Electronic Supplementary Information

Enzymatic synthesis and electrochemical characterization of sodium 1,2-naphthoquinone-4-sulfonate-doped PEDOT/MWCNT composite

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								Spectrum 1
	Element	Line	Арр.	k ratio	Intensity	Weight%	Weight%	Atomic%
ø			Conc		corrn.		sigma	
	С	K_SERIES	179.71	0.83066	1.7972	87.96	0.25	91.52
	0	K_SERIES	5.28	0.01896	0.4606	10.09	0.24	7.88
	Mg	K_SERIES	0.56	0.00385	0.9775	0.51	0.02	0.26
	Al	K_SERIES	0.23	0.00167	0.9939	0.20	0.02	0.09
	Co	K_SERIES	0.86	0.00855	0.7202	1.04	0.07	0.22
	Mo	L_SERIES	0.18	0.00178	0.7627	0.21	0.06	0.03
		•			•	•	····	а
0 1	2	3 4	5	6	7	8	9	10
Full Scale 5798 cts Cursor: 0.000 keV								
1								
								Spectrum 1
, P	Element	Line	Арр.	k ratio	Intensity	Weight%	Weight%	Spectrum 1 Atomic%
	Element	Line	App. Conc	k ratio	Intensity corrn.	Weight%	Weight% sigma	Spectrum 1 Atomic%
.	Element C	Line K_SERIES	App. Conc 178.20	k ratio 0.82367	Intensity corrn. 0.8654	Weight% 85.91	Weight% sigma 0.26	Spectrum 1 Atomic% 89.28
	Element C O	Line K_SERIES K_SERIES	App. Conc 178.20 7.18	k ratio 0.82367 0.02578	Intensity corrn. 0.8654 0.4745	Weight% 85.91 13.61	Weight% sigma 0.26 0.25	Spectrum 1 Atomic% 89.28 10.62
• •	Element C O Co	Line K_SERIES K_SERIES K_SERIES	App. Conc 178.20 7.18 0.38	k ratio 0.82367 0.02578 0.00381	Intensity corrn. 0.8654 0.4745 0.7190	Weight% 85.91 13.61 0.48	Weight% sigma 0.26 0.25 0.06	Spectrum 1 Atomic% 89.28 10.62 0.10
•	Element C Co	Line K_SERIES K_SERIES K_SERIES	App. Conc 178.20 7.18 0.38	k ratio 0.82367 0.02578 0.00381	Intensity corrn. 0.8654 0.4745 0.7190	Weight% 85.91 13.61 0.48	Weight9 sigma 0.26 0.25 0.06	Spectrum 1 Atomic% 89.28 10.62 0.10

Fig. S1 EDX spectra of untreated (a) and acid-treated (b) MWCNTs.



Fig. S2 FTIR spectra of untreated and acid-treated MWCNTs.



Fig. S3 TEM and SEM images of untreated (a,c) and acid-treated (b,d) MWCNTs.



Fig. S4 The linear dependence of the cathode and anode currents of couple II of redox peaks on the scan rate.



Fig. S5 The specific capacitance of the PEDOT-NQS/MWCNT composite as a function of the potential scan rate.



Fig. S6 The dependence of the specific capacitance of the PEDOT-NQS/MWCNT composite on CV cycle numbers within a potential window from -0.5 to 1.0 V at a potential scan rate of 100 mV s⁻¹. The inset exhibits the CV curves at cycle 1 and cycle 1000.



Fig. S7 (a) Comparison of the experimental EIS spectrum at 0.235 V (hollow circles) and the spectrum calculated by the equivalent circuit (solid line). (b) The plot shows the extended high-frequency region.



Fig. S8 Galvanostatic charge/discharge curves of the PEDOT-NQS/MWCNT composite in 1 M H₂SO₄ at different current densities.