Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Core/Shell Structure Halloysite/Polyaniline Nanotubes with Enhanced Electrochromic Properties

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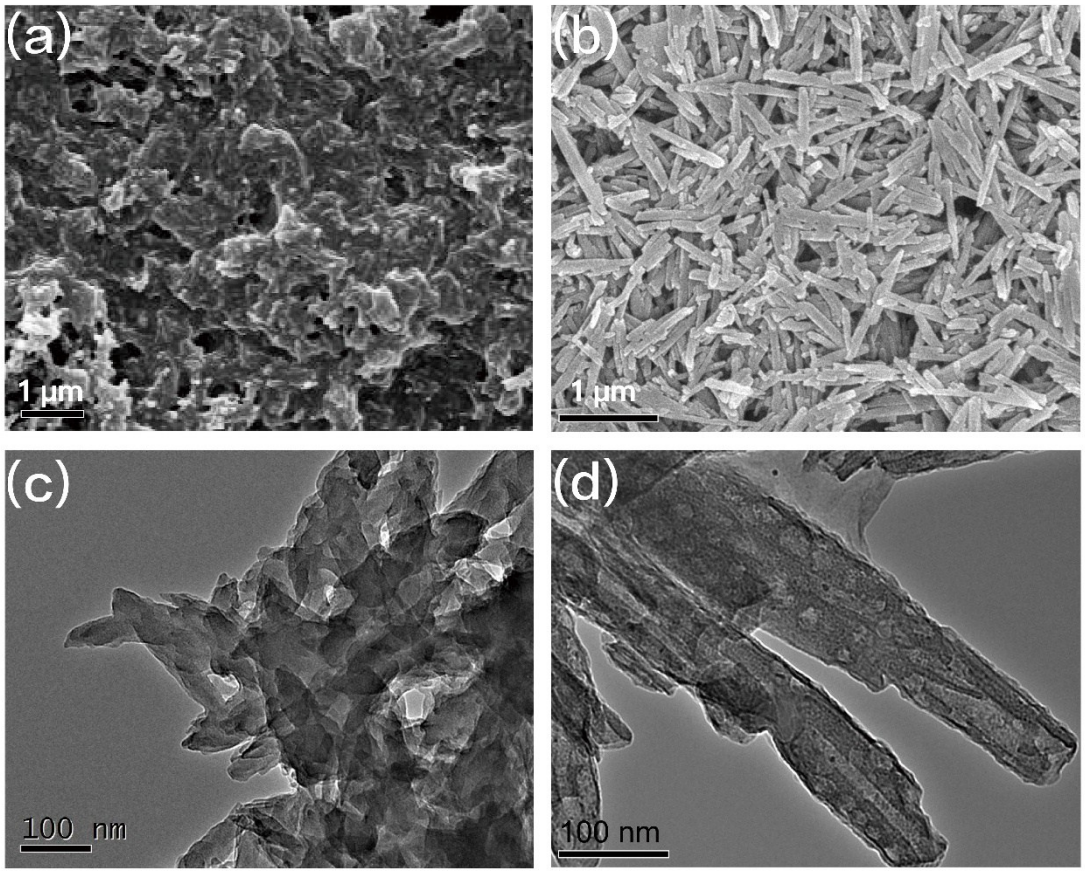

Figure S1. SEM images of (a) PANI and (b) 25PANI/75HNT; TEM images of (c) PANI and (d) 25PANI/75HNT.

$$PANI + nCl^- \leftrightarrow (PANI^{n+})(Cl^-)_n + ne^- \quad (1)$$

$$EB + mCl^- \leftrightarrow (EB^{m+})(Cl^-)_m + me^- \quad (2)$$

$$ES \leftrightarrow (EB) + nCl^- + nH^+ \quad (3)$$

$$(PANI^{n+})(Cl^-)_n = EB \qquad (EB^{m+})(Cl^-)_m = PS$$

Figure S2. The reactions in the oxidation-reduction process.

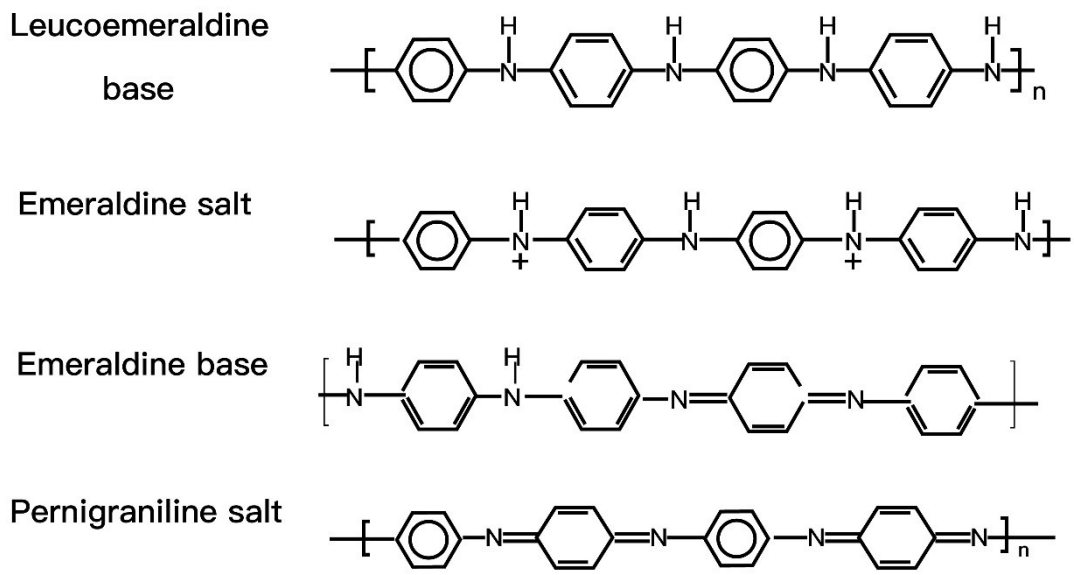

Figure S3. Main molecular structures of LB, ES, EB and PS.

Table S1. Current and Potential from **Figure 4.**

samples	**A_1**		**A_2**		**C_1**		**C_2**	
	Current (mA/cm^2)	Potential (V)	Current (mA/cm^2)	Potential (V)	Current (mA/cm^2)	Potential (V)	Current (mA/cm^2)	Potential (V)
Pure PANI	0.009	0.511	0.010	0.951	-0.009	-0.230	-0.011	0.185
75PANI/25HNT	0.012	0.464	0.008	0.862	-0.008	-0.116	-0.013	0.269
50PANI/50HNT	0.006	0.329	0.003	0.710	-0.003	-0.044	-0.008	0.396
25PANI/75HNT	0.005	0.367	0.003	0.735	-0.003	-0.044	-0.007	0.341

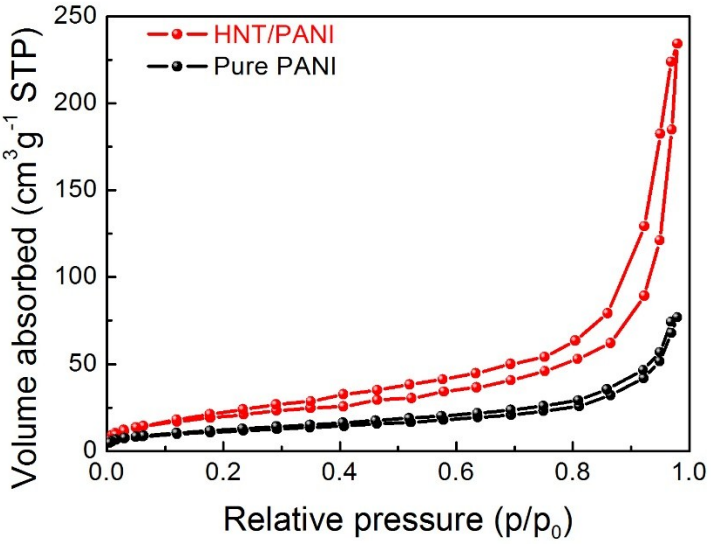

Figure S4. Nitrogen adsorption (solid symbol)/desorption (hollow symbol) isotherms.

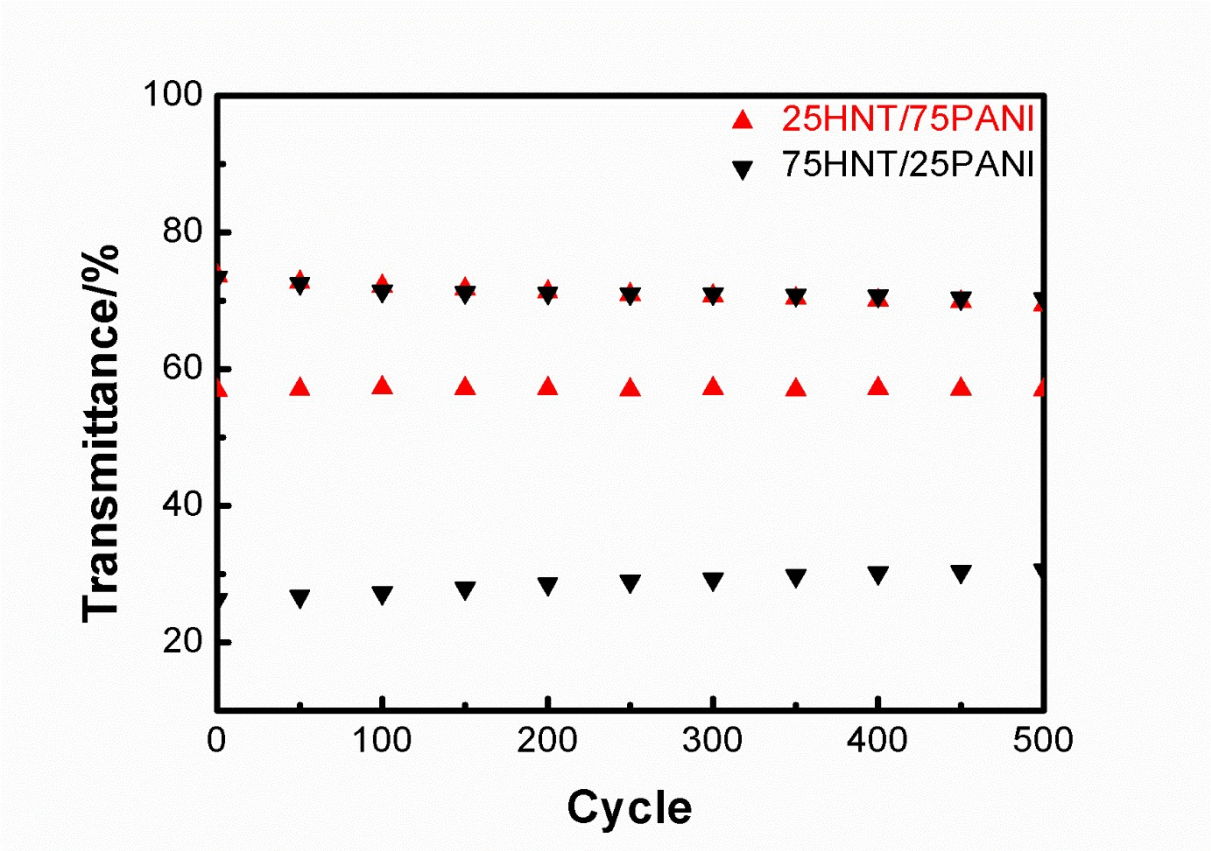

Figure S5. The cycling stability test of the 25HNT/75PANI and 75HNT/25PANI.

Table S2. The charge values and current density of each materials

Samples	Charge values (C/cm²)	Current density (mA/cm²)
PANI	0.08576	0.009
25HNT/75PANI	0.15105	0.012
50HNT/50PANI	0.06447	0.006
75HNT/25PNAI	0.06358	0.005