Electronic Supplementary Information

Graphene oxide and Ag engulfed TiO_2 nanotube arrays for enhanced electrons mobility and visible-light-driven photocatalytic performance

Table S1 Photocatalytic degradation kinetic parameters of MB for TNTs, Ag/TNTs, GO/TNTs and GO-Ag/TNTs.

		First Order Kinetic		
	TNTs	Ag/TNTs	GO/TNTs	GO-Ag/TNTs
R^2	0.99328	0.99933	0.986	0.98645
k	0.000862308	0.00128	0.00255	0.00365
		Second Order Kinetic		
R^2	0.99962	0.99965	0.99961	0.99913
k_2	0.000210615	0.000323795	0.00121	0.00182

Table S2 Photocatalytic degradation kinetic parameters of 2-CP for TNTs, Ag/TNTs, GO/TNTs and GO-Ag/TNTs.

	1st Order Kinetic			
	TNTs	Ag/TNTs	GO/TNTs	GO-Ag/TNTs
R^2	0.98724	0.9905	0.9917	0.98586
k	0.00147	0.00226	0.00209	0.00285
	2nd Order Kinetic			
R^2	0.99769	0.99318	0.99429	0.98598
k_2	0.000215077	0.000393487	0.0003464	0.000543231

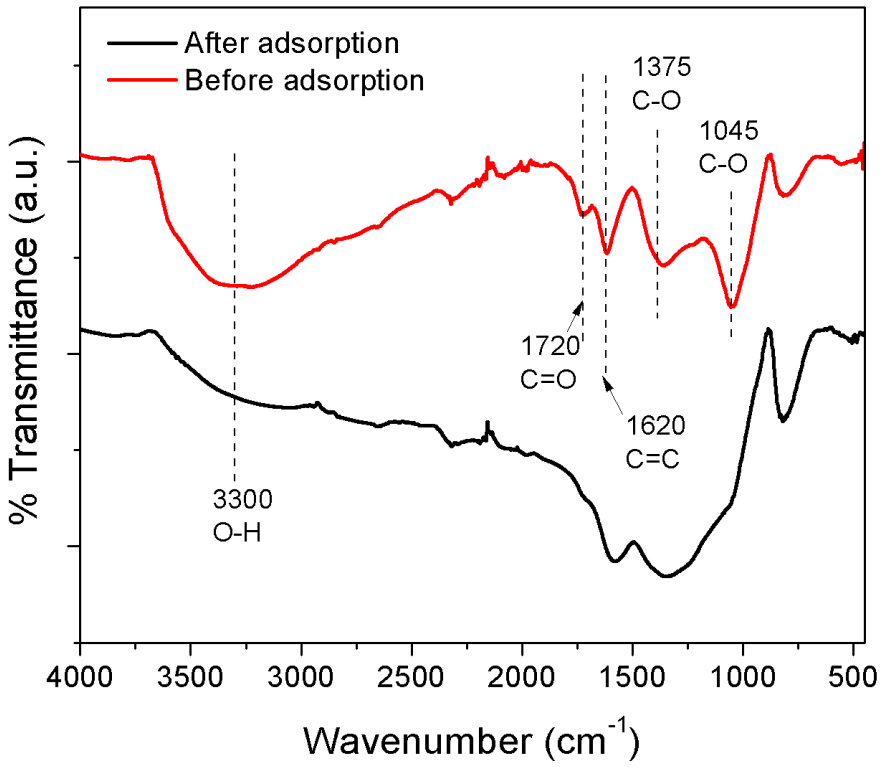

Fig. S1 FTIR spectra of GO-Ag/TNTs before and after the adsorption of MB.

The FTIR of GO-Ag/TNTs before and after the adsorption of MB is demonstrated to ascertain the role of functional groups on the surface of GO in the adsorption of MB. It could be inferred from Fig. S1, that chemical bonding between MB and related groups of GO attained based on following facts: 1) After adsorption, the stretching vibration adsorption band of OH groups at 3300 cm^{-1} was wide with offset 2) The bands at 1620 and 1375 cm^{-1} were shifted to 1579 and 1343 cm^{-1} with a broadening effect. This signifies the involvement of –OH, -C=C and C-O group in the adsorption of MB onto GO. FTIR results also proved the contribution of some functional groups on the surface of GO in the adsorption of MB, which possibly reduce the interaction between MB and GO surfaces through π-π electron coupling. Hence, it can be speculated that the active sites of the GO can be undesirably occupied by the adsorbed MB through chemisorption and cannot be eluted.

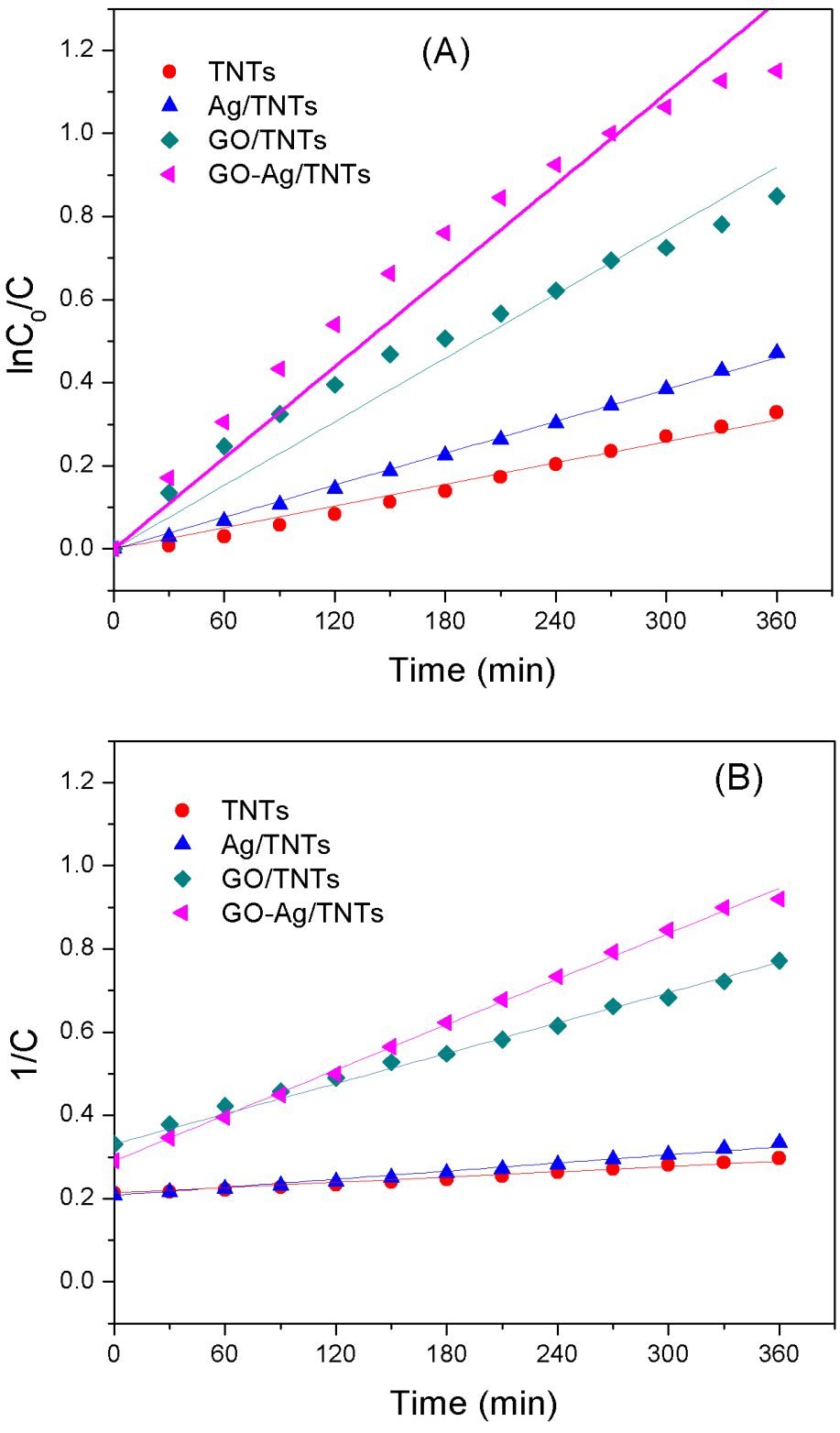

Fig. S2 Kinetic plots of (a) first order and (b) second order for MB degradation.

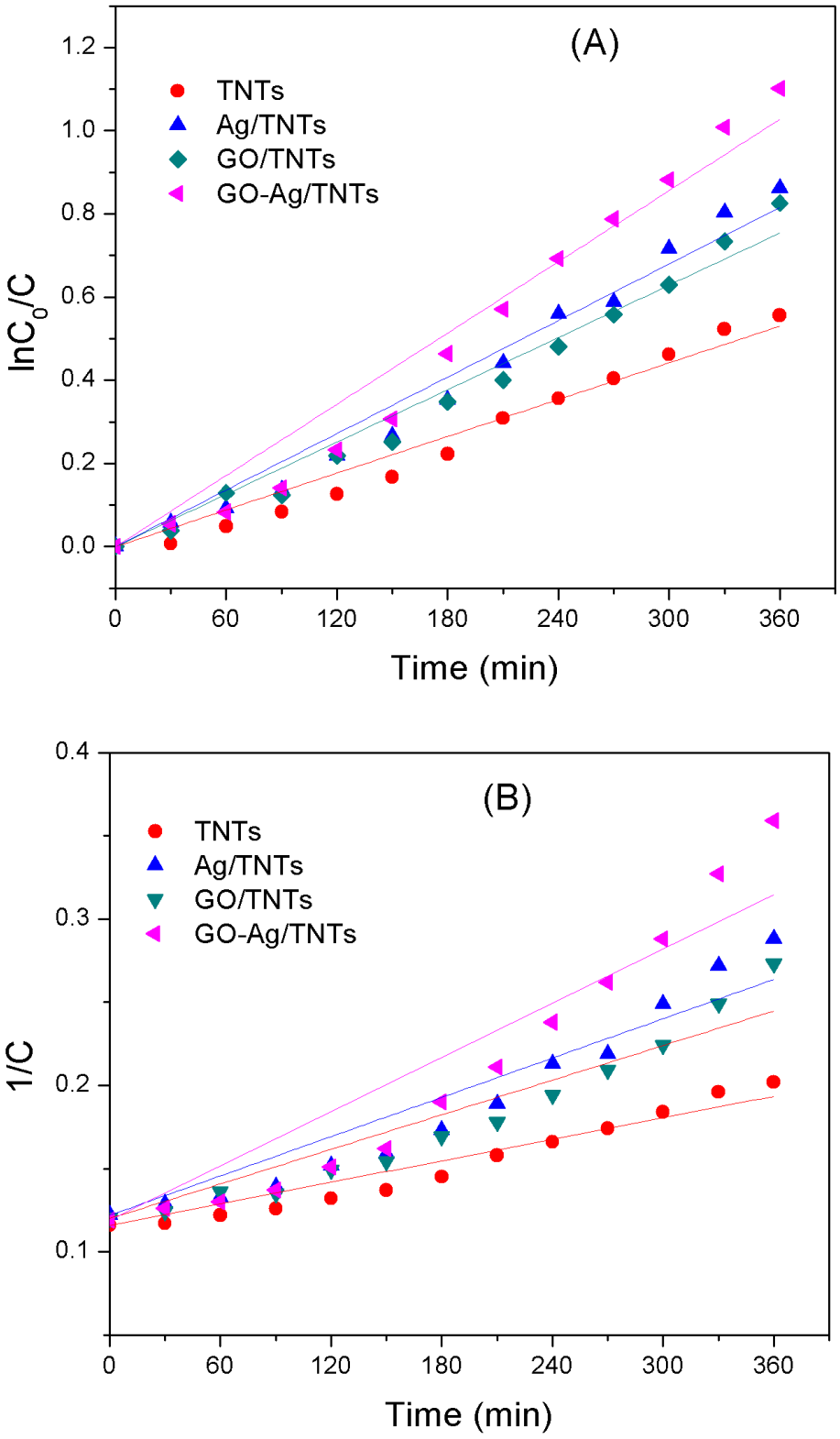

Fig. S3 Kinetic plots of (a) first order and (b) second order for 2-CP degradation.