Supporting Information Available

Iron(III) diethylenetriaminepentaacetic acid complex on polyallylamine functionalized multiwalled carbon nanotubes: immobilization, direct electrochemistry and electrocatalysis

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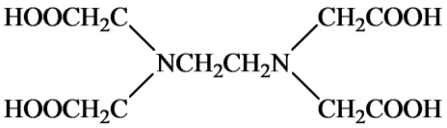
Experimental data



Scheme S1 The structures of EDTA.

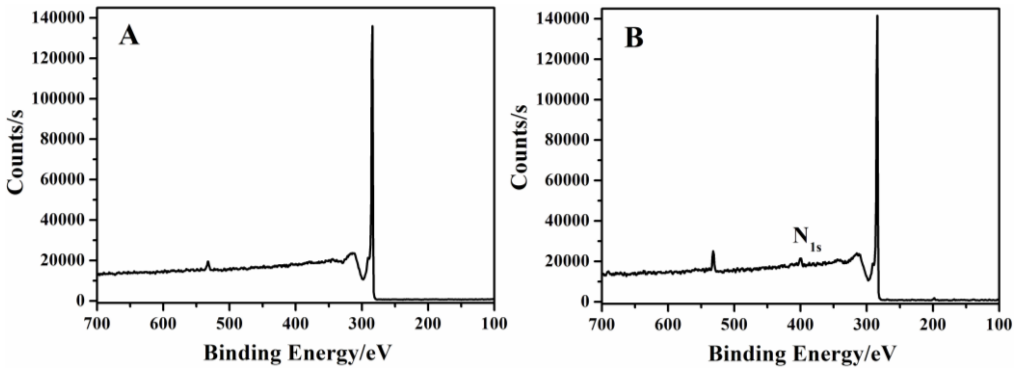


Fig. S1 XPS spectra of the (A) pristine MWCNTs and (B) PAH-MWCNTs hybrids.

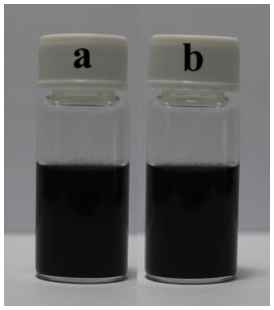


Fig. S2 Digital photographs of the PAH-MWCNTs suspension at (a) 10 min and (b) 3 months of storage under ambient temperature.

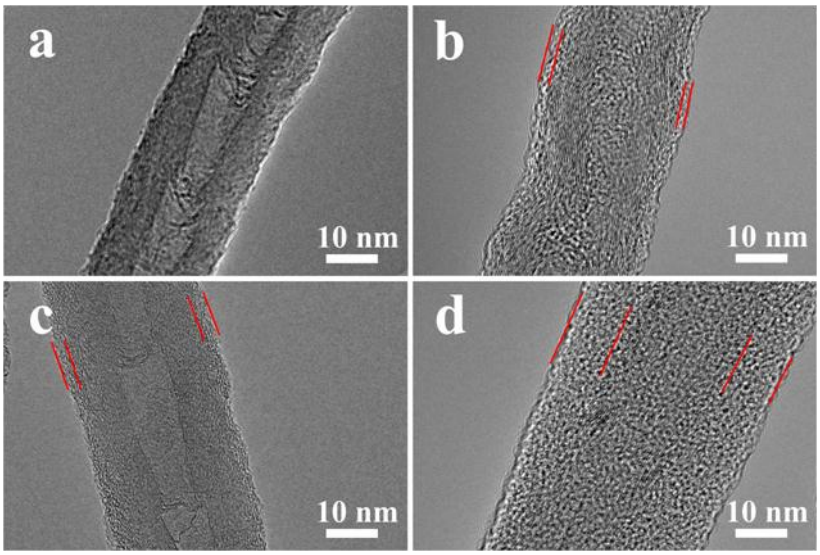


Fig. S3 TEM images of (a) the pristine MWCNTs, (b) PAH-MWCNTs, (c) Fe^{III}-DETPA/PAH-MWCNTs and (d) EDTMP/Fe^{III}-DETPA/PAH-MWCNTs hybrids.

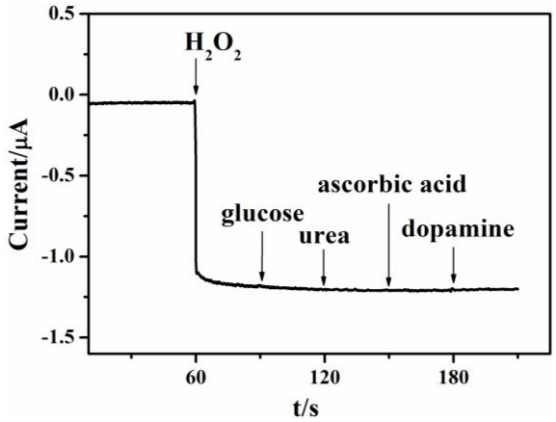


Fig. S4 Amperometric response of the EDTMP/Fe^{III}-DETPA/PAH-MWCNTs/Au electrode on injection of 0.5 mM H_2O_2, 0.5 mM glucose, 0.5 mM urea, 0.5 mM ascorbic acid and 0.5 mM dopamine to 10 mL of N_2-saturated PBS solution at the applied potential of −500 mV under continuous stirring condition.

Table S1 Electrochemical methods for determination of hydrogen peroxide.

Electrode	Linear range (μM)	Limit of detection (μM)	References
EDTMP/Fe^{III}-DETPA/PAH-MWCNTs/Au	0.0125−4750	0.0063	this work
Hb/MPPA/Au	0.078−0.91	0.025	1
HRP-GSH/Au	1.0−1200.0	0.4	2
heme/ZrO_2/chitosan/GC	10.0−1500.0	4.0	3
HRP/glutaraldehyde/cysteamine/Au	1.0−1000.0	0.5	4
PBCB/SWCNT/GC	0.49−100.0	0.12	5
Hb/P123-NGP/GC	10.0−150.0	8.24	6
HRP/laponite/Chit/GC	29.0−1400.0	5.0	7
Hb/Chit-IL-Fc/Gr/GC	50.0−1200.0	3.8	8
MWCNT-CS-He/PAR-GC	10.0−1000.0	1.75	9
Clay-HRP-Clay/AuCS-GC	39.0−3100.0	9.0	10
HRP/CNT/MB/GC	4.0−2000.0	1.0	11
Mb/DNA/CILE	1.0–160.0	0.2	12

Abbreviations: Hb: hemoglobin; MPPA: 3-Mercaptopropylphosphonic acid; HRP: horseradish peroxidase; GSH: L-glutathione; PBCB: poly(brilliant cresyl blue); P123-NGP: Pluronic P123-Nanographene platelet; Chit: Chitosan; IL: ionic liquid; Fc: ferrocene; Gr: grapheme; CS: Chitosan; He: Hematin; PAR: poly-acridine red; MB: methylene blue; CILE: carbon ionic liquid electrode.

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