

*Article*

# Real-Time Pyrolysis Dynamics of Thermally Aged Tire Microplastics by TGA-FTIR-GC/MS

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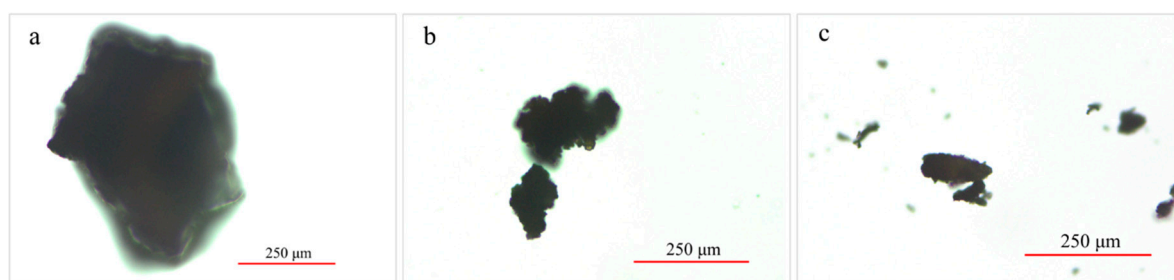
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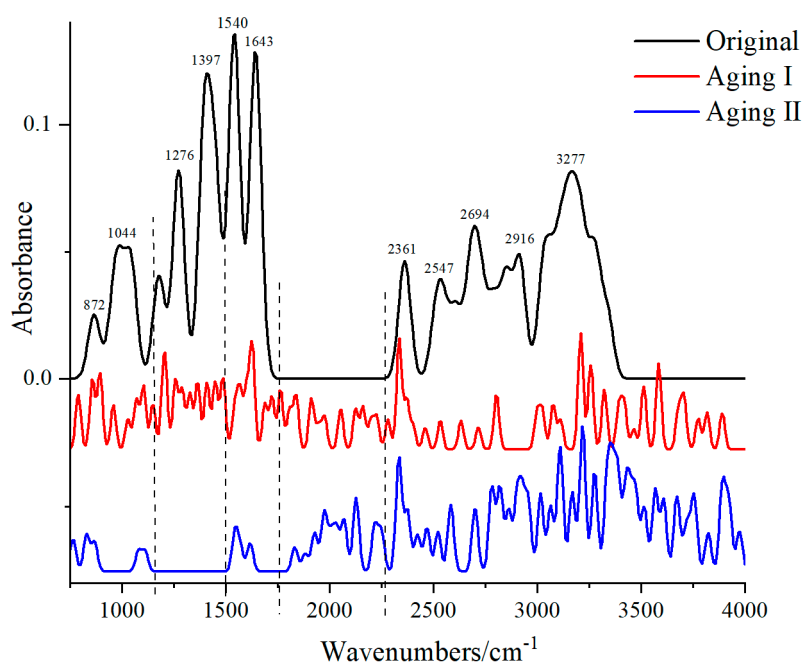
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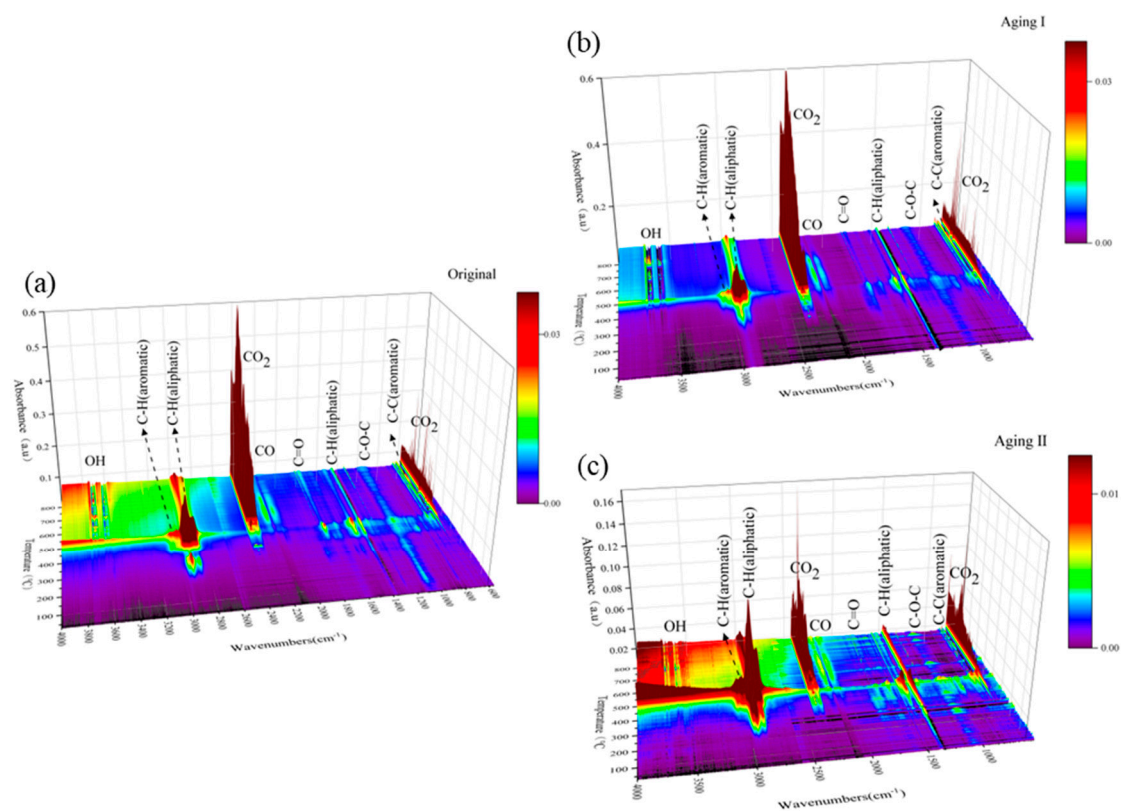
**Text S1.** The morphologies of WTPs with different thermal-oxidative aging conditions showed a significant change. As shown in Figure S1, the original WTP particles exhibited a smooth surface and neat edges, and their corners were relatively clear. However, the aged WTPs under Aging I and Aging II exhibited a rough surface and edges. Their shape was more irregular and curlier than that of the original particles.



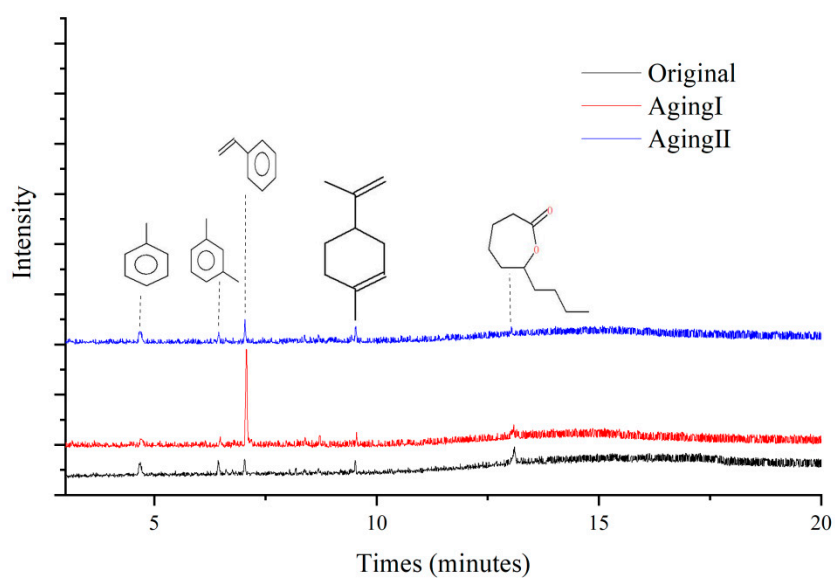
**Figure S1** Morphologies of WTPs with different thermal-oxidative aging time (a, original WTPs; b, aged WTPs under Aging I; c, aged WTPs under Aging II)



**Figure S2** Changes in ART-FTIR spectra of WTPs with different thermal aging time



**Figure S3** 3D FTIR spectra of pyrolysis products of WTPs in original stage (a), aging I (b) and aging II (c).



**Figure S4** Pyrochromatograph detection of volatile products at 484 °C.

**Table S1** Characteristic IR absorption bands and functional groups of tires.

Functional group	Peak/cm <sup>-1</sup>	Products	Vibration
C-H	2960	aliphatic compound	Stretching
	2932		Stretching
	2874		Stretching
	1459		Bending
	1380		Bending
C-H	3067	aromatic compound	Stretching
	750		Bending
C-C	700		Bending
C=O	1715		Stretching
C-O	1250		Bending
C-H	3014	CH <sub>4</sub>	Stretching
O=C=O	2350	CO <sub>2</sub>	Stretching
	668		Bending
	2184	CO	Stretching
C=C	1600	benzene ring	Stretching
C-O-C	1085		Stretching
C=C	905	alkene	Bending
C-H	893		Stretching