Electronic Supplementary Information (ESI)

for

Rapid and high-capacity adsorption of sulfonated anionic dyes onto a basic bismuth(III) nitrate via bidentate bridging and electrostatic attracting interactions

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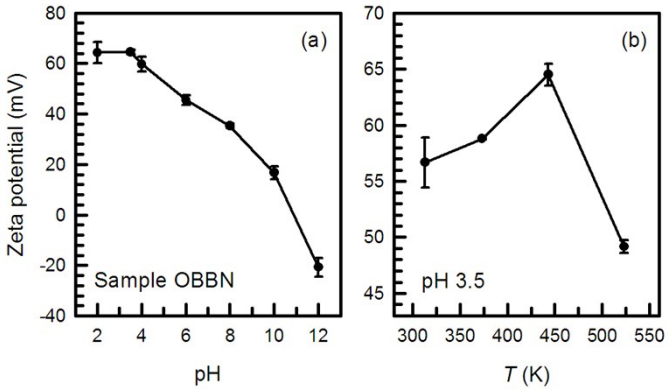

Fig. S1 (a) Effect of solution pH and heat treatment temperature on zeta potential of basic bismuth (III) nitrate samples.

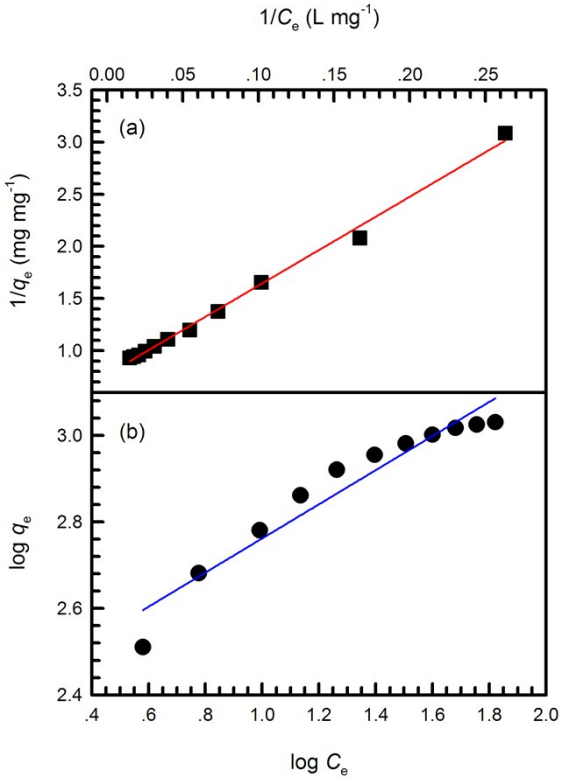

Fig. S2 (a) Langmuir and (b) Freundlich adsorption isotherm for MO adsorption on OBBN adsorbent at 303 K.

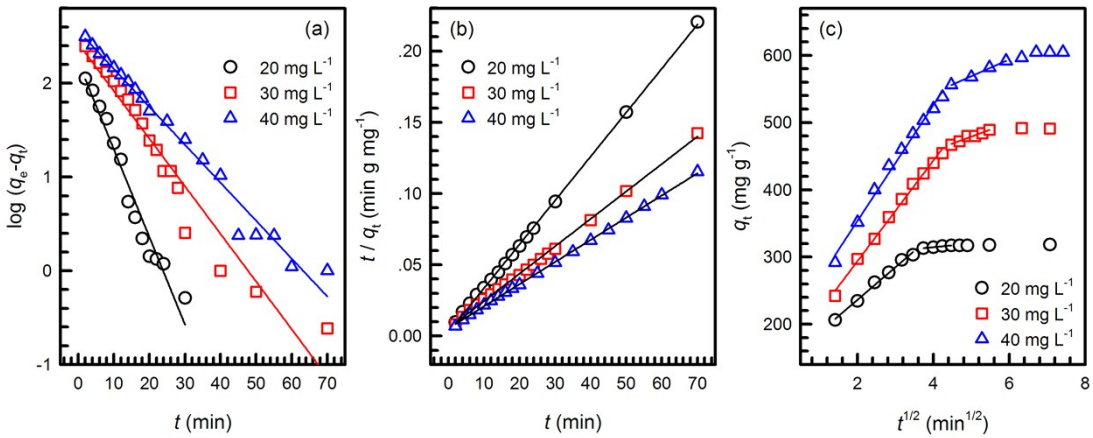

Fig. S3 (a) Pseudo- first -order kinetic, (b) Pseudo-second-order kinetic and (c) Weber–Morris intraparticle diffusion plots for MO adsorption on OBBN adsorbent at 303 K.

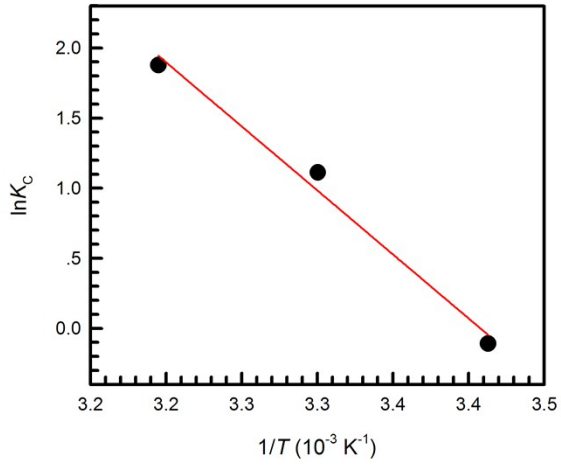

Fig. S4 Plot of ln K_C versus $1/T$ for estimation of thermodynamic parameters for MO adsorption on OBBN adsorbent (C_0 = 40 mg L^{-1}).

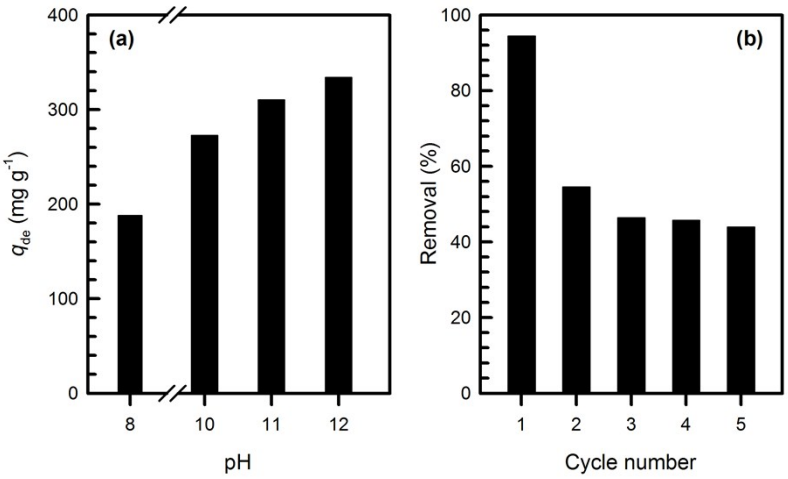

Fig. S5 (a) Effect of solution pH for MO desorption from OBBN and (b) variation of the MO removal percentage on OBBN adsorbent as a function of regeneration cycles.

Table S1 Isotherm parameters for MO adsorption on OBBN adsorbent. (T = 303 K, m = 10 mg)

Langmuir model				Freundlich model		
q_m (mg g^{-1})	K_L (L mg^{-1})	R^2	R_L	K_F	n	R^2
1298	0.0903	0.9950	0.0845	232.8	2.532	0.9313

Table S2 Adsorption kinetic parameters for MO adsorption on OBBN at different initial concentrations. (T = 303 K, m = 10 mg)

C_0 (mg L^{-1})	$q_{e,exp}$ (mg/g)	Pseudo-first order			Pseudo-second order			
		q_e (mg g^{-1})	k_1 (min^{-1})	R^2	q_e (mg g^{-1})	k_2 (mg mg^{-1} min^{-1})	R^2	h (mg g^{-1} min^{-1})
20	327.8	169.8	0.225	0.9638	322.6	3.559	0.9995	370.37
30	501.3	266.7	0.117	0.9431	526.3	0.694	0.9986	192.31
40	613.6	362.2	0.093	0.9801	625.0	0.483	0.9995	188.70

Table S3 Intraparticle diffusion model parameters of MO adsorption on OBBN adsorbent. (T = 303 K, m = 10 mg)

C_0 (mg L^{-1})	$k_{i,1}$ (mg g^{-1} min$^{-1/2}$)	C_1 (mg g^{-1})	R^2	$k_{i,2}$ (mg g^{-1} min$^{-1/2}$)	C_2	R^2 (mg g^{-1})
20	48.52	139.2	0.9933	5.59	292.2	0.9815
30	74.86	144.0	0.9947	20.76	375.3	0.9593
40	86.12	181.5	0.9914	24.98	444.0	0.9952