Supporting Information

Eosin Y covalently anchored on reduced graphene oxide as an efficient and recyclable photocatalyst for the aerobic oxidation of α-aryl halogen derivatives

*Zhen Li, Wenfeng Zhang, Qingshan Zhao, Hanying Gu, Yang Li, Guoliang Zhang, Fengbao Zhang, and Xiaobin Fan**

State Key Laboratory of Chemical Engineering, School of Chemical Engineering and Technology, Collaborative Innovation Center of Chemical Science and Engineering, Tianjin University, Tianjin 300072, China

Tel./Fax: +86 22-27408778; E-mail: xiaobinfan@tju.edu.cn

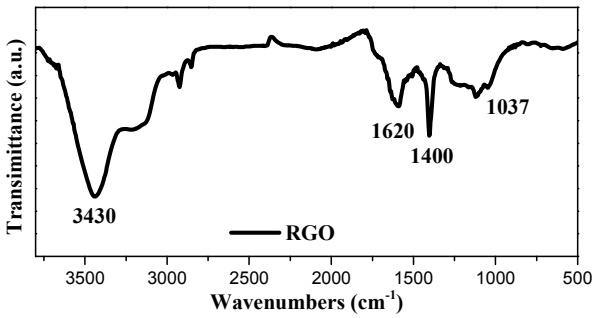


Figure S1. Fourier transform infrared (FTIR) spectrum of reduced graphene oxide (RGO)

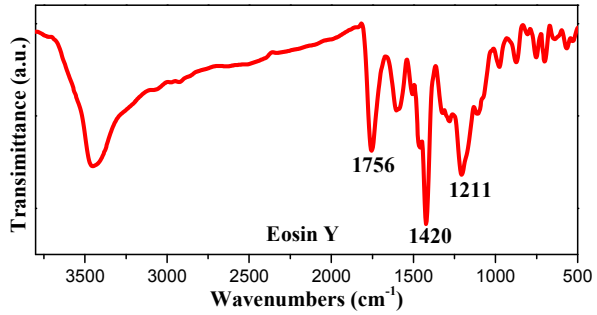


Figure S2. Fourier transform infrared (FTIR) spectrum of Eosin Y (EY)

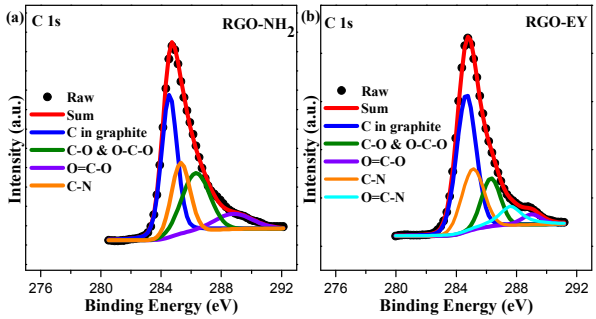


Figure S3. C 1s XPS spectra of (a) RGO–NH2 and (b) RGO–EY

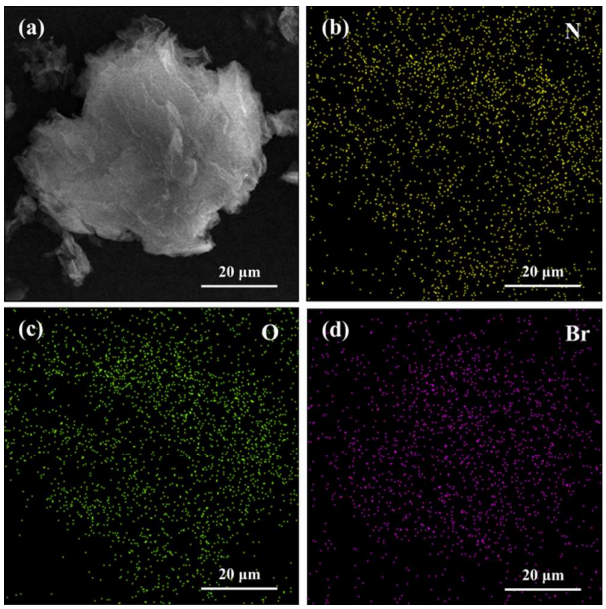


Figure S4. (a) SEM image of RGO–EY and corresponding quantitative EDS mapping of (b) N, (c) O and (d) Br

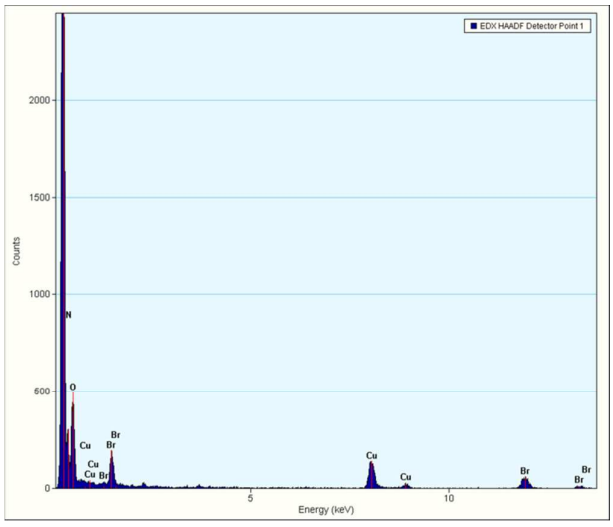


Figure S5. EDS spectrum of RGO-EY.

Note that the GO sample was placed on a copper grid in the testing process. As a result, signals of Cu could also be detected.

Table S1. EDS Quantification Results of RGO-EY

Entry	Element	Weight %	Atomic %
1	C(K)	75.91	81.63
2	N(K)	10.99	10.13
3	O(K)	9.47	7.65
4	Br(K)	3.63	0.59

The element atomic ratio of Br in the final RGO–EY is 0.59%, presenting an EY loading content of 0.12 mmol·g^{-1}.

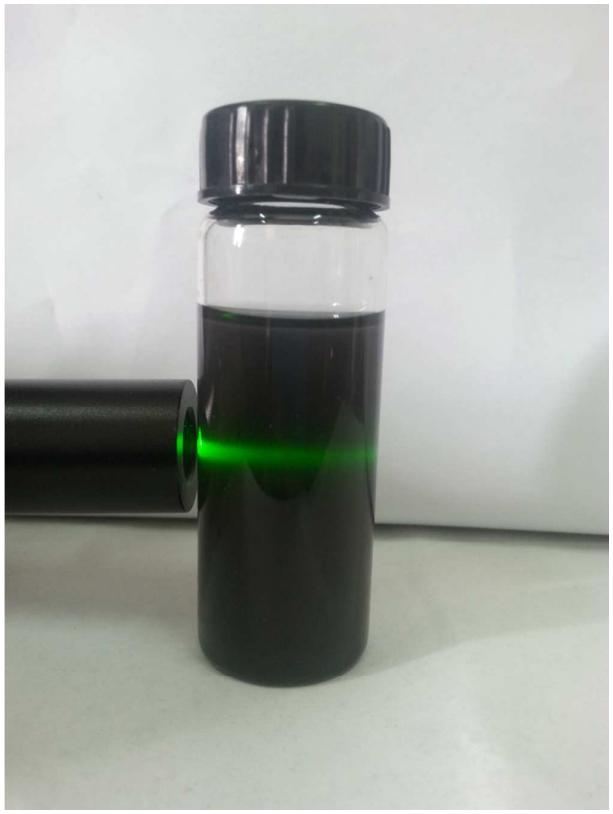


Figure S6. Tyndall effect exhibited by a RGO-EY dispersion in DMA.

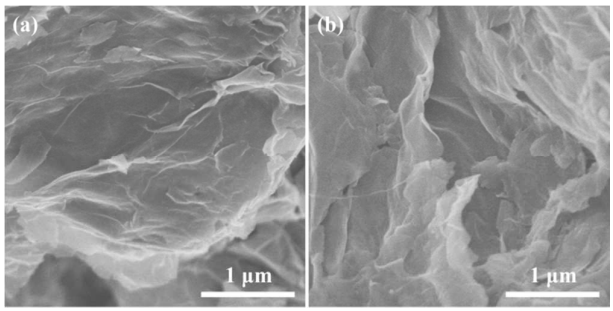
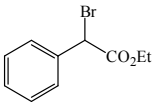
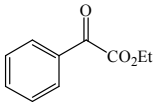
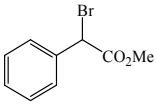
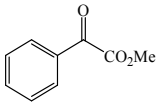
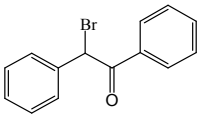
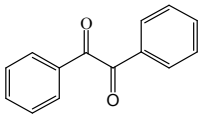
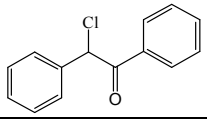
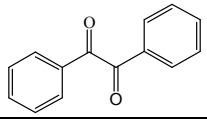


Figure S7. SEM images of (a) RGO-EY and (b) RGO-EY after recyclable testing

Table S2. Synthesis of α-Aryl Carbonyl Compounds 2 from 1 by Eosin Y[a]

Entry	1		Product (2)		Yield[%][b]	Selectivity[%]
1		1a		2a	42	66
2		1b		2b	37	68
3		1c		2c	76	78
4		1d		2c	15	49

[a] Standard conditions: 1a-d (1.0 mmol), Li_2CO_3 (1.0 mmol), 4-methoxypyridine (0.2 mmol) and catalyst (20 mg) were added in DMA (15 mL) under air at 25 °C. Irradiation time using a 24 W compact fluorescent bulb at 20 cm was 24 h. [b] Calibrated yields determined by GC.

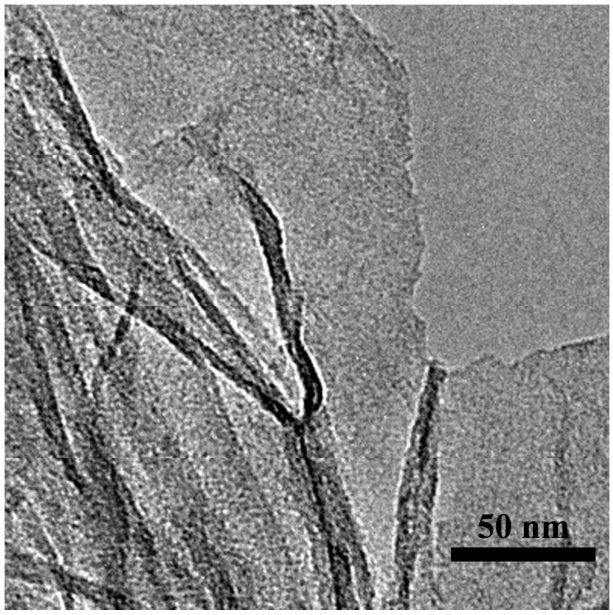


Figure S8. The TEM image of RGO-EY