SUPPORTING INFORMATION

Efficacy of shape monitored reduced graphene oxide-copper nanohybrid: Anti-bacterial attributes for food safety and dye degradation study

Moumita Maiti[1], Manas Sarkar[2], Soumen Maiti[3], Donghong Liu[1]*

[1]College of Bio systems Engineering and Food Science, Zhejiang University, China

[2]Institute of Advanced Engineering Structures and Materials, Zhejiang University, China

[3] Department of Physics, St. Thomas College of Engineering and Technology, India

***Corresponding author:** Prof. D. Liu; **E-mail**: dhliu@zju.edu.cn

Kinetics and quantitative analysis of the dyes degradation by using the nanohybrids

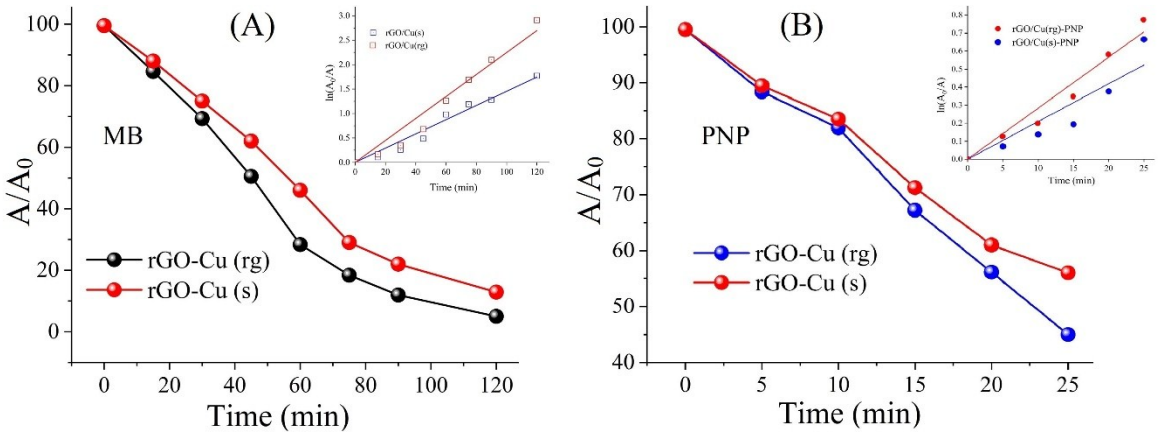

Figure S-1: Degradation percentages with respect to time for (A) MB (B) PNP dyes; and corresponding kinetic plot (inset)

For the quantitative analysis of the dye degradation behavior of both hybrids, the decrease in dye content percentages were evaluated with time as results are depicted in figure 13. From this figure superior degradation ability of rGO-Cu(rg) sample as compared to other for both dyes is obvious. Further we have calculated the kinetics of each degradation (presented in inset). Taking the slopes of the graphs of $\ln(A_0/A)$ versus irradiation time (t), k value for all samples were

estimated (Table 1), which further discloses higher degradation ability of rGO-Cu(rg) than rGO-Cu(s) (Figure 13-inset).

Table S-1: values of k and R^2 calculated from the kinetic graphs

	R^2		k(min^{-1})	
	MB	PNP	MB	PNP
rGO-Cu(rg)	0.981	0.981	0.2248	0.02823
rGO-Cu(s)	0.985	0.921	0.0141	0.02093

Effect of the dosages of catalyst on the photo dye degradation

To determine the consequence of the catalyst in dye degradation, dosage dependent (1 mg -50 mg) catalytic study also explored. Initial concentration of the dyes was taken 500 µM. The irradiation time was set at 120 min and 25 min for MB and PNP dyes solution respectively.

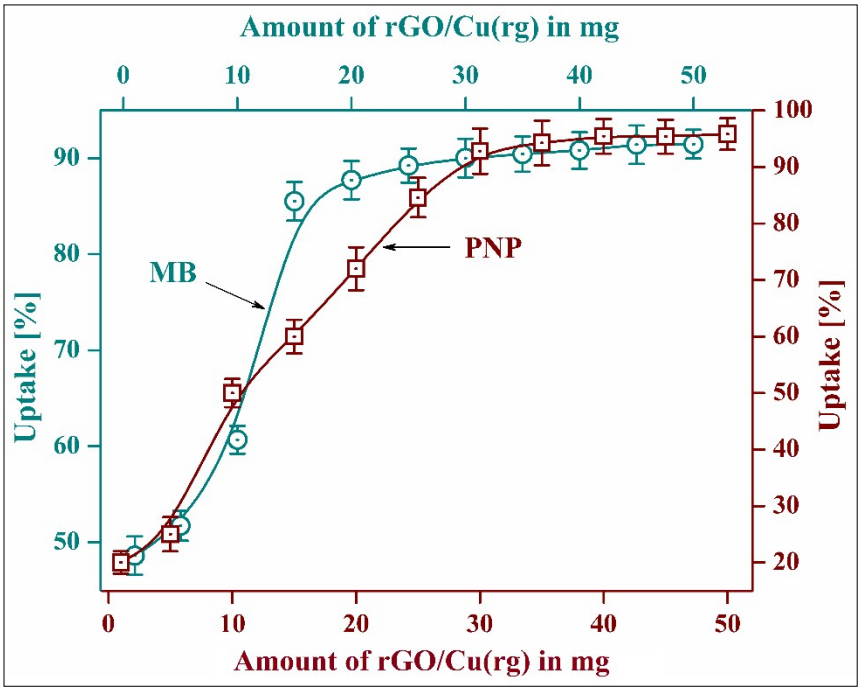

Figure S-2: Effect of amount of rGO-Cu(rg) on photocatalytic activity