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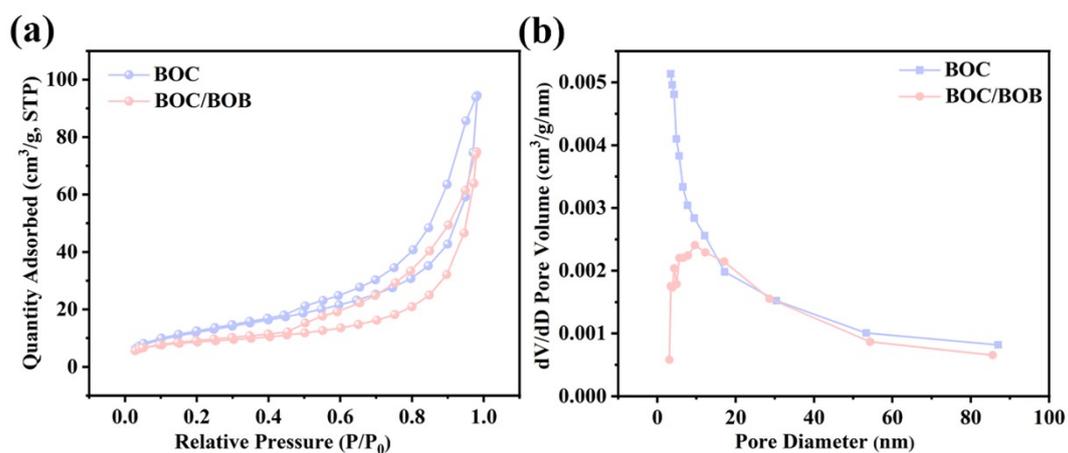
## Supporting Information

### **Built-in electric field driven S-Scheme Bi<sub>2</sub>O<sub>2</sub>CO<sub>3</sub>/Bi<sub>5</sub>O<sub>7</sub>Br heterojunction for superior photocatalytic mineralization of polystyrene microplastics**

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College of Chemistry and Chemical Engineering, Shanghai University of Engineering Science,  
Shanghai 201620, China

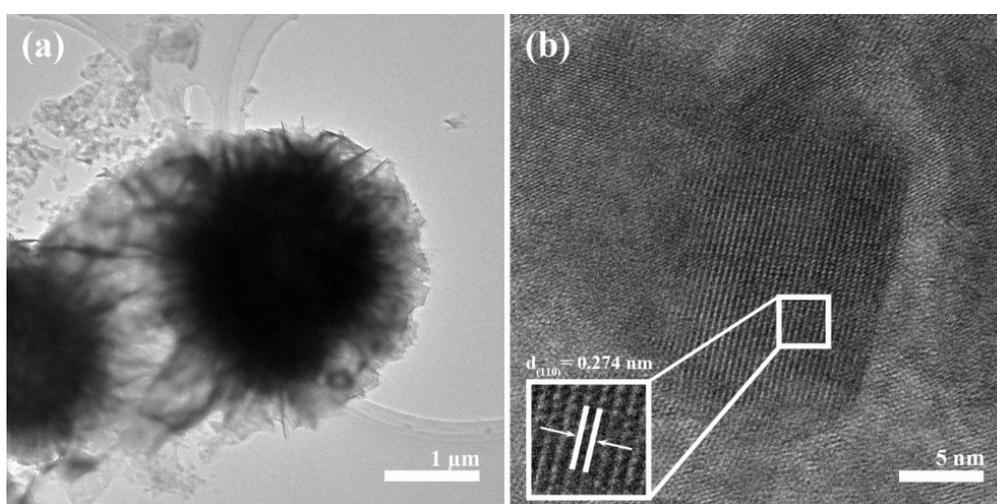
E-mail: [syg021@sues.edu.cn](mailto:syg021@sues.edu.cn)



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27 **Fig. S1** (a) N<sub>2</sub> adsorption-desorption isotherms and (b) pore size distribution of BOC

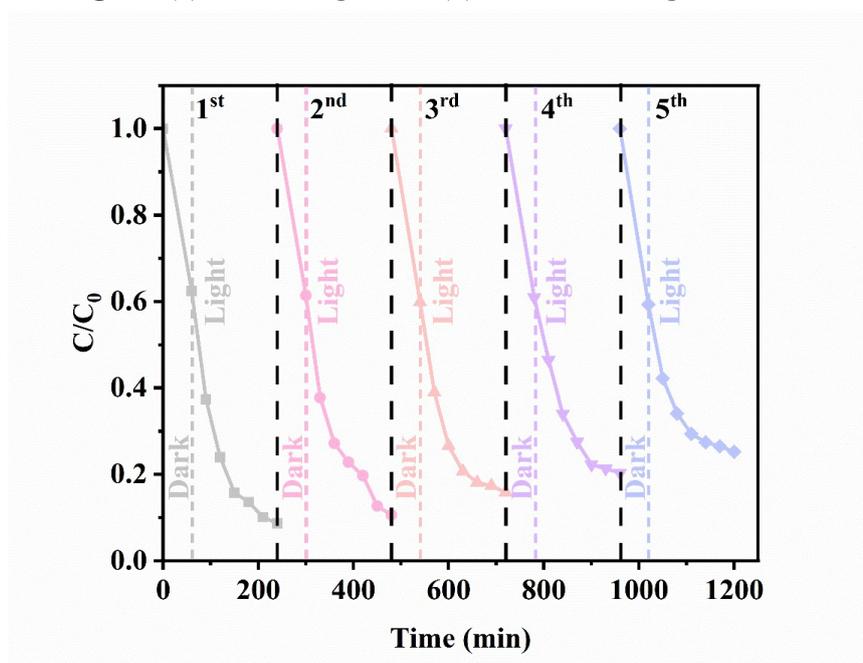
28 and BOC/BOB.



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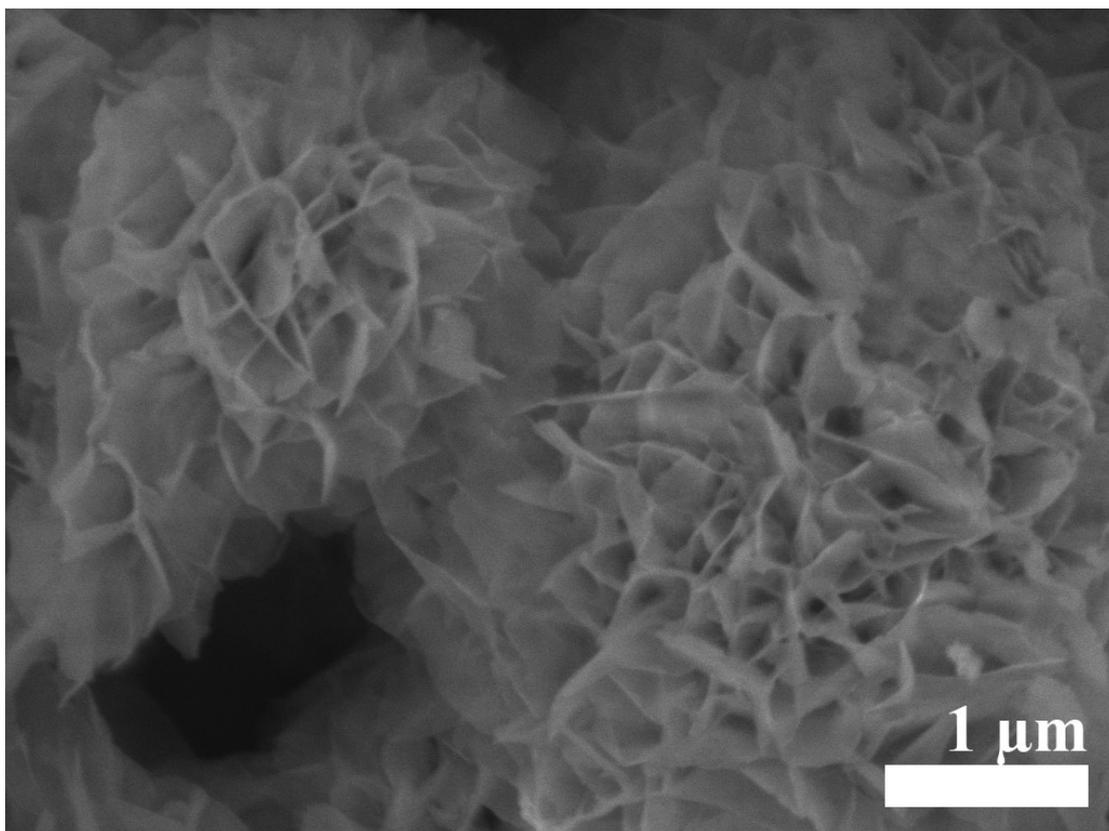
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**Fig. S2** (a) TEM images and (b) HR-TEM images of BOC.



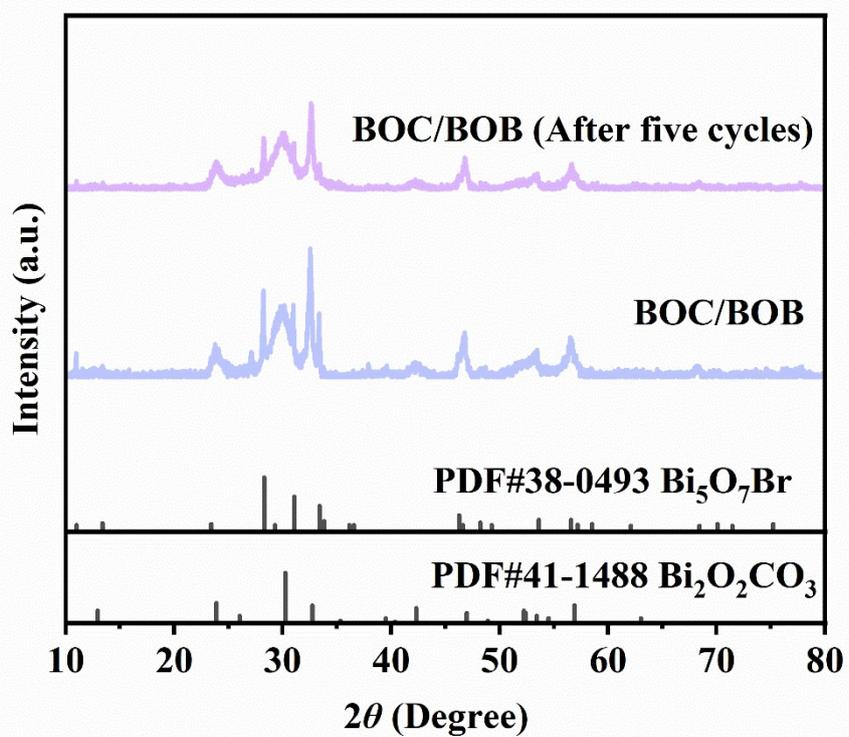
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32 **Fig. S3** Cyclic activity diagram of CIP degradation by BOC/BOB material.



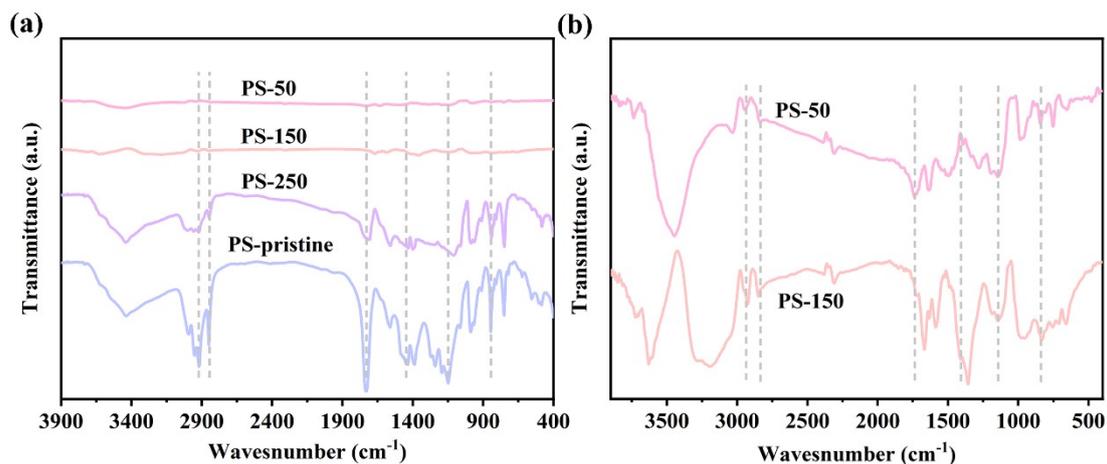
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34 **Fig. S4** SEM photos of BOC/BOB after five cycles.



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36 **Fig. S5** XRD patterns of BOC/BOB after five cycles.



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38 **Fig. S6** FTIR spectra of PS at different concentrations.

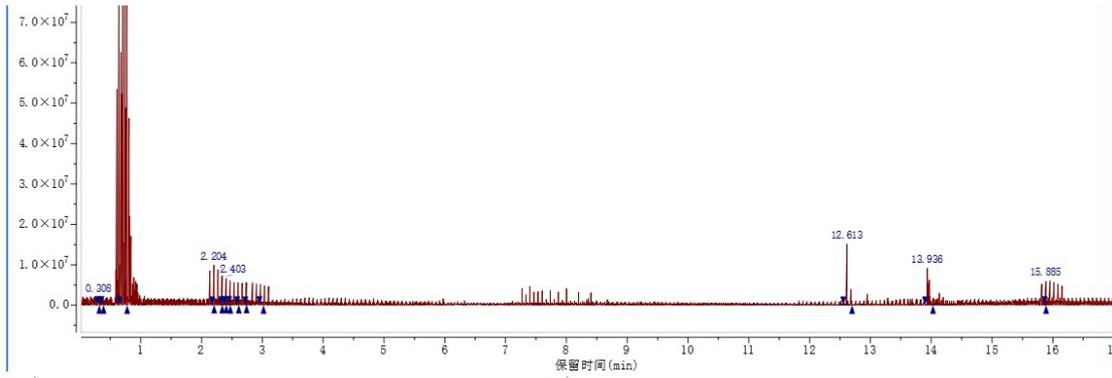
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40 **Table S1.** The degradation of microplastics by different catalysts in the literature.

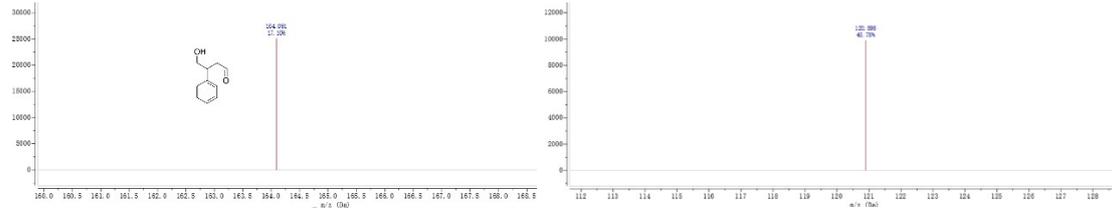
Photocatalyst	Initial Concentration	Light	Main Method	Evaluation	Ref
$\text{Bi}_2\text{O}_2\text{CO}_3/\text{Bi}_5\text{O}_7\text{Br}$	PS, 50mg/L (200mL)	Xenon lamp (500 W) 50h	SEM, FTIR		This work
Crystalline Supramolecular Naphthalimide	PC, 1g/L(120mL)	Xenon lamp (300 W) 15h	Excitation-emission matrix (EEM), FTIR		1
Cu doping $\text{TiO}_2$	PE, 1 mg/mL (50mL)	Hg lamp (250 W) 48h	Optical SEM, FTIR	microscope,	2
$\text{Cs}_3\text{Bi}_2\text{Br}_9/\text{BiOCl}$	PS, 1 mg/L (100mL)	Xe lamp (300 W) 50h	SEM, FTIR, GC		3
$\text{BiOBr}/\text{g}-\text{C}_3\text{N}_4$	PS, 10mg	Hg lamp (300 W) 16h	LC-MS, FTIR		4

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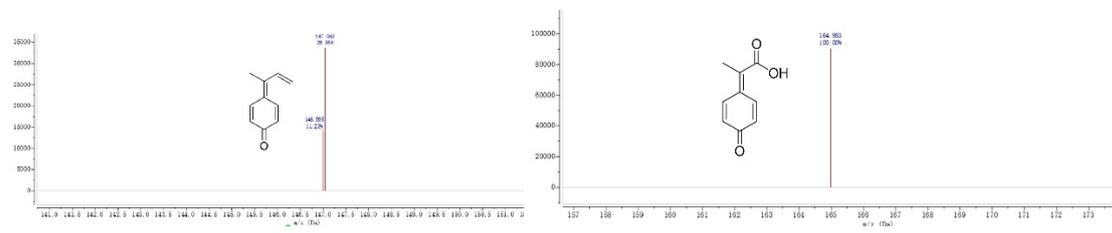
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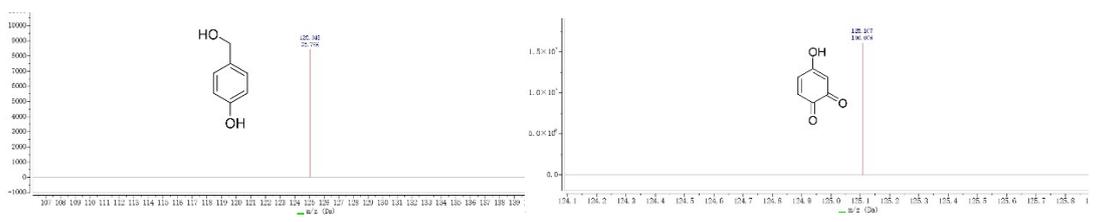
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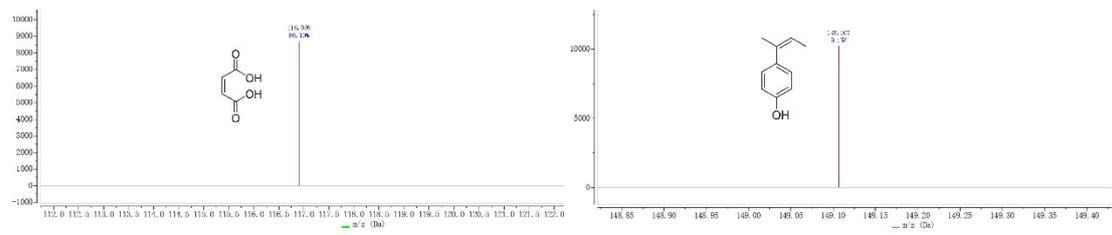
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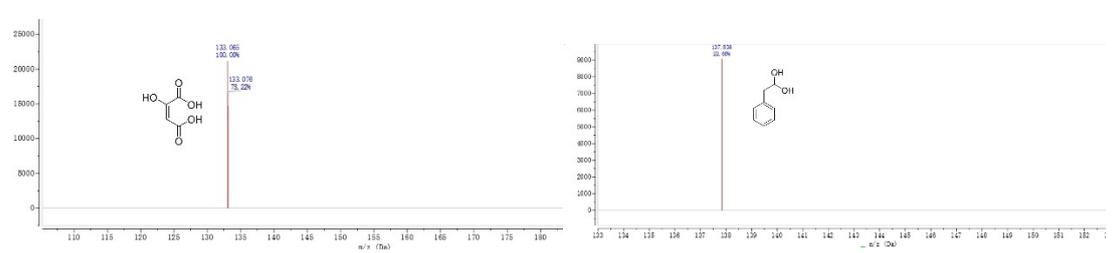
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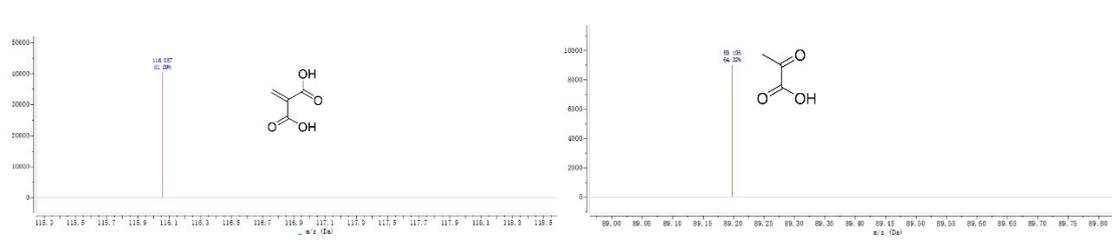
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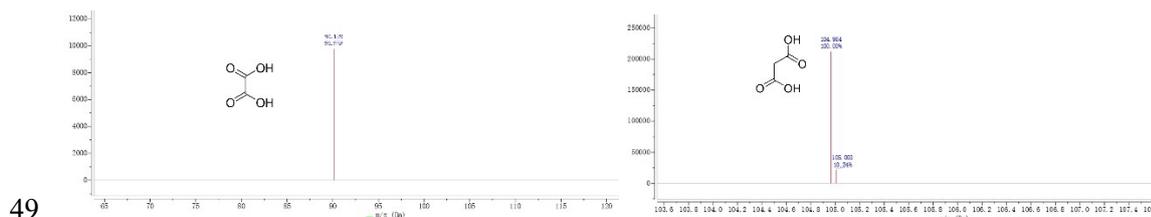


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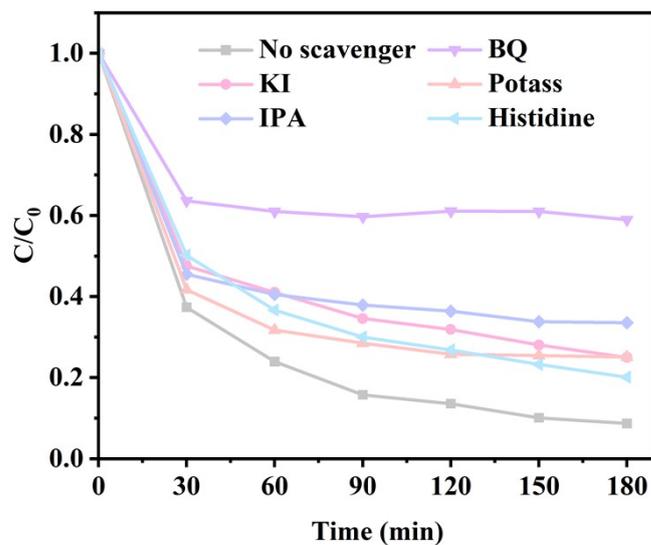
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50 **Fig. S7** Liquid chromatography-mass spectrometry database of PS microplastic

51 decomposition products.



55 **Reference**

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