

## Electronic Supplementary Information (ESI)

for

### **Nanostructured mesoporous gold electrodes detect protein phosphorylation in cancer with electrochemical signal amplification**

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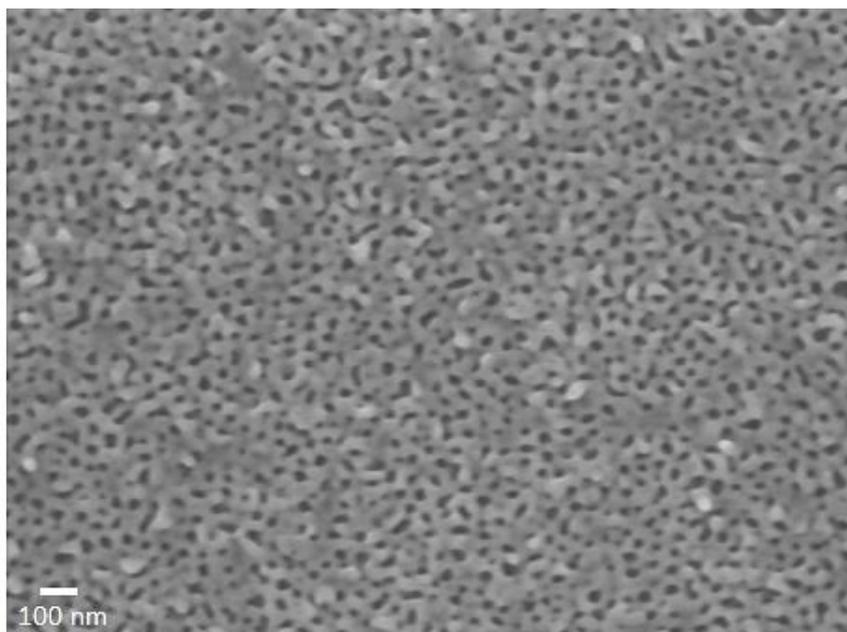
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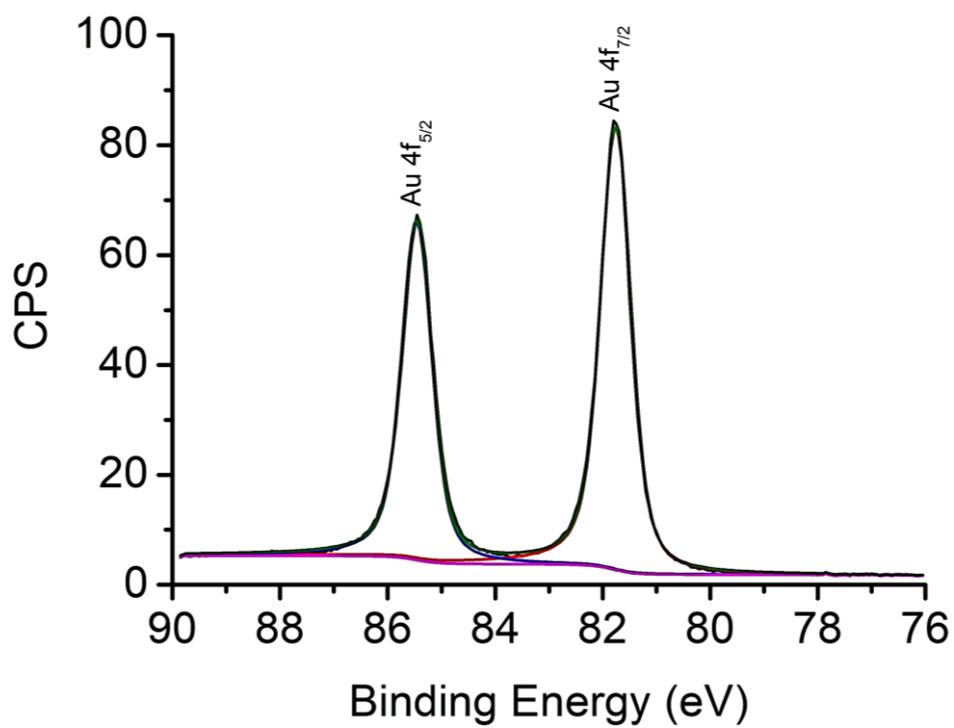
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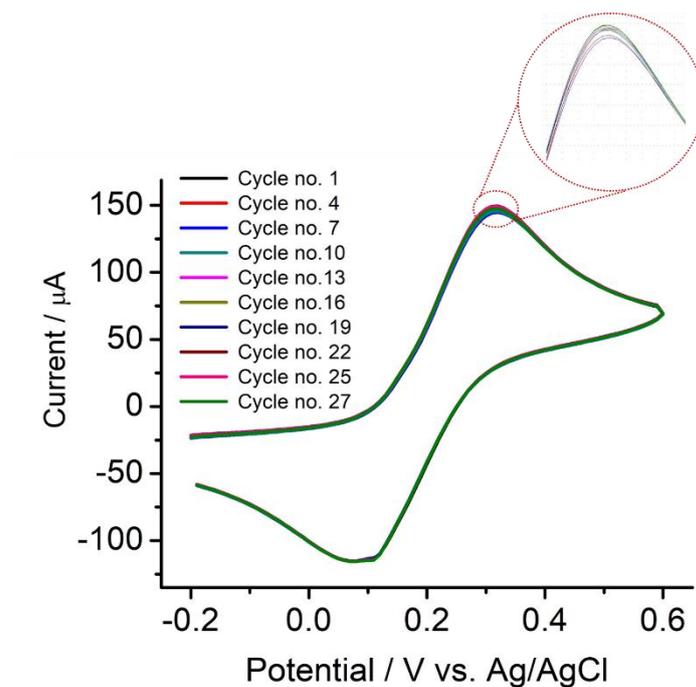
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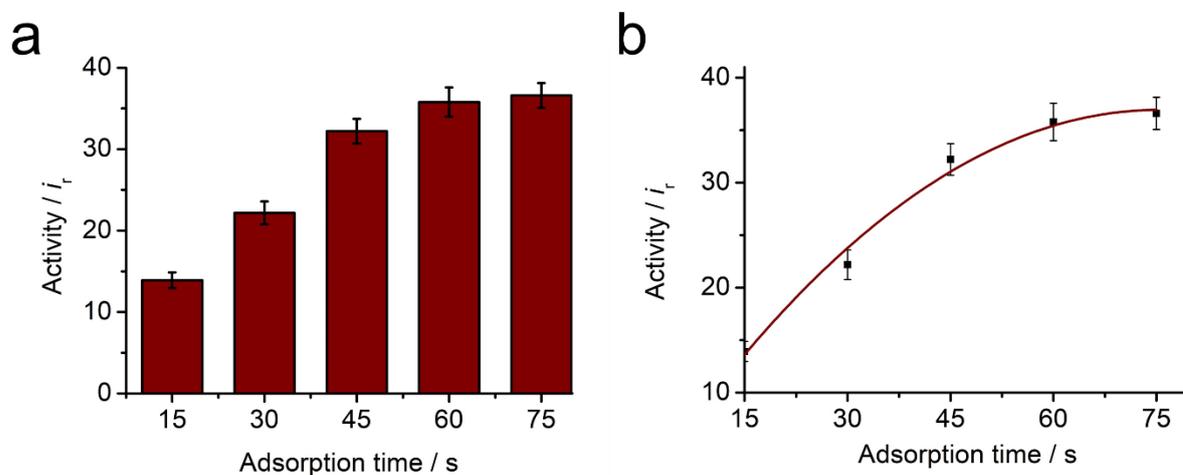
**Figure S1:** The SEM image of the top-surface of NMGE



**Figure S2:** The high-resolution XPS spectra of Au-4f.



**Figure S3.** Stability of NMGE over several cyclic voltammetric runs in 2.5 mM  $[\text{Fe}(\text{CN})_6]^{3-/4-}$  solution.



**Figure S4:** Optimisation of adsorption time. (a) and (b) represents the average DPV signals obtained after adsorbing pBRAF for different amounts of time (*i.e.* 15min, 30min, 45min, 60min, and 75min).

**Table S1:** Comparison of the analytical performances in detecting phosphorylated proteins with different methods.

Methods	Target	Dynamic Range	LOD	Reference
Electrochemical biosensor-based detection.	Protein kinase A (PKA).	0.05–100 unit/mL	0.014 unit/mL	S1
Zeta potential measurement.	Abelson murine leukemia viral oncogene kinase	1 to 40 nM	1 nM	S2
NanoPro Assay	phosphorylated ERK 1/2	3.125 to 25 $\mu$ g/ml	3.125 $\mu$ g/ml	S3
SDS-PAGE	Phosphoprotein (casein)	4 to 500 ng	4 ng	S4
Electrochemical biosensor-based detection.	EGFR/p-EGFR protein	10 to 40 ng/ $\mu$ l	10 ng/ $\mu$ l	S5
Electrochemical biosensor-based detection.	BRAF/p-BRAF protein	0.5 to 20 ng/ $\mu$ l	0.5 ng/ $\mu$ l	This work

## References

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