

Supporting information

Simultaneous and rapid dye removal in the presence of ultrasound wave and nano structured material: Experimental design methodology, equilibrium and kinetics

Ebrahim Sharifpour ^a, Hedayat Haddadi ^{a,b}, Mehrorang Ghaedi ^{*c}, Arash Asfaram ^c, Shaobin Wang ^d

^a *Department of Chemistry, Faculty of Sciences, Shahrekord University, P.O. Box 115, Shahrekord, Iran*

^b *Nanotechnology Research Center, Shahrekord University, 8818634141, Shahrekord, Iran*

^c *Chemistry Department, Yasouj University, Yasouj 75918-74831, Iran.*

^d *Department of Chemical Engineering, Curtin University, G.P.O. Box U1987, Perth, Western Australia 6845, Australia*

* Corresponding author at: Tel.: +98 741 2223048; fax: +98 741 2223048.
E-mail address: m_ghaedi@mail.yu.ac.ir; m_ghaedi@yahoo.com (M. Ghaedi)

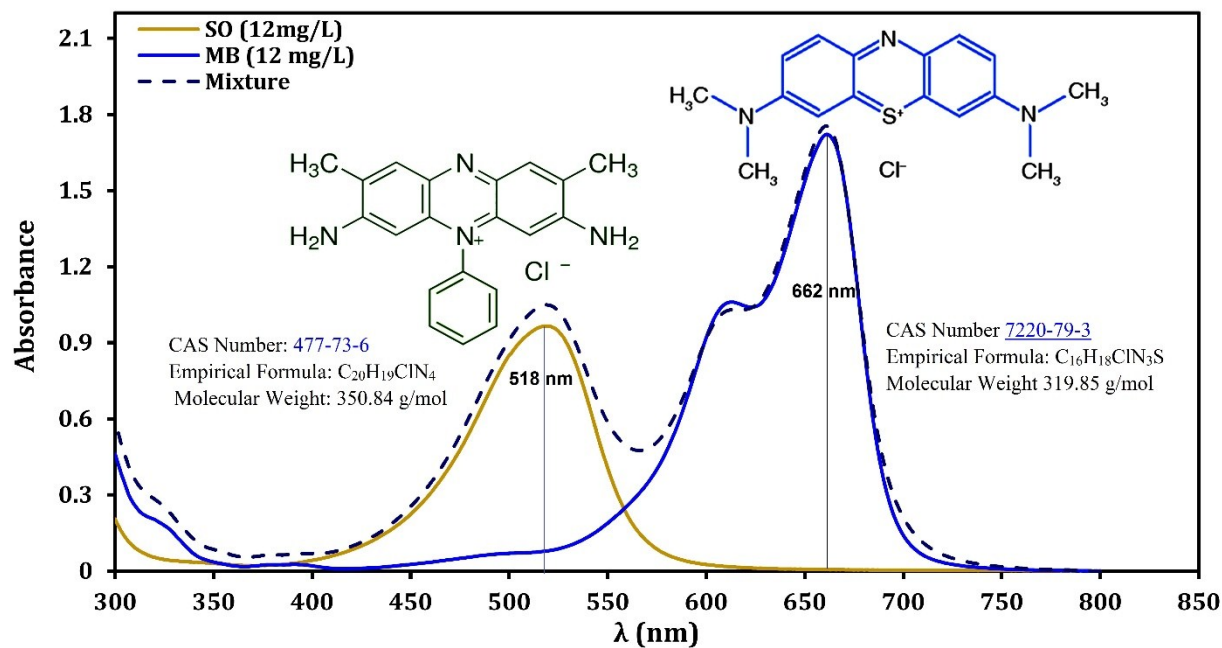


Fig. S1. Absorption spectra of: SO; MB, their mixture spectrum and chemical structure.

Table S1. Analysis of variance (ANOVA) for the response surface quadratic model of the yield of dyes adsorption.

Source of variation	R% MB						R% SO					
	Sum of square	Df ^a	Mean square	F-value	P-value	Status	Sum of square	Df ^a	Mean square	F-value	P-value	Status
Model	5320.781	14	380.056	185.890	< 0.0001	*	8049.948	14	574.996	70.243	< 0.0001	*
A	1930.252	1	1930.252	944.112	< 0.0001	*	4294.418	1	4294.42	524.62	< 0.0001	*
B	281.273	1	281.273	137.575	< 0.0001	*	335.545	1	335.545	40.991	< 0.0001	*
C	2098.610	1	2098.610	1026.46	< 0.0001	*	21.738	1	21.738	2.656	0.1227	**
D	34.804	1	34.804	17.023	0.00079	*	2991.059	1	2991.06	365.39	< 0.0001	*
AB	12.257	1	12.257	5.995	0.02625	*	2.221	1	2.221	0.271	0.6096	**
AC	301.928	1	301.928	147.677	< 0.0001	*	14.821	1	14.821	1.811	0.1972	**
AD	5.875	1	5.875	2.874	0.1094	**	16.243	1	16.243	1.984	0.1781	**
BC	89.661	1	89.661	43.854	< 0.0001	*	4.841	1	4.841	0.591	0.4531	**
BD	0.153	1	0.153	0.075	0.7880	**	29.700	1	29.700	3.628	0.0750	**
CD	73.271	1	73.271	35.838	< 0.0001	*	7.291	1	7.291	0.891	0.3593	**
A ²	253.755	1	253.755	124.115	< 0.0001	*	10.929	1	10.93	1.335	0.2649	**
B ²	25.844	1	25.844	12.641	0.00264	*	233.071	1	233.07	28.47	< 0.0001	*
C ²	284.670	1	284.670	139.236	< 0.0001	*	9.999	1	9.999	1.222	0.2854	**
D ²	3.531	1	3.531	1.727	0.2073	**	65.808	1	65.808	8.039	0.0119	*
Residual	32.712	16	2.045				130.974	16	8.186			
Lack-of-Fit	18.998	10	1.900	0.831	0.6213	**	104.334	10	10.433	2.350	0.1539	**
Pure Error	13.714	6	2.286				26.639	6	4.440			
Total	5353.493	30					8180.922	30				
Quadratic Summary Statistics												
Standard Deviation (SD)			1.430				2.861					
Mean			85.73				68.00					
Coefficient of Variation (CV %)			1.668				4.208					
R-Squared (R ²)			0.9939				0.9840					
Adj-R-Squared (R ² _{Adj})			0.9885				0.9700					
Pred-R-Squared (R ² _{Pred})			0.9761				0.9221					
Adequate precision (AP)			46.61				31.87					

^a Degree of freedom

*significant

**not significant