Supporting information

Design of a Composite Based on Polyamide Fabric-Hydrogel-Zinc Oxide Particles to Act as Adsorbent and Photocatalyst

Daniela Atanasova [1], Miglena Irikova [1], Desislava Staneva [1,*] and Ivo Grabchev [2,*]

[1] Department of Textile, Leader, and Fuels, University of Chemical Technology and Metallurgy, 1756 Sofia, Bulgaria
[2] Faculty of Medicine, Sofia University St. "Kliment Ohridski", 1407 Sofia, Bulgaria
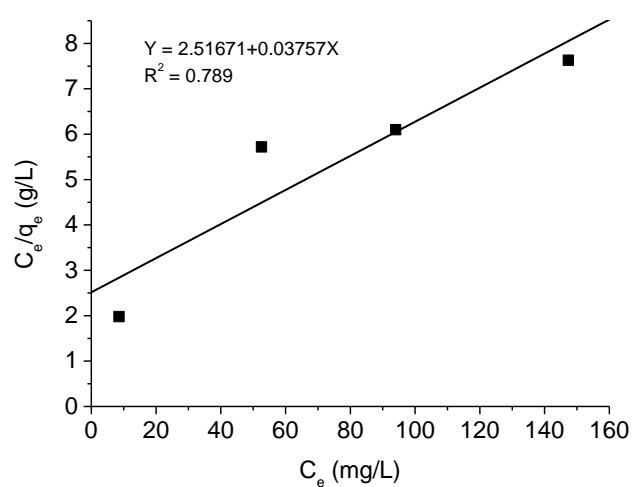* Correspondence: grabcheva@mail.bg (D.S.); i.grabchev@chem.uni-sofia.bg (I.G.)
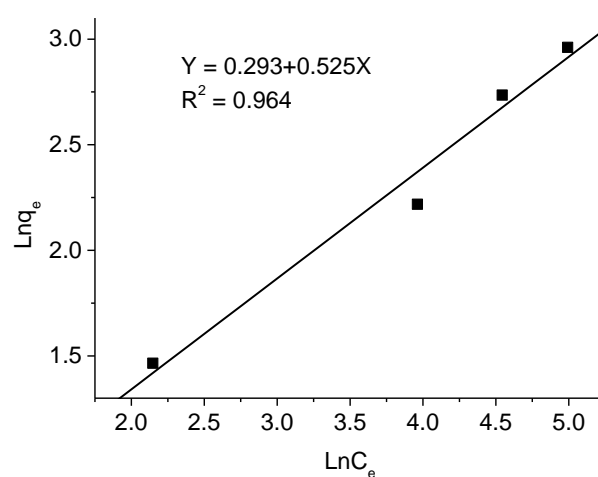
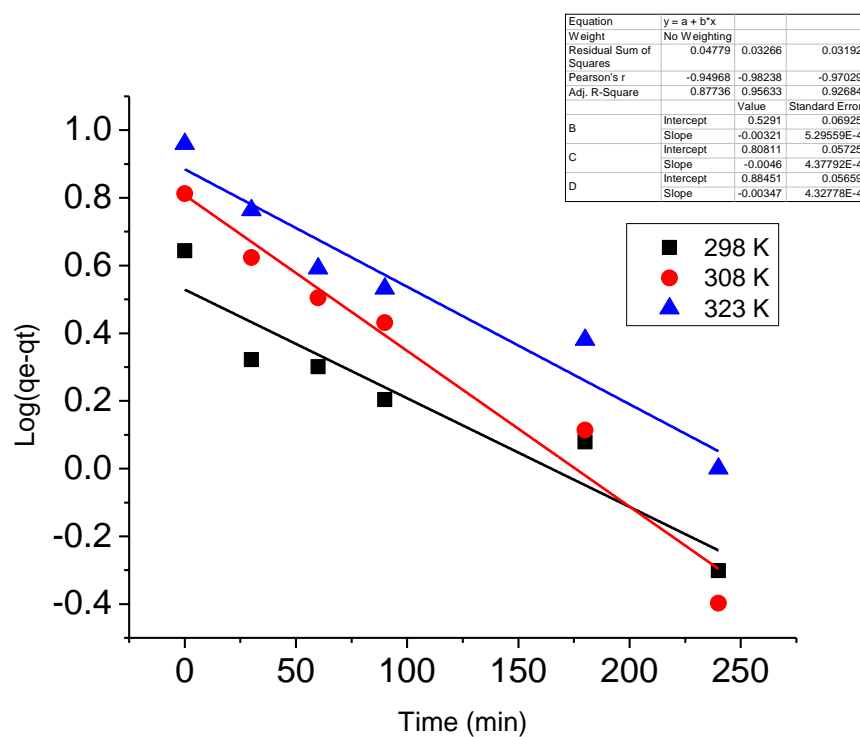**Figure S1.** Langmuir adsorption isotherm.

Figure S2. Freundlich isotherm.

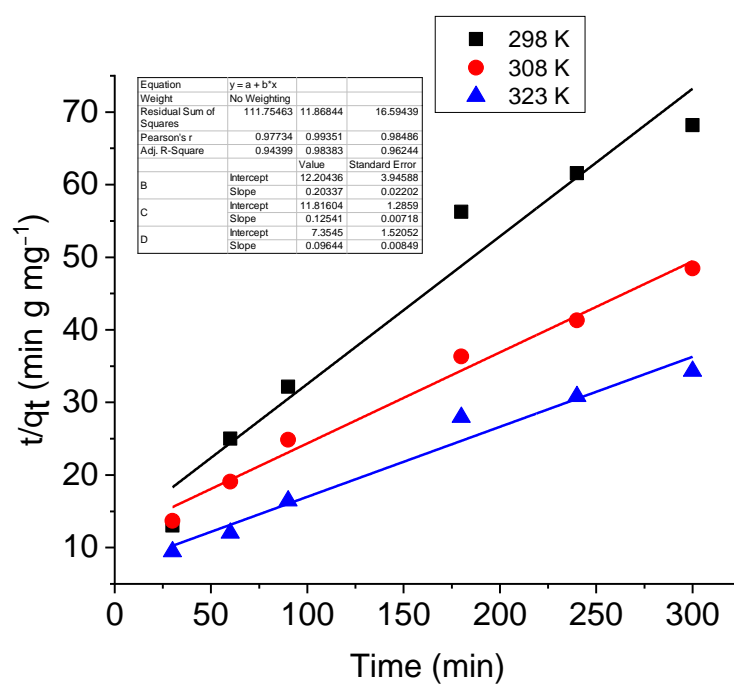**Figure S3.** Pseudo-first-order at 298 K, 308 K and 323 K.

Equation	y = a + b*x		
Weight	No Weighting		
Residual Sum of Squares	0.04779	0.03266	0.03192
Pearson's r	-0.94968	-0.98238	-0.97029
Adj. R-Square	0.87736	0.95633	0.92684
		Value	Standard Error
B	Intercept	0.5291	0.06925
	Slope	-0.00321	5.29559E-4
C	Intercept	0.80811	0.05725
	Slope	-0.0046	4.37792E-4
D	Intercept	0.88451	0.05659
	Slope	-0.00347	4.32778E-4

Figure S4. Pseudo-second-order at 298 K, 308 K and 323 K.

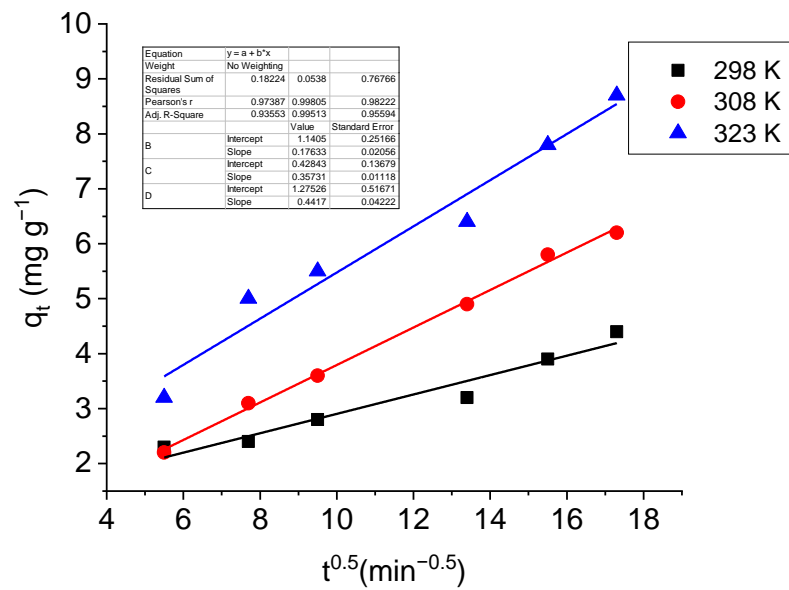| Equation	y = a + b*x		
Weight	No Weighting		
Residual Sum of Squares	111.75463	11.86844	16.59439
Pearson's r	0.97734	0.99351	0.98486
Adj. R-Square	0.94399	0.98383	0.96244
		Value	Standard Error
B	Intercept	12.20436	3.94588
	Slope	0.20337	0.02202
C	Intercept	11.81604	1.2859
	Slope	0.12541	0.00718
D	Intercept	7.3545	1.52052
	Slope	0.09644	0.00849

Figure S5. Diffusion kinetic model of the dye adsorption onto composite material PA30 at different temperature.

Equation	y = a + b*x		
Weight	No Weighting		
Residual Sum of Squares	0.18224	0.0538	0.76766
Pearson's r	0.97387	0.99805	0.98222
Adj. R-Square	0.93553	0.99513	0.95594
		Value	Standard Error
B	Intercept	1.1405	0.25166
	Slope	0.17633	0.02056
C	Intercept	0.42843	0.13679
	Slope	0.35731	0.01118
D	Intercept	1.27526	0.51671
	Slope	0.4417	0.04222

Figure S6. Temperature dependence of the distribution coefficient.

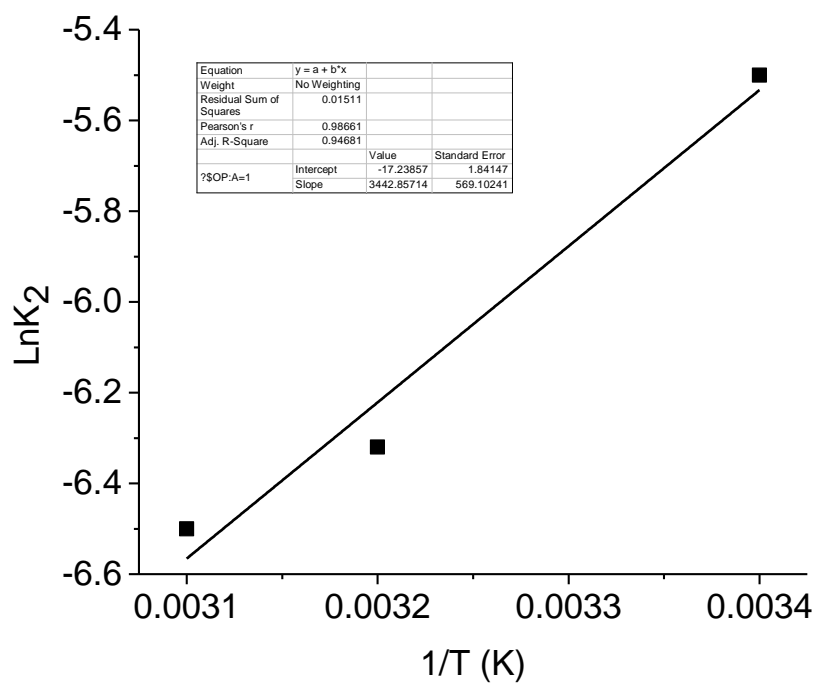| Equation	y = a + b*x	
Weight	No Weighting	
Residual Sum of Squares	0.00978	
Pearson's r	-0.98198	
Adj. R-Square	0.92857	
	Value	Standard Error
B Intercept	5.66071	1.48118
Slope	-2378.57143	457.75628

Figure S7. Dependence of LnK_2 on $1/T$.

Table S1. Bacterial growth Log (CFU mL^{-1}) after incubation with PA30.

Strain	Time of incubation (h)	Log (CFU mL^{-1})		
		Control	Cotton fabric	PA30
S. aureus	1	7.9 ± 0.14	8 ± 0.14	6.33 ± 0.08
	2	7.8 ± 0.05	8 ± 0.08	Full kill
	3	7.7 ± 0.1	7.9 ± 0.13	Full kill
E. coli	1	8.9 ± 0.05	8.8 ± 0.11	7.1 ± 0.05
	2	8.9 ± 0.14	8.9 ± 0.13	7 ± 0.07
	3	8.8 ± 0.1	8.8 ± 0.04	7 ± 0.06