

## *Supplementary Information*

### **Natural coal gangue as a stable catalyst to activate persulfate: Tetracycline hydrochloride degradation and explored mechanism**

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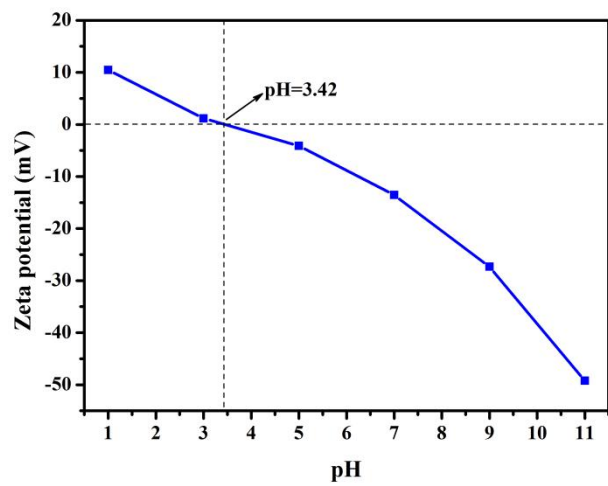
*R. China.*

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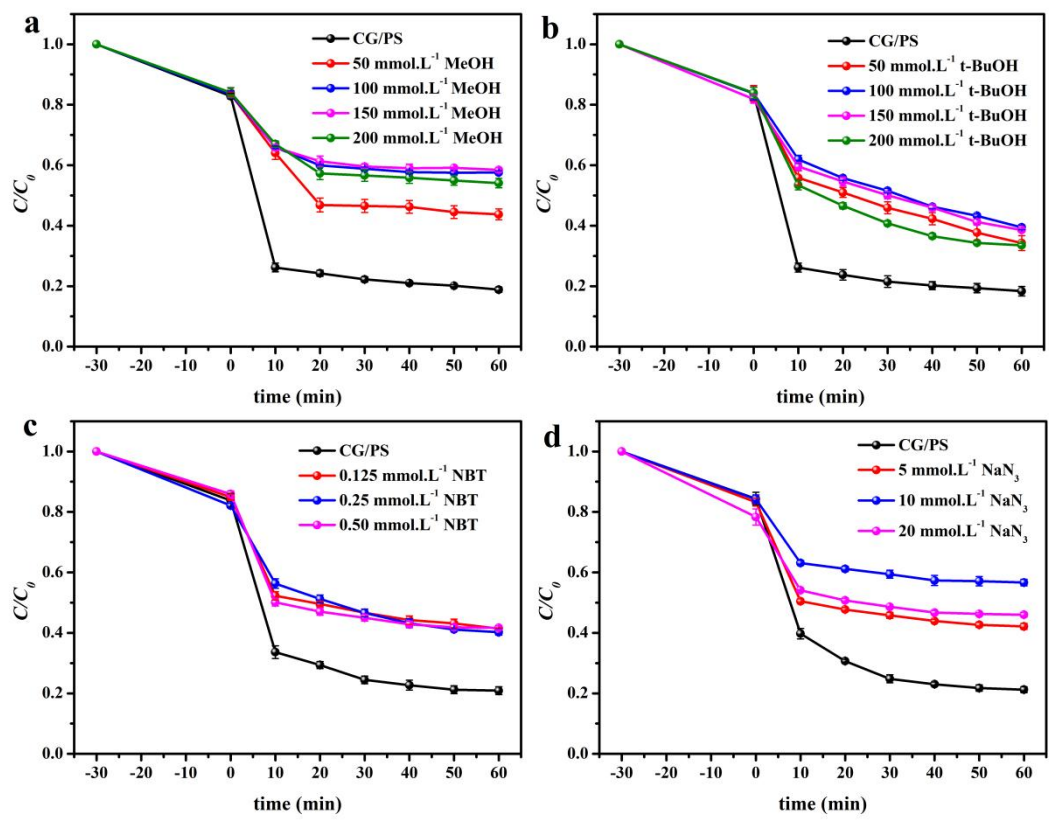
*Tel: +86-471-4994375.*

**Table. S1.** Chemical compositions of raw CG

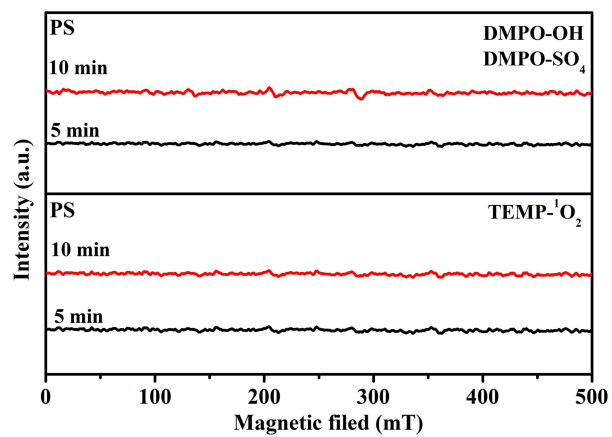
Elements	Content (%)	Elements	Content (%)
O	42.00	Zr	0.06
Si	23.48	Cl	0.05
Al	22.52	P	0.05
Fe	5.69	Sr	0.02
S	4.29	Pb	0.01
Ti	1.06	Ga	0.009
Ca	0.49	Y	0.006
K	0.19	Nb	0.005



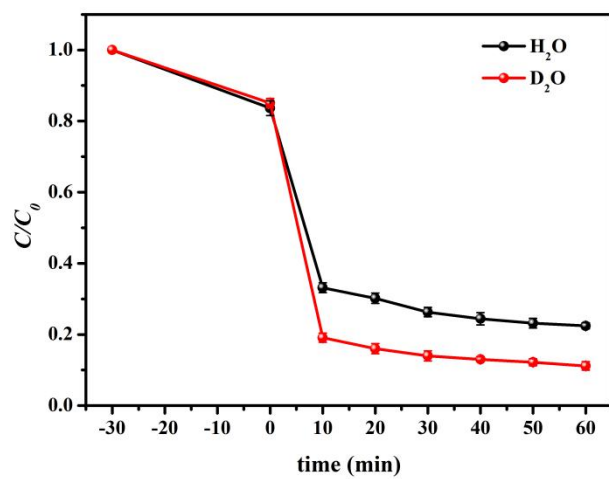
**Fig. S1.** The Zeta potentials of CG at different pH value



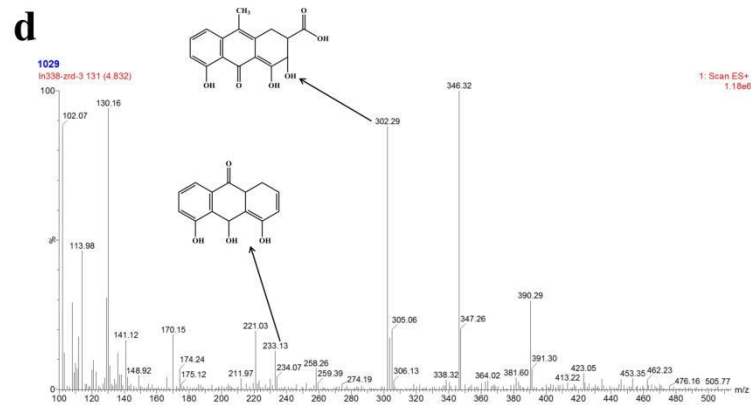
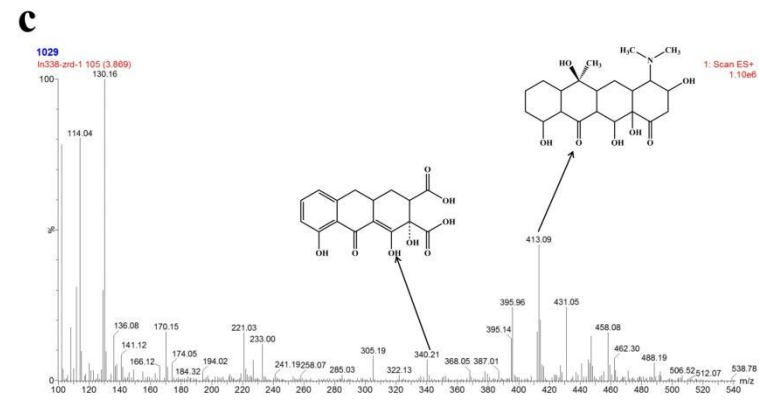
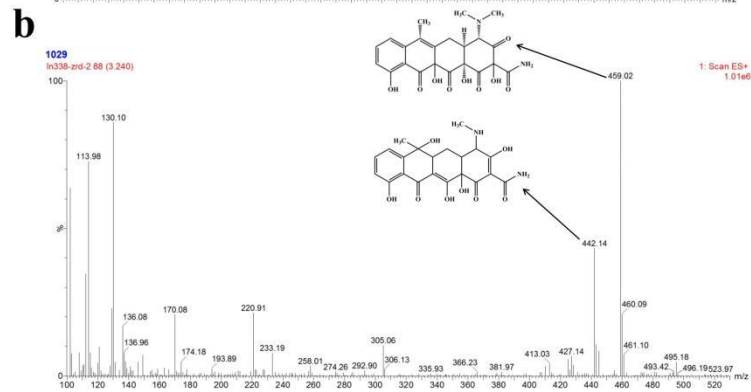
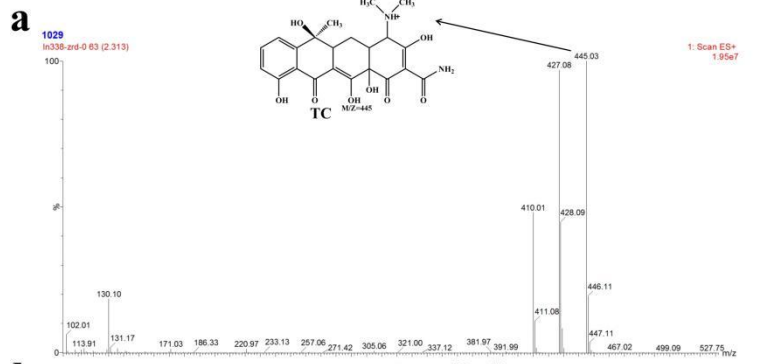
**Fig. S2.** (a-d) The effects of various scavengers with different concentrations on the degradation efficiency of TC

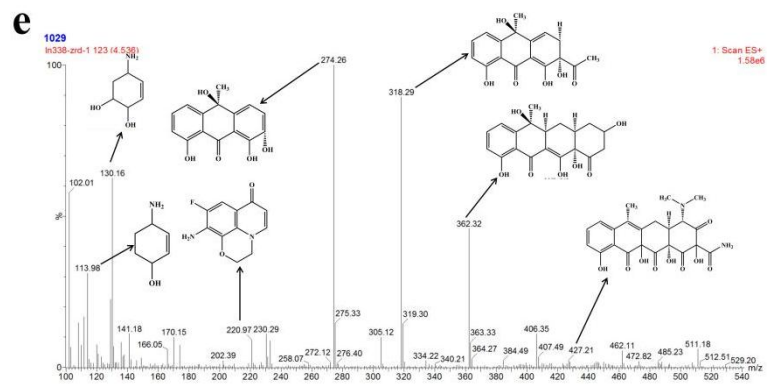


**Fig. S3.** ESR spectra of PS without CG in aqueous solution obtained using DMPO and TEMP as the spin trapping agents



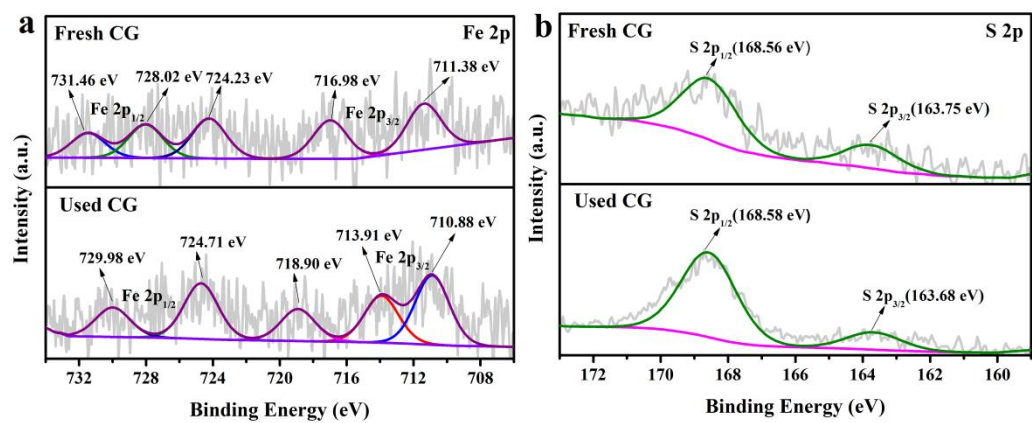
**Fig. S4.** Degradation of BPA in  $D_2O$  and  $H_2O$





**Fig. S5.** (a-e) LC-MS spectra of the intermediates during TC degradation process





**Fig. S6.** High-resolution XPS spectra of Fe 2p (a), S 2p (b) for CG before and after catalytic reaction