

### Electronic Supplementary Information (ESI)

No.	h	k	l	d [Å]	2 $\theta$ [°]	I [%]
1	0	1	1	3.52213	25.266	100.0
2	0	1	3	2.42317	37.071	6.0
3	0	0	4	2.36100	38.084	18.5
4	1	1	2	2.33352	38.550	7.5
5	0	2	0	1.89800	47.889	26.5
6	0	2	2	1.76106	51.877	0.0
7	0	1	5	1.69103	54.197	16.2
8	1	2	1	1.67084	54.906	16.5
9	1	2	3	1.49420	62.065	2.7
10	0	2	4	1.47927	62.762	11.9
11	1	1	6	1.35777	69.128	5.5
12	2	2	0	1.34209	70.053	5.9
13	0	1	7	1.27124	74.593	0.5
14	1	2	5	1.26260	75.192	8.7
15	0	3	1	1.25413	75.789	2.4
16	0	2	6	1.21158	78.956	0.0
17	0	0	8	1.18050	81.464	0.4
18	0	3	3	1.17404	82.008	0.6
19	2	2	4	1.16676	82.631	4.2
20	1	3	2	1.16340	82.922	1.8

Fig. S1. XRD peaks list as per ICSD No. 154601.

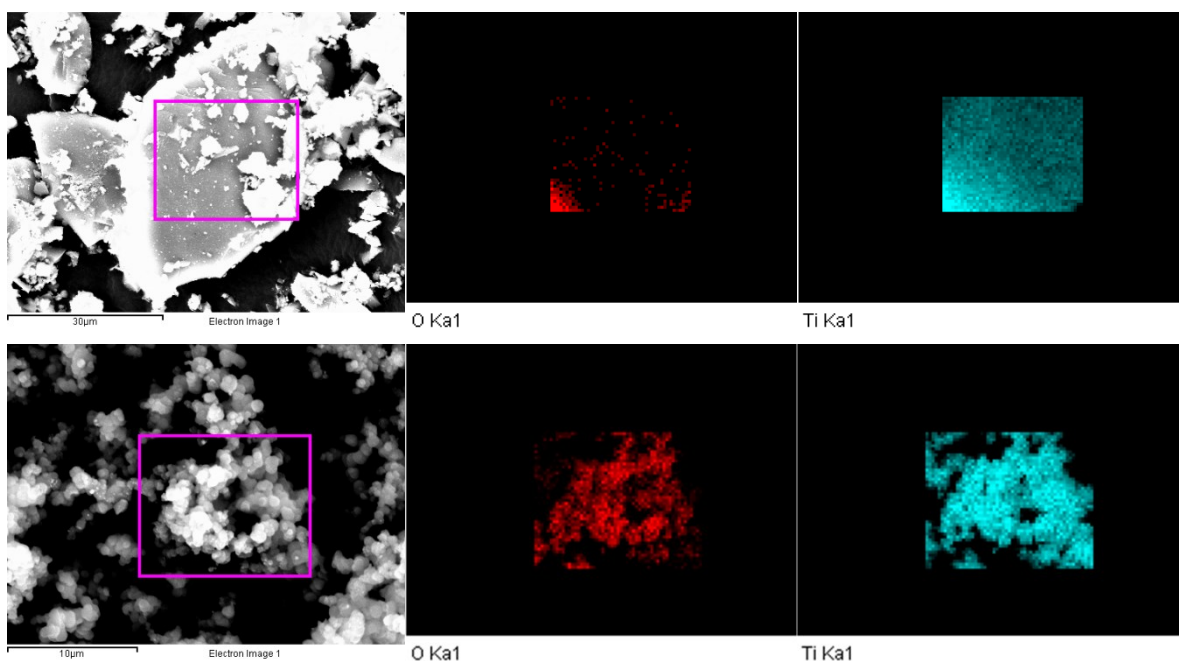
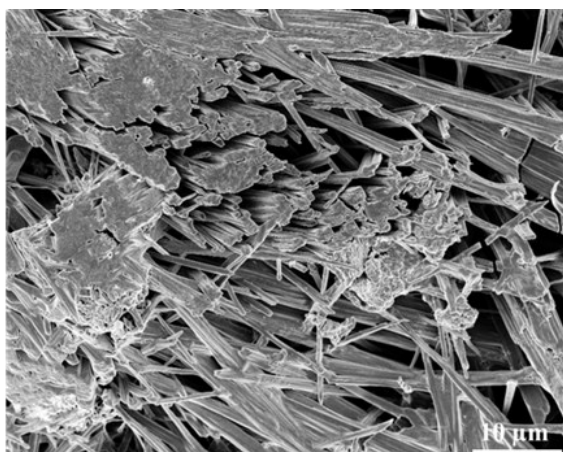
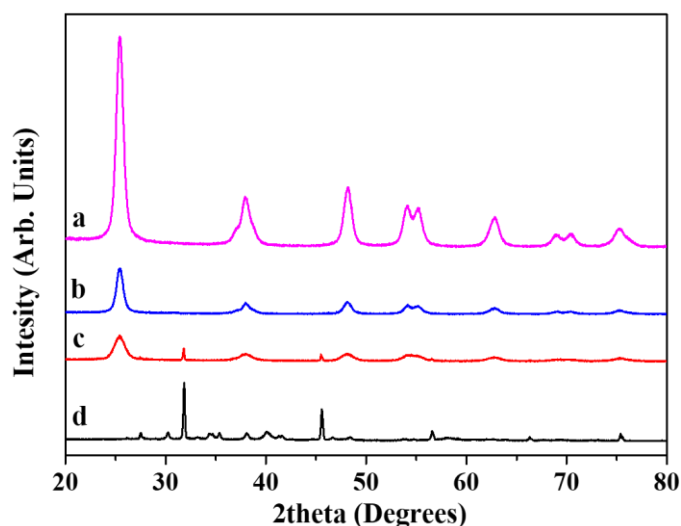


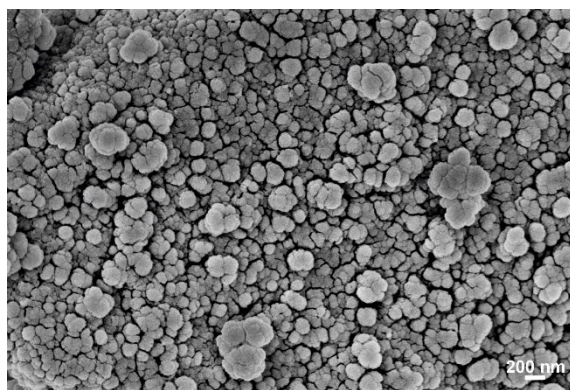
Fig. S2. EDS maps of (top row) 5MT and (bottom row) 10MT samples.



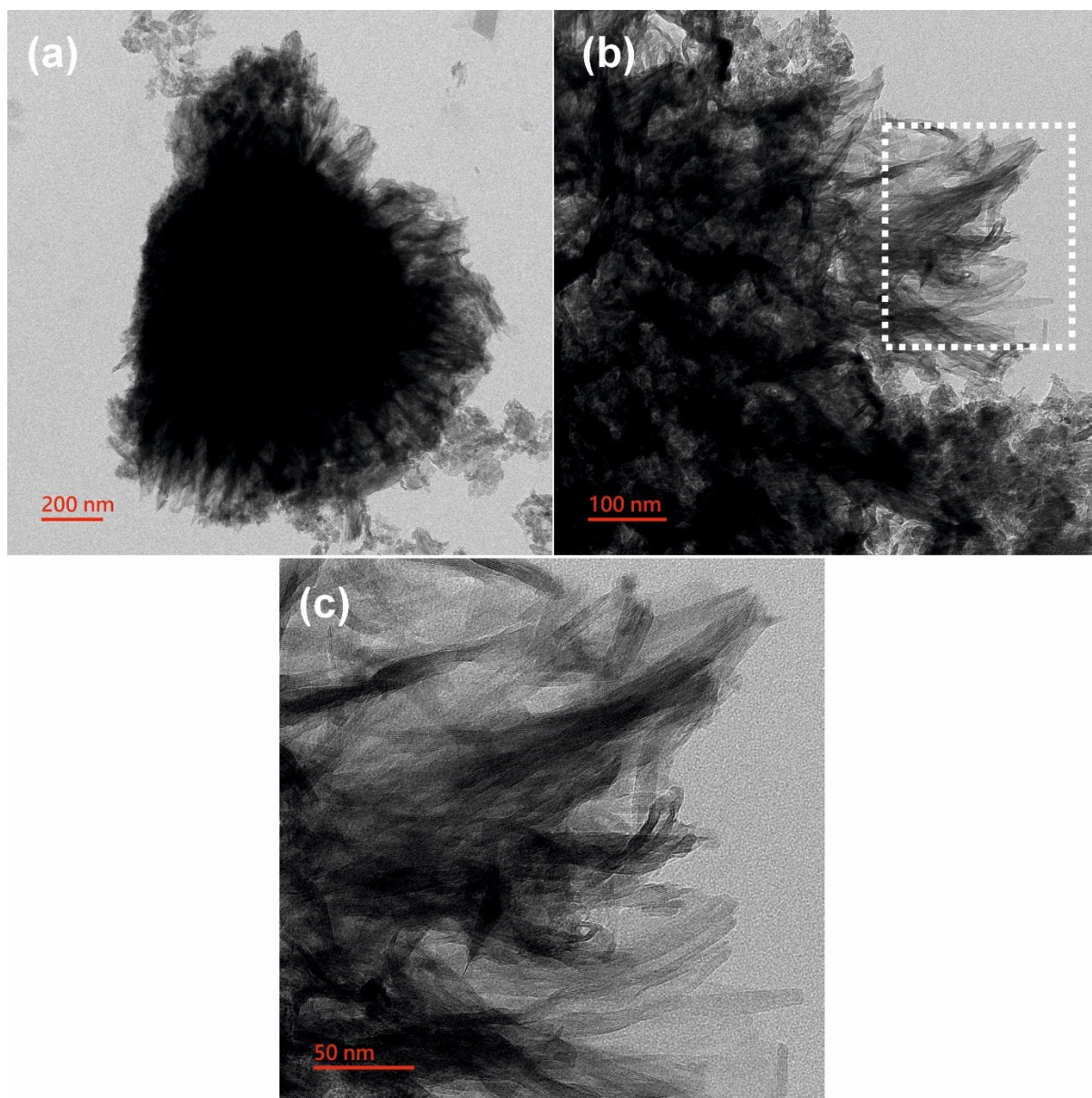
**Fig. S3.** FESEM image of the sample prepared with 5 mL of 10 M NaOH in the reaction mixture with the rest of the experimental parameters remaining the same.



**Fig. S4.** XRD patterns of the samples prepared with a) the use of 2 mL of 10 M NaOH (the sample with flowery microsphere morphology, this XRD pattern is the same as shown in Fig. 2 for 10MT sample), b) the use of 2 mL of 10 M  $\text{NH}_4\text{OH}$  instead of 2 mL of 10 M NaOH (rest all remaining the same), c) with the use of 2 mL of 10 M NaOH but by increasing the synthesis time to 20 min (rest all remaining the same) and d) the use of 5 mL of 10 M NaOH instead of 2 mL of 10 M NaOH (rest all remaining the same).

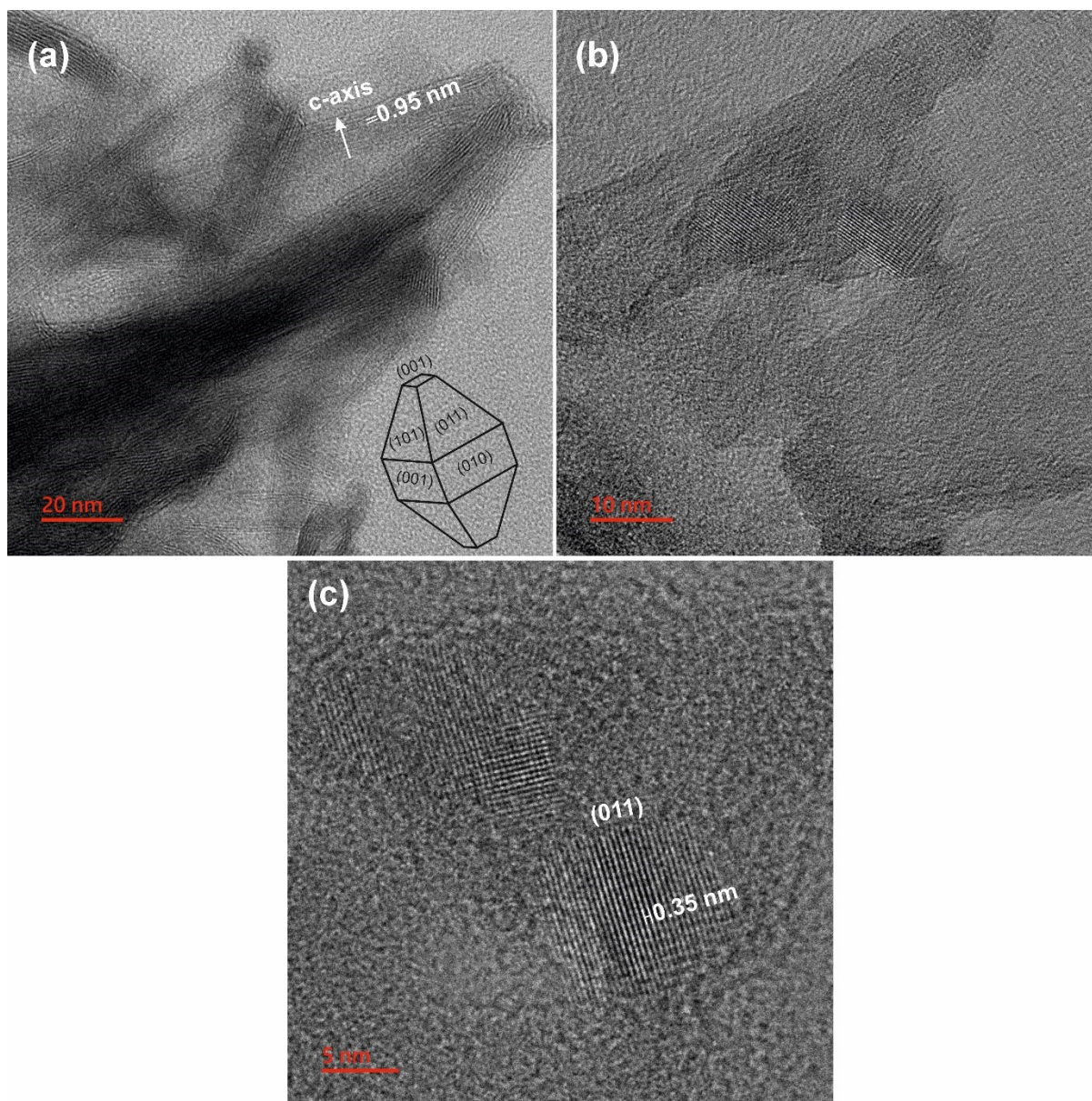


**Fig. S5.** FESEM image of the sample prepared with 2 mL of 10 M NaOH in the reaction mixture but by increasing the synthesis time to 20 min (rest all remaining the same).

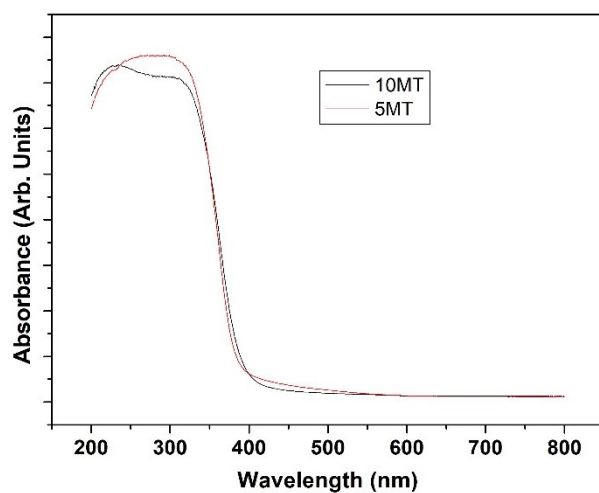


**Fig. S6.** Representative TEM images of flowery anatase-TiO<sub>2</sub> shown in Fig. 1. (c) is the magnified image of the dotted region shown in (b).

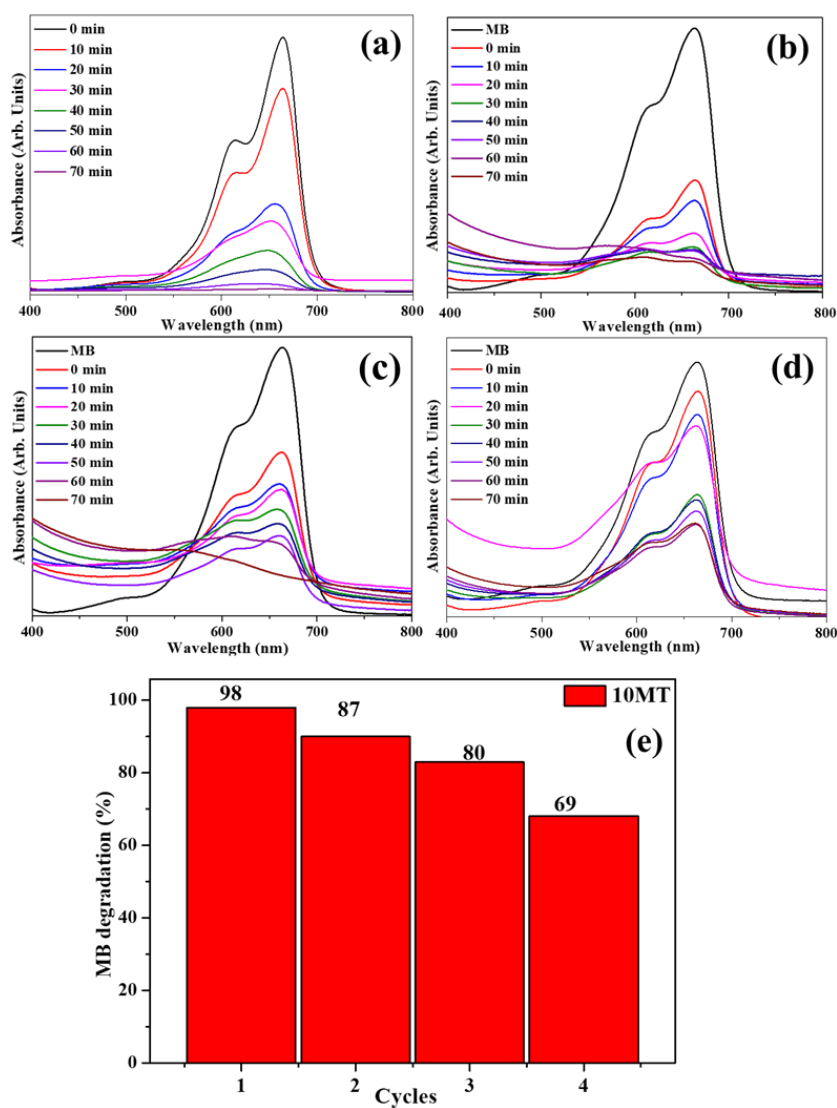




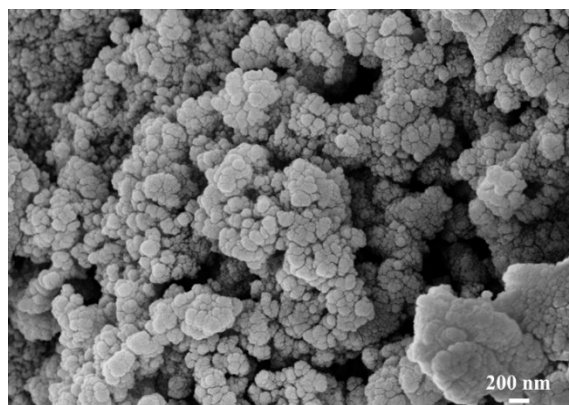
**Fig. S7.** Representative HRTEM images of flowery anatase-TiO<sub>2</sub> shown in Fig. S6.



**Fig. S8.** UV-Vis spectra of 5MT and 10MT samples.



**Fig. S9.** Photodegradation of 10MT; (a) 1<sup>st</sup> cycle, (b) 2<sup>nd</sup> cycle, (c) 3<sup>rd</sup> cycle, (d) 4<sup>th</sup> cycle, and (e) efficiency of photodegradation of MB.



**Fig. S10.** FESEM image of the sample prepared with 2 mL of 10 M  $\text{NH}_4\text{OH}$  in the reaction mixture (rest all remaining the same).