Supporting Information

Facile fabrication of NiS and reduced graphene oxide hybrid film for nonenzymatic detection of glucose

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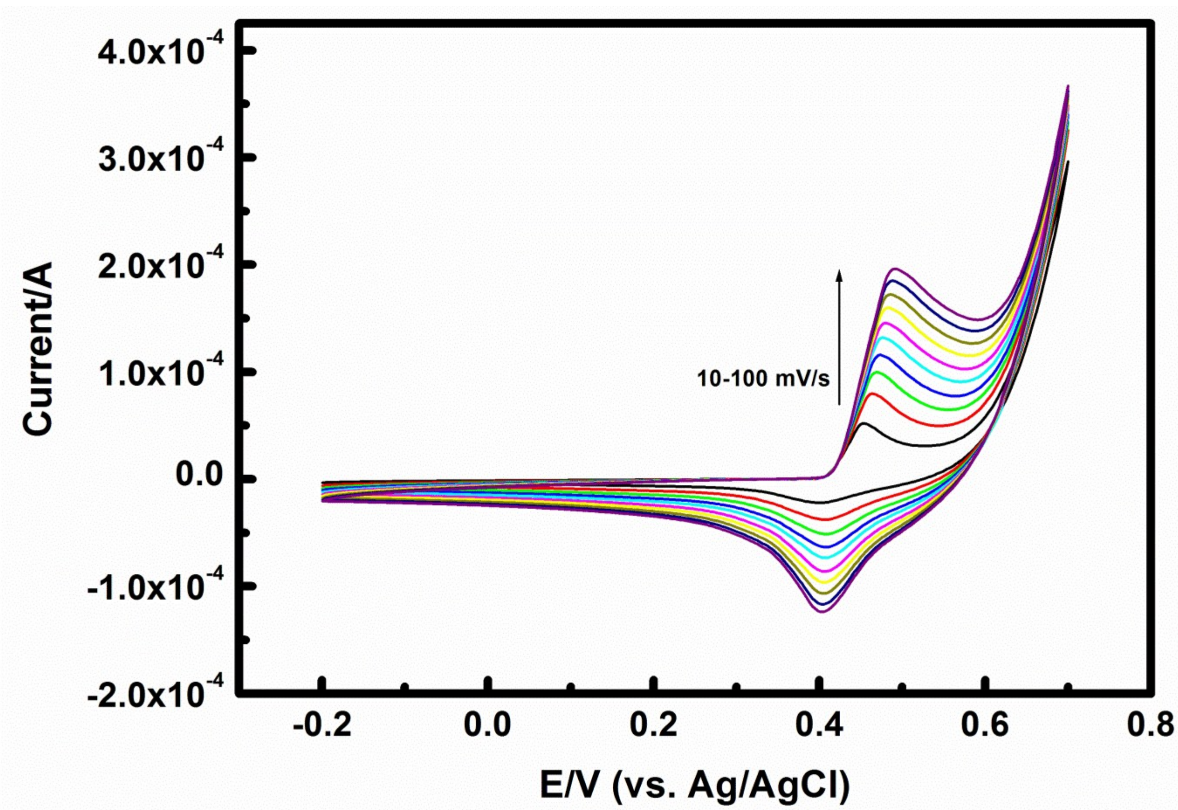

Fig. S1 Cyclic voltammograms of NiS-rGO modified GC electrode in 0.1 M NaOH at different scan rates (10-100 mV/s).

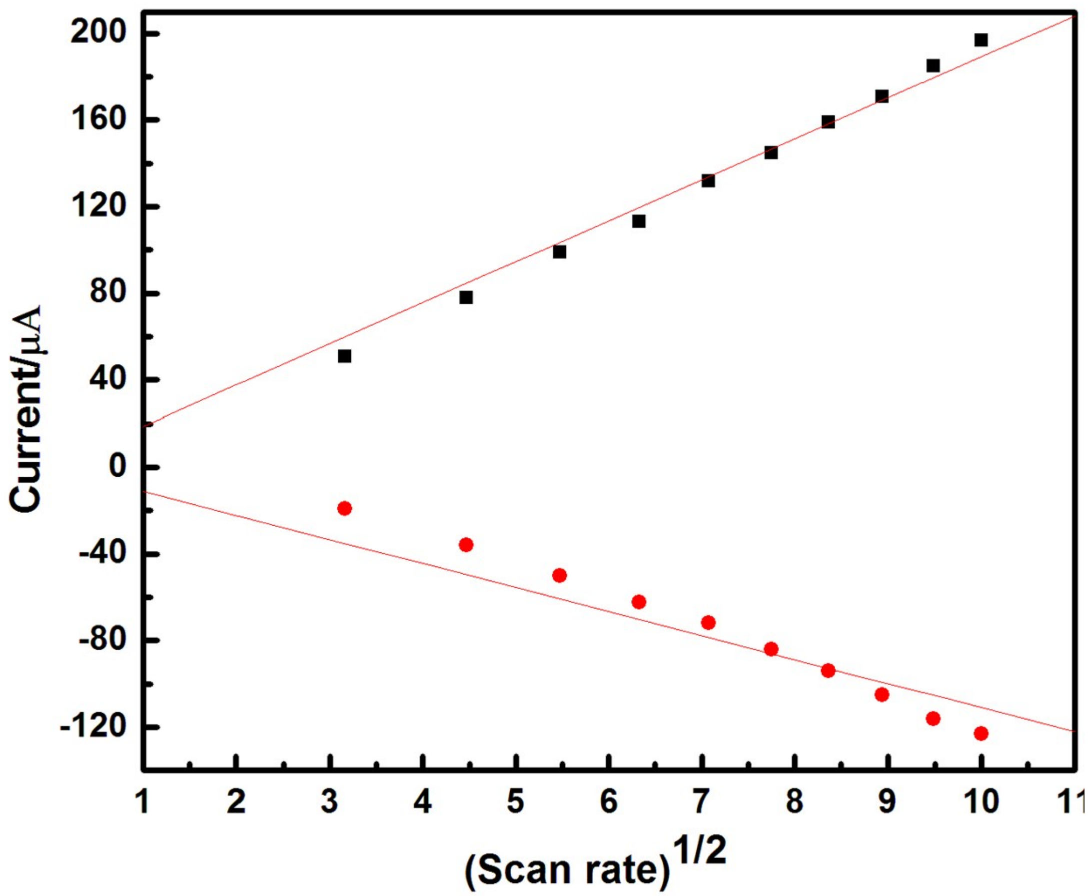

Fig. S2 Peak current vs. square root of scan rates for NiS-rGO modified GC electrode.

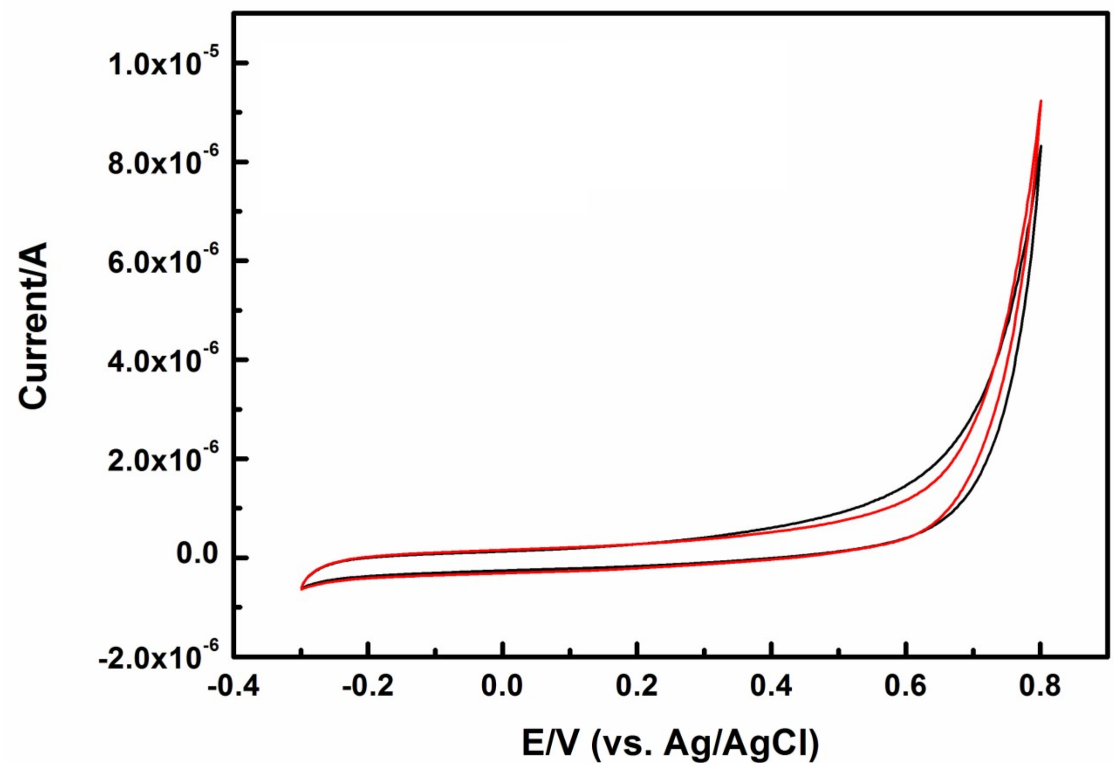

Fig. S3 Cyclic voltammograms of bare GC electrode with (red line) and wothout (block line) the presence of 3 mM glucose in 0.1 M NaOH solution at a scan rate of 50 mV/s.

Supplementary Table 1

Electrode Material	Linear range (M)	Detection limit (M)	Ref.
AuNP	$0.5 \times 10^{-3} – 5.0 \times 10^{-2}$	6.1×10^{-5}	1
AuNP/LDH-CNT-G	$1.0 \times 10^{-5} – 6.1 \times 10^{-3}$	1.0×10^{-6}	2
Ni_3S_2-CNT	$3.0 \times 10^{-5} – 5.0 \times 10^{-4}$	1.0×10^{-6}	3
Ni-CNT	$5.0 \times 10^{-5} – 1.0 \times 10^{-3}$	3.0×10^{-5}	4
DGNs	$1.0 \times 10^{-4} – 2.5 \times 10^{-2}$	5.0×10^{-5}	5
CuO-G	$2.0 \times 10^{-6} –5.0 \times 10^{-4}$	6.7×10^{-7}	6
$(Ni\text{-}Co)(OH)_2$	$2.5 \times 10^{-5} –3.7 \times 10^{-3}$	-	7
NiO	$1.0 \times 10^{-6} – 1.1 \times 10^{-4}$	1.6×10^{-7}	8
$Ni(OH)_2$	$5.0 \times 10^{-5} – 2.3 \times 10^{-2}$	6.0×10^{-6}	9
NiOH-G	$6.2\times 10^{-7} – 1.0 \times 10^{-4}$	3.0×10^{-8}	10
AuNP-G	$1.0\times 10^{-5} – 1.6 \times 10^{-4}$	4.0×10^{-6}	11
Au/LDH-CNT-G	$1.0\times 10^{-5} – 6.1 \times 10^{-3}$	1.0×10^{-6}	12
NiS-rGO	$5.0 \times 10^{-5} – 1.7\times 10^{-3}$	1.0×10^{-5}	This work

References

[1] M.C. Dilusha Cooray, Y. Liu, S.J. Langford, A.M. Bond, J. Zhang, Analytica Chimica Acta, 2015, 856, 27-34.

[2] F. Shuai, G. Fan, L. Yang, L. Feng, Electrochimica Acta, 2015, 152, 146-154.

[3] T-W. Lin, C-J. Liu, C-S. Dai, Applied Catalysis B: Environmental 2014, 154-155, 213-220.

[4] W-S. Kim, G-J. Lee, J-H. Ryu, K.C. Park, H-K. Park, RSC Advances 2014, 4, 48310-48316.

[5] H. Shu, L. Cao, G. Chang, H. He, Y. Zhang, Y. He, Electrochimica Acta, 2014, 132, 524-532.

[6] H-Y. Yu, M.Q. Xu, S-H. Yu, G-C. Zhao, International Journal of Electrochemical Science, 2013, 8, 8050-8057.

[7] C-H. Lien, J-C. Chen, C-C. Hu, D.S-H. Wong, Journal of the Taiwan Institute of Chemical Engineers, 2014, 45, 846-851.

[8] Y. Mu, D. Jia, Y. He, Y. Miao, H-L. Wu, Biosensors and Bioelectronics 2011, 26, 2948-2952.

[9] A. Safavi, N. Maleki, E. Farjami, Biosensors and Bioelectronics, 2009, 24, 1655-1660.

[10] P. Lu, J. Yu, Y. Lei, S. Lu, C. Wang, D. Liu, Q. Guo, Sensors and Actuators B, 2015, 208, 90-98.

[11] L. Ruiyi, Z. Juanjuan, W. Zhouping, L. Zaijun, L. Junkang, G. Zhiago, W. Guangli, Sensors and Actuators B, 2015, 208, 421-428.

[12] S. Fu, G. Fan, L. Yang, F. Li, Electrochimica Acta, 2015, 152, 146-154.