

## Supplementary materials

**Table S1: The photocatalysis data used for the CGCNN-MF-ANN model**

Photocat.	Contaminants	Photocat. dosage (g/L)	Photocat. size (nm)*	Initial conc. (mg/L)	pH	Light type <sup>#</sup>	k (min <sup>-1</sup> )	Ref
ZnO	Phenoxyacetic acid	0.30	N/A	15.00	6.00	1	0.0499	1
ZnO	Phenoxyacetic acid	0.50	N/A	15.00	6.00	1	0.0395	1
ZnO	Phenoxyacetic acid	0.30	N/A	25.00	6.00	1	0.0261	1
ZnO	Phenoxyacetic acid	0.50	N/A	25.00	6.00	1	0.0220	1
ZnO	Phenoxyacetic acid	0.30	N/A	15.00	8.00	1	0.0632	1
ZnO	Phenoxyacetic acid	0.50	N/A	15.00	8.00	1	0.0502	1
ZnO	Phenoxyacetic acid	0.30	N/A	25.00	8.00	1	0.0305	1
ZnO	Phenoxyacetic acid	0.50	N/A	25.00	8.00	1	0.0324	1
ZnO	Phenoxyacetic acid	0.20	N/A	20.00	7.00	1	0.0194	1
ZnO	Phenoxyacetic acid	0.60	N/A	20.00	7.00	1	0.0174	1
ZnO	Phenoxyacetic acid	0.40	N/A	10.00	7.00	1	0.0762	1
ZnO	Phenoxyacetic acid	0.40	N/A	30.00	7.00	1	0.0229	1
ZnO	Phenoxyacetic acid	0.40	N/A	20.00	5.00	1	0.0225	1
ZnO	Phenoxyacetic acid	0.40	N/A	20.00	9.00	1	0.0375	1
ZnO	Phenoxyacetic acid	0.40	N/A	20.00	7.00	1	0.0595	1
ZnO	Phenoxyacetic acid	0.40	N/A	17.00	7.93	1	0.0579	1
ZnO	Phenoxyacetic acid	0.40	N/A	17.00	7.12	1	0.0650	1
ZnO	Phenoxyacetic acid	0.40	N/A	19.00	7.21	1	0.0594	1
ZnO	Phenoxyacetic acid	0.40	N/A	16.00	6.73	1	0.0641	1
ZnO	Phenoxyacetic acid	0.40	N/A	15.00	7.01	1	0.0745	1
ZnO	4-Nitrophenol	1.50	100-4000	27.82	1.00	3	0.0133	2
ZnO	4-Nitrophenol	1.50	100-4000	27.82	3.00	3	0.0171	2
ZnO	4-Nitrophenol	1.50	100-4000	27.82	5.00	3	0.0242	2
ZnO	4-Nitrophenol	1.50	100-4000	27.82	7.00	3	0.0324	2
ZnO	4-Nitrophenol	1.50	100-4000	27.82	9.00	3	0.0389	2
ZnO	4-Nitrophenol	1.50	100-4000	27.82	11.00	3	0.0679	2
ZnO	4-Nitrophenol	1.50	100-4000	55.64	5.00	3	0.0151	2
ZnO	4-Nitrophenol	1.50	100-4000	83.46	5.00	3	0.0119	2
ZnO	4-Nitrophenol	1.50	100-4000	111.28	5.00	3	0.0058	2
ZnO	Congo red	0.20	30.1	16.02	N/A	1	0.0062	3
ZnO	Direct blue 15	0.50	N/A	25.00	N/A	2	0.0048	4
ZnO	Crystal violet	0.40	~200	10.00	9.00	3	0.0790	5
ZnO	Basic Blue-41	0.40	~200	10.00	9.00	3	0.1000	5
ZnO	Methyl red	0.40	~200	10.00	9.00	3	0.0140	5
ZnO	Triclocarban	1.00	>1000	0.11	7.00	1	0.0230	6
ZnO	Ciprofloxacin	0.02	2.1	5.00	4.00	2	0.0117	7

ZnO	Ciprofloxacin	0.02	2.1	5.00	7.00	2	0.0048	7
ZnO	Ciprofloxacin	0.02	2.1	5.00	10.00	2	0.0043	7
ZnO	Carbamazepine	0.05	N/A	1.00	7.00	2	0.0152	8
ZnO	Diclofenac sodium	0.05	N/A	1.00	7.00	2	0.0574	8
ZnO	Ibuprofen sodium	0.05	N/A	1.00	7.00	2	0.0328	8
ZnO	Metronidazole	0.02	20-50	10.00	N/A	2	0.0720	9
ZnO	2-Chlorophenol	1.00	18	50.00	N/A	3	0.0171	10
ZnO	Phenol	0.50	N/A	10.00	5.20	1	0.0464	11
ZnO	Phenol	1.00	N/A	10.00	5.20	1	0.0526	11
ZnO	Phenol	1.50	N/A	10.00	5.20	1	0.0590	11
ZnO	Phenol	2.00	N/A	10.00	5.20	1	0.0655	11
ZnO	Phenol	2.50	N/A	10.00	5.20	1	0.0793	11
ZnO	Phenol	3.00	N/A	10.00	5.20	1	0.0653	11
ZnO	Phenol	2.50	N/A	10.00	4.00	1	0.0695	11
ZnO	Phenol	2.50	N/A	10.00	6.80	1	0.0647	11
ZnO	Phenol	2.50	N/A	10.00	7.00	1	0.0635	11
ZnO	Phenol	2.50	N/A	10.00	9.00	1	0.0443	11
ZnO	Phenol	2.50	N/A	10.00	11.00	1	0.0139	11
ZnO	Phenol	2.50	N/A	20.00	5.20	1	0.0499	11
ZnO	Phenol	2.50	N/A	40.00	5.20	1	0.0323	11
ZnO	Phenol	2.50	N/A	80.00	5.20	1	0.0228	11
ZnO	Resorcinol	0.50	N/A	10.00	6.80	1	0.0662	11
ZnO	Resorcinol	1.00	N/A	10.00	6.80	1	0.0748	11
ZnO	Resorcinol	1.50	N/A	10.00	6.80	1	0.0829	11
ZnO	Resorcinol	2.50	N/A	10.00	6.80	1	0.0968	11
ZnO	Resorcinol	3.00	N/A	10.00	6.80	1	0.0895	11
ZnO	Resorcinol	2.00	N/A	10.00	4.00	1	0.0613	11
ZnO	Resorcinol	2.00	N/A	10.00	5.20	1	0.0711	11
ZnO	Resorcinol	2.00	N/A	20.00	11.00	1	0.0777	11
ZnO	Resorcinol	2.00	N/A	40.00	11.00	1	0.0463	11
ZnO	Resorcinol	2.00	N/A	80.00	11.00	1	0.0273	11
SnO <sub>2</sub>	Rhodamine B	1.00	2.9	4.79	2.00	1	0.0022	12
SnO <sub>2</sub>	Rhodamine B	1.00	2.9	4.79	6.00	1	0.0033	12
SnO <sub>2</sub>	Rhodamine B	1.00	2.9	4.79	8.00	1	0.0219	12
SnO <sub>2</sub>	Direct blue 15	0.50	N/A	25.00	N/A	2	0.0016	4
SnO <sub>2</sub>	Methylene blue	0.22	4.5	10.00	N/A	1	0.0134	13
SnO <sub>2</sub>	Methylene blue	0.22	<44000	10.00	N/A	1	0.0019	13
SnO <sub>2</sub>	Methylene blue	0.25	15-20	31.99	N/A	1	0.0952	14
SnO <sub>2</sub>	Aniline	1.00	D120-280,L300	20.00	4.00	1	0.0459	15
SnO <sub>2</sub>	Aniline	1.00	D120-280,L300	20.00	7.00	1	0.0561	15
SnO <sub>2</sub>	Aniline	1.00	D120-280,L300	20.00	10.00	1	0.0629	15

SnO <sub>2</sub>	4-Nitroaniline	1.00	D120-280,L300	20.00	4.00	1	0.0260	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	D120-280,L300	20.00	7.00	1	0.0201	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	D120-280,L300	20.00	10.00	1	0.0115	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	D120-280,L300	20.00	4.00	1	0.0046	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	D120-280,L300	20.00	7.00	1	0.0028	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	D120-280,L300	20.00	10.00	1	0.0008	15
SnO <sub>2</sub>	Aniline	1.00	D80-100,L300	20.00	4.00	1	0.0244	15
SnO <sub>2</sub>	Aniline	1.00	D80-100,L300	20.00	7.00	1	0.0311	15
SnO <sub>2</sub>	Aniline	1.00	D80-100,L300	20.00	10.00	1	0.0453	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	D80-100,L300	20.00	4.00	1	0.0184	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	D80-100,L300	20.00	7.00	1	0.0146	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	D80-100,L300	20.00	10.00	1	0.0061	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	D80-100,L300	20.00	4.00	1	0.0025	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	D80-100,L300	20.00	7.00	1	0.0012	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	D80-100,L300	20.00	10.00	1	0.0004	15
SnO <sub>2</sub>	Aniline	1.00	70-105	20.00	4.00	1	0.0355	15
SnO <sub>2</sub>	Aniline	1.00	70-105	20.00	7.00	1	0.0439	15
SnO <sub>2</sub>	Aniline	1.00	70-105	20.00	10.00	1	0.0543	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	70-105	20.00	4.00	1	0.0217	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	70-105	20.00	7.00	1	0.0182	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	70-105	20.00	10.00	1	0.0083	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	70-105	20.00	4.00	1	0.0035	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	70-105	20.00	7.00	1	0.0018	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	70-105	20.00	10.00	1	0.0006	15
SnO <sub>2</sub>	Aniline	1.00	400-1800	20.00	4.00	1	0.0135	15
SnO <sub>2</sub>	Aniline	1.00	400-1800	20.00	7.00	1	0.0275	15
SnO <sub>2</sub>	Aniline	1.00	400-1800	20.00	10.00	1	0.0343	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	400-1800	20.00	4.00	1	0.0089	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	400-1800	20.00	7.00	1	0.0057	15
SnO <sub>2</sub>	4-Nitroaniline	1.00	400-1800	20.00	10.00	1	0.0018	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	400-1800	20.00	4.00	1	0.0019	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	400-1800	20.00	7.00	1	0.0007	15
SnO <sub>2</sub>	2,4-Dinitroaniline	1.00	400-1800	20.00	10.00	1	0.0004	15
SnO <sub>2</sub>	Crystal violet	0.40	86-230	10.00	9.00	3	0.0100	5
SnO <sub>2</sub>	Basic Blue-41	0.40	86-230	10.00	9.00	3	0.0170	5
SnO <sub>2</sub>	Methyl red	0.40	86-230	10.00	9.00	3	0.0040	5
SnO <sub>2</sub>	Rhodamine B	1.00	2.9	4.79	2.00	1	0.0236	16
SnO <sub>2</sub>	Rhodamine B	1.00	2.9	4.79	6.00	1	0.0022	16
SnO <sub>2</sub>	Rhodamine B	1.00	2.9	4.79	8.00	1	0.0017	16
SnO <sub>2</sub>	Amaranth	0.02	3.73	30.00	7.00	1	0.0253	17
SnO <sub>2</sub>	Amaranth	0.02	3.73	40.00	7.00	1	0.0121	17

SnO <sub>2</sub>	Amaranth	0.02	3.73	60.00	7.00	1	0.0056	17
SnO <sub>2</sub>	Amaranth	0.02	3.73	80.00	7.00	1	0.0032	17
SnO <sub>2</sub>	Amaranth	0.02	5.31	60.00	7.00	1	0.0031	17
SnO <sub>2</sub>	Amaranth	0.02	7.6	60.00	7.00	1	0.0008	17
SnO <sub>2</sub>	Methylene blue	0.50	N/A	10.00	N/A	1	0.0028	18
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.50	D75,L168	10.00	N/A	1	0.0035	19
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.50	D50-75	10.00	N/A	1	0.0007	19
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.50	D50-70,L100-150	10.00	N/A	1	0.0007	19
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.50	N/A	10.00	N/A	1	0.0012	19
Fe <sub>2</sub> O <sub>3</sub>	Methyl orange	1.00	70	40.00	N/A	1	0.0043	20
Fe <sub>2</sub> O <sub>3</sub>	Methyl orange	1.50	70	40.00	N/A	1	0.0052	20
Fe <sub>2</sub> O <sub>3</sub>	Methyl orange	2.00	70	40.00	N/A	1	0.0079	20
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	1.00	42	10.00	8.00	1	0.0066	21
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	1.00	42	10.00	9.00	1	0.0557	21
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	1.00	42	10.00	10.00	1	0.0384	21
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	1.00	42	2.00	N/A	1	0.0485	21
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	1.00	42	10.00	N/A	1	0.0844	21
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	1.00	42	10.00	N/A	1	0.0439	21
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	3.00	42	10.00	N/A	1	0.0868	21
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	0.20	1400	5.00	7.00	1	0.0014	22
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	1.00	1400	5.00	7.00	1	0.0022	22
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	1.00	600	5.00	7.00	1	0.0035	22
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	0.20	2200	5.00	7.00	1	0.0028	22
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	1.00	2200	5.00	7.00	1	0.0029	22
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	0.20	500	5.00	7.00	1	0.0032	22
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	1.00	500	5.00	7.00	1	0.0048	22
Fe <sub>2</sub> O <sub>3</sub>	Atrazine	0.20	400	2.50	7.00	1	0.0067	22
Fe <sub>2</sub> O <sub>3</sub>	Atrazine	1.00	400	2.50	7.00	1	0.0058	22
Fe <sub>2</sub> O <sub>3</sub>	Atrazine	0.20	600	2.50	7.00	1	0.0129	22
Fe <sub>2</sub> O <sub>3</sub>	Atrazine	1.00	600	2.50	7.00	1	0.0149	22
Fe <sub>2</sub> O <sub>3</sub>	Atrazine	2.00	600	2.50	7.00	1	0.0139	22
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	0.20	44	20.00	N/A	1	0.0830	23
Fe <sub>2</sub> O <sub>3</sub>	Bismarck Brown R	0.50	D10-30	21.25	7.00	2	0.0050	24
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	0.30	120	10.00	N/A	3	0.0131	25
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.30	120	10.00	N/A	3	0.0014	25
Fe <sub>2</sub> O <sub>3</sub>	4-Nitrophenol	0.30	120	10.00	N/A	3	0.0010	25
Fe <sub>2</sub> O <sub>3</sub>	Methyl orange	0.30	120	10.00	N/A	3	0.0007	25
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.20	D30-50,L300-500	3.20	N/A	2	0.0106	26
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.20	20-30	3.20	N/A	2	0.0082	26
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.20	2000-3000	3.20	N/A	2	0.0062	26
Fe <sub>2</sub> O <sub>3</sub>	Rose bengal	0.38	20	35.05	N/A	3	0.0265	27

Fe <sub>2</sub> O <sub>3</sub>	Rose bengal	0.38	40	35.05	N/A	3	0.0157	27
Fe <sub>2</sub> O <sub>3</sub>	Salicylic acid	0.40	50-200	50.00	N/A	2	0.0970	28
Fe <sub>2</sub> O <sub>3</sub>	Salicylic acid	0.40	50-200	60.00	N/A	2	0.0823	28
Fe <sub>2</sub> O <sub>3</sub>	Salicylic acid	0.40	50-200	75.00	N/A	2	0.0790	28
Fe <sub>2</sub> O <sub>3</sub>	Salicylic acid	0.40	50-200	100.00	N/A	2	0.0610	28
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	1.00	55–100	3.20	N/A	3	0.0120	29
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	1.00	150–200	3.20	N/A	3	0.0210	29
Fe <sub>2</sub> O <sub>3</sub>	Salicylic acid	0.40	1000-2000	20.00	N/A	1	0.0069	30
Fe <sub>2</sub> O <sub>3</sub>	Salicylic acid	0.40	N/A	20.00	N/A	1	0.0009	30
Fe <sub>2</sub> O <sub>3</sub>	Malachite green	2.00	28.9	100.00	N/A	1	0.0077	31
Fe <sub>2</sub> O <sub>3</sub>	Malachite green	2.00	19.9	100.00	N/A	1	0.0095	31
Fe <sub>2</sub> O <sub>3</sub>	Malachite green	2.00	25.3	100.00	N/A	1	0.0174	31
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	0.50	420-550	4.79	N/A	2	0.0970	32
Fe <sub>2</sub> O <sub>3</sub>	Rhodamine B	0.50	N/A	4.79	N/A	2	0.0205	32
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.02	250-2500	10.00	5.30	1	0.0374	33
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.05	250-2500	10.00	5.30	1	0.0739	33
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.10	250-2500	10.00	5.30	1	0.0317	33
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.05	250-2500	30.00	5.30	1	0.0203	33
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.05	250-2500	20.00	5.30	1	0.0424	33
Fe <sub>2</sub> O <sub>3</sub>	Methylene blue	0.05	250-2500	5.00	5.30	1	0.0784	33
TiO <sub>2</sub>	4-Chlorophenol	0.50	<44000	1.29	5.50	1	0.0570	34
TiO <sub>2</sub>	4-Chlorophenol	0.50	<44000	2.57	5.50	1	0.0430	34
TiO <sub>2</sub>	4-Chlorophenol	0.50	<44000	5.14	5.50	1	0.0300	34
TiO <sub>2</sub>	4-Chlorophenol	0.50	<44000	6.43	5.50	1	0.0270	34
TiO <sub>2</sub>	4-Chlorophenol	0.50	<44000	10.28	5.50	1	0.0180	34
TiO <sub>2</sub>	4-Chlorophenol	0.50	<44000	12.86	5.50	1	0.0160	34
TiO <sub>2</sub>	4-Chlorophenol	0.50	<44000	16.20	5.50	1	0.0120	34
TiO <sub>2</sub>	2,6-Dichlorophenol	0.50	<44000	3.26	5.50	1	0.0500	34
TiO <sub>2</sub>	2,6-Dichlorophenol	0.50	<44000	6.52	5.50	1	0.0370	34
TiO <sub>2</sub>	2,6-Dichlorophenol	0.50	<44000	8.15	5.50	1	0.0310	34
TiO <sub>2</sub>	2,6-Dichlorophenol	0.50	<44000	13.04	5.50	1	0.0240	34
TiO <sub>2</sub>	2,6-Dichlorophenol	0.50	<44000	16.30	5.50	1	0.0180	34
TiO <sub>2</sub>	Sulfanilamide	2.50	<40000	17.22	6.69	1	0.0312	35
TiO <sub>2</sub>	Sulfacetamide sodium	2.50	<40000	23.62	7.35	1	0.0133	35
TiO <sub>2</sub>	Sulfamethoxazole	2.50	<40000	25.33	5.63	1	0.0241	35
TiO <sub>2</sub>	Sulfadiazine sodium	2.50	<40000	27.23	6.60	1	0.0128	35
TiO <sub>2</sub>	Sulfathiazole sodium	2.50	<40000	27.73	7.10	1	0.0181	35
TiO <sub>2</sub>	Carbamazepine	0.10	<10	4.30	6.50	1	0.0079	36
TiO <sub>2</sub>	Carbamazepine	1.00	<10	4.30	6.50	1	0.0250	36
TiO <sub>2</sub>	Carbamazepine	0.10	<10	1.00	6.50	1	0.0380	36
TiO <sub>2</sub>	Carbamazepine	1.00	<10	1.00	6.50	1	0.0800	36

TiO <sub>2</sub>	Clofibric acid	0.05	<10	5.00	6.50	1	0.0096	36
TiO <sub>2</sub>	Clofibric acid	0.08	<10	5.00	6.50	1	0.0180	36
TiO <sub>2</sub>	Clofibric acid	0.50	<10	5.00	6.50	1	0.0250	36
TiO <sub>2</sub>	Clofibric acid	0.08	<10	0.50	6.50	1	0.0240	36
TiO <sub>2</sub>	Reactive violet 5	0.08	230	10.00	4.00	1	0.0870	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	10.00	5.00	1	0.0640	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	10.00	6.00	1	0.0520	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	10.00	8.00	1	0.0500	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	10.00	9.00	1	0.0750	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	10.00	10.00	1	0.0900	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	15.00	4.00	1	0.0742	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	20.00	4.00	1	0.0569	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	30.00	4.00	1	0.0368	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	40.00	4.00	1	0.0259	37
TiO <sub>2</sub>	Reactive violet 5	0.08	230	50.00	4.00	1	0.0173	37
TiO <sub>2</sub>	Reactive violet 5	0.01	230	10.00	4.00	1	0.0130	37
TiO <sub>2</sub>	Reactive violet 5	0.04	230	10.00	4.00	1	0.0369	37
TiO <sub>2</sub>	Reactive violet 5	0.05	230	10.00	4.00	1	0.0468	37
TiO <sub>2</sub>	Reactive violet 5	0.06	230	10.00	4.00	1	0.0644	37
TiO <sub>2</sub>	Reactive violet 5	0.07	230	10.00	4.00	1	0.0770	37
TiO <sub>2</sub>	Crystal violet	0.40	55-170	10.00	9.00	3	0.0260	5
TiO <sub>2</sub>	Basic blue 41	0.40	55-170	10.00	9.00	3	0.0450	5
TiO <sub>2</sub>	Methyl red	0.40	55-170	10.00	9.00	3	0.0080	5
TiO <sub>2</sub>	Reactive blue 4	1.00	<25	60.00	6.00	1	0.0885	38
TiO <sub>2</sub>	Methylene blue	2.00	37.71	100.00	N/A	1	0.0439	39
TiO <sub>2</sub>	Methyl orange	2.00	37.71	100.00	N/A	1	0.0487	39
TiO <sub>2</sub>	Rhodamine B	2.00	37.71	100.00	N/A	1	0.0468	39
TiO <sub>2</sub>	Carmin indigo	2.00	37.71	100.00	N/A	1	0.0554	39
TiO <sub>2</sub>	Eriochrome Black T	2.00	37.71	100.00	N/A	1	0.0552	39
WO <sub>3</sub>	Amoxicillin	0.10	<200	0.37	6.00	3	0.0138	40
WO <sub>3</sub>	Amoxicillin	0.10	<200	0.73	6.00	3	0.0070	40
WO <sub>3</sub>	Amoxicillin	0.30	<200	0.37	4.00	3	0.0315	40
WO <sub>3</sub>	Amoxicillin	0.30	<200	0.73	4.00	3	0.0150	40
WO <sub>3</sub>	Amoxicillin	0.50	<200	0.37	6.00	3	0.0210	40
WO <sub>3</sub>	Amoxicillin	0.50	<200	0.73	6.00	3	0.0129	40
WO <sub>3</sub>	Amoxicillin	0.10	<200	0.55	8.00	3	0.0072	40
WO <sub>3</sub>	Amoxicillin	0.50	<200	0.55	8.00	3	0.0135	40
WO <sub>3</sub>	Amoxicillin	0.30	<200	0.37	8.00	3	0.0171	40
WO <sub>3</sub>	Amoxicillin	0.10	<200	0.55	4.00	3	0.0149	40
WO <sub>3</sub>	Amoxicillin	0.30	<200	0.73	8.00	3	0.0088	40
WO <sub>3</sub>	Methylene blue	2.00	33.6	20.00	9.00	3	0.0160	41

WO <sub>3</sub>	Methylene blue	2.00	19.6	20.00	9.00	3	0.0570	41
WO <sub>3</sub>	Methylene blue	2.00	23.4	20.00	9.00	3	0.0330	41
WO <sub>3</sub>	Methylene blue	2.00	37.7	20.00	9.00	3	0.0160	41
WO <sub>3</sub>	Rhodamine B	0.40	4000	10.00	N/A	1	0.0151	42
WO <sub>3</sub>	Rhodamine B	0.40	3500	10.00	N/A	1	0.0560	42
WO <sub>3</sub>	Rhodamine B	0.40	4000	10.00	N/A	2	0.0030	42
WO <sub>3</sub>	Rhodamine B	0.40	3500	10.00	N/A	2	0.0028	42
WO <sub>3</sub>	Rhodamine B	3.00	80-100	5.00	N/A	2	0.0077	43
WO <sub>3</sub>	Rhodamine B	3.00	4000	5.00	N/A	2	0.0034	43
WO <sub>3</sub>	Rhodamine B	1.00	18	5.00	N/A	2	0.0073	44
WO <sub>3</sub>	Rhodamine B	1.00	19	5.00	N/A	2	0.0056	44
WO <sub>3</sub>	Rhodamine B	1.00	16	5.00	N/A	2	0.0186	44
WO <sub>3</sub>	Rhodamine B	1.00	15	5.00	N/A	2	0.0065	44
WO <sub>3</sub>	Rhodamine B	1.00	20	5.00	N/A	2	0.0132	44
WO <sub>3</sub>	Rhodamine B	1.00	17	5.00	N/A	2	0.0143	44
WO <sub>3</sub>	Rhodamine B	1.00	>100	5.00	N/A	2	0.0124	44
WO <sub>3</sub>	Indigo carmine	1.00	18	30.00	N/A	2	0.0168	44
WO <sub>3</sub>	Indigo carmine	1.00	19	30.00	N/A	2	0.0223	44
WO <sub>3</sub>	Indigo carmine	1.00	16	30.00	N/A	2	0.0190	44
WO <sub>3</sub>	Indigo carmine	1.00	15	30.00	N/A	2	0.0530	44
WO <sub>3</sub>	Indigo carmine	1.00	20	30.00	N/A	2	0.0126	44
WO <sub>3</sub>	Indigo carmine	1.00	17	30.00	N/A	2	0.0071	44
WO <sub>3</sub>	Indigo carmine	1.00	>100	30.00	N/A	2	0.0048	44
WO <sub>3</sub>	Congo red	1.00	18	20.00	N/A	2	0.0014	44
WO <sub>3</sub>	Congo red	1.00	19	20.00	N/A	2	0.0011	44
WO <sub>3</sub>	Congo red	1.00	16	20.00	N/A	2	0.0011	44
WO <sub>3</sub>	Congo red	3.00	18	20.00	N/A	2	0.0023	44
WO <sub>3</sub>	Congo red	1.00	>100	20.00	N/A	2	0.0005	44
WO <sub>3</sub>	Indigo carmine	1.00	>100	30.00	N/A	1	0.0049	45
WO <sub>3</sub>	Indigo carmine	1.00	>100	30.00	N/A	1	0.0250	45
WO <sub>3</sub>	Indigo carmine	1.00	>100	30.00	N/A	1	0.0123	45
WO <sub>3</sub>	Indigo carmine	1.00	>100	30.00	N/A	1	0.0330	45
WO <sub>3</sub>	Rhodamine B	1.00	>100	5.00	N/A	1	0.0194	45
WO <sub>3</sub>	Rhodamine B	1.00	>100	5.00	N/A	1	0.0142	45
WO <sub>3</sub>	Rhodamine B	1.00	>100	5.00	N/A	1	0.0145	45
WO <sub>3</sub>	Rhodamine B	1.00	>100	5.00	N/A	1	0.0232	45
WO <sub>3</sub>	Methyl orange	1.00	>100	10.00	N/A	1	0.0010	45
WO <sub>3</sub>	Methyl orange	1.00	>100	10.00	N/A	1	0.0019	45
WO <sub>3</sub>	Methyl orange	1.00	>100	10.00	N/A	1	0.0018	45
WO <sub>3</sub>	Methyl orange	1.00	>100	10.00	N/A	1	0.0028	45
WO <sub>3</sub>	Congo red	1.00	>100	20.00	N/A	1	0.0005	45

WO <sub>3</sub>	Congo red	1.00	>100	20.00	N/A	1	0.0013	45
WO <sub>3</sub>	Congo red	1.00	>100	20.00	N/A	1	0.0014	45
WO <sub>3</sub>	Congo red	1.00	>100	20.00	N/A	1	0.0016	45
WO <sub>3</sub>	Methylene blue	1.00	26.41	10.00	N/A	2	0.0069	46
WO <sub>3</sub>	Rhodamine B	1.00	20-100	5.00	N/A	3	0.0040	47
WO <sub>3</sub>	Rhodamine B	1.00	20-100	5.00	N/A	3	0.0096	47
WO <sub>3</sub>	Rhodamine B	1.00	20-100	5.00	N/A	3	0.0120	47
WO <sub>3</sub>	Rhodamine B	1.00	20-100	5.00	N/A	3	0.0068	47
WO <sub>3</sub>	Rhodamine B	1.00	20-100	5.00	N/A	3	0.0072	47
WO <sub>3</sub>	Indigo carmine	1.00	20-100	30.00	N/A	3	0.0023	47
WO <sub>3</sub>	Indigo carmine	1.00	20-100	30.00	N/A	3	0.0115	47
WO <sub>3</sub>	Indigo carmine	1.00	20-100	30.00	N/A	3	0.0192	47
WO <sub>3</sub>	Indigo carmine	1.00	20-100	30.00	N/A	3	0.0040	47
WO <sub>3</sub>	Indigo carmine	1.00	20-100	30.00	N/A	3	0.0109	47
WO <sub>3</sub>	Rhodamine B	1.00	20-100	20.00	N/A	3	0.0015	47
WO <sub>3</sub>	Rhodamine B	1.00	20-100	20.00	N/A	3	0.0025	47
WO <sub>3</sub>	Rhodamine B	1.00	100	5.00	6.00	3	0.0125	48
WO <sub>3</sub>	Rhodamine B	1.00	10-50	5.00	6.00	3	0.0087	48
WO <sub>3</sub>	Rhodamine B	1.00	10-50	5.00	6.00	3	0.0230	48
WO <sub>3</sub>	Rhodamine B	1.00	10-50	5.00	6.00	3	0.0141	48
WO <sub>3</sub>	Rhodamine B	1.00	10-50	5.00	6.00	3	0.0067	48
WO <sub>3</sub>	Indigo carmine	1.00	100	30.00	6.00	3	0.0044	48
WO <sub>3</sub>	Indigo carmine	1.00	10-50	30.00	6.00	3	0.0135	48
WO <sub>3</sub>	Indigo carmine	1.00	10-50	30.00	6.00	3	0.0290	48
WO <sub>3</sub>	Indigo carmine	1.00	10-50	30.00	6.00	3	0.0260	48
WO <sub>3</sub>	Indigo carmine	1.00	10-50	30.00	6.00	3	0.0054	48
WO <sub>3</sub>	Congo red	1.00	100	20.00	6.00	3	0.0005	48
WO <sub>3</sub>	Congo red	1.00	10-50	20.00	6.00	3	0.0010	48
WO <sub>3</sub>	Congo red	1.00	10-50	20.00	6.00	3	0.0010	48
WO <sub>3</sub>	Congo red	1.00	10-50	20.00	6.00	3	0.0006	48
WO <sub>3</sub>	Congo red	1.00	10-50	20.00	6.00	3	0.0008	48
WO <sub>3</sub>	Phenol	2.00	D200-800,L35-40	30.00	N/A	3	0.0007	49
WO <sub>3</sub>	2-Chlorophenol	2.00	D200-800,L35-40	30.00	N/A	3	0.0205	49
WO <sub>3</sub>	Resorcinol	2.00	D200-800,L35-40	30.00	N/A	3	0.0007	49
WO <sub>3</sub>	2-Nitrophenol	2.00	D200-800,L35-40	30.00	N/A	3	0.0270	49
β-MnO <sub>2</sub>	Methylene blue	0.50	N/A	10.00	N/A	2	0.0119	50
β-MnO <sub>2</sub>	Methylene blue	0.04	50-100	9.60	N/A	1	0.0168	51
β-MnO <sub>2</sub>	Eosin yellow	0.04	50-100	20.76	N/A	1	0.0122	51
β-MnO <sub>2</sub>	Methylene blue	0.04	50-100	9.60	N/A	3	0.0553	51
β-MnO <sub>2</sub>	Eosin yellow	0.04	50-100	20.76	N/A	3	0.0275	51
β-MnO <sub>2</sub>	Rhodamine B	0.16	15-20	9.60	3.00	3	0.0603	52



$\beta$ -MnO <sub>2</sub>	Rhodamine B	0.16	15-20	9.60	5.00	3	0.0493	52
$\beta$ -MnO <sub>2</sub>	Rhodamine B	0.16	15-20	9.60	7.00	3	0.0028	52
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	6.00	3	0.0127	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	6.50	3	0.0148	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	7.00	3	0.0185	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	7.50	3	0.0213	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	8.00	3	0.0239	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	8.50	3	0.0205	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	9.00	3	0.0178	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	9.50	3	0.0151	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	10.00	3	0.0133	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	19.47	8.00	3	0.0146	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	21.91	8.00	3	0.0163	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	24.34	8.00	3	0.0182	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	26.78	8.00	3	0.0207	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	31.64	8.00	3	0.0220	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	34.08	8.00	3	0.0201	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	36.51	8.00	3	0.0186	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	38.95	8.00	3	0.0172	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.10	N/A	29.21	8.00	3	0.0126	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.20	N/A	29.21	8.00	3	0.0141	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.30	N/A	29.21	8.00	3	0.0173	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.40	N/A	29.21	8.00	3	0.0199	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.60	N/A	29.21	8.00	3	0.0239	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.70	N/A	29.21	8.00	3	0.0239	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.80	N/A	29.21	8.00	3	0.0239	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.90	N/A	29.21	8.00	3	0.0239	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	8.00	3	0.0086	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	8.00	3	0.0105	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	8.00	3	0.0127	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	8.00	3	0.0161	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	8.00	3	0.0193	53
$\beta$ -MnO <sub>2</sub>	Rose bengal	0.50	N/A	29.21	8.00	3	0.0223	53
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	5.50	3	0.0011	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	6.00	3	0.0014	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	6.50	3	0.0023	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.00	3	0.0028	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.50	3	0.0033	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	8.00	3	0.0025	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	8.50	3	0.0015	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	9.00	3	0.0012	54

$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	5.50	3	0.0022	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.00	3	0.0034	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0051	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	7.00	3	0.0039	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	7.50	3	0.0027	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	8.00	3	0.0022	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	8.50	3	0.0020	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	9.00	3	0.0018	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	5.50	3	0.0013	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	6.00	3	0.0023	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	6.50	3	0.0026	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	7.00	3	0.0031	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	7.50	3	0.0035	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0040	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.50	3	0.0031	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	9.00	3	0.0024	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	2.62	7.50	3	0.0018	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	3.20	7.50	3	0.0023	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	3.90	7.50	3	0.0029	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.54	7.50	3	0.0033	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	5.15	7.50	3	0.0023	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	5.79	7.50	3	0.0011	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	10.70	6.50	3	0.0018	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	12.23	6.50	3	0.0019	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	13.76	6.50	3	0.0038	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0051	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	16.82	6.50	3	0.0032	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	18.35	6.50	3	0.0020	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	10.70	8.00	3	0.0023	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0028	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	13.76	8.00	3	0.0040	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	15.29	8.00	3	0.0021	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	16.82	8.00	3	0.0020	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	18.35	8.00	3	0.0018	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.05	3200	4.48	7.50	3	0.0009	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.10	3200	4.48	7.50	3	0.0016	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.15	3200	4.48	7.50	3	0.0020	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.20	3200	4.48	7.50	3	0.0033	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.25	3200	4.48	7.50	3	0.0034	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.30	3200	4.48	7.50	3	0.0033	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.05	3200	15.29	6.50	3	0.0020	54

$\beta$ -MnO <sub>2</sub>	Azure B	0.10	3200	15.29	6.50	3	0.0027	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.15	3200	15.29	6.50	3	0.0038	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0051	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.25	3200	15.29	6.50	3	0.0051	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.30	3200	15.29	6.50	3	0.0051	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.05	3200	12.23	8.00	3	0.0014	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.10	3200	12.23	8.00	3	0.0021	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.15	3200	12.23	8.00	3	0.0029	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0040	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.25	3200	12.23	8.00	3	0.0041	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.30	3200	12.23	8.00	3	0.0040	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.50	3	0.0016	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.50	3	0.0023	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.50	3	0.0033	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.50	3	0.0044	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.50	3	0.0055	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.50	3	0.0077	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0014	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0033	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0051	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0059	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0068	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0077	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0015	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0026	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0040	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0051	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0061	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0063	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	800	4.48	7.50	3	0.0083	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	1600	4.48	7.50	3	0.0044	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	2400	4.48	7.50	3	0.0040	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	3200	4.48	7.50	3	0.0033	54
$\beta$ -MnO <sub>2</sub>	Methylene blue	0.16	4000	4.48	7.50	3	0.0030	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	800	15.29	6.50	3	0.0104	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	1600	15.29	6.50	3	0.0065	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	2400	15.29	6.50	3	0.0057	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	3200	15.29	6.50	3	0.0051	54
$\beta$ -MnO <sub>2</sub>	Azure B	0.20	4000	15.29	6.50	3	0.0038	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	800	12.23	8.00	3	0.0099	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	1600	12.23	8.00	3	0.0060	54

$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	2400	12.23	8.00	3	0.0049	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	3200	12.23	8.00	3	0.0040	54
$\beta$ -MnO <sub>2</sub>	Toluidine blue	0.20	4000	12.23	8.00	3	0.0030	54

\*D denotes diameter. L denotes length.

#For light type, 1 denotes UV, 2 denotes visible light, and 3 denotes sunlight.

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