Supporting materials

Nitrogen doped graphene–poly(hydroxymethylated-3,4-ethylenedioxythiophene) nanocomposites electrochemical sensor for ultrasensitive determination of luteolin

Shanshan Yu [a], Yining Chen [a], Ying Yang [a], Yuanyuan Yao [a,*] Haijun Song [b,*]

[a] Jiaxing Key Laboratory of Molecular Recognition and Sensing, College of Biological, Chemical Sciences and Engineering, Jiaxing University, Jiaxing 314001, PR China.

[b] College of Mechanical and Electrical Engineering, Jiaxing University, Jiaxing 314001, PR China.

*Correspondence: yaoyuanyuan2007@163.com (Y.Y. Yao); songhaijun8837@126.com (H.J. Song).

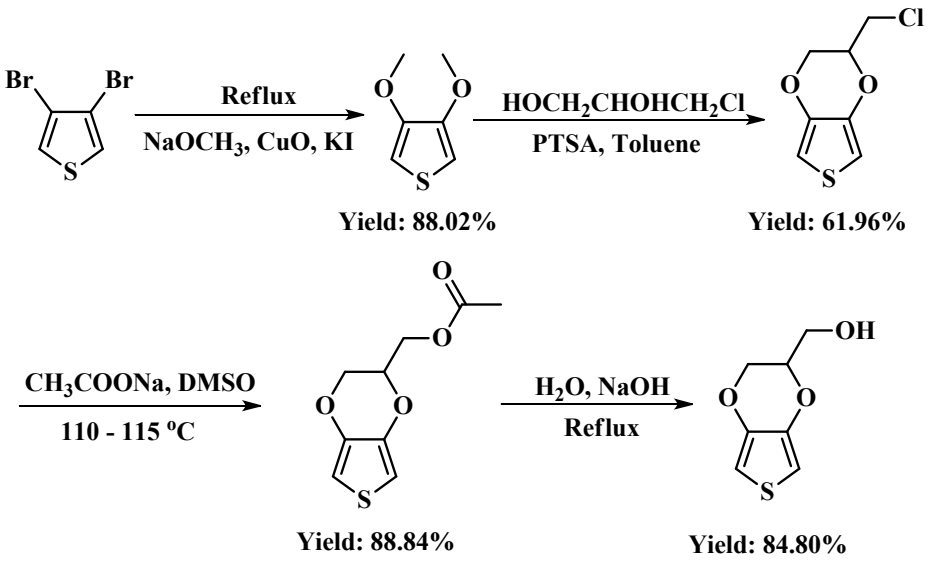

Figure S1. The synthesis route of EDOT-MeOH.

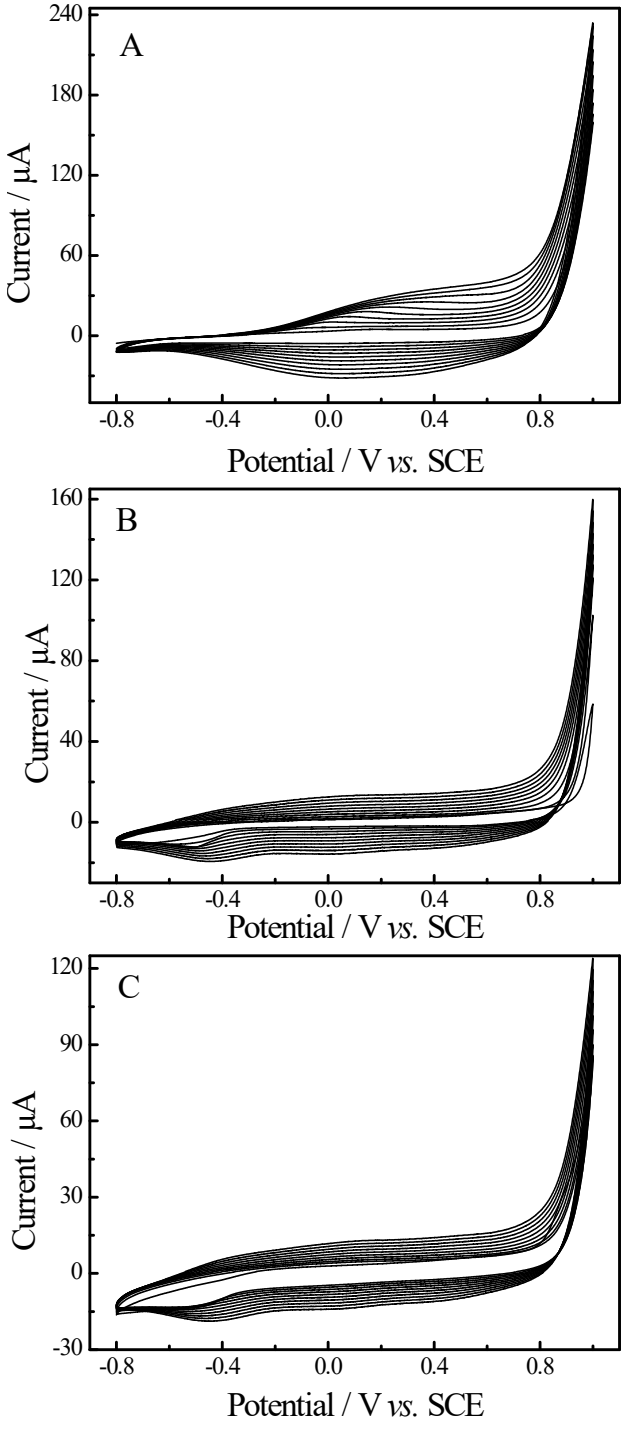

Figure S2. CVs of PEDOT/GCE (A), PEDOT-MeOH/GCE (B) and N-GR-PEDOT-MeOH/GCE (C) in 10 mM monomers containing 0.1 M $LiClO_4$.

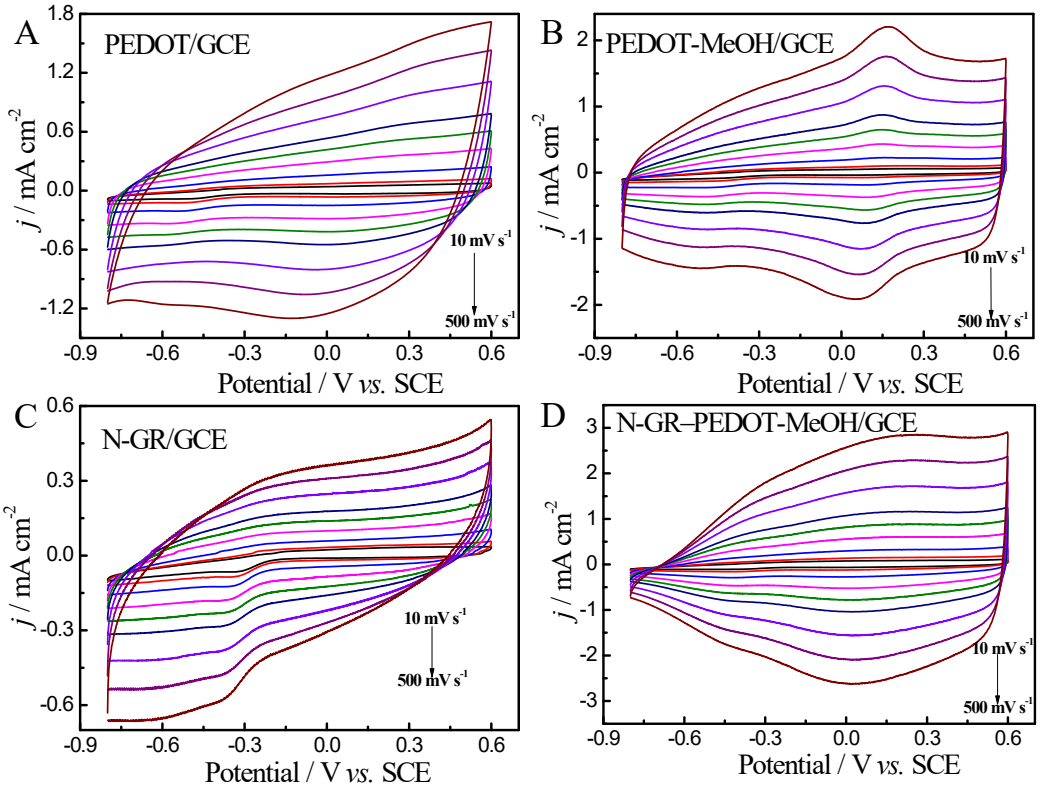

Figure S3. CVs of PEDOT/GCE (a), PEDOT-MeOH/GCE (b), N-GR (c), and N-GR–PEDOT-MeOH/GCE (d) (e) in 1 mM $[Fe(CN)_6]^{3-}$ with different scan rates.

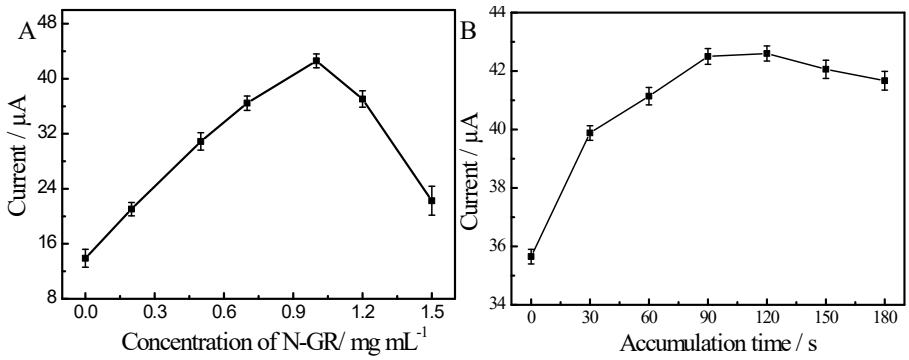

Figure S4. Effect of N-GR concentration and accumulation time on the current response of 50 μM luteolin in 0.1 M PBS (pH 7.0).

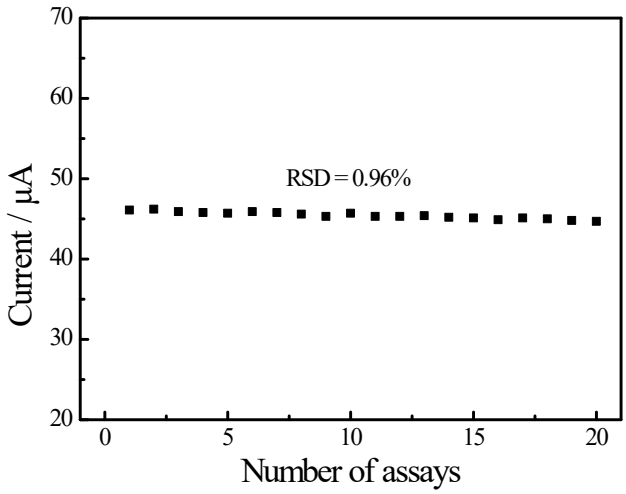

Figure S5. Current responses of 50 μM luteolin in 0.1 M PBS (pH 7.0) based on N-GR-PEDOT-MeOH/GCE for 20 successive assays with the same modified electrode.

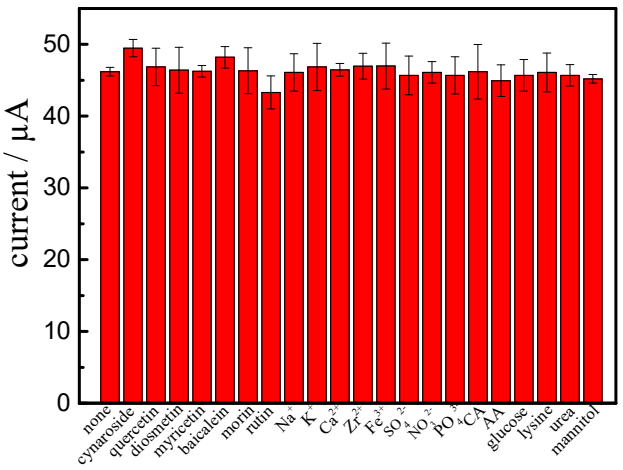

Figure S6. Effect of some possible interfering substances on the determination of 50 μM luteolin in 0.1 M PBS (pH 7.0) based on N-GR-PEDOT-MeOH/GCE.

Table S1 Comparison of the constructed electrode with other reported electrodes for the determination of luteolin.

Electrodes	Accumulation potential (V)	Accumulation time	Linear range (μM)	Limit of detection (nM)	Real sample	Ref.
MOF-525/MPC [a]	0.1	350 s	0.005-5	0.35	Serum and urine	[9]
MoO_3-Polypyrrole Nanowires/MWCNTs	—	1 min	0.0001-10	0.03	Chrysanthemum tea	[10]
Mxene/ZIF-67/CNTs	—	280 s	0.0001-1	0.03	Grape juice drink	[11]
poly alizarin red/f-MWCNTs[b]	—	—	0.5-45	170	Duyiwei capsules, serum	[13]
ZrO2/CS[c]/rGOA[d]/GCE	—	5 min	0.005-1	1.0	Peach juice, red wine	[14]
Au/Pd/rGO/GCE	—	—	0.01-80	0.98	*Chrysanthemums*, *Peanut shells*	[15]
AuNFs-BPC[e]/GCE	0	300 s	0.15-10		Capsule, human urine	[16]
PEDOT/EDTA-Ni/GCE	—	—	0.001-10	0.3	*Lamiophlomis rotata* Kudo	[17]
In_2O_3NPs/CPE[f]	-0.2	60 s	0.00998-0.0884	0.199	Human urine and serum, *Thyme*	[18]
N-GR–PEDOT-MeOH/GCE	0	120 s	0.005-10.06	0.05	*Thyme*, *Lonicera japonica*, *Lamiophlomis rotata* Kudo	This work

[a] Porphyrin-based zirconium MOF macroporous carbon, [b] carboxylic acid group functionalized multiwall carbon nanotube, [c] chitosan, [d] reduced graphene oxide aerogel, [e] biomass-derived porous carbon, [f] carbon paste electrode.