Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supplementary Data

Selective Dye Adsorption by pH Modulation on Chemically Modified Nanopolyaniline by N-Grafting of Maleic Acid

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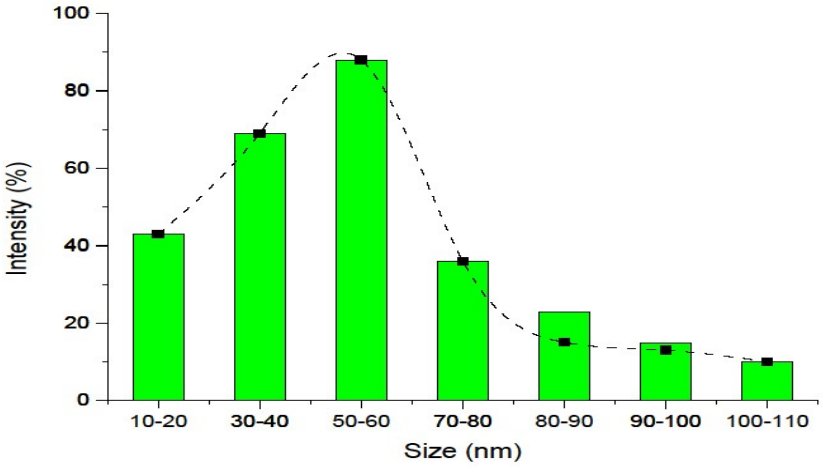


Fig.S1 Histogram graph of PANI-g-MA

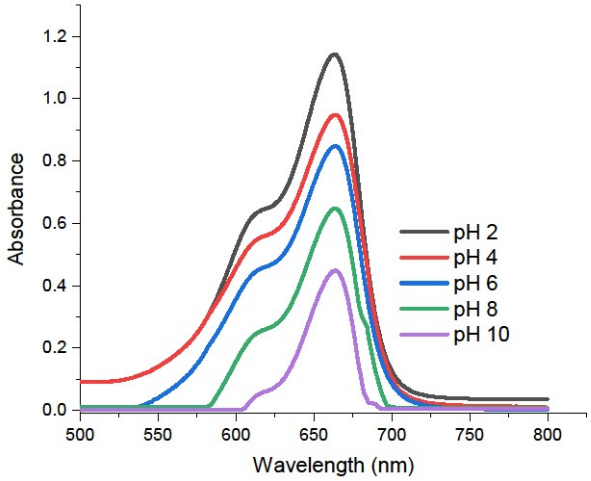


Fig.S2 UV-Vis spectra of MB dye adsorption by PANI-g-MA at different pH (Dose = 80 mg, dye concentration = 100 ppm, RT)

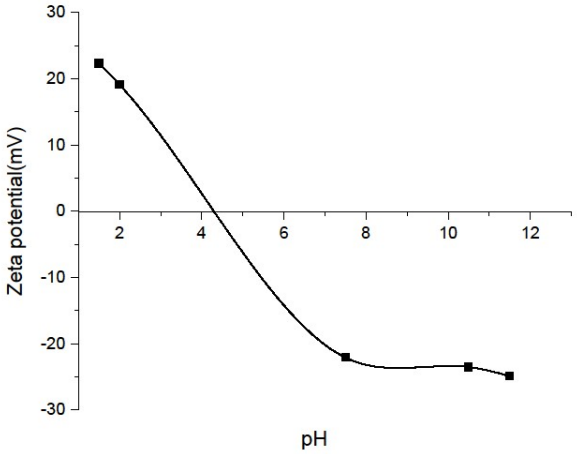


Fig.S3 Effect of pH on zeta potential of PANI-g-MA

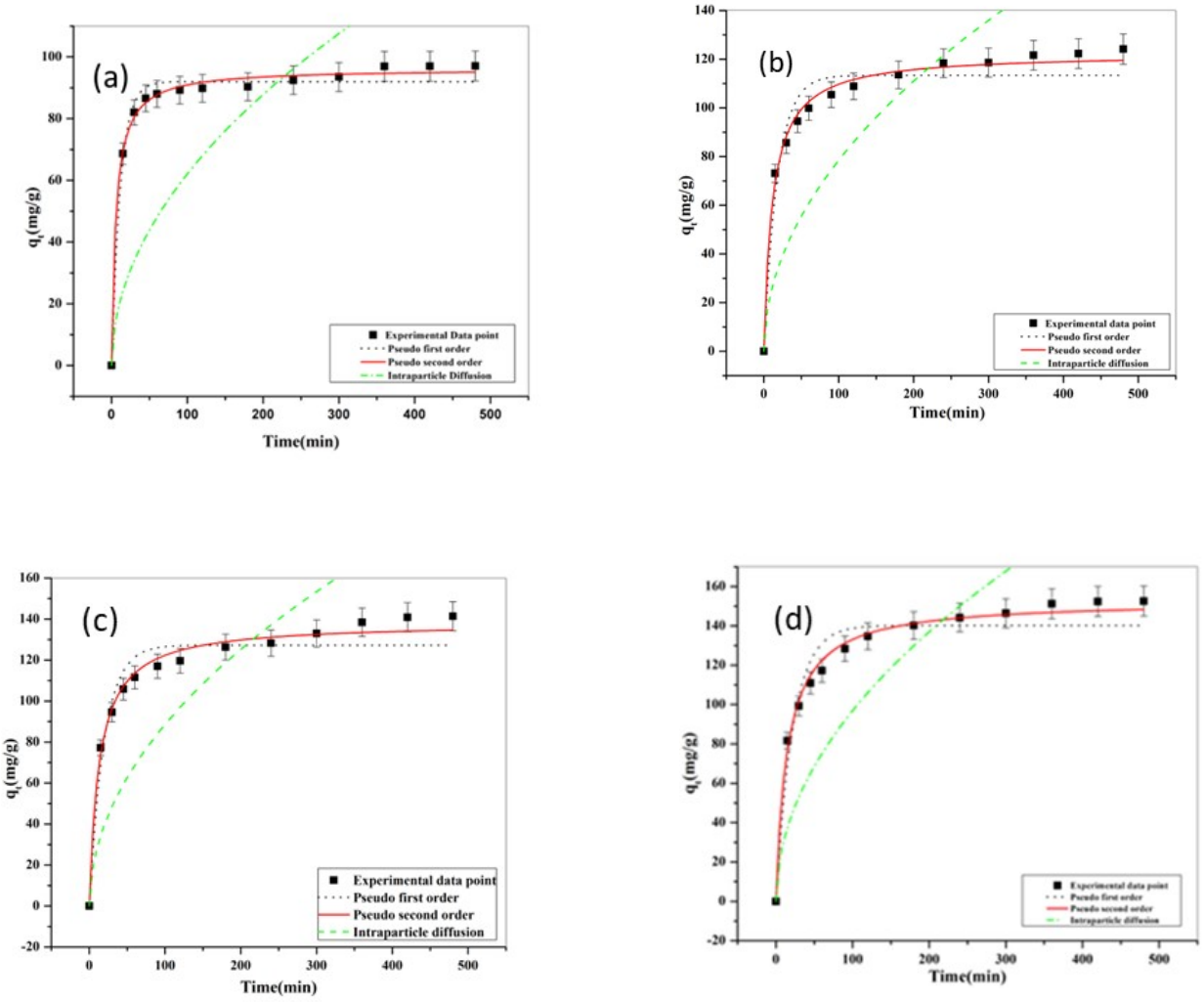
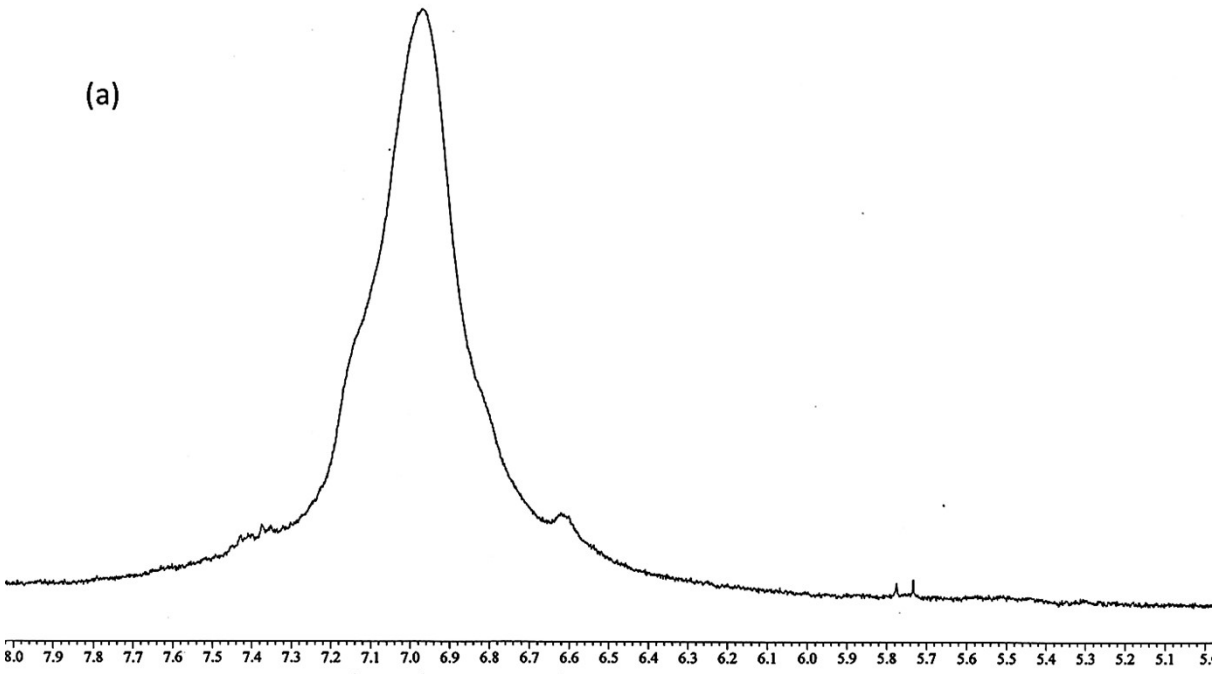


Fig.S4 Nonlinear kinetics plot of adsorption for different initial concentration of MB dye (a) 200 ppm (b) 300 ppm (c) 400 ppm (d) 500 ppm .



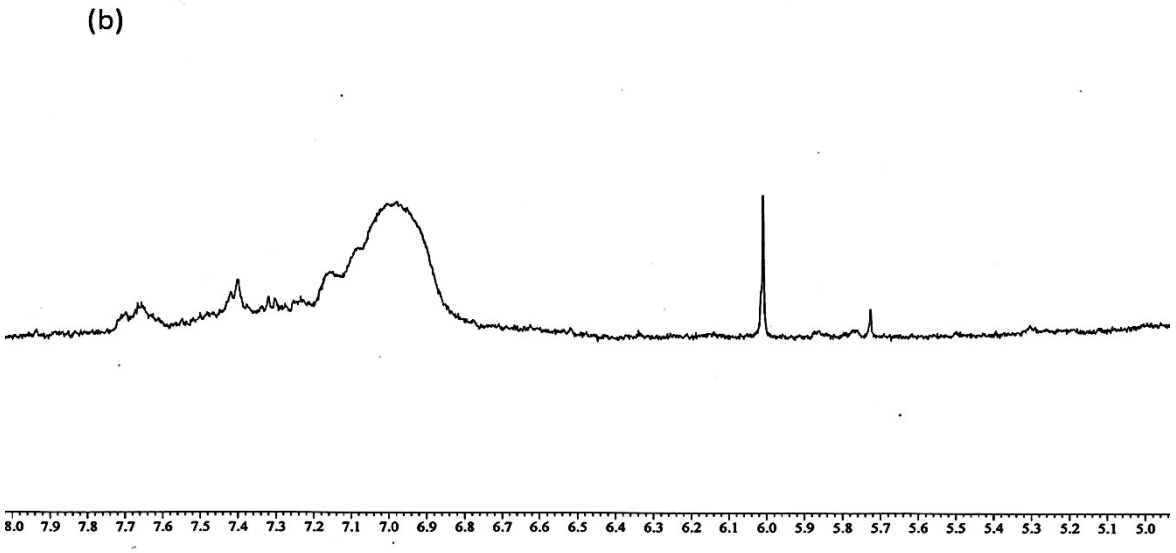


Fig. S5 ^{1}H NMR of (a) EBPANI (b) PANI-g-MA in DMSO- d6

Table.S1 Adsorption Kinetics parameter for nonlinear regression analysis

Dye			Pseudo-first-order					Pseudo-second-order					Intraparticle diffusion				
MB	Co (mg/L)	q_e,exp(mg g^{-1})	K_1	q_e,cal (mg g^{-1})	Adj R^2	X^2	SSE	K_2	q_e,cal (mg g^{-1})	Adj R^2	X^2	SSE	K_i	C	Adj R^2	X^2	SSE
	100	62.5	0.099	60.02	0.960	36.98	406.79	0.0028	62.47	0.999	36.41	400.58	0.850	46.90	0.757	37.19	3522.92
	200	97.05	0.086	91.97	0.907	36.92	406.14	0.00178	96.20	0.990	36.512	401.63	6.208	9.902	0.75	99.99	1099.99
	300	124.21	0.055	113.39	0.902	38.81	426.95	7.049	122.41	0.998	36.73	404.10	7.85	7.790	0.782	87.05	957.65
	400	141.40	0.051	127.26	0.902	38.85	427.45	5.54	138.28	0.997	36.81	404.93	8.855	1.978	0.881	47.33	520.71
	500	152.62	0.045	140.24	0.902	39.16	430.77	4.377	152.97	0.998	36.76	404.39	9.68	7.437	0.794	73.10	902.27

Table.S2 Adsorption isotherm parameter for nonlinear regression analysis

Dye	Langmuir adsorption isotherm						Freundlich adsorption isotherm				
MB	Q_{max}(mg/g)	K_L(L/mg)	R_L	Adj. R^2	X^2	SSE	n_F	K_F(L mg^{-1})	Adj. R^2	X^2	SSE
	170.30	0.028	0.07-0.28	0.989	0.180	0.361	3.82	36.35	0.989	0.181	0.362

Table.S3 Comparison of MB dye adsorption by PANI-g-MA with other PANI based adsorbents

Adsorbents	Dyes	Q_m(mg/g)	Sources
PANI hydrogel	MB	71.2	60
PANI Macro nanoparticles	MB	19.67	61
PANI/zirconium oxide	MB	35	62
PANI zirconium (IV) silicophosphate	MB	8.8	63
PANI-g-MA	MB	181.81	Present Study