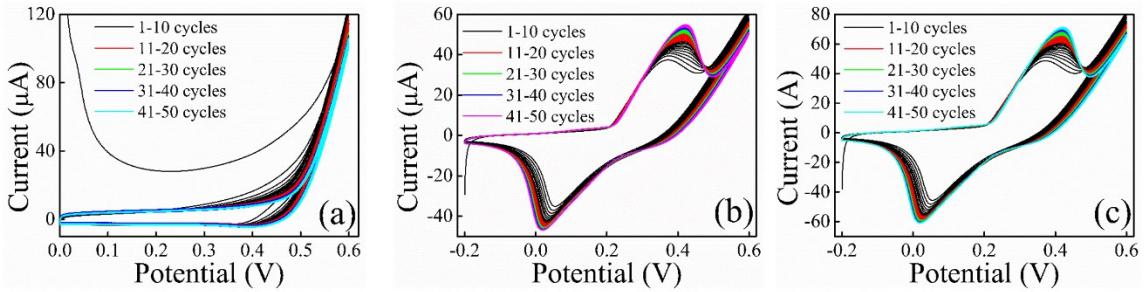


**Fig. S1** CVs during the growth process of the (a) $Cu(OH)_2$, (b) $Ni(OH)_2$, and (c) $Ni(OH)_2/Cu(OH)_2$ on the working electrodes surfaces in a 0.1 M NaOH solution, scan rate 50 $mVs^{-1}$.

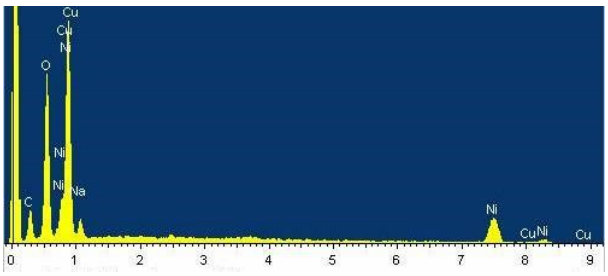


**Fig. S2** EDX spectrum of Ni/Cu modified SPE after electrochemical activation.

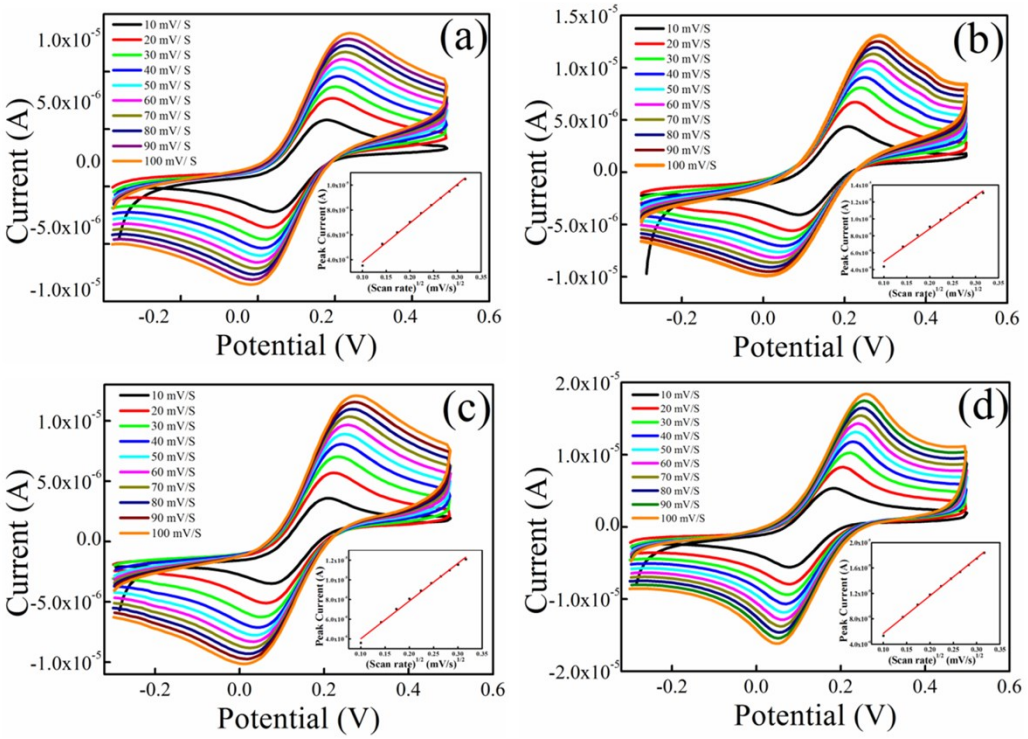


**Fig. S3** CV curves of 0.5 mM $Fe(CN)_6^{3-/4-}$ in 0.1 M KCl at (a) unmodified SPEs, (b) $Ni(OH)_2$/SPE, (c) $Cu(OH)_2$/SPE and (d) $Ni(OH)_2/Cu(OH)_2$/SPE , at scan rates in the range of 0.01–0.1 V $s^{-1}$. [Inset: Analysis of corresponding anodic peak current as a function of square root of scan rate]

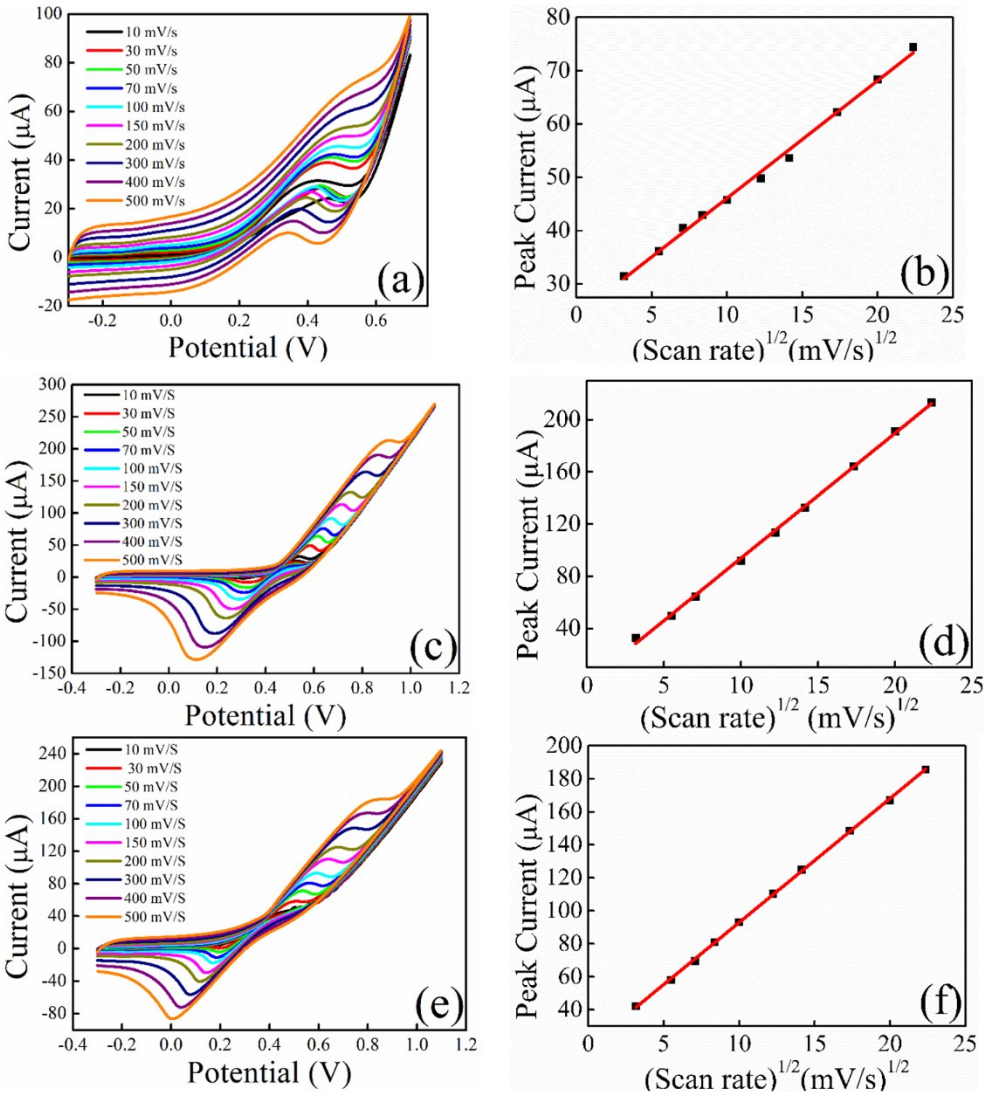


**Fig. S4** CV curves of 0.5 mM glucose in 0.1 M NaOH using (a) $Cu(OH)_2$/SPE, (c) $Ni(OH)_2$/SPE and (e) $Ni(OH)_2$/$Cu(OH)_2$/SPE all obtained at scan rates over the range 10−500 mV $s^{-1}$. (b, d, f) Analysis of corresponding anodic peak current versus of square root of scan rate.

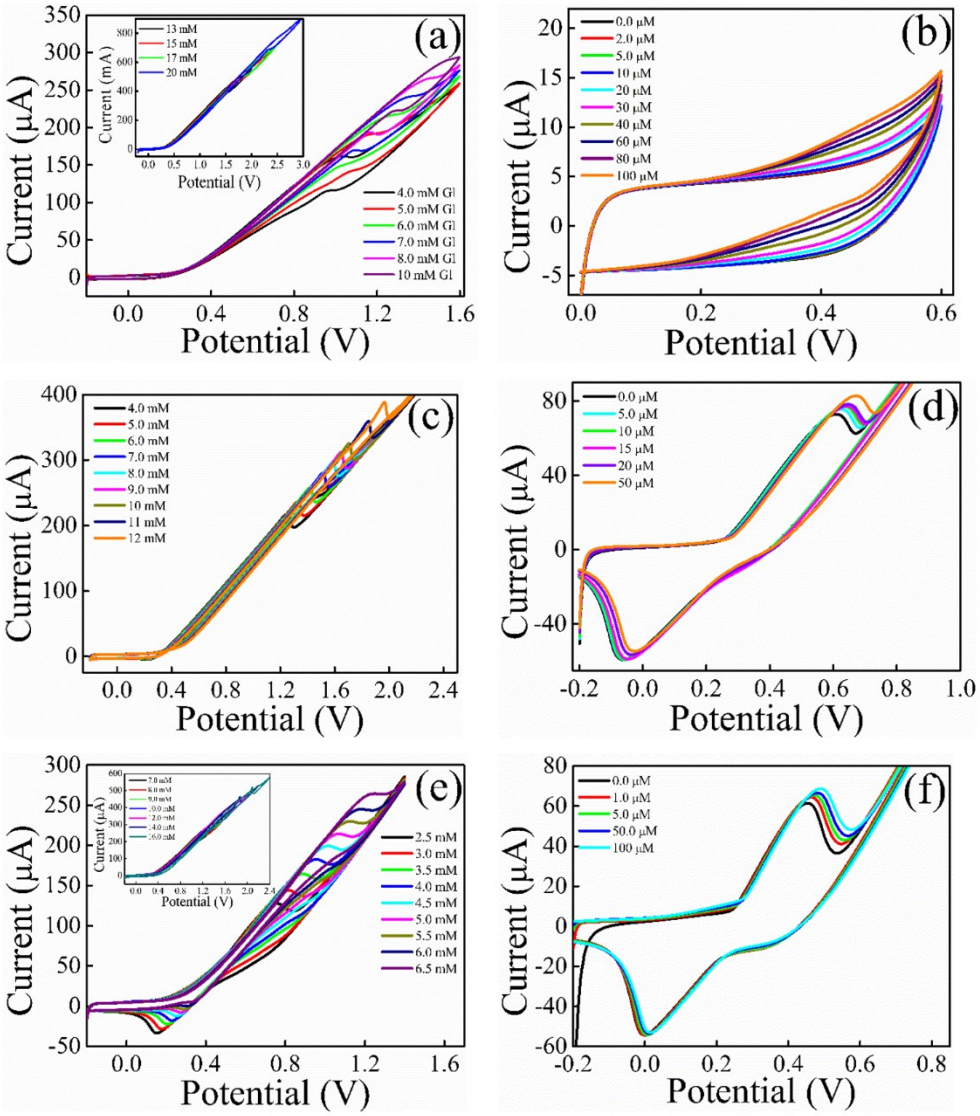


**Fig. S5** CVs obtained for higher and lower glucose concentrations on (a, b) $Cu(OH)_2$/SPE, (c, d) $Ni(OH)_2$/SPE and (e, f) $Ni(OH)_2/Cu(OH)_2$/SPE acquired in 0.1 M NaOH.

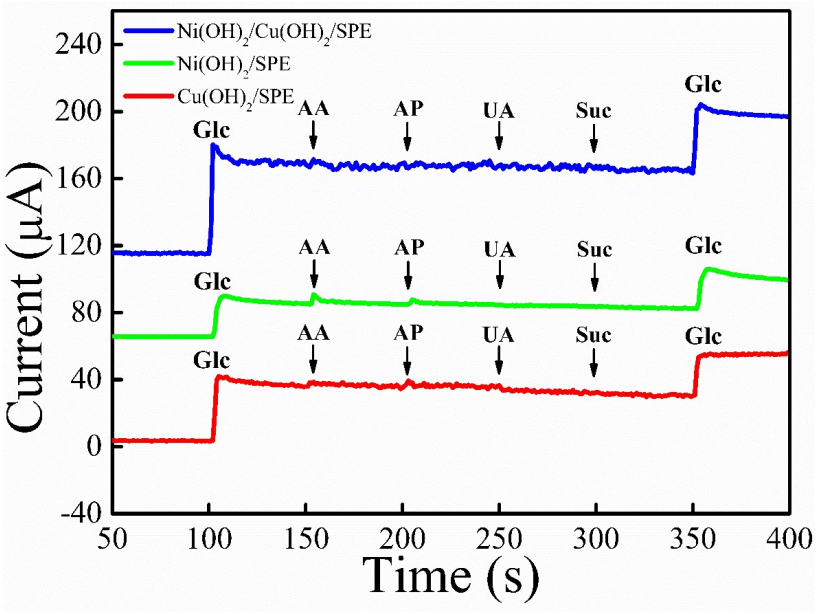


**Fig. S6** Anti-interference curve of modified SPEs with the successive additions of 1.0 mM glucose and 0.1 mM interferents including ascorbic acid (AA), acetaminophen (AP), uric acid (UA), and sucrose (Suc) into 0.1M NaOH at an applied potential of +0.5 V

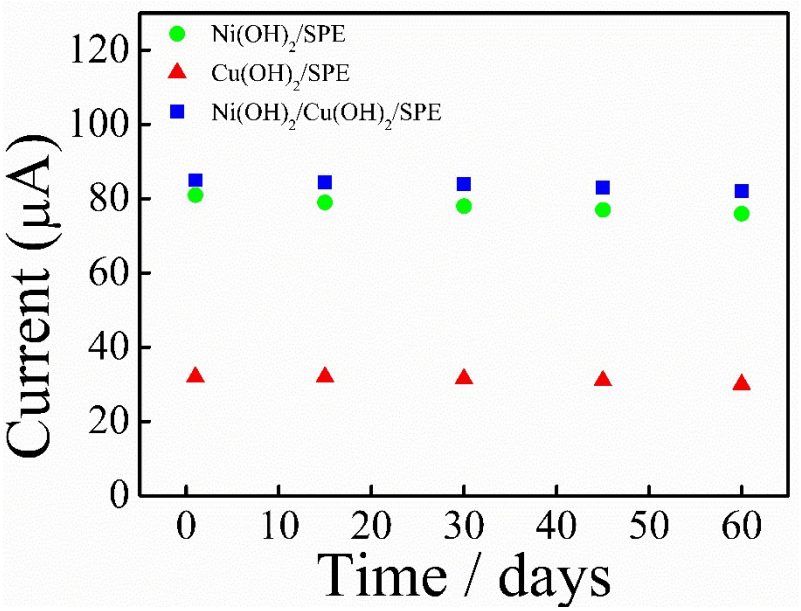


**Fig. S7** The detection stability of the proposed electrode for glucose tested at intervals of fifteen days for two months.