

Optimization of weight ratios of the components in polyaniline based composites on the basis of their electrochemical performances

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Supplementary Data:

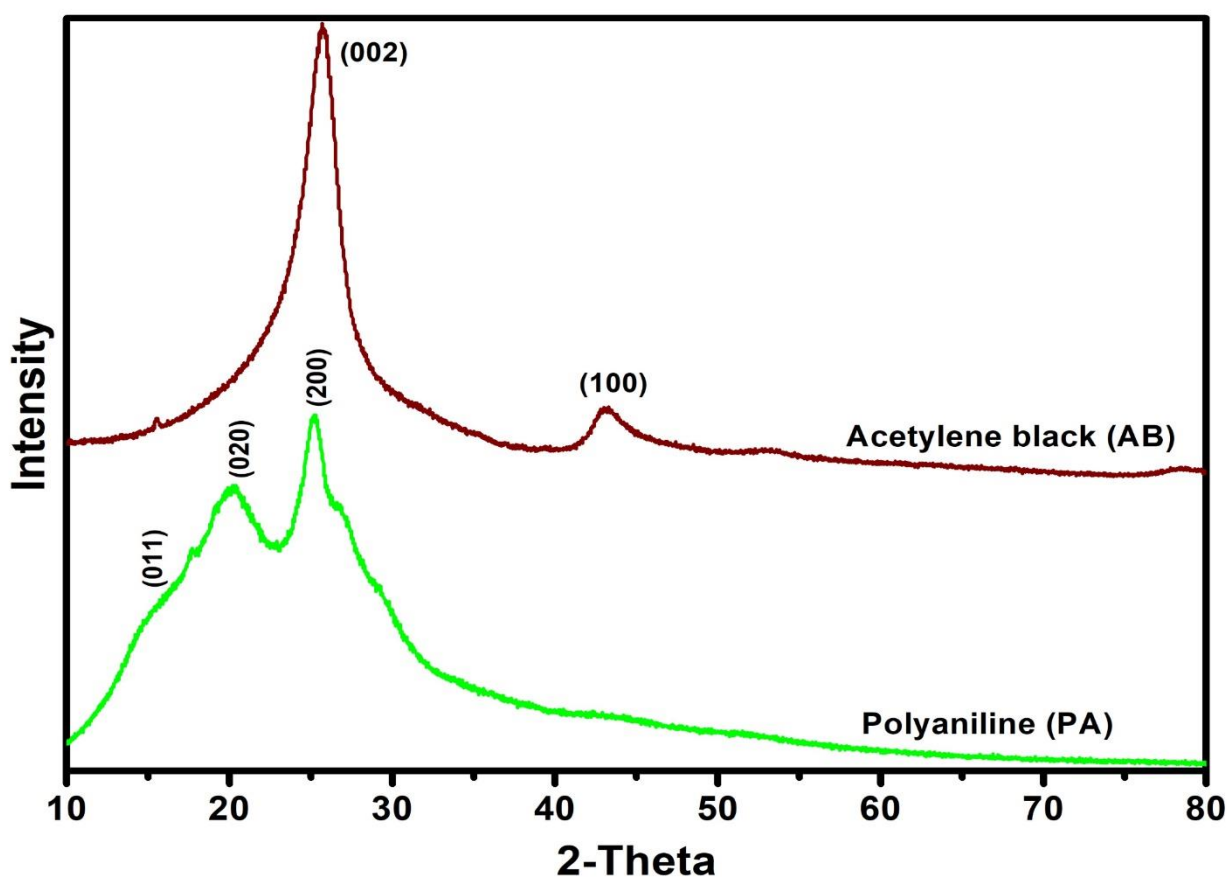


Fig. S1. Diffraction peaks of pure polyaniline and acetylene black

Pure polyaniline had XRD peaks at 14.77°, 20.72°, 24.93°. The diffraction peaks of pure acetylene black (AB) were found at 43.33° and 26.09°.

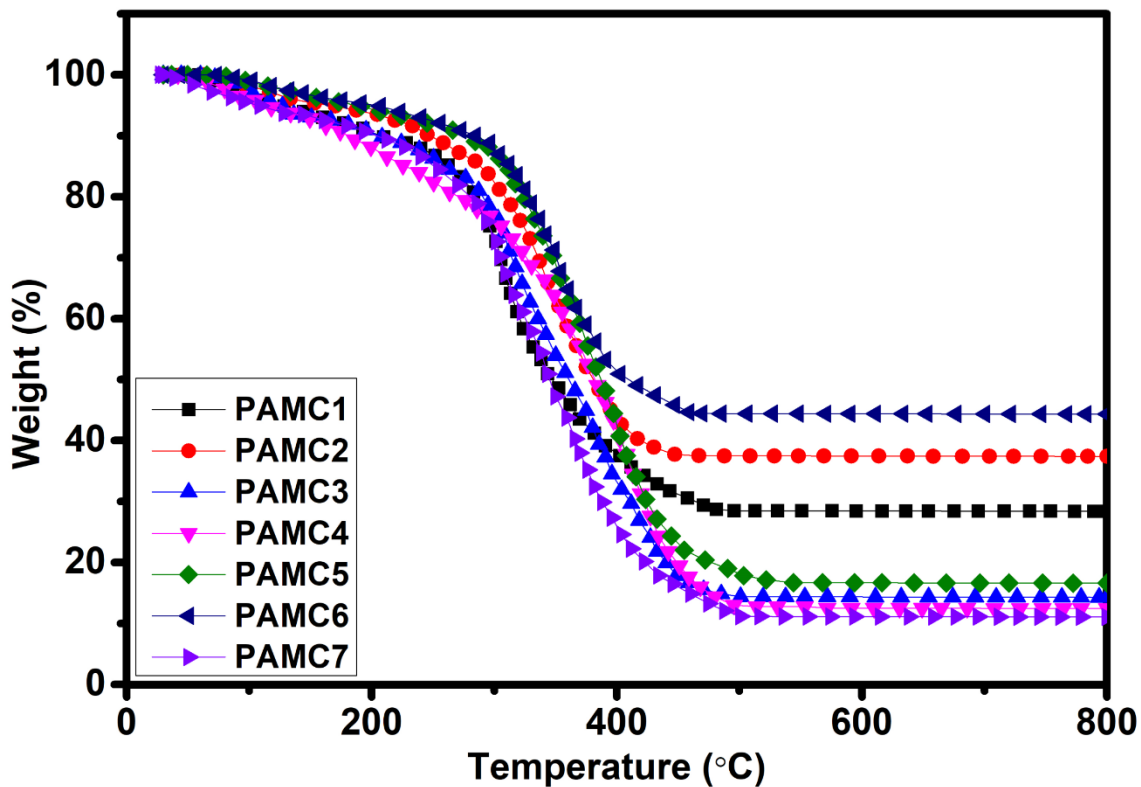


Fig. S2. TGA of synthesized composite materials

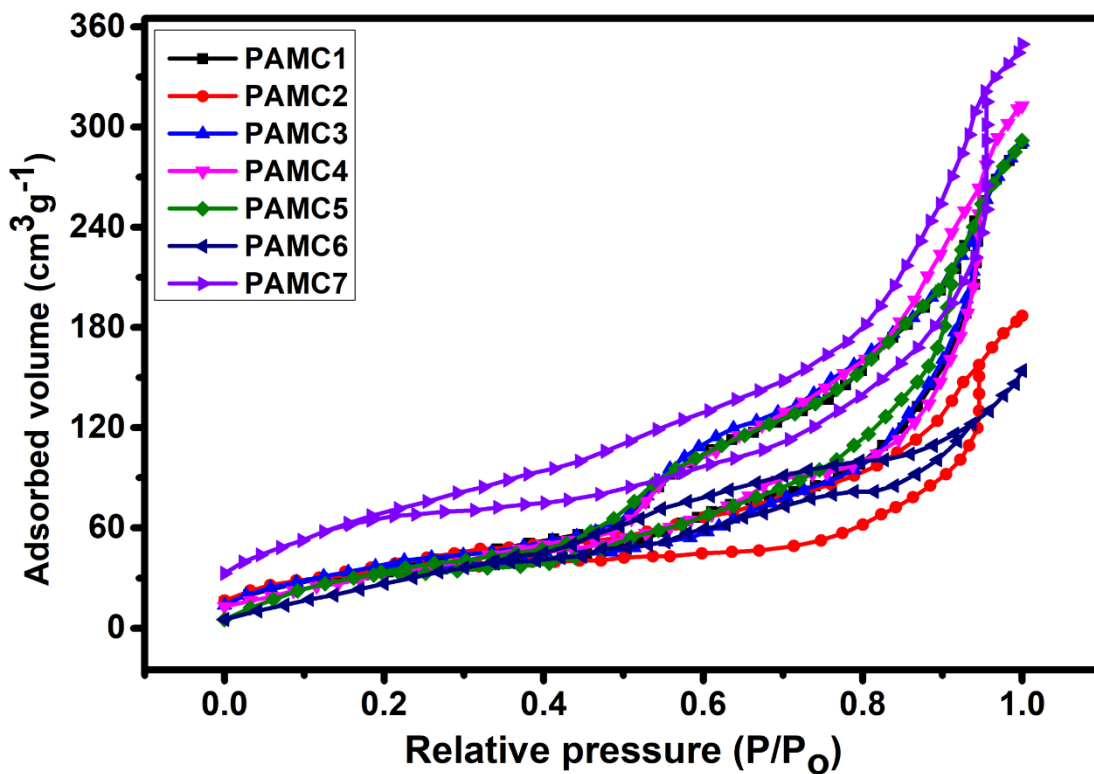


Fig. S3. BET of synthesized composite materials

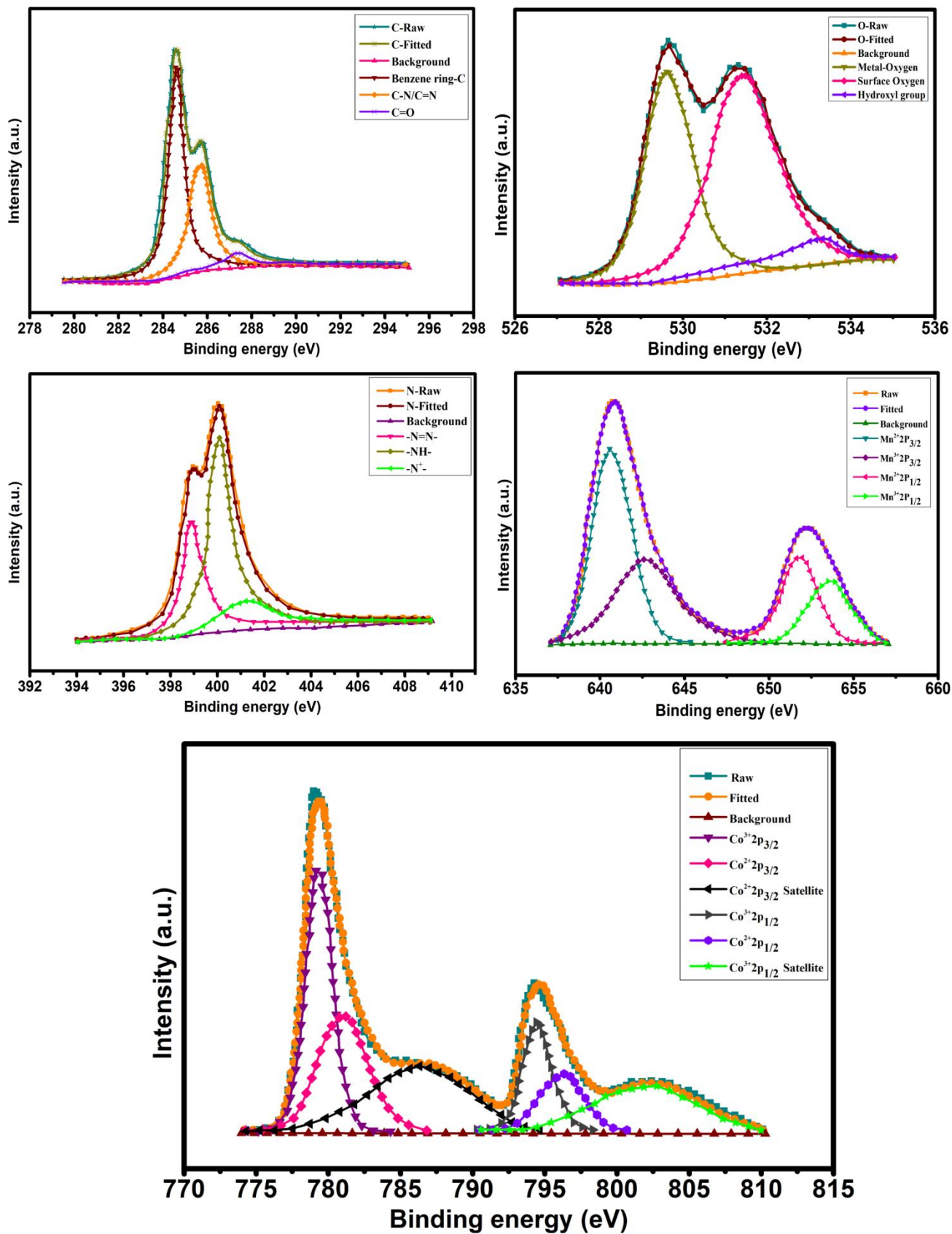


Fig. S4. XPS of PAMC1

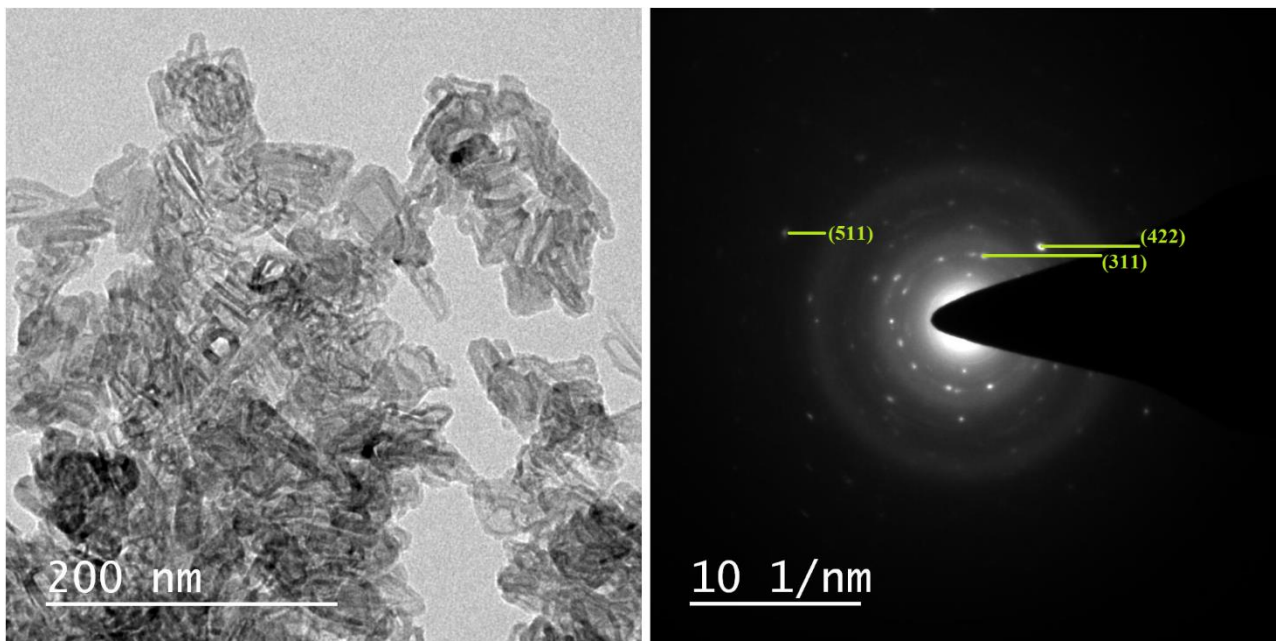


Fig. S5. TEM of PAMC1

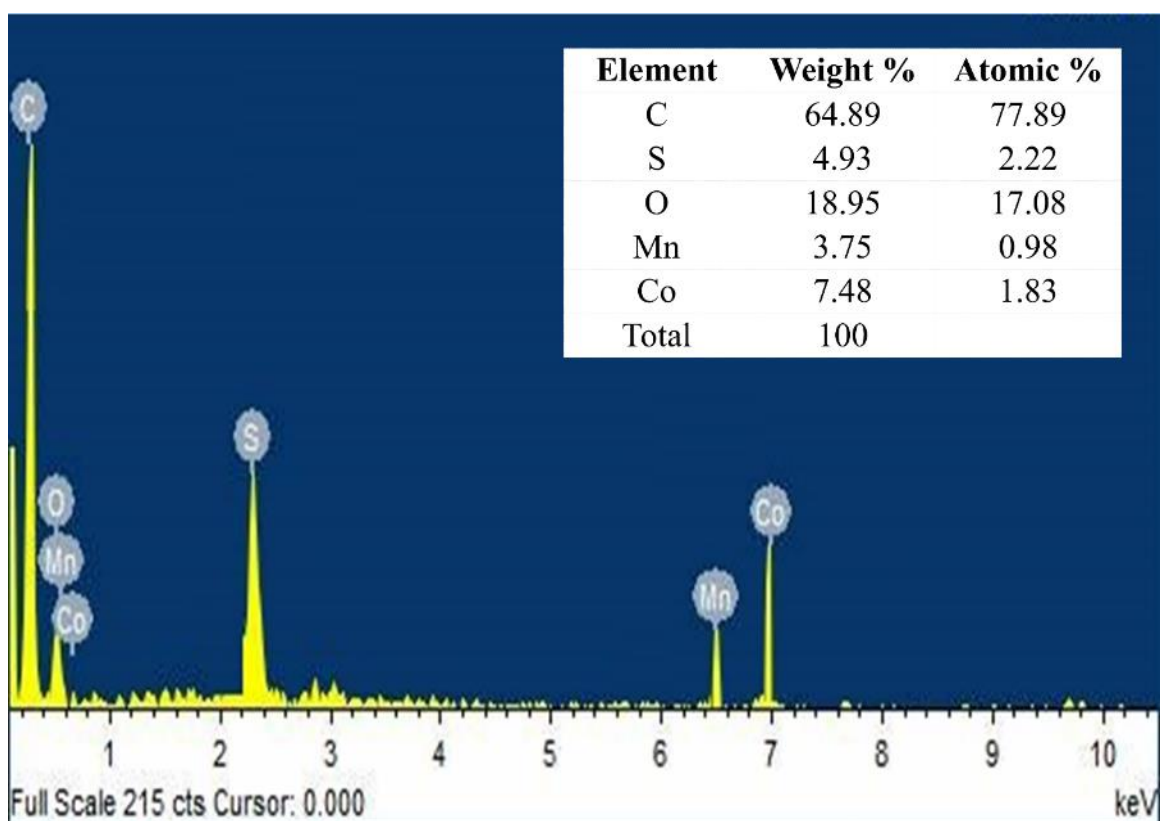


Fig. S6. EDX of PAMC1

Table S1 Oxidation-reduction peak positions of all the systems

Sample	CV 3E			CV 2E		
	Oxd ⁿ /Red ⁿ	Oxd ⁿ /Red ⁿ	Oxd ⁿ /Red ⁿ	Oxd ⁿ /Red ⁿ	Oxd ⁿ /Red ⁿ	Oxd ⁿ /Red ⁿ
PAMC1	0.37/0.29	0.56/0.47	0.71/0.64	0.36/0.25	0.55/0.44	0.71/0.63
PAMC2	0.35/0.28	0.56/0.47	0.71/0.65	0.36/0.26	0.56/0.45	0.71/0.64
PAMC3	0.34/0.29	0.55/0.44	0.71/0.63	0.36/0.26	0.56/0.44	0.71/0.63
PAMC4	0.35/0.28	0.55/0.44	0.71/0.65	0.35/0.29	0.55/0.45	0.71/0.62
PAMC5	0.35/0.28	0.56/0.47	0.71/0.63	0.37/0.28	0.55/0.46	0.71/0.63
PAMC6	0.34/0.28	0.55/0.46	0.71/0.65	0.36/0.26	0.55/0.47	0.71/0.63
PAMC7	0.36/0.28	0.56/0.47	0.71/0.65	0.35/0.27	0.54/0.46	0.71/0.64

Table S2 TGA and BET data

Sample	Weight left after TGA (%)	Specific surface area (m ² /g)
PAMC1	28.5	185
PAMC2	37.2	121
PAMC3	14.2	205
PAMC4	12.28	219
PAMC5	16.61	192
PAMC6	44.31	78
PAMC7	11.05	242

Table S3 Wavenumbers and corresponding functional groups

Wavenumbers (cm ⁻¹)	Functional groups
507	K-Br
565	Co-O
678	Mn-O
795	-CH/S-O
1010	O=S=O
1114	-N=Q=N-
1295	C-N
1479	C=C
1563	C=C
2918	NH
3237	-OH
3430	-CH/NH ₂ ⁺