nanomaterials

MDPI

Supplementary Materials

Defect Engineering Enhances the Charge Separation of CeO_2 Nanorods toward Photocatalytic Methyl Blue Oxidation

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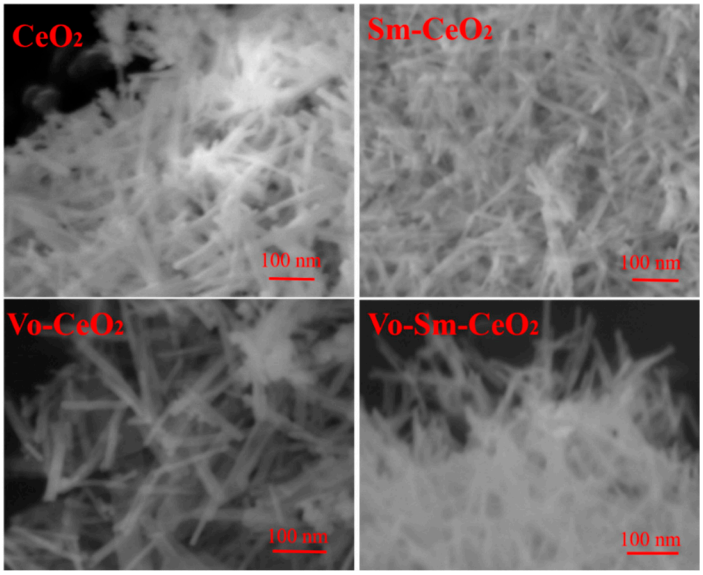

Figure S1. SEM images of CeO_2, Sm-CeO_2, Vo-CeO_2 and Vo-Sm-CeO_2.

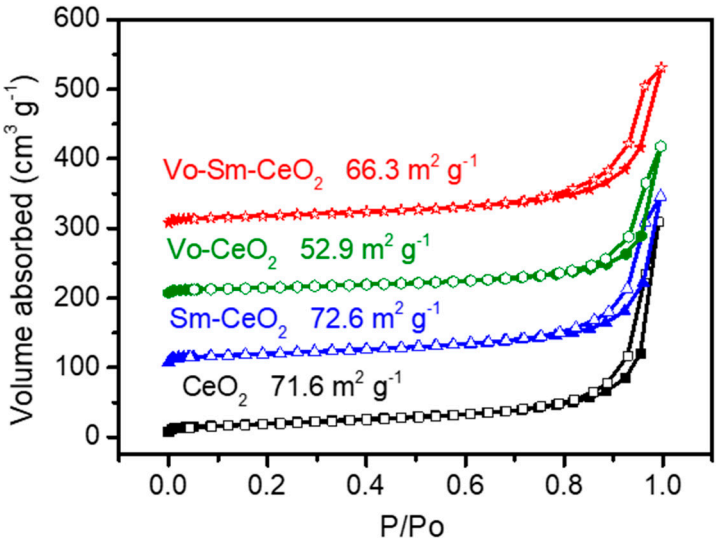

Figure S2. The N_2 adsorption spectra of all the samples.

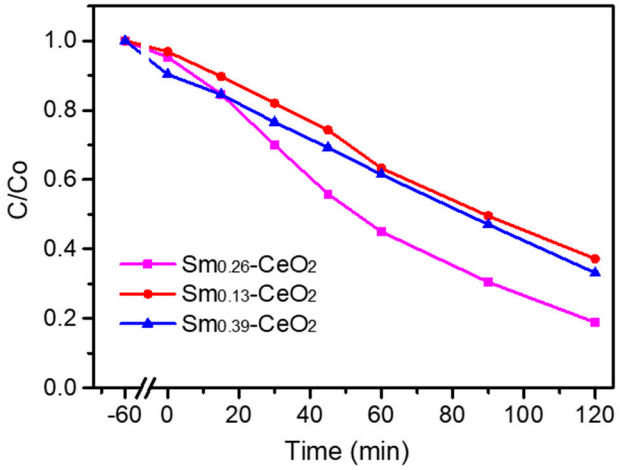

Figure S3. Photocatalytic performance of Sm doping CeO_2.

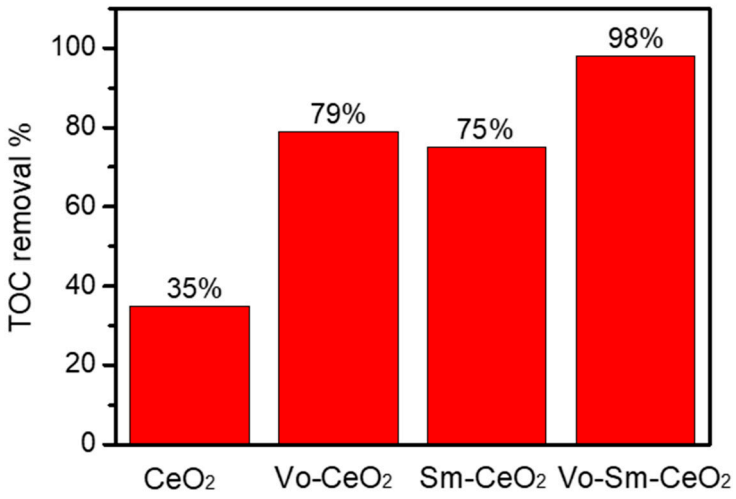

Figure S4. TOC removal efficiency CeO_2, Sm-CeO_2, Vo-CeO_2 and Vo-Sm-CeO_2 at 120 min.

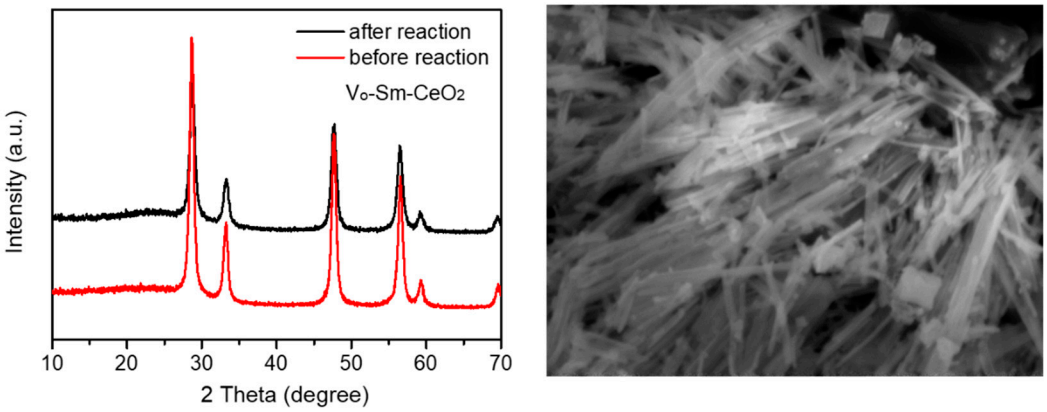

Figure S5. XRD spectra and SEM image of Vo-Sm-CeO_2 after five cycles test.

Table S1. The performance of Vo-Sm-CeO_2 is also compared with other reported Ce based photocatalysts.

Samples	Solution	Light Source	Photocatalytic Efficiency	Ref.
Vo-Sm-CeO_2 (0.02 g)	100 mL MB (10 mg/L)	300 W Xe lamp coupled with a 420 nm cut-off filter	*T50=30 min *T100=90 min	Our sample
$Ce_xCo_{1-x}O_2$ nanoparticle (0.01 g)	200 mL MB (10 ppm)	150 W Xenon lamp	T_{29}= 180 min	1
ZnO/CeO_2/10 wt.% NGP (0.03 g)	100 mL MB (20 mg/L)	150 W Xenon lamp	T_{84}=120 min	2
$CeCa_5$ quantum dots (0.2 g)	100 mL MB (5×10^{-3}M)	150 W Xenon lamp	T_{84}=50 min	3
CeO_2 Nps (0.1g)	100 mL MB (10 ppm)	125 W UV-light	T94=180 min	4
AgNWs@Ce O_2-2 (0.05g)	100 mL MB (10 ppm)	300 W Xe lamp	T_{80}=150 min	5
ZnO/CeO_2 (90:10) (0.5g)	500 mL MB	250 W projection lamp	T_{97}=150 min	6
CeO_2/Tb_2O_3 nanotubes (0.01g)	15 mL MB (0.3 mM)	50W Xenon lamp	T_{93}=75 min	7
5 wt% Zn-CeO_2 (0.5g)	500 mL MB (3×10^{-5} mol/L)	400 W sodium lamp	T_{85}=180 min	8
CeO_2/g-C_3N_4 (13.0%) (0.1g)	100 mL MB (10 mg/L)	300 W Xe lamp with a 400 nm cutoff filter	T_{95}=120 min	9
RGO/CeO_2 (0.015g)	100 mL MB (1×10^{-5} M)	direct sunlight	T_{50}=90 min	10
CeO_2 nanoparticles (0.05g)	100 mL MB (12ppm)	20 W UV light	T_{94}=27 min	11
Gd-CeO_2 nanoparticles (0.1g)	100 mL MB (1.7×10^{-6} M)	900W UV-light source	T_{98}=300min	12

*T50 means the time needs for photocatalytic degradation of 50% MB.

Reference

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