

Supporting Information

Study of adsorption efficiencies of biopolymer-based composites of chitosan with sulfonic acid functionalized imidazolium ionic liquid for elimination of organic dyes in wastewater

Subham Paul ^a, Amlan Jyoti Gogoi ^a, Krishna Dev ^a, Prapti Priyam Handique ^a, Debanga Bhusan Bora ^a, Sangeeta Kalita ^a, Ruli Borah ^{a *}

Table S1: Experimental data of kinetics study.

t (hrs)	Removal (%)	C_t (mg/L)	$t^{1/2}$	q_t	t/q_t	$\ln(q_e - q_t)$
0.5	34	3.4	0.707107	0.85	0.588235	0.09531
0.75	52	5.2	0.866025	1.3	0.576923	-0.43078
1	72	7.2	1	1.8	0.555556	-1.89712
2	73	7.3	1.414214	1.825	1.09589	-2.07944
3	78	7.8	1.732051	1.95	1.538462	0
4	64	6.4	2	1.6	2.5	-1.04982
6	65	6.5	2.44949	1.625	3.692308	-1.12393

Table S2: Experimental data of adsorption isotherm study.

289K						
C_o (mg/L)	Removal (%)	C_e (mg/L)	q_e (mg/g)	C_e/q_e	$\ln C_e$	$\ln q_e$
2.5	83	0.425	0.51875	0.819277	-0.85567	-0.65633
5	83	0.85	1.0375	0.819277	-0.16252	0.036814
10	78	2.2	1.95	1.128205	0.788457	0.667829
20	47	10.6	2.35	4.510638	2.360854	0.854415

308K						
C_o (mg/L)	Removal (%)	C_e (mg/L)	q_e (mg/g)	C_e/q_e	$\ln C_e$	$\ln q_e$
2.5	59	1.025	0.36875	2.779661	0.024693	-0.99764
5	58	2.1	0.725	2.896552	0.741937	-0.32158
10	51	4.9	1.275	3.843137	1.589235	0.242946
20	29	14.2	1.45	9.793103	2.653242	0.371564

318K						
C_o (mg/L)	Removal (%)	C_e (mg/L)	q_e (mg/g)	C_e/q_e	$\ln C_e$	$\ln q_e$
2.5	68	0.8	0.425	1.882353	-0.22314	-0.85567
5	58	2.1	0.725	2.896552	0.741937	-0.32158
10	57	4.3	1.425	3.017544	1.458615	0.354172
20	47	10.6	2.35	4.510638	2.360854	0.854415

Table S3: Experimental data of adsorption study.

Amount (mg)	Removal (%)	$C_o - C_e$ (mg/L)	Adsorption capacity (mg/g)
5	24	2.4	4.8
10	33	3.3	3.3
20	66	6.6	3.3
30	69	6.9	2.3
40	78	7.8	1.95
50	79	7.9	1.58