

Supporting Information

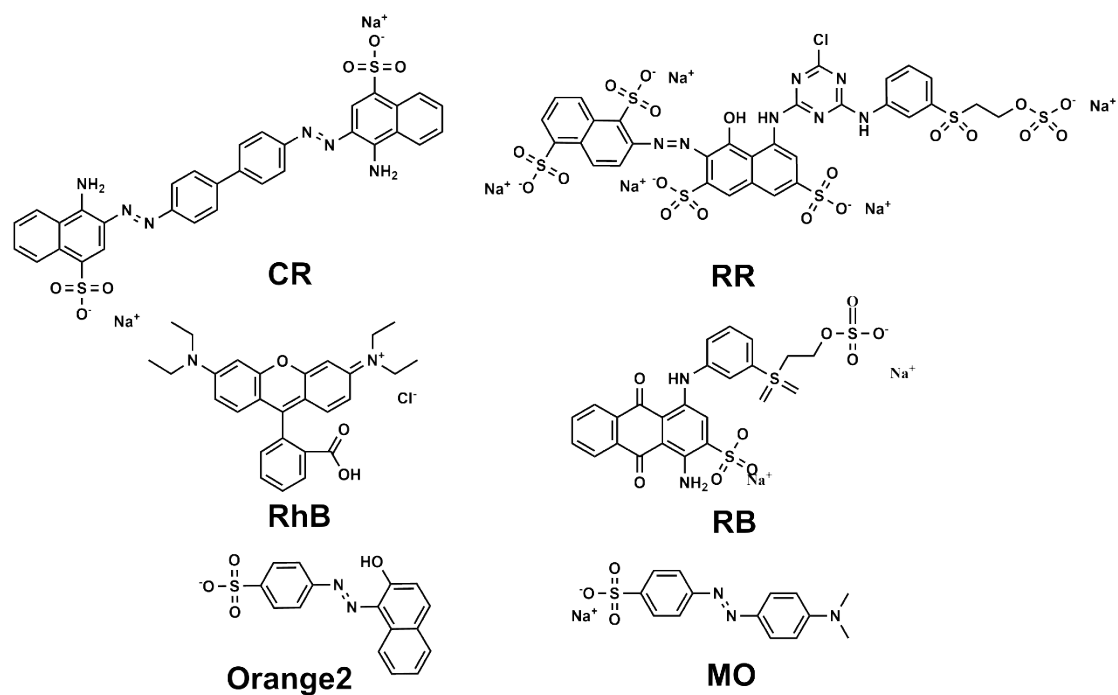
# Strongly Enhanced persulfate activation by bicarbonate accelerated Cu (III)/Cu (I) redox cycle

*Jun Zhang, Shenjun wang, Yuhao Wu, Jiahai Ma\**

School of Chemical Sciences, University of Chinese Academy of Sciences, Beijing

100049, P. R. China

E-mail: [majia@ucas.ac.cn](mailto:majia@ucas.ac.cn)



Scheme S1. Structural formula of selected six dyes.

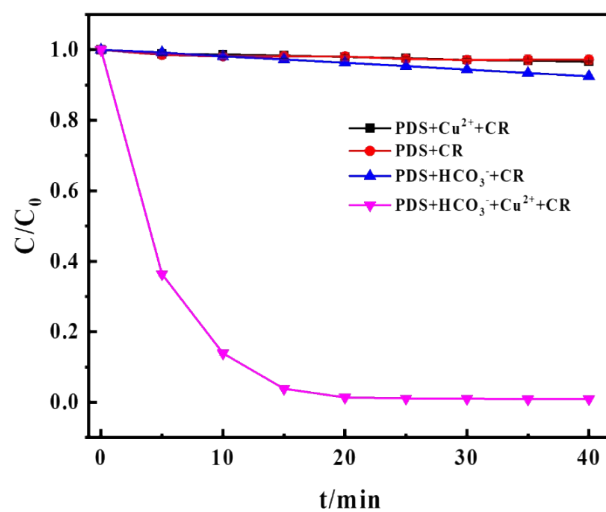


Fig. S1. The degradation of CR in various systems. Experimental conditions: [PDS] = 16mM, [NaHCO<sub>3</sub>] = 20mM, [Cu<sup>2+</sup>] = 0.1mM, [CR] = 0.02 mM.

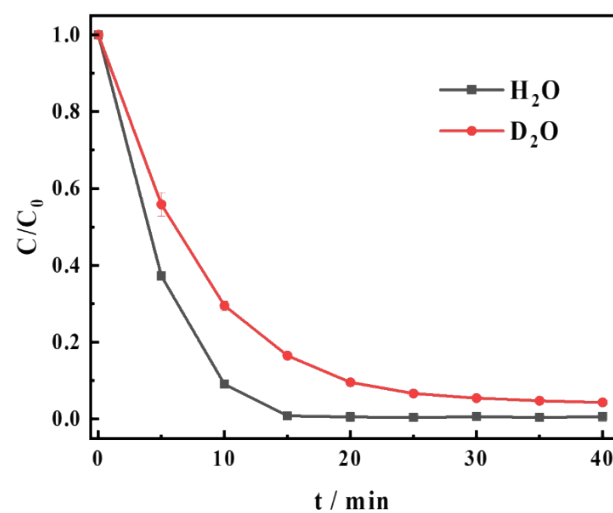


Figure S2. The degradation of CR in different solvents. Experimental conditions: [PDS] = 16mM, [NaHCO<sub>3</sub>] = 20 mM, [CuCl<sub>2</sub>] = 0.1 Mm, [CR] = 0.02 mM

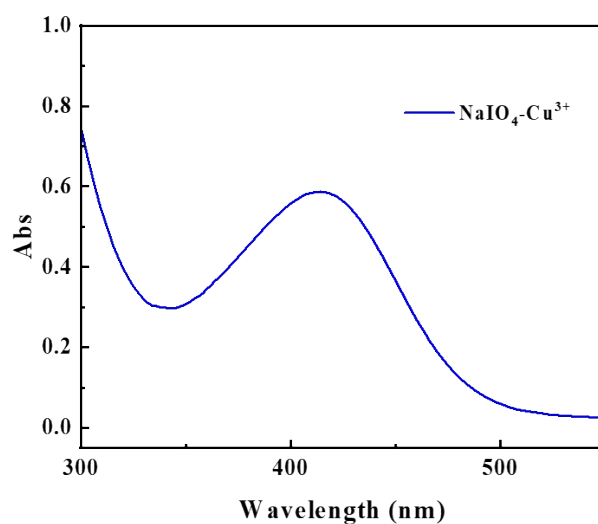


Figure S3. The absorbance of the complex of copper and NaIO<sub>4</sub> after adding NaIO<sub>4</sub> into the PDS/HCO<sub>3</sub><sup>-</sup>/Cu<sup>2+</sup> system. Experimental conditions: [PDS] = 16mM, [NaHCO<sub>3</sub>] = 20 mM, [CuCl<sub>2</sub>] = 0.1 mM, [CR] = 0.02 mM.

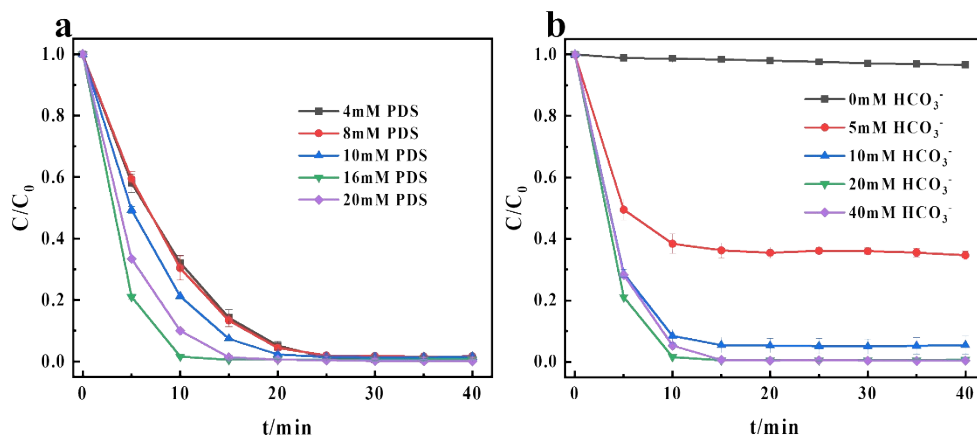


Figure S4. The degradation of CR in (a) different concentration of PDS, [NaHCO<sub>3</sub>] = 20 mM, [CR] = 0.02 mM, [CuCl<sub>2</sub>] = 0.1 mM; (b) different concentration of NaHCO<sub>3</sub>, [PDS] = 16mM, [CR] = 0.02 mM, [CuCl<sub>2</sub>] = 0.1 mM.

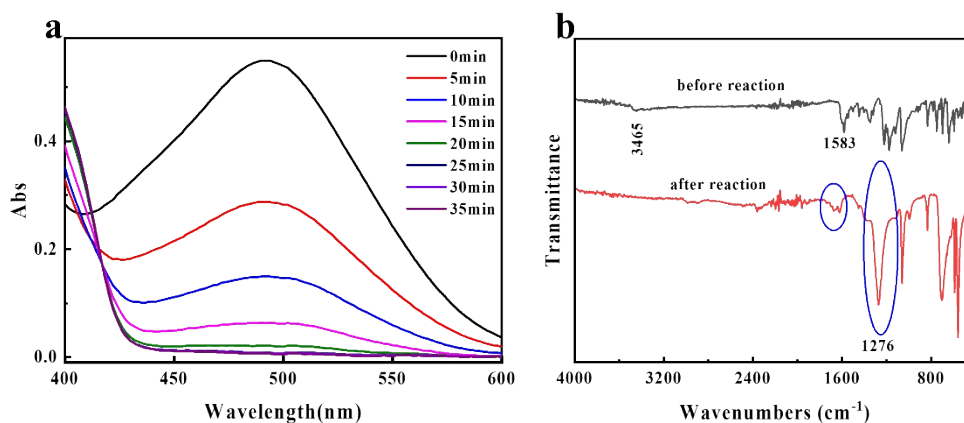


Figure S5. (a) The changes of UV-vis spectrum in the CR degradation. (b) The changes of FT-IR in the CR degradation. Experimental conditions: [PDS] = 16 mM, [NaHCO<sub>3</sub>] = 20 mM, [Cu<sup>2+</sup>] = 0.1mM, [NaIO<sub>4</sub>] = 10 mM, [CR] = 0.02 mM.

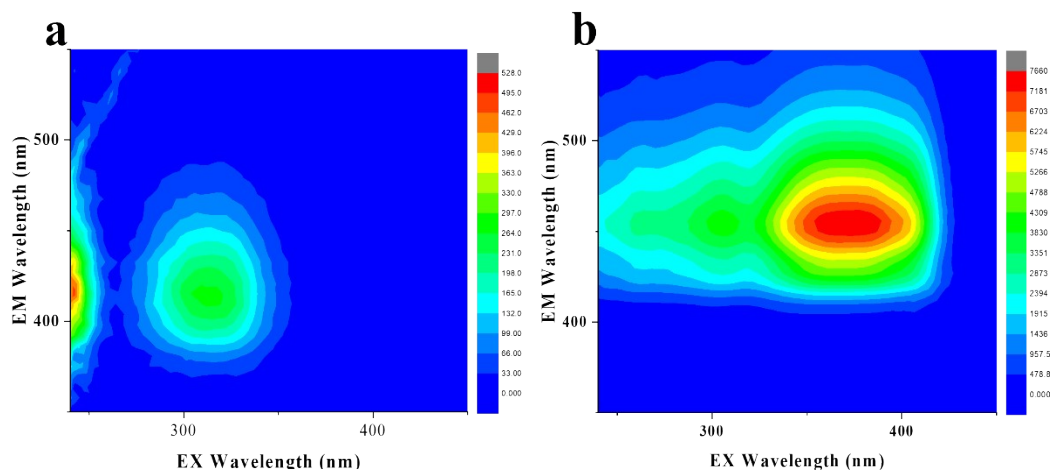


Figure S6. The 3D fluorescence spectra of CR before the reaction (a) and after the reaction (b) in

the PDS/HCO<sub>3</sub><sup>-</sup>/Cu<sup>2+</sup> system. Experimental conditions: [PDS] = 16mM, [NaHCO<sub>3</sub>] = 20 mM, [CuCl<sub>2</sub>] = 0.1 mM, [CR] = 0.02 mM.

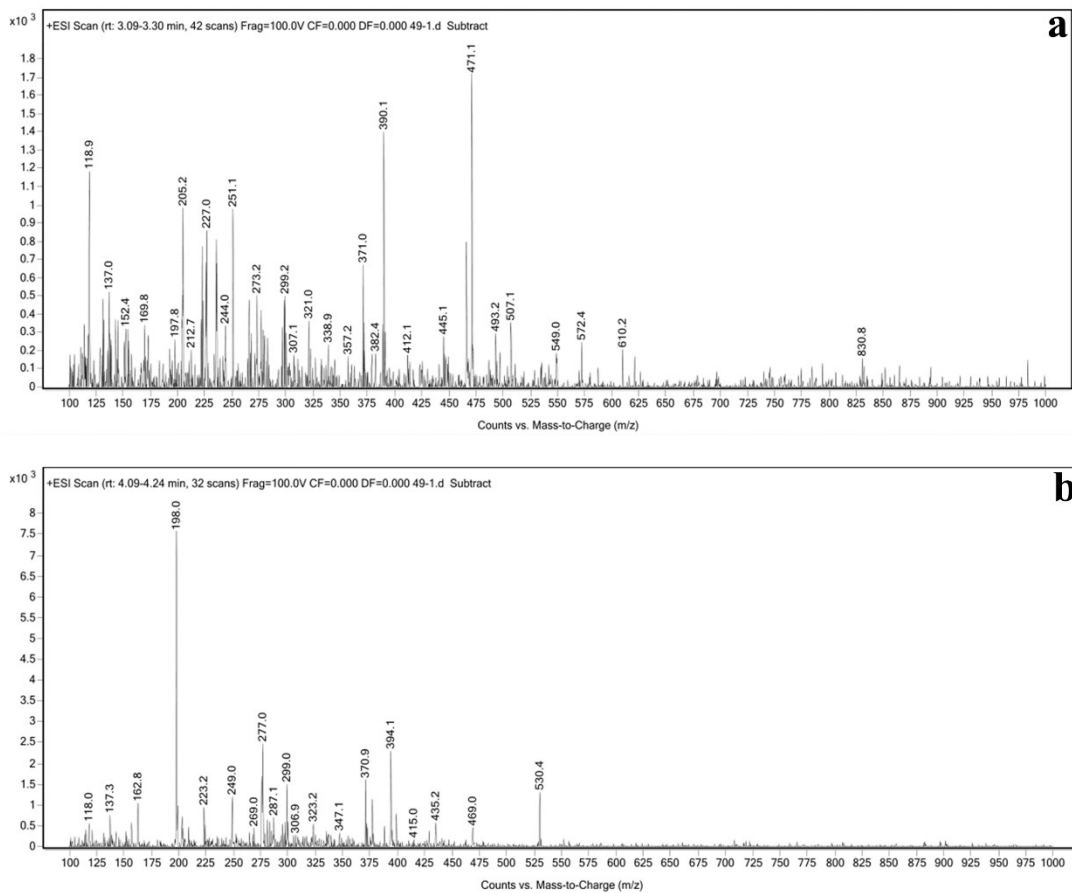


Figure S7. The LC-MS spectra of the degradation products of CR in different retention time, (a) 3.09-3.30min, (b) 4.09-4.24min.