

Template assisted fast photocatalytic degradation of azo dye using ferric oxide -gallia nanostructures

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Samples	Ga (wt%)		Fe (wt%)	
	Nominal	Experimental	Nominal	Experimental
G	100	100	-	-
GF-0.5	99.5	99.2	0.5	0.8
GF-1	98.8	98.6	1.2	1.4
GF-2	97.5	97.9	2.5	2.1
GF-3	96.8	96.5	3.2	3.5
GF-5	94.9	94.7	5.1	5.3
GF-10	89.7	89.2	10.3	10.8
GF-25	74.3	74.6	25.7	25.4
GF-50	49.5	49.7	50.5	50.3
GT	100	100	-	-
GFT-0.5	99.6	99.4	0.4	0.6
GFT-1	98.9	99.8	1.1	1.2
GFT-2	97.5	97.7	2.5	2.3
GFT-3	96.6	96.5	3.4	3.5
GFT-5	94.8	94.6	5.2	5.4
GFT-10	89.5	89.3	10.5	10.7

Table S1. EDX elemental analysis and nominal composition of samples.

Sample	T _{dark}	T _{removal}	% Removal
P25	30	120	54

Table S2. Photocatalytic activity of P25 in presence of 15 ppm CR.

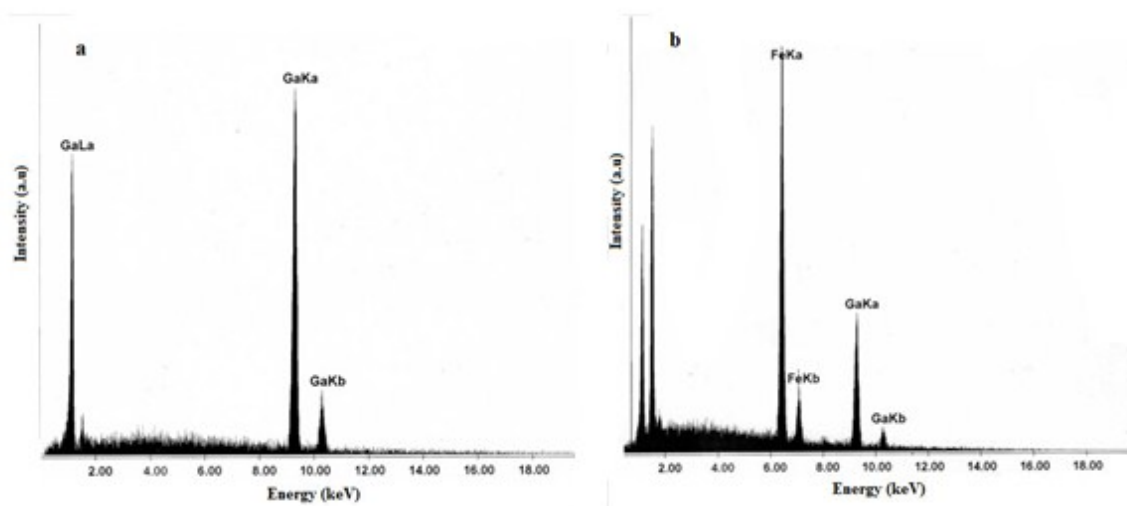


Fig. S1. EDX analysis of a) Ga_2O_3 (G) and b) 50 wt% Fe_2O_3 - Ga_2O_3 (GF-50) samples.

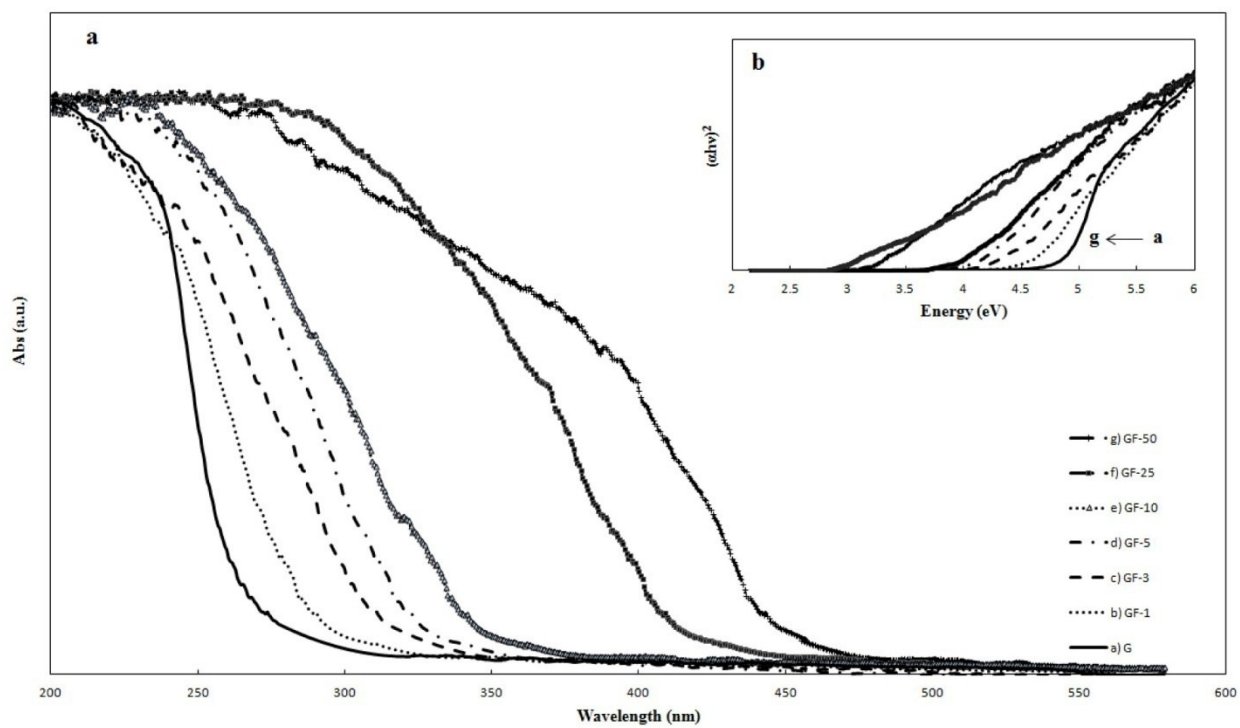


Fig. S2. a) Optical absorption spectra of the 0, 1, 3, 5, 10, 25 and 50 wt% Fe₂O₃-Ga₂O₃ samples by template free route and b) $(\alpha h\nu)^2$ versus photon energy plots of the mentioned samples.

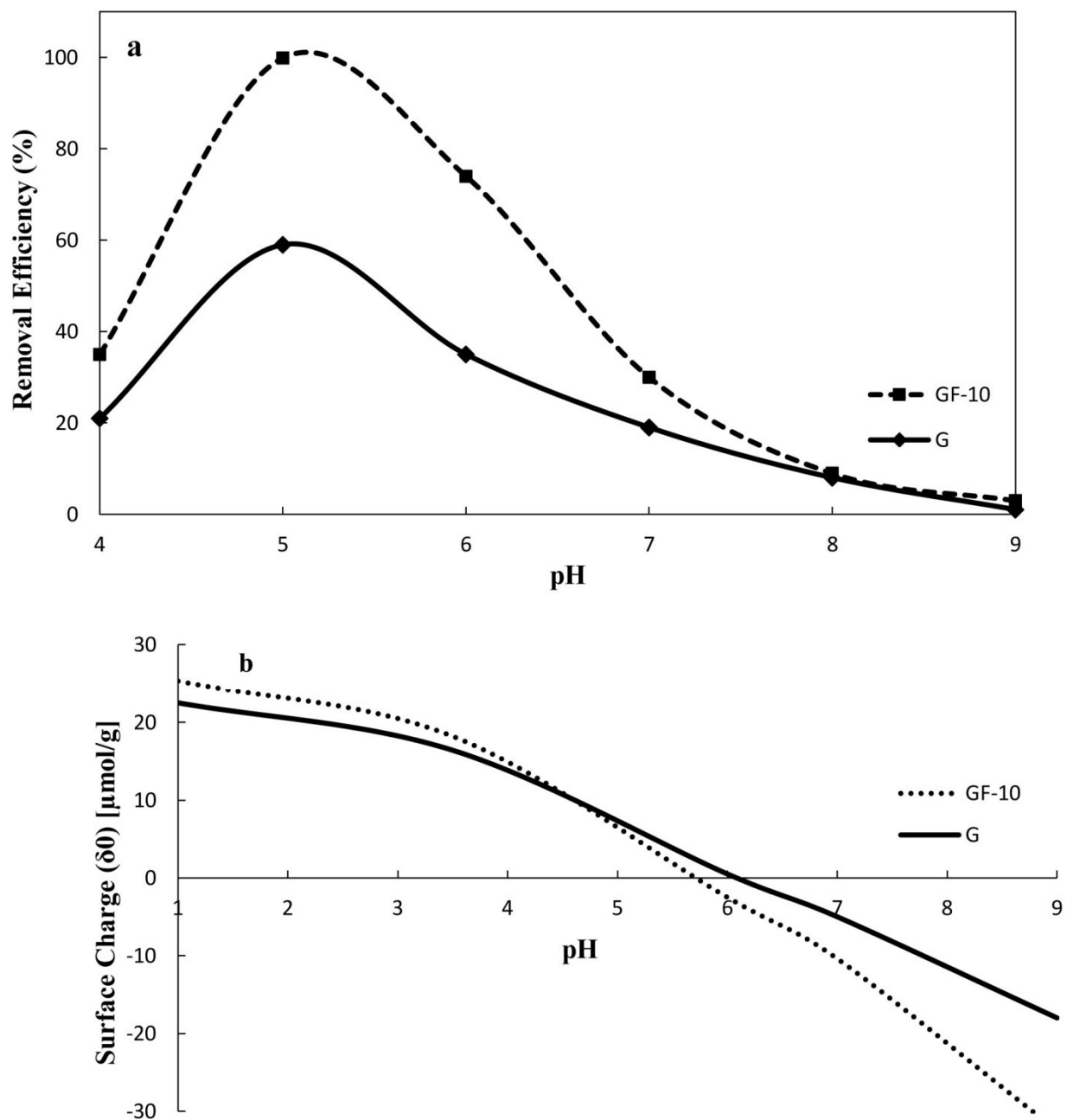
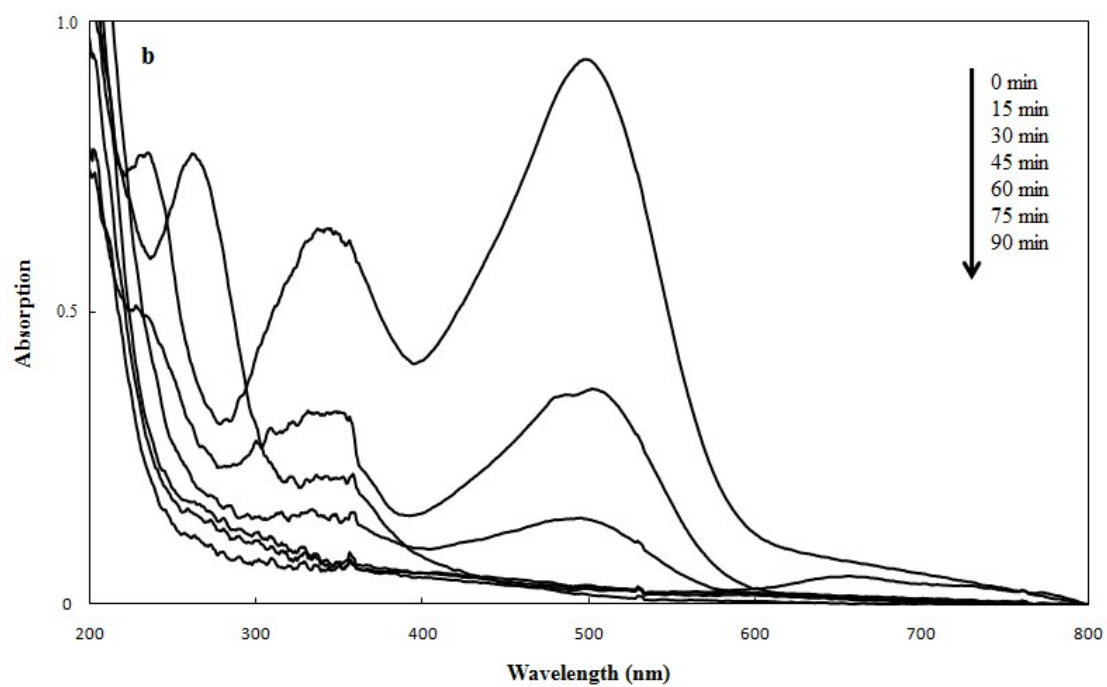
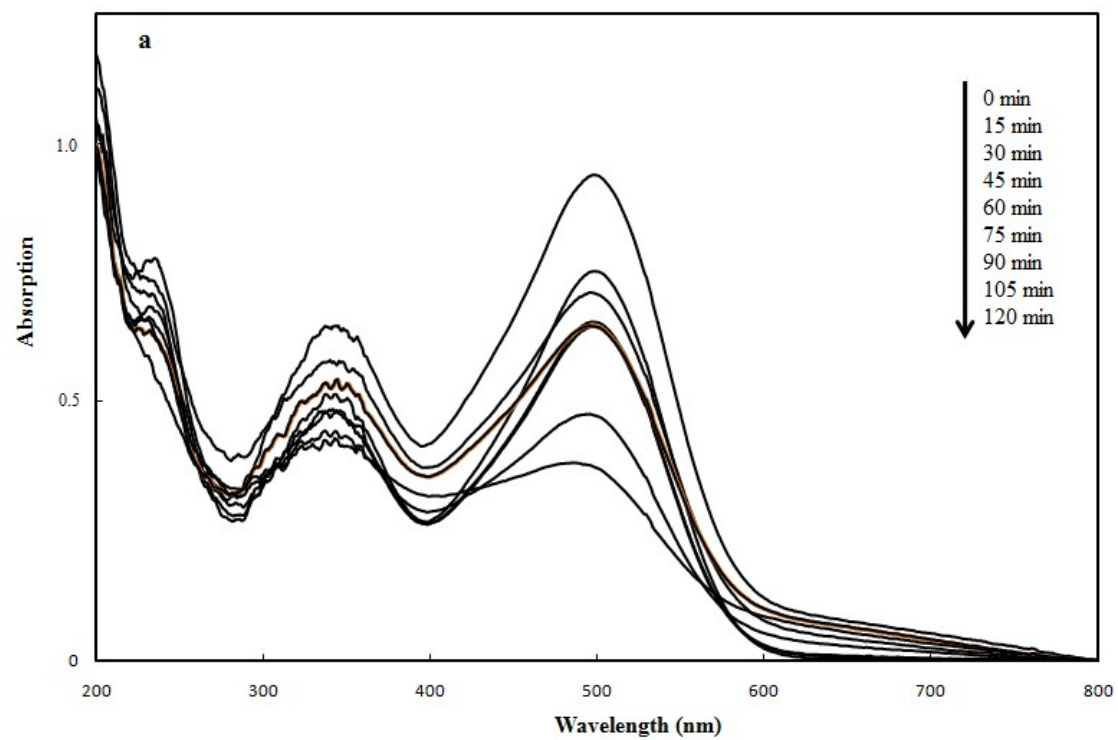


Fig. S3. Removal efficiency percentage versus pH for a) G and b) GF-10 samples, condition: 0.025 g photocatalyst, 20 ml of CR dye with 15 ppm concentration, irradiation time 2h at room temperature.



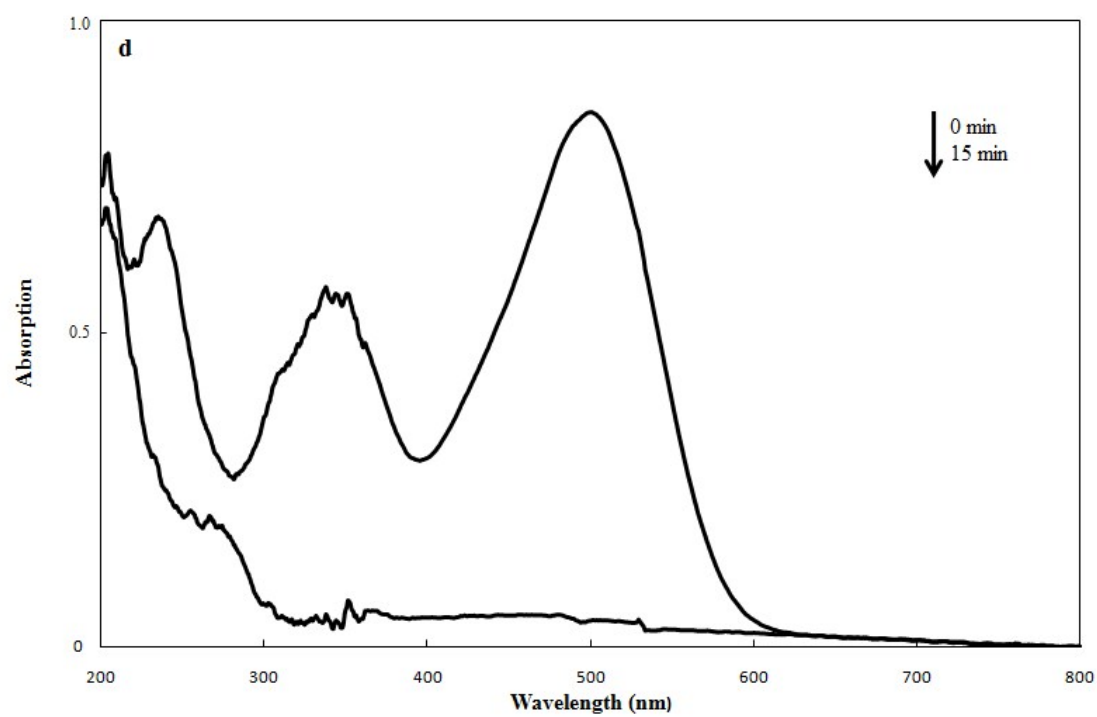
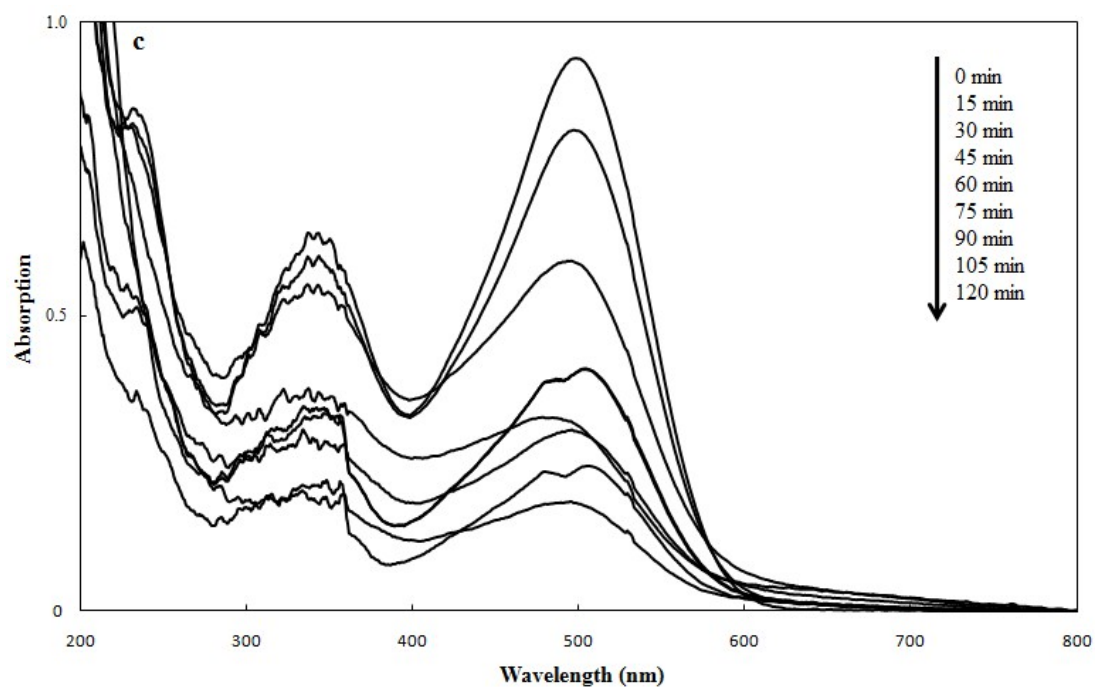


Fig. S4. Absorption spectra of a solution of 15ppm CR in the presence of a) G, b) GF-10 c) GT and d) GFT-3 samples under UV light irradiation.

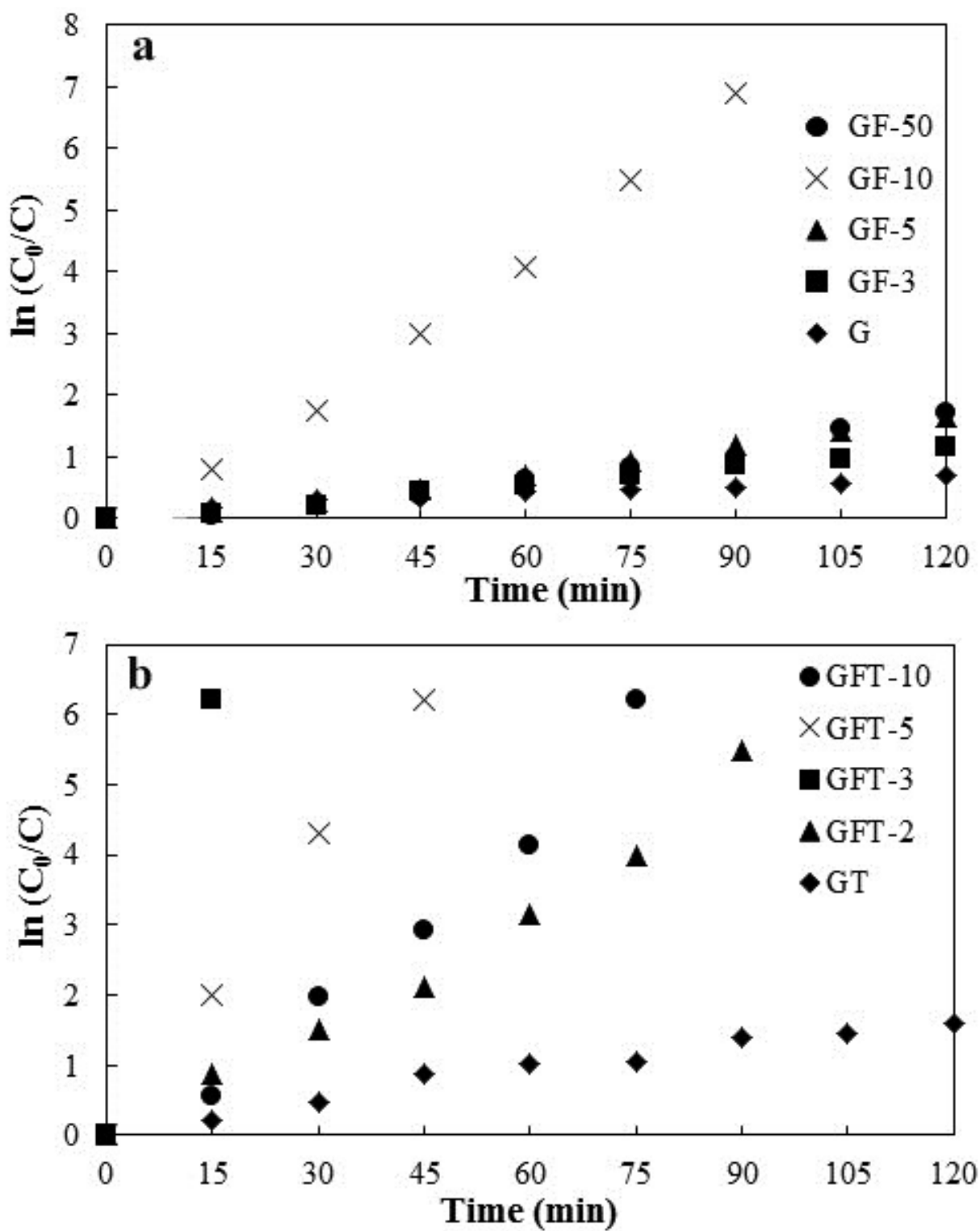


Fig. S5. Reaction kinetics of photocatalytic degradation of CR.

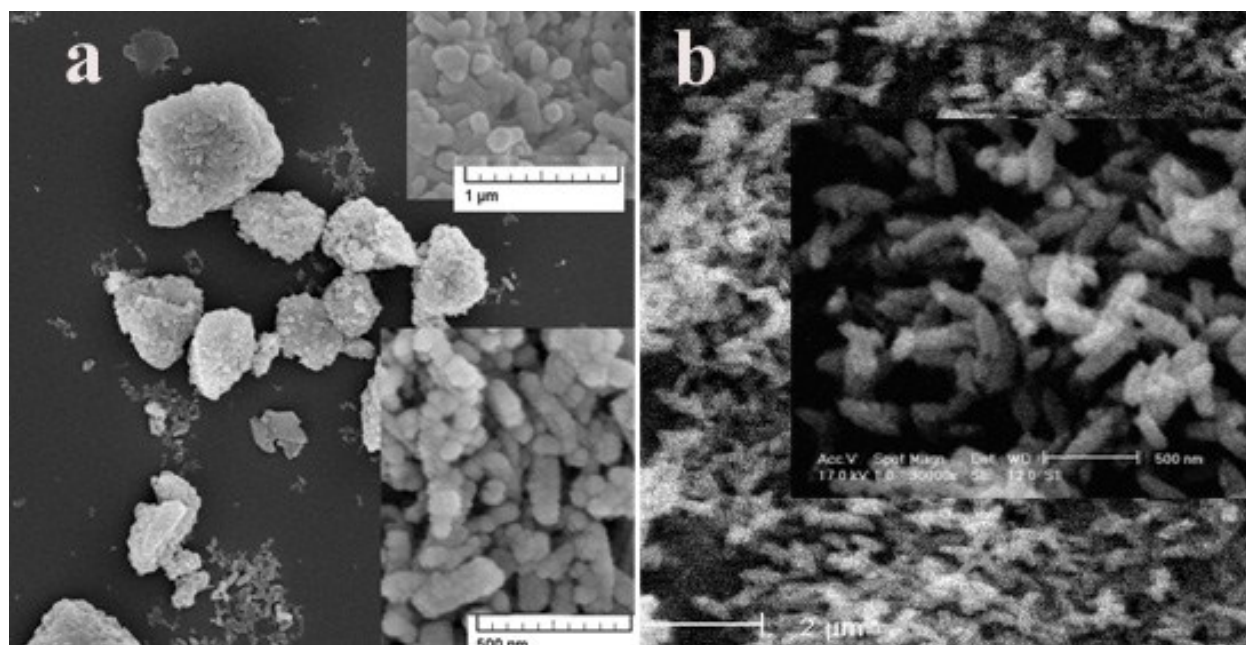


Fig. S6. SEM image of a) GF-10 and b) GFT-3 samples after 4 runs for photo-degradation of CR.

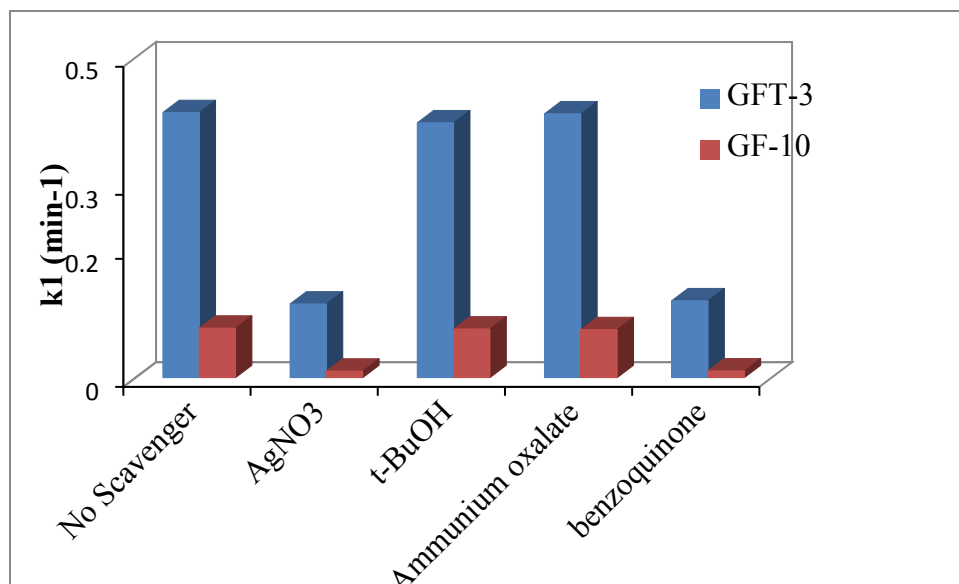


Fig. S7. Rate constants of GF-10 and GFT-3 in present of different scavengers.