

Effective carbon/TiO₂ gel for enhanced adsorption and demonstrable visible light driven photocatalytic performance

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Supporting Information

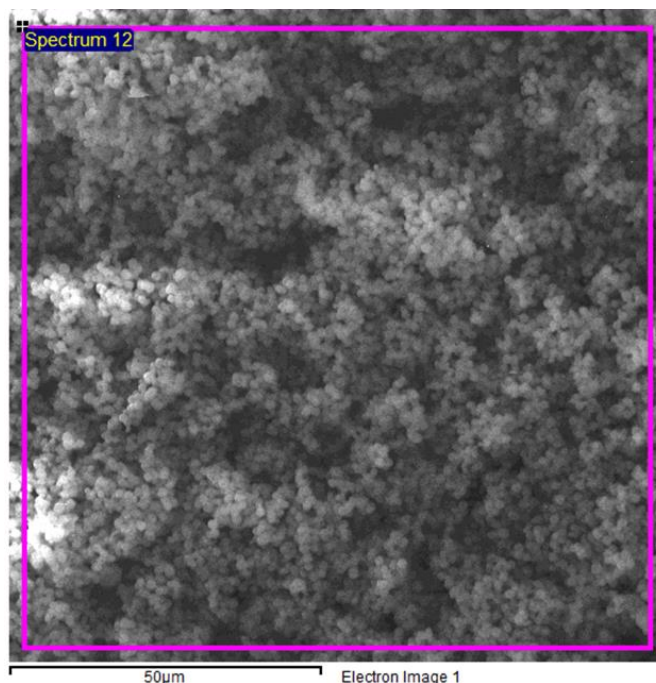


Figure S1: Zone of Energy dispersive x-ray (EDX) spectra

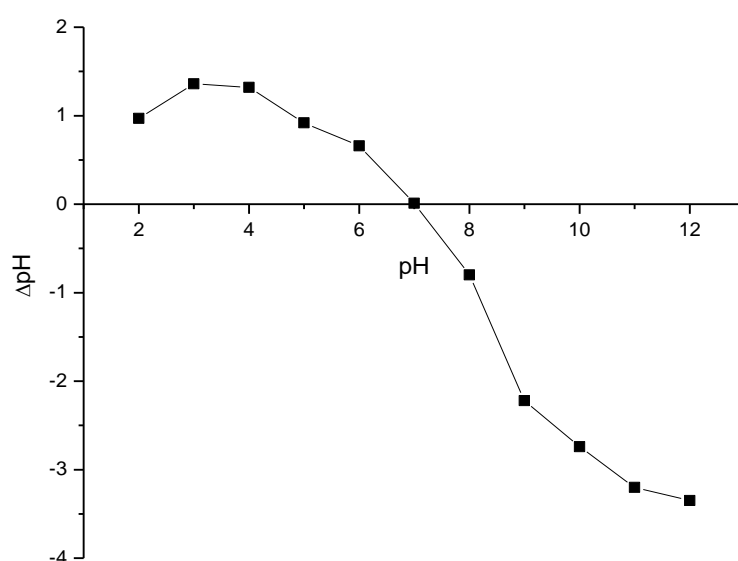


Figure S2: Point of zero charge (pHpzc) on the surface of RF/TiO₂

Table S1. Kinetic parameters obtained by fitting kinetic data for MB adsorption to RF/TiO₂.

Model	50 mg L ⁻¹	100 mg L ⁻¹	150 mg L ⁻¹	200 mg L ⁻¹
q _e experimental (mg g ⁻¹)	112.7	175.9	201.5	212.6
<i>Pseudo first order</i>				
q _e , mg g ⁻¹	107.7	167.5	183.1	206.9
K ₁ (min ⁻¹)	0.081	0.119	0.126	0.171
R ²	0.975	0.963	0.948	0.985
ARE	-0.524	0.888	9.387	-2.535
SSE	490.3	674.1	3452	572.9
RMSE	7.002	8.210	18.58	7.569
HYBRID	0.036	-0.061	-0.647	0.174
MPSD	3.339	5.654	59.74	16.13
Chi square	5.325	6.504	21.69	3.713
<i>Pseudo second order</i>				
q _e , mg g ⁻¹	116.9	178.54	203.6	217.59
K ² (x 10 ⁻³ g mg ⁻¹ min ⁻¹)	1.01	1.10	1.06	1.48
R ²	0.998	0.989	0.987	0.996
ARE	-2.770	0.113	4.432	-2.949
SSE	817.6	505.3	1492	856.5
RMSE	9.042	7.108	12.21	9.255
HYBRID	0.191	-0.007	-0.305	0.203
MPSD	17.63	0.719	28.21	18.77
Chi square	9.068	3.726	8.589	5.124

Table S2. Isotherm parameters obtained by fitting MB adsorption data for RF/TiO₂ to the Langmuir, Freundlich, SIPS and Toth equations

Langmuir	q_m (mg g ⁻¹)	254.7
	K_L (L mg ⁻¹)	0.073
	ARE	-16.69
	SSE	3566
	RMSE	36.64
	HYBRID	19.91
	MPSD	-20.87
	Chi square	118.0
	R ²	0.960
Freundlich	K_F mg g ⁻¹ (L/mg) ^{1/n}	54.85
	n_F	3.199
	ARE	-21.25
	SSE	6149
	RMSE	27.72
	HYBRID	-26.56
	MPSD	150.3
	Chi square	86.43
	R ²	0.865
SIPS	q_s (mg g ⁻¹)	218.7
	K_s	0.010
	n_s	1.913
	ARE	-9.675
	SSE	3930
	RMSE	22.17
	HYBRID	-12.09
	MPSD	68.41
	Chi square	31.21
Toth	q_m (mg g ⁻¹)	558.5
	K_T	0.029
	n_T	1.403
	ARE	-13.83
	SSE	4033
	RMSE	22.45
	HYBRID	-17.28
	MPSD	97.76
	Chi square	29.99
	R ²	0.991