

Voltammetric Characterization of a Fully Integrated, Patterened Singlewalled Carbon Nanotube Three-Electrode System on a Glass Substrate

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Supplementary table 1. XPS data of plasma treated CNTs at various plasma treatment time. The asymmetric peak of C1s at around 284 eV was observed for all CNTs. The C1s peak is specific for sp^2 -hybridized graphite carbon atoms and hydrogen-bound carbon atoms. The peak shown at around 285 eV is assigned to sp^3 -hybridized carbon atoms. The other three peaks shown at around 286.4, 287.5, and 288.6 eV with higher bonding energy are considered as oxygen-containing carbon atoms. The sp^2 -hybridized graphite carbons decreased as the plasma treatment time increased; while the sp^3 -hybridized hydrogen-bound carbons increased. The plasma treatment has the CNTs developed many defects on the surface. All oxygen-bound carbon peaks increased with the increase of the plasma treatment time.

Plasma treatment time (s)		C1s							O1s		
		CC (sp^2)	CC (sp^3)	sp^3/sp^2	C-O-C	-C=O	-COO	COx (total)	-OH	-C=O or C-O-C	O (total)
0	BE (eV)	284.25	285.54	-	286.33	287.36	-	-	531.63	533.88	-
	Ratio (%)	73.15	5.00	6.83	3.54	1.44	-	4.98	1.01	15.86	16.87
10	BE (eV)	284.54	285.86	-	286.77	287.74	288.9	-	531.87	533.36	-
	Ratio (%)	52.27	5.88	11.24	5.56	3.22	2.46	11.31	4.27	26.28	30.55
30	BE (eV)	284.27	285.45	-	286.37	287.32	288.53	-	531.95	533.17	-
	Ratio (%)	46.66	5.51	11.81	5.78	3.11	2.81	12.03	8.99	26.80	35.78
60	BE (eV)	284.29	285.52	-	286.49	287.55	288.73	-	532.04	533.32	-
	Ratio (%)	40.79	6.43	15.77	5.62	2.83	2.64	11.18	7.80	33.80	41.60