

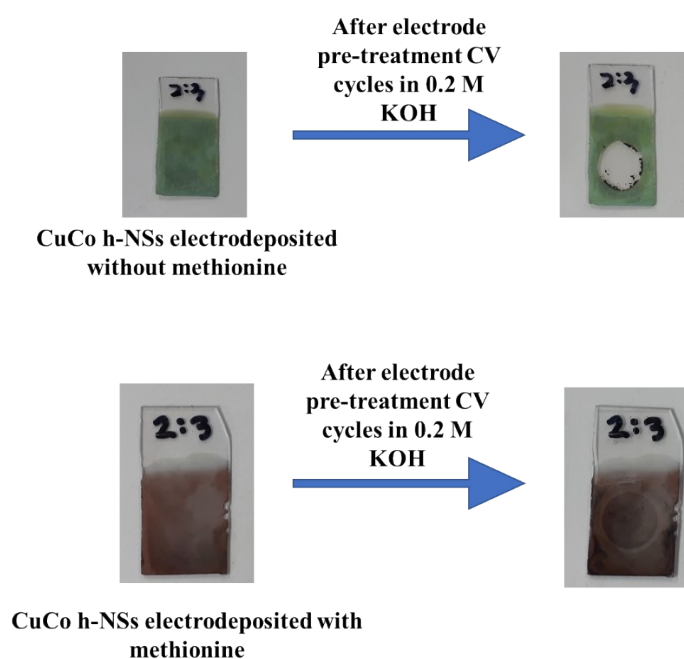
## Methionine assisted electrodeposition of porous copper cobalt bi-metallic hetero-nanostructures on an indium tin oxide electrode: a disposable and stable electrode for non-enzymatic glucose sensing

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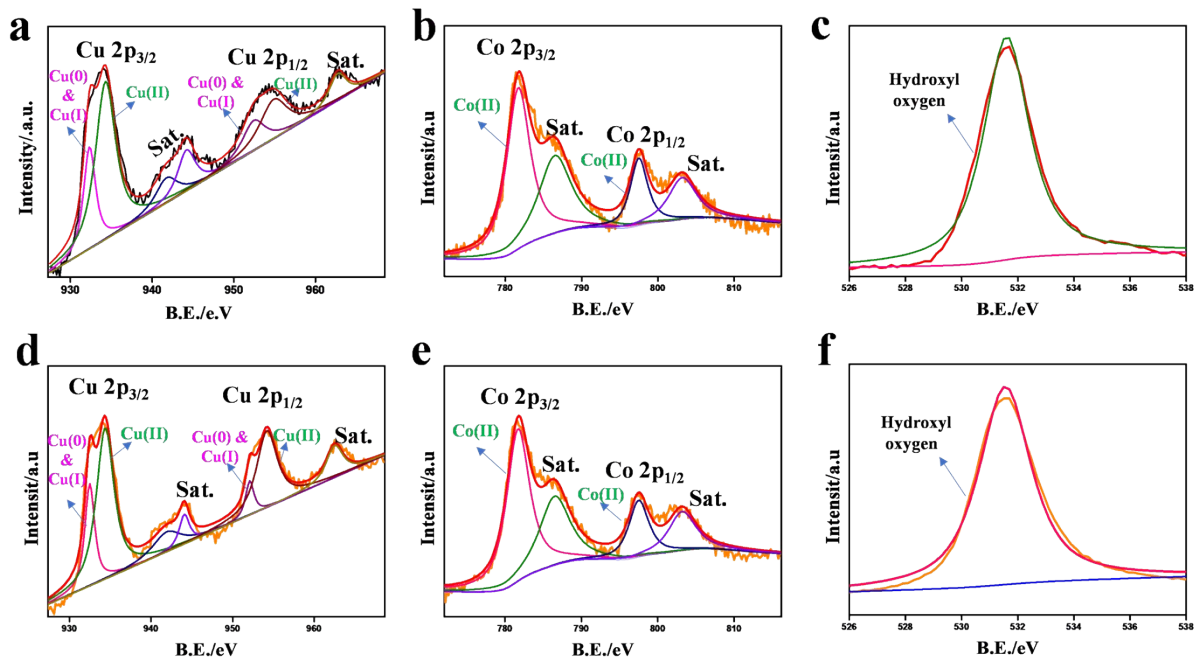
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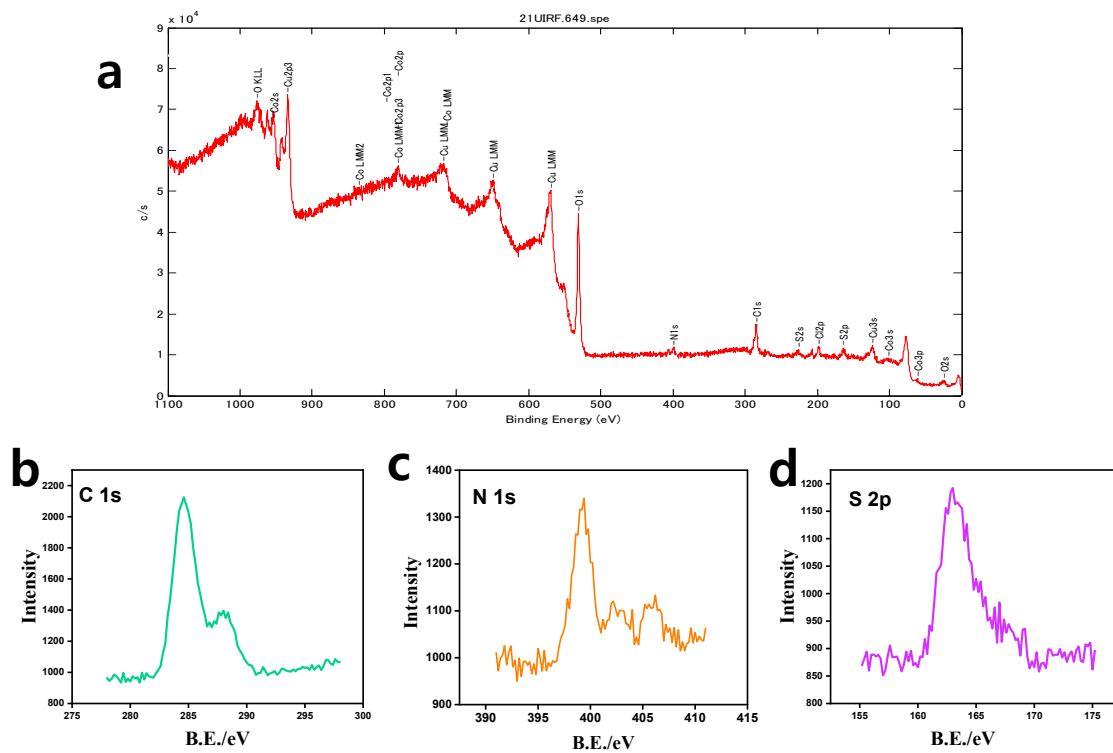
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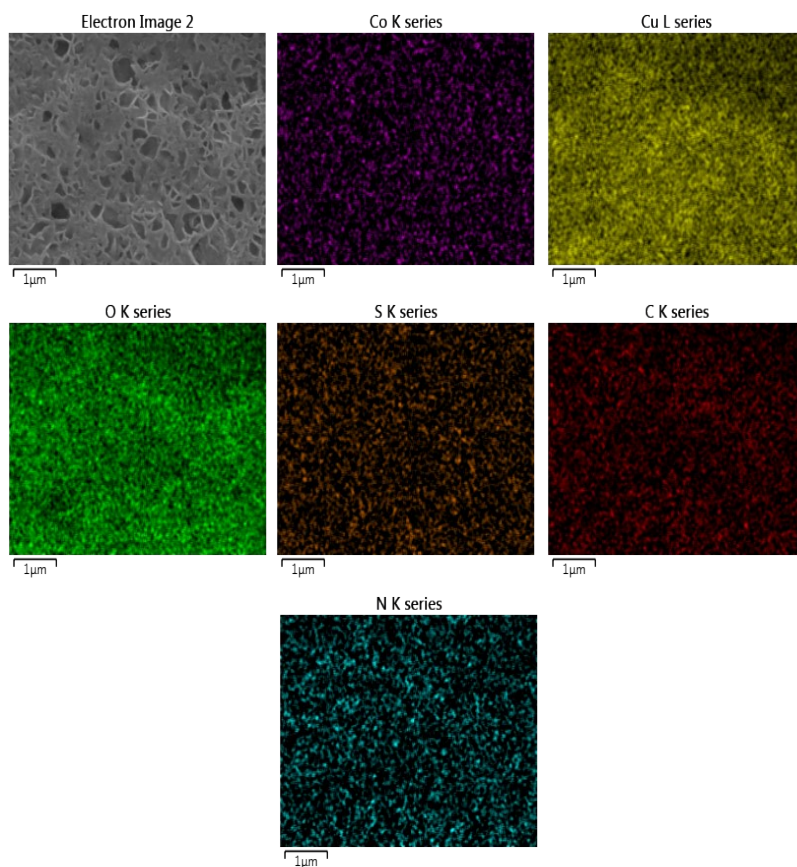
**Fig. S1** Digital photographs of CuCo h-NSs films electrodeposited on ITO electrodes in the presence and absence of methionine and their stability after electrode pre-treatment.



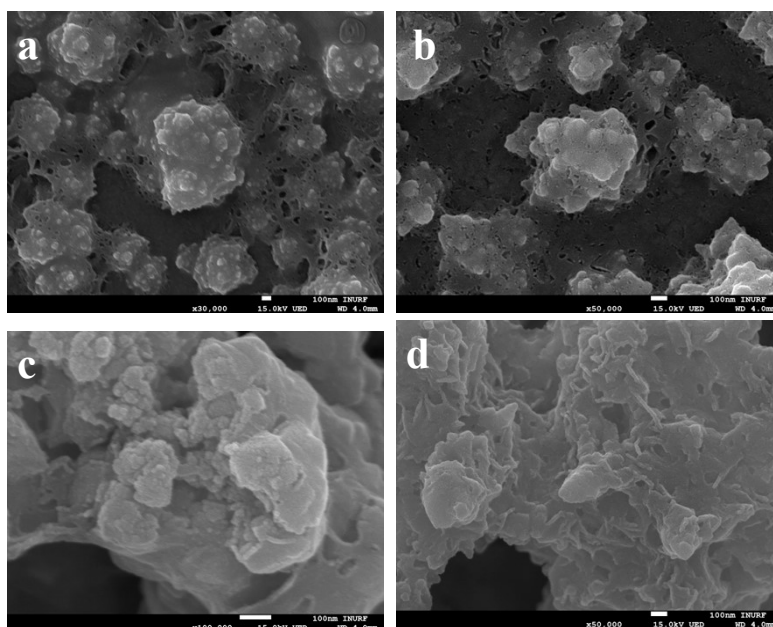
**Fig. S2** XPS core-level spectra of Cu, Co and O of CuCo films electrodeposited for 15 min (a-c) and for 60 min (d-f) in the presence of methionine.



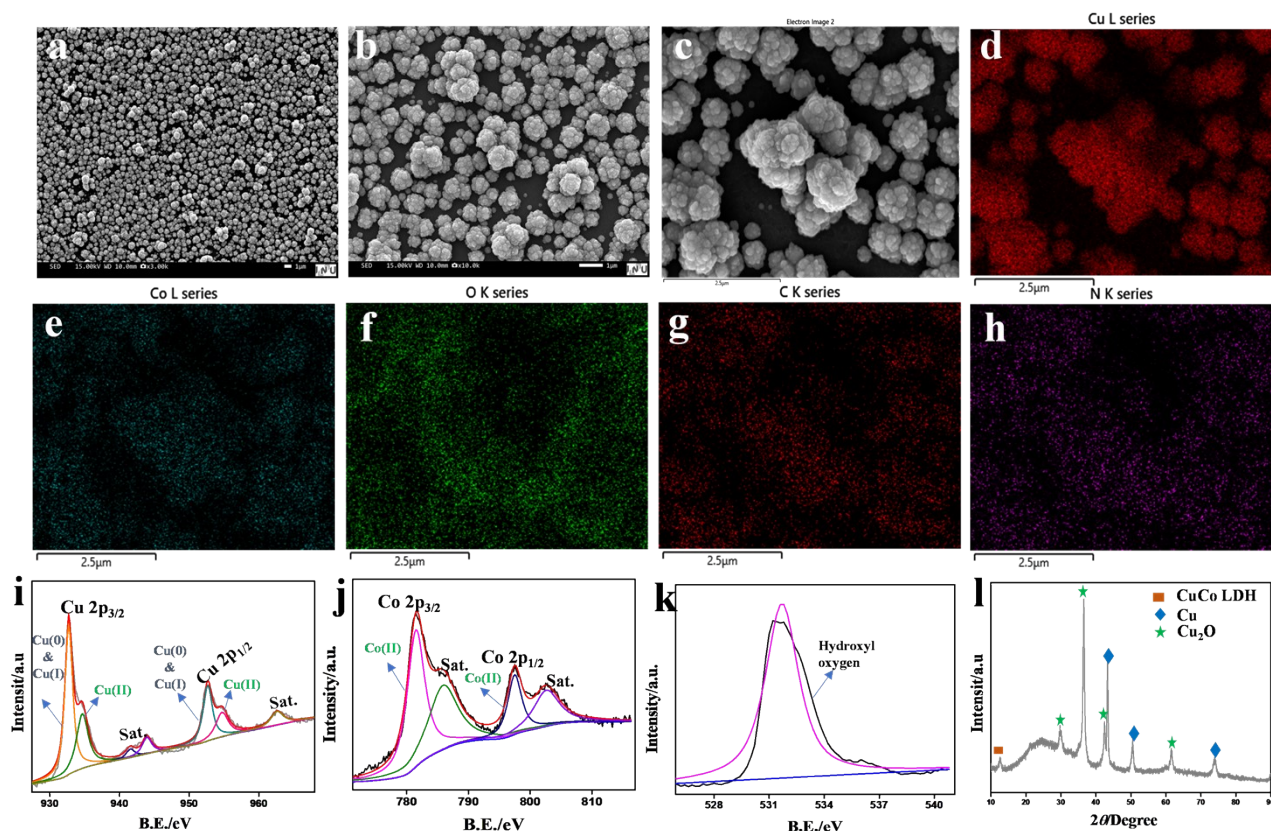
**Fig. S3** XPS spectra of CuCo h-NSs electrodeposited in the presence of methionine for 30 min; survey (a), core-level spectrum of C 1s (b), N 1s (c) and S 2p (d).



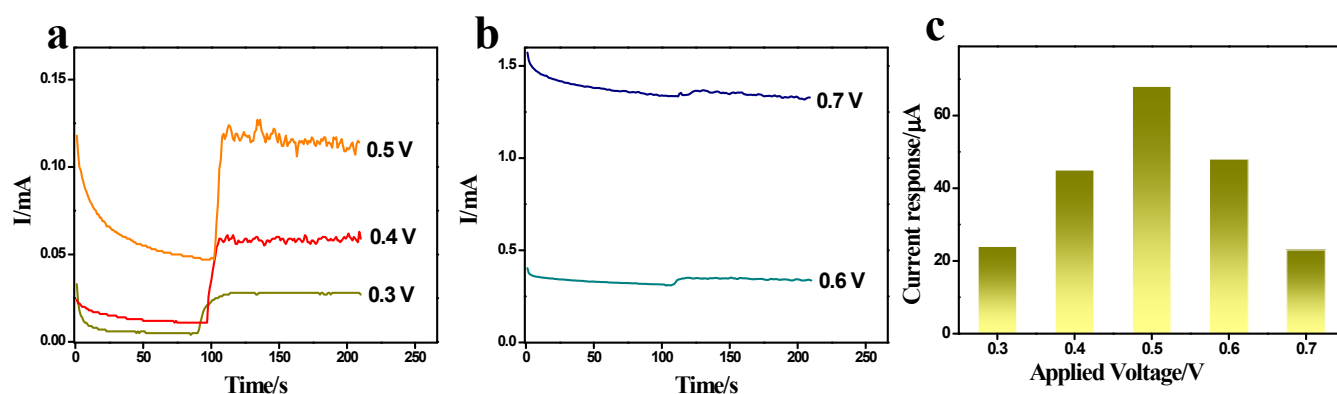
**Fig. S4** FE-SEM images of CuCo h-NSs electrodeposited in the presence of methionine for 30 min and their elemental mapping analyses.



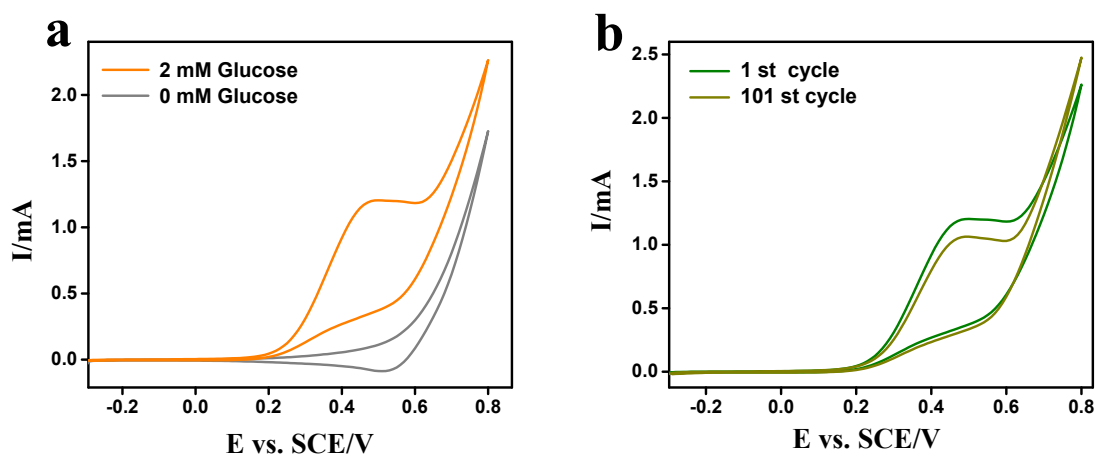
**Fig. S5** FE-SEM images of CuCo h-NSs electrodeposited in the presence of methionine for 15 min (a-b) and 60 (c-d) min.



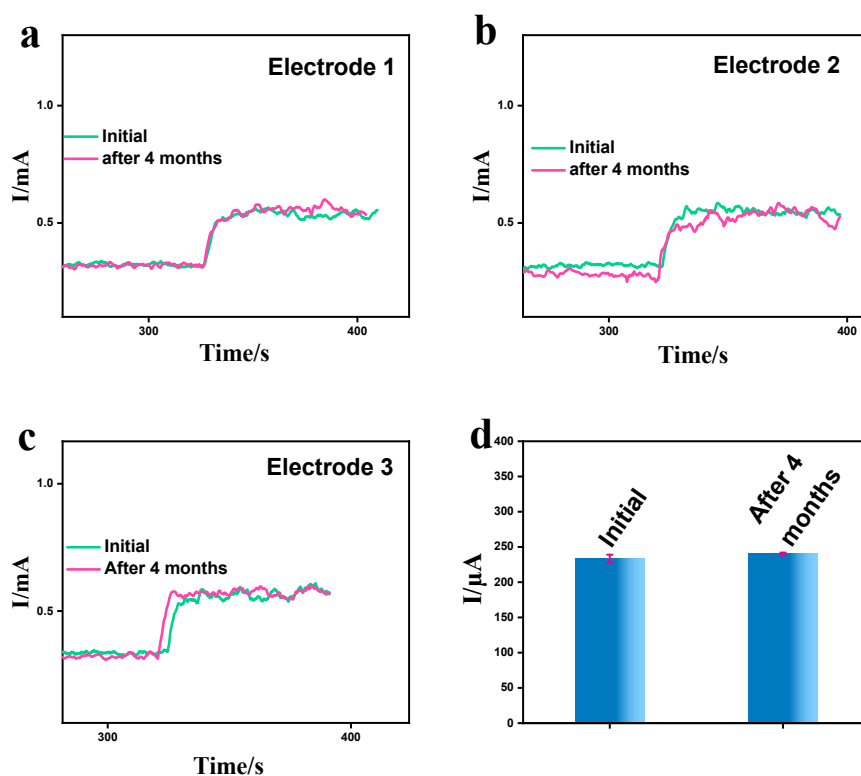
**Fig. S6** FE-SEM images (a-c), elemental mapping analyses (d-h), core-level XPS spectra of Cu 2p (i), Co 2p (j), O 1s (k) and XRD data (l) of CuCo h-NSs electrodeposited for 30 min in the presence of glutamine.



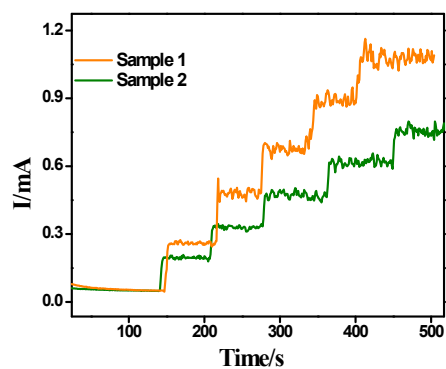
**Fig. S7** Amperometry i-t curve recorded for the addition of 50  $\mu$ M glucose at various applied potentials of 0.3 to 0.5 (a), 0.6 to 0.7 (b) and their corresponding current response bar diagram against applied voltage (c).



**Fig. S8** (a) CVs recorded in the presence and absence of 2 mM glucose at CuCo h-NSs electrodeposited in the presence of glutamine for 30 min in 0.2 M KOH, (b) comparison of CVs recorded before and after 100 cycles of stability test (Scan rate = 50 mV/s).



**Fig. S9** Long-term storage test carried out at three different CuCo h-NSs electrodeposited in the presence of methionine for 30 min (a-c) and the corresponding bar diagram compare the current responses at initial and after four months (d).



**Fig. S10** Amperometry i-t curve obtained for the quantification of glucose concentration in the glucose spiked orange juice samples.

**Table S1.** Determination of glucose concentration in the glucose spiked orange juice samples.

Juice sample	Original glucose concentration in juice ( $\mu\text{M}$ )	Spiked glucose concentration ( $\mu\text{M}$ )	Measured glucose concentration	Recovery (%)	RSD (%) (n=4)
Sample 1	50	100	160	106	3.2
Sample 2	50	50	103	103	1.08