

High-Performance Supercapacitors Based on Graphene/Activated Carbon Hybrid Electrodes Prepared via Dry Processing

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Table S1. Test data of electrodes prepared by two methods

Number	Dry method electrode			Wet method electrode		
	1#	2#	3#	1#	2#	3#
Size(mm x mm x mm)	75 x 37 x 0.095	75 x 37 x 0.096	75 x 37 x 0.095	75 x 37 x 0.091	75 x 37 x 0.090	75 x 37 x 0.091
Volume(mm ³)	263.625	266.4	263.625	252.525	249.75	252.525
Weight(g)	0.1757	0.1767	0.1753	0.1455	0.1447	0.1449
Electrode Density(g/cm ³)	0.666	0.663	0.665	0.576	0.579	0.574
Average Electrode Density(g/cm ³)	0.665			0.576		

Table S2. Electrical conductivity of several metals

Number	Metal	Conductivity (X10 ⁶ S/M)
1	Al	37.7
2	Cu	59.5
3	Ni	14.3
4	Ti	2.3

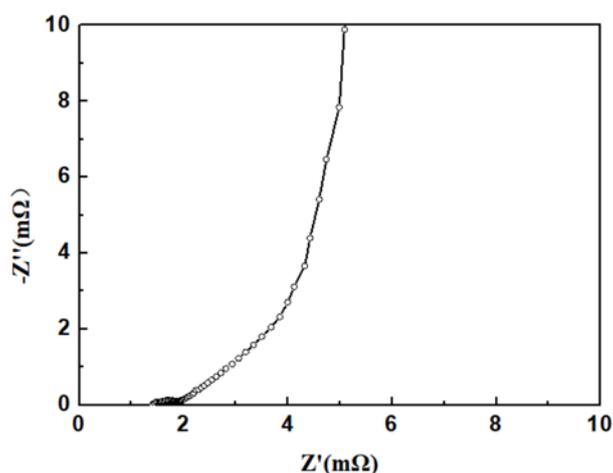


Figure S1: AC Impedance Spectrum of Supercapacitors

From Figure S1, it is evident that the impedance spectrum of the supercapacitor consists of a semicircle in the high-frequency range and a diagonal line in the low-frequency range. The semicircle is primarily attributed to contact resistance (between the current collector and the active material, as well as among the active material particles), while the diagonal line in the low-frequency range is primarily associated with ion diffusion. The closer the diagonal line approaches the perpendicular, the higher the ion diffusion rate. Furthermore, it is apparent that the supercapacitor's equivalent series internal resistance is a mere $1.41\text{m}\Omega$, indicating a relatively low resistance. Additionally, conduct electrical performance tests on the above-mentioned capacitors, and the data is shown in the table below.