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Supporting Information for

Synthesis of Morphology-Controlled Bismutite for Selective Applications

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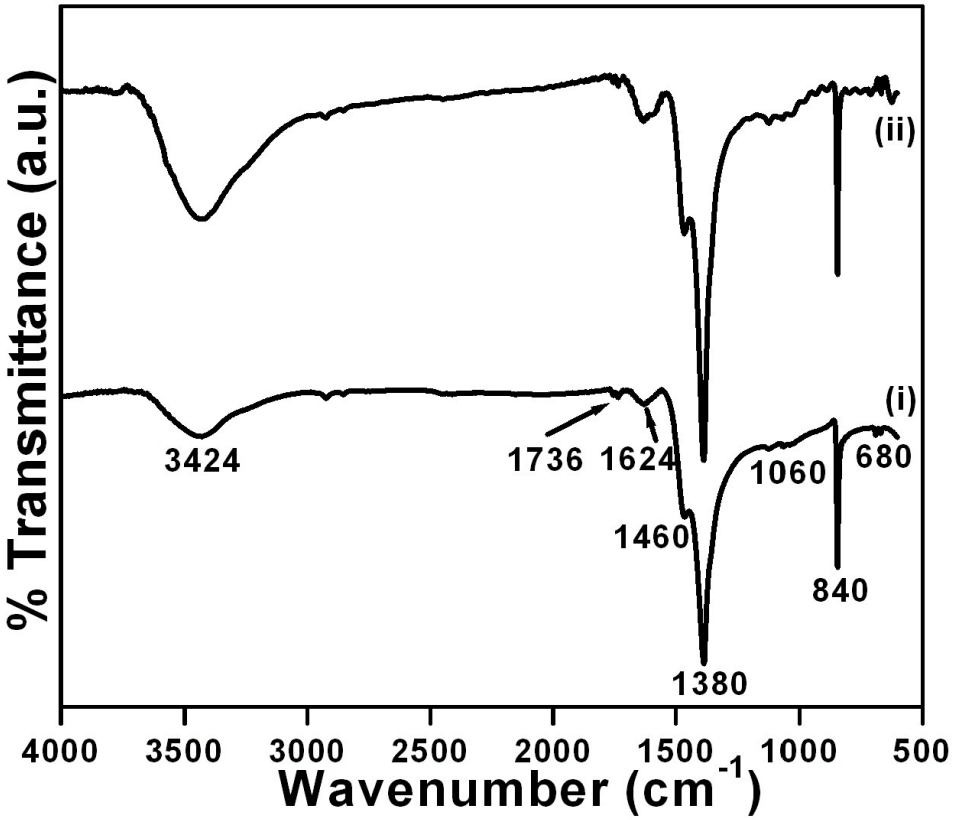

Fig. S1 FT-IR spectrum of $Bi_2O_2CO_3$ nanoplatelets (i) and nanodiscs (ii)

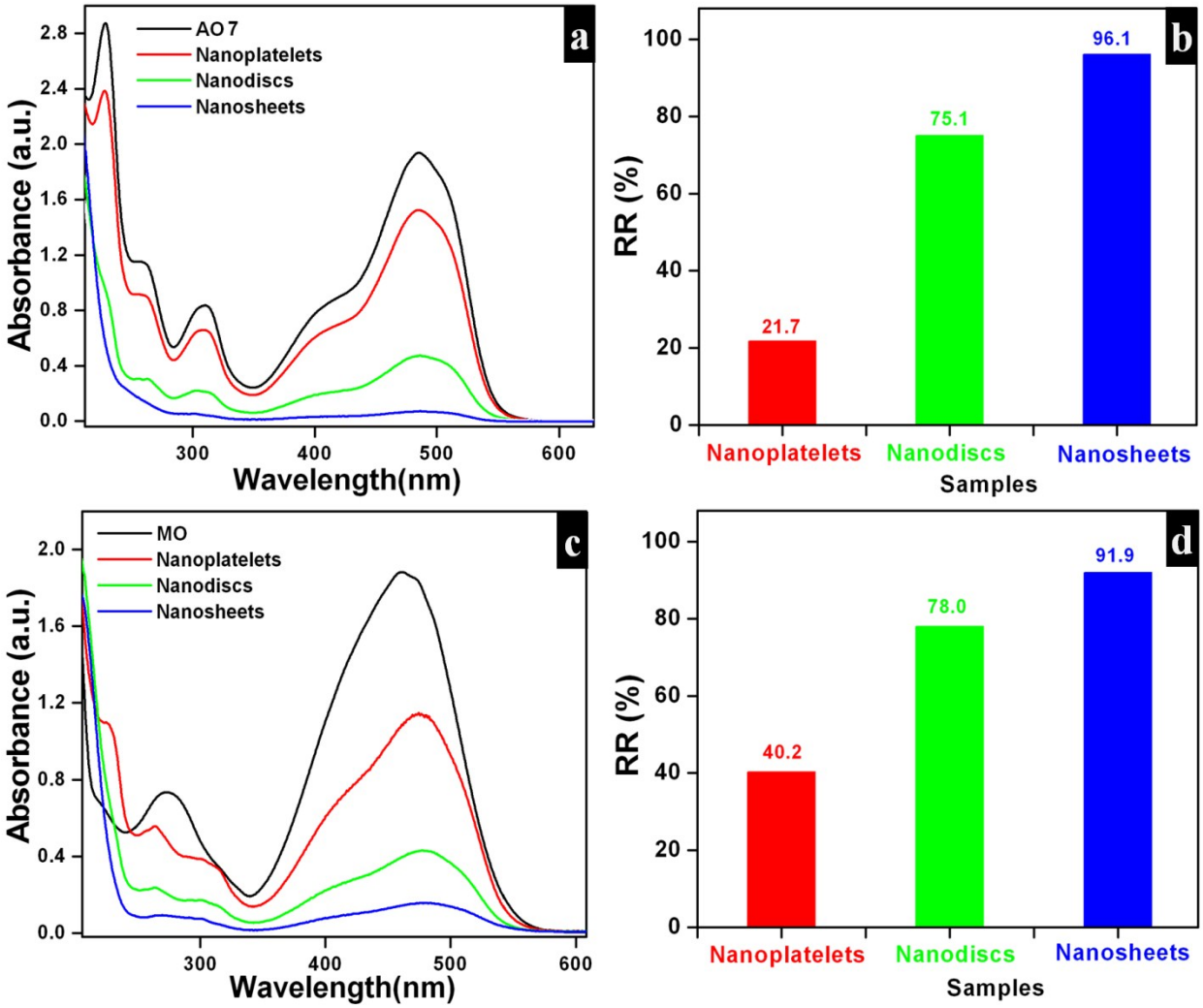

Fig. S2. Adsorption profile and percentage of adsorption (RR %) for different morphologies of $Bi_2O_2CO_3$ in the presence of AO7 (a and b) and MO (c and d)

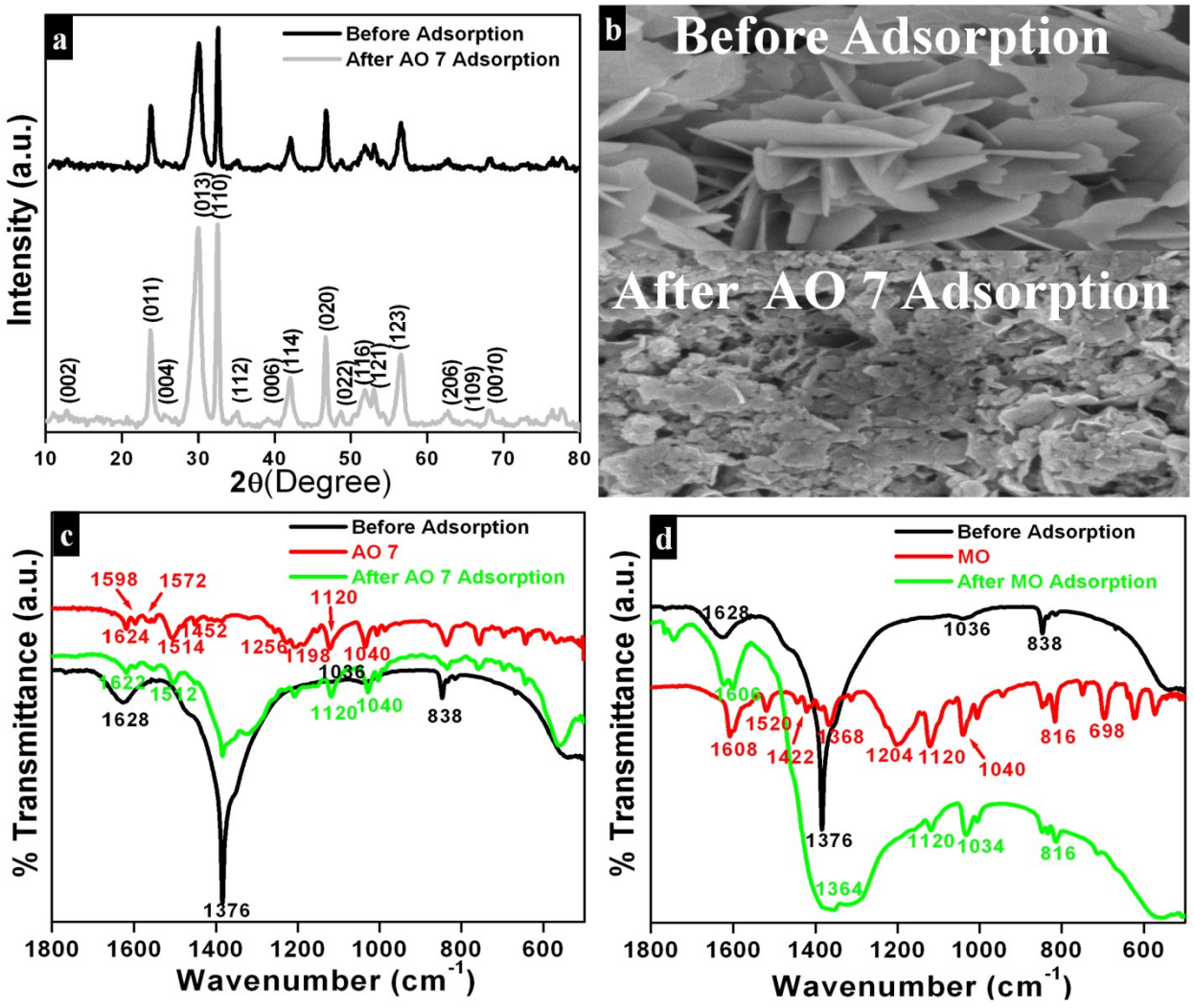

Fig. S3 Powder XRD pattern (a) and FESEM images (b) for before and after AO7 adsorption of $Bi_2O_2CO_3$ nanosheets sample. FT-IR spectrums (c) and (d) for before and after AO7 and MO adsorption profiles on $Bi_2O_2CO_3$ nanosheets sample

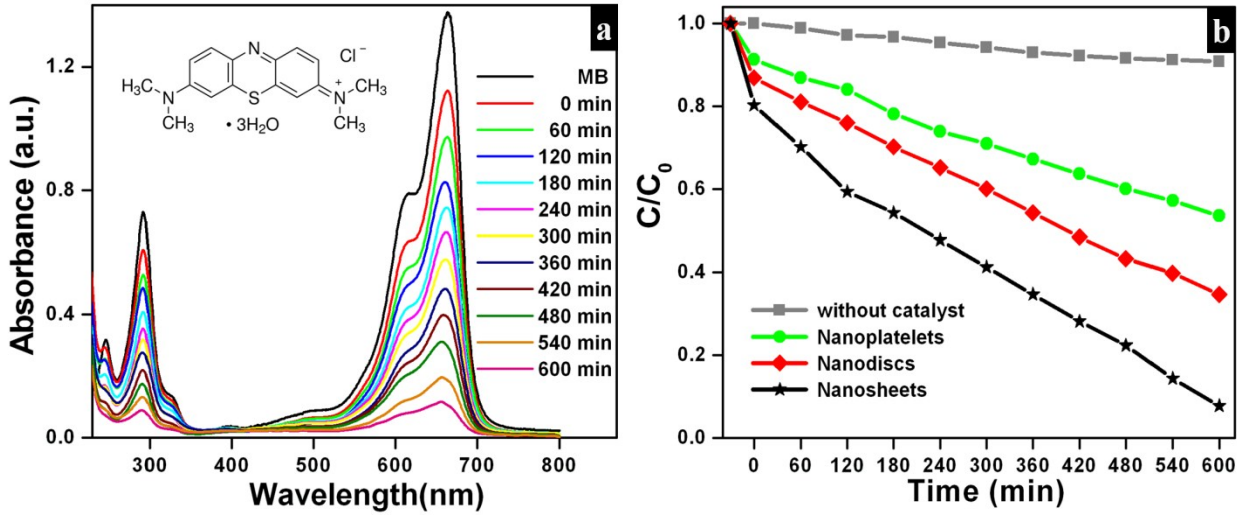

Fig. S4 Time dependence UV-vis absorption spectrum (a) and Photocatalytic degradation curve for different morphologies of $Bi_2O_2CO_3$ in the presence of MB under illumination

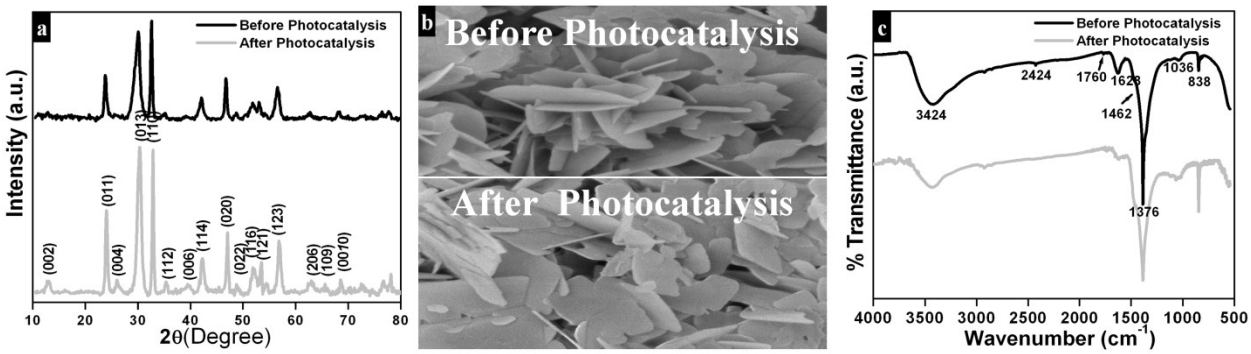

Fig. S5 Powder XRD (a), FESEM images (b) and FT-IR spectrum (c) of $Bi_2O_2CO_3$ nanosheets before and after photocatalysis of Rh B degradation under visible light irradiation

Fig.S6. Photographs of 25 mg nanosheets adsorbed in 100 mL AO 7 dye solution ($1x10^{-4}$ mol L^{-1})

Fig. S7. Photographs of 25 mg nanosheets adsorbed in 100 mL MO dye solution ($1x10^{-4}$ mol L^{-1})

Fig. S8. Photographs of 50 mg nanosheets photocatalysis in 100 mL RhB dye solution ($5x10^{-5}$ mol L^{-1})

Fig. S9. Photographs of 50 mg nanosheets photocatalysis in 100 mL MB dye solution ($5x10^{-5}$ mol L^{-1})

Table ST1. Unit cell parameters of as-synthesized $Bi_2O_2CO_3$ samples

S.No	$Bi_2O_2CO_3$ Samples	Lattice parameters (Å)			Volume ($Å^3$)
		alfa	beta	gamma	
1.	Nanosheets	3.91	-	13.64	209.06
2.	Nanoplatelets	3.89	-	13.63	206.75
3.	Nanodiscs	3.90	-	13.64	208.55

Table ST2. The calculated E_g value and $E_{VB,}$ E_{CB} positions for as-synthesized $Bi_2O_2CO_3$ samples

S.No	Samples	E_g(eV)	E_{VB}(eV)	E_{CB}(eV)
1.	Nanosheets	3.02	3.553	0.533
2.	Nanodiscs	3.12	3.603	0.483
3.	Nanoplatelets	3.21	3.648	0.438

Table ST3. Removal ratios, adsorption capacities of AO 7 and MO for as- synthesized $Bi_2O_2CO_3$ samples

S.No	$Bi_2O_2CO_3$ Samples	AO 7		MO	
		RR (%)	Q_m (mg g^{-1})	RR (%)	Q_m (mg g^{-1})
1.	Nanosheets	**96.1**	**139.8**	**91.9**	**117.8**
2.	Nanodiscs	75.1	105.2	78.0	98.5
3.	Nanoplatelets	21.7	30.4	40.2	51.5

Table ST4. Comparison of adsorption capacity for acid orange 7 (AO 7) on various adsorbents

Adsorbent	Maximum Adsorption Capacity (mg. g^{-1})	Reference
$Bi_2O_2CO_3$ nanosheets	139.8	**This work**
CuO nanospheres Cu_2O microspheres	121.9 75.9	RSC Adv., 2014, 4, 43024
Amorphous TiO_2/ZrO_2 matrices	<40-101	J. Mater. Chem A 2015, 3, 3768.

Table ST5. Comparision of adsorption capacity for methyl orange (MO) on various adsorbents

Adsorbent	Maximum Adsorption Capacity (mg. g^{-1})	Reference
K-δ- MnO_2 Nanosheet	145	J. Mater. Chem A 2015,3,5674
$Bi_2O_2CO_3$ nanosheets	117.8	**This work**
$CeO_{2-\delta}$ nanopowder	113	Langmuir 2014, 30, 11582.
CuO nanospheres Cu_2O microspheres	68.9 14.1	RSC Adv 2014, 4, 43024