Electronic Supplementary Information

Study of the roles of oxygen vacancies in TiO_2 by reduced graphene oxide as active sites

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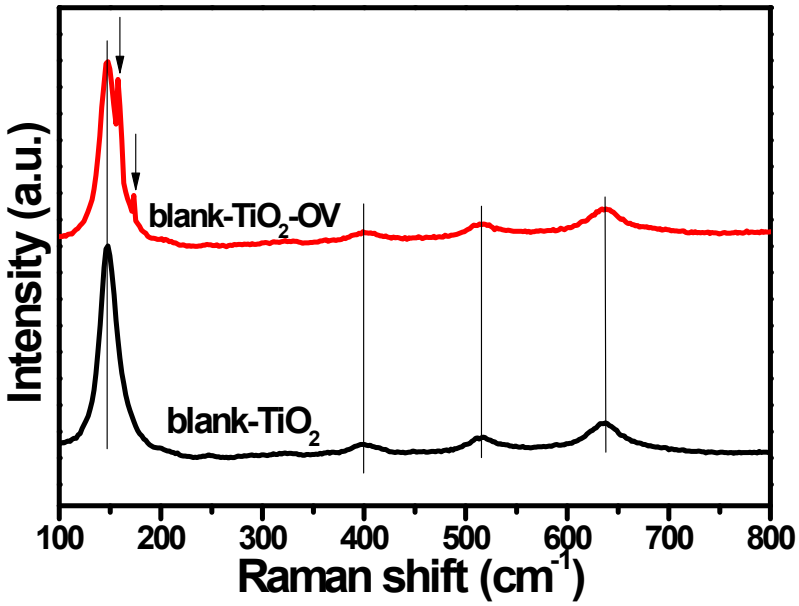

Fig. S1 Raman spectra of blank-TiO_2-OV (a) and blank-TiO_2 (b).

Table S1. The average crystallite sizes of TiO_2 nanoparticles in 5%RGO/TiO_2-OV, 5%RGO/TiO_2, blank-TiO_2-OV and blank-TiO_2 calculated from the (101), (004), (200), (105), and (211) crystal planes of anatase TiO_2 on the basis of Scherrer formula.

Samples	Crystal planes	Size (nm)	Average crystallite sizes (nm)
5%RGO/TiO_2-OV	(101)	23	21.2
	(004)	24	
	(200)	22	
	(105)	19	
	(211)	18	
5%RGO/TiO_2	(101)	23	21.2
	(004)	25	
	(200)	22	
	(105)	18	
	(211)	18	
blank-TiO_2-OV	(101)	24	21.4
	(004)	25	
	(200)	22	
	(105)	18	
	(211)	18	
blank-TiO_2	(101)	23	21.4
	(004)	24	
	(200)	22	
	(105)	19	
	(211)	19	

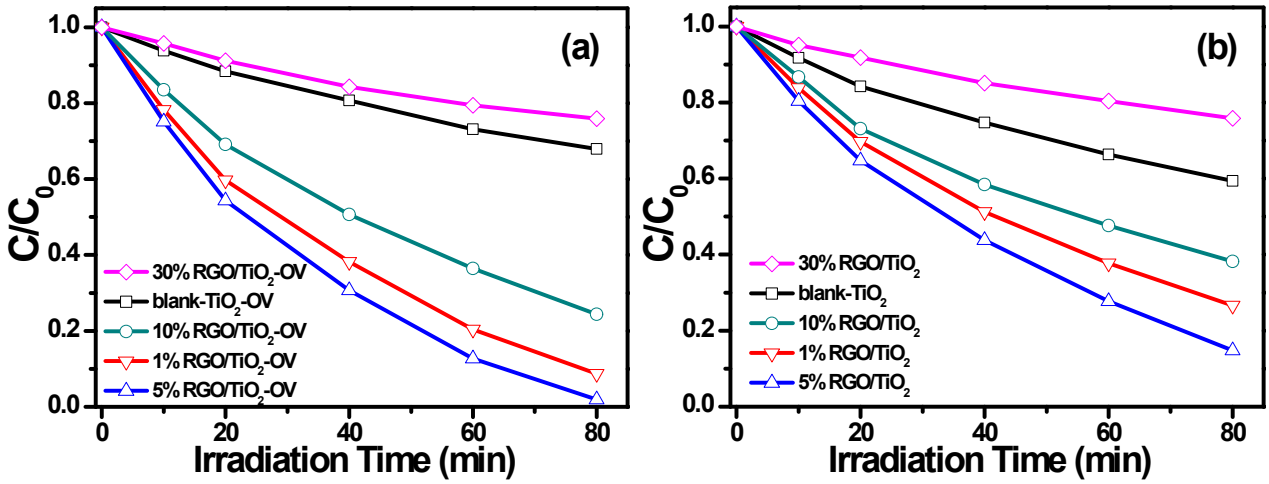

Fig. S2 Liquid-phase photocatalytic degradation of HCHO over RGO/TiO_2-OV composites (a) and RGO/TiO_2 composites (b) under simulated solar light irradiation. Note: OV is short for oxygen vacancies.

Table S2 Summary of surface area of the as-prepared blank-TiO_2-OV, blank-TiO_2, 5%RGO/TiO_2 composite, and 5%RGO/TiO_2-OV composite.

Samples	S_{BET} (m^2 g^{-1})
blank-TiO_2-OV	55
blank-TiO_2	56
5%RGO/TiO_2	59
5%RGO/TiO_2-OV	58

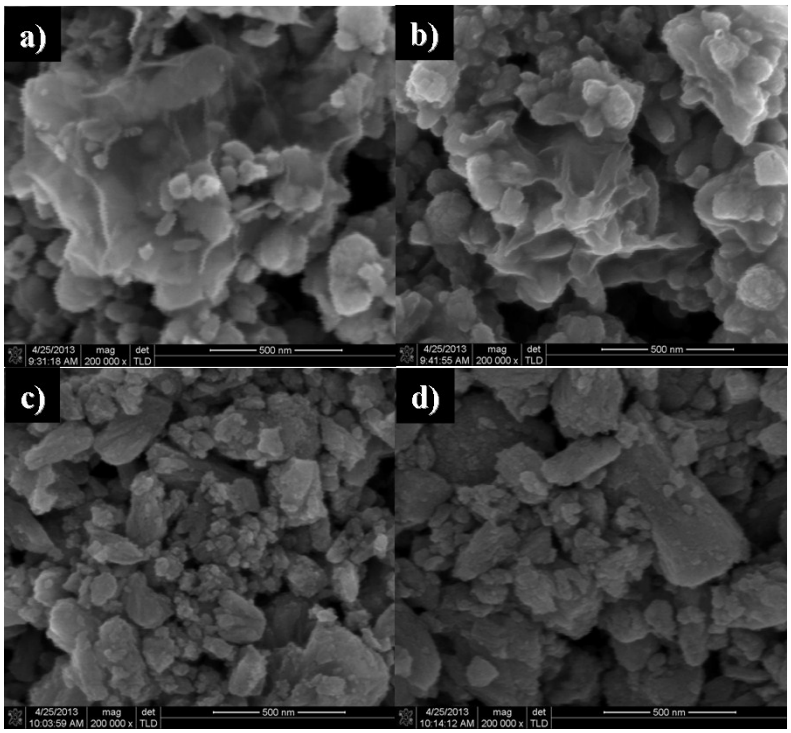

Fig. S3 Typical SEM images of 5%RGO/TiO_2-OV (a), 5%RGO/TiO_2 (b), blank-TiO_2-OV (c) and blank-TiO_2 (d).