

Electronic Supplementary Information (ESI):

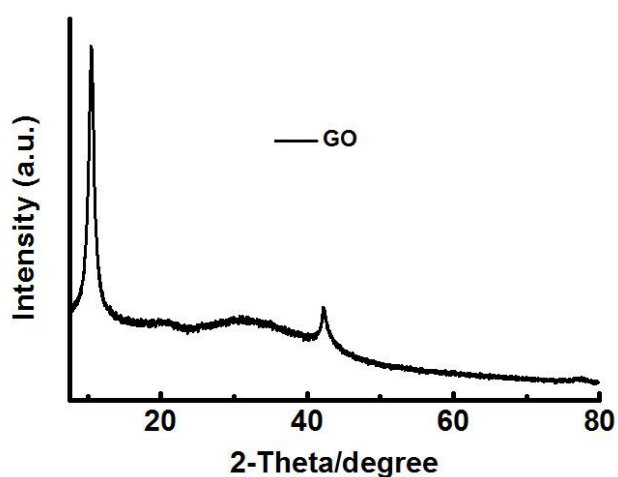
## Single-Step Solvothermal Synthesis of Mesoporous Ag/TiO<sub>2</sub>/Reduced Graphene Oxide Ternary Composite with Enhanced Photocatalytic Activity

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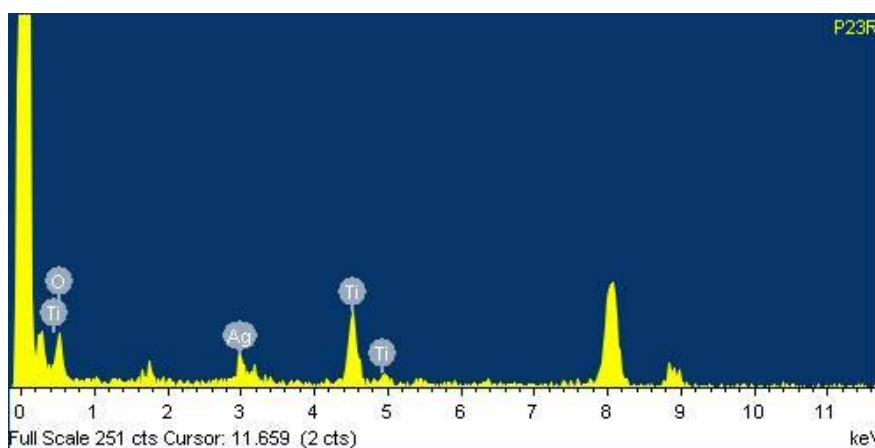
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**Figure S1.** X-ray diffractogram of GO.<sup>1</sup>



**Figure S2.** EDX spectrum of AgTG 0.50.

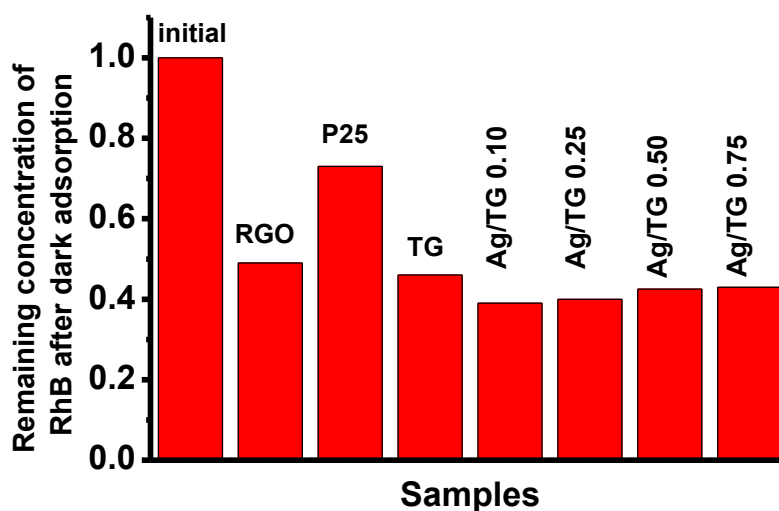
**Table S1.** Calculated graphitic domain size for different samples.<sup>2,3</sup>

Sample	Graphitic domain size (nm)
GO	17.0
RGO	15.7
TG	14.6
AgTG 0.50	14.2

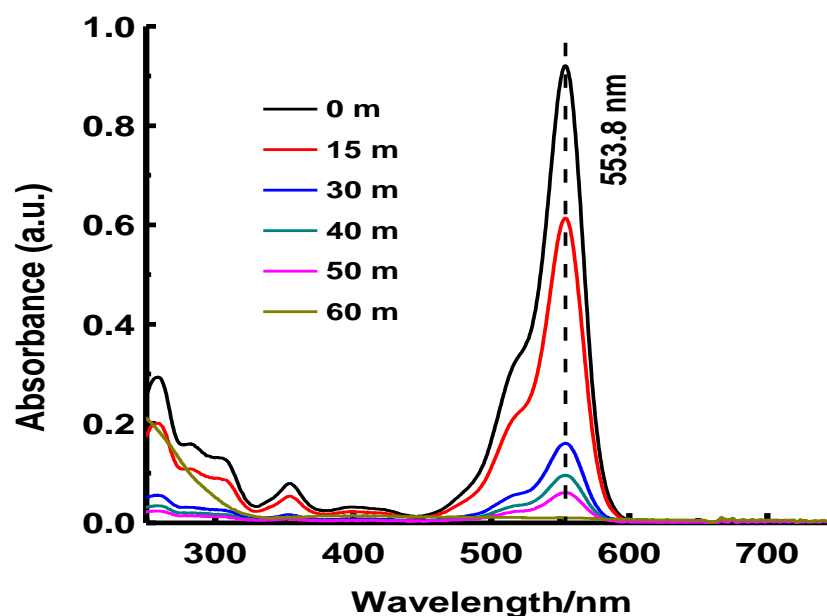
**Table S2.** Peak area ratio of oxygen containing groups ( $A_O$ ) to the non-oxygenated groups ( $A_C$ ) and the ratio of total carbon ( $A_{TC}=A_O+A_C$ ) to titanium ( $A_{Ti}$ ) and silver ( $A_{Ag}$ ) in different samples.

Sample	$A_O/A_C$	$A_{TC}/A_{Ti}$	$A_{TC}/A_{Ag}$
GO	1.21	-	-
AgTG 0.25	0.54	0.40	0.24
AgTG 0.25 after use	0.43	0.35	0.21

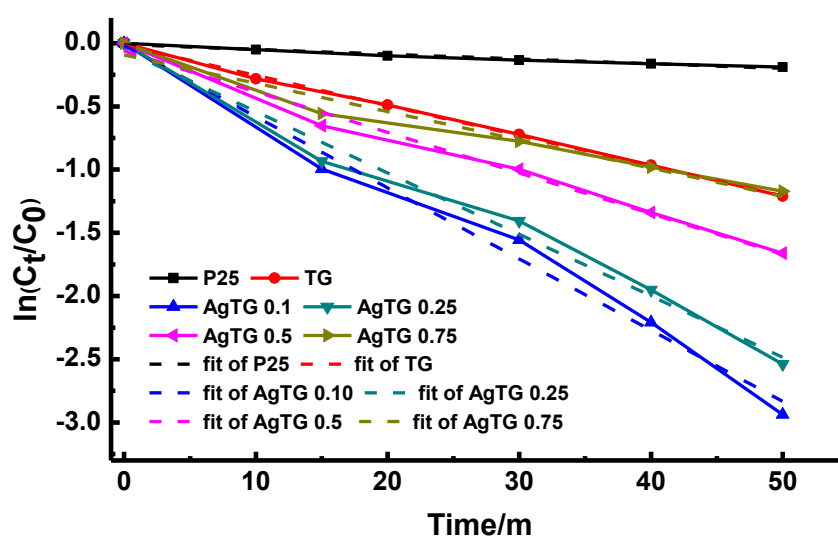
Decrease of the ratio  $A_O/A_C$  in AgTG 0.25 after use indicates further reduction of RGO in the sample during photocatalytic experiment. Whereas, the decrease of the ratios  $A_{TC}/A_{Ti}$  and  $A_{TC}/A_{Ag}$  implies the degradation of rGO during the experiment.<sup>2,4</sup>



**Figure S3.** Plot of the concentration of the dye remained in solution after dark-adsorption against catalysts.



**Figure S4.** UV-visible absorption spectra of the dye at different time during dye degradation experiment.



**Figure S5.** Plots of  $\ln(C_t/C_0)$  vs. time for different catalysts. The dotted lines are the corresponding fitting curves. Last point of each curve was not considered.

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