Supporting information

Thermal degradation and carbonization mechanism of Fe-based metal-organic frameworks onto flame retardant polyethylene terephthalate

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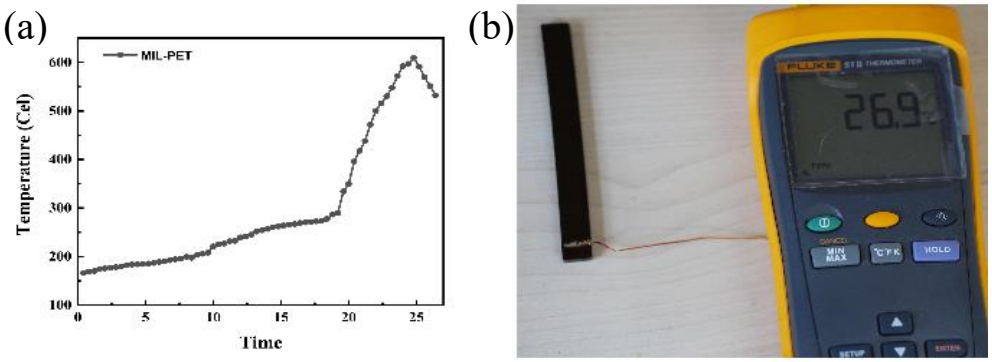

Figure S1. (a) Temperature changes vs. combustion time of MIL-PET in LOI test and (b) its measurement setup

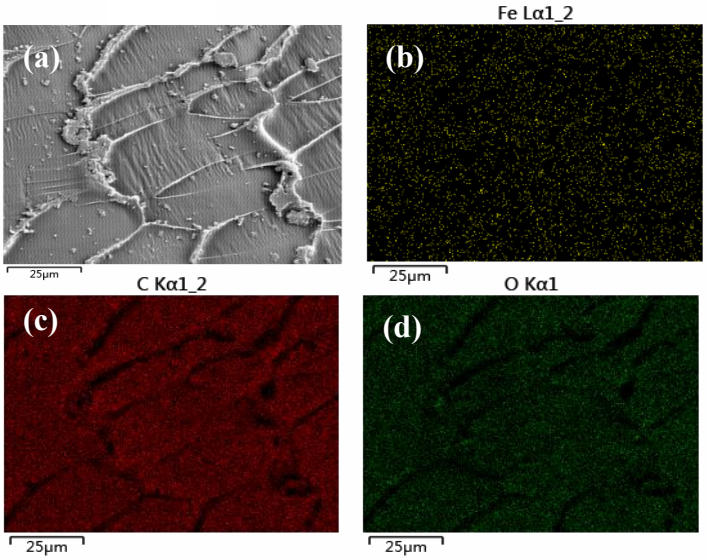

Figure S2. SEM image (a) and element mapping images (b-d) for 0.6 MIL-PET

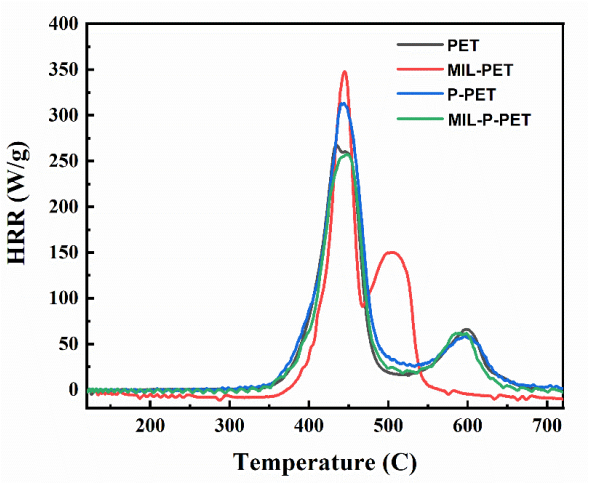

Figure S3. The micro cone calorimeter curves of PET, MIL-PET, P-PET, MIL-P-PET

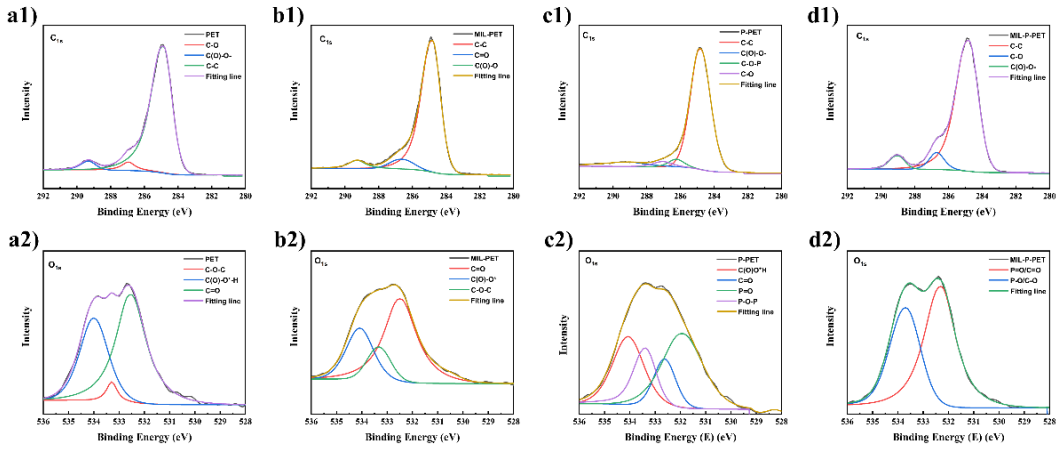

Figure S4. C1s and O1s of X-ray photoelectron spectroscopy and its fitted lines of char residue of PET a1-a2), MIL-PET b1-b2), P-PET c1-c2), MIL-P-PET d1-d2)

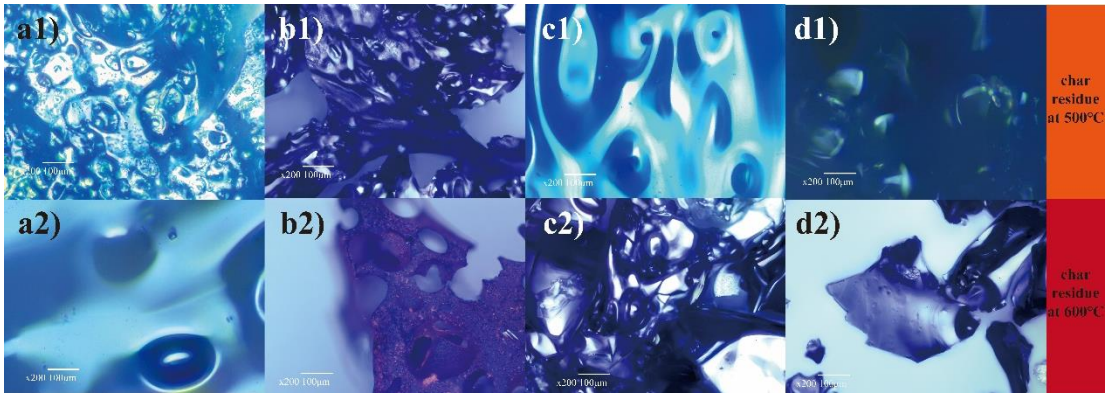

Figure S5. Optical microscope of PET a1-a2), MIL-PET b1-b2), P-PET c1-c2) and MIL-P-PET d1-d2) at 500 and 600 °C

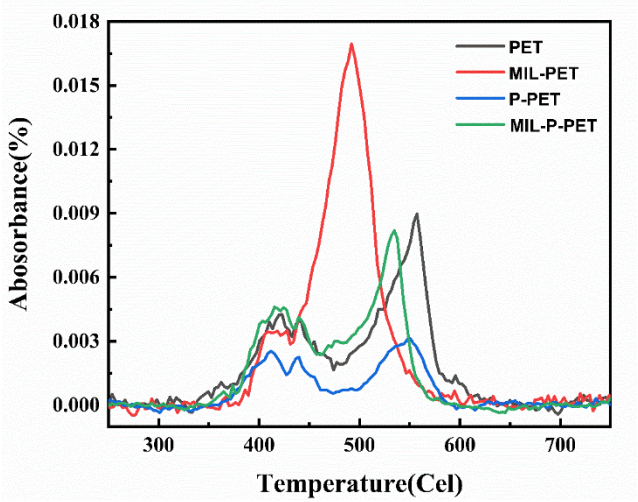

Figure S6. FTIR spetra at 3750 cm^{-1} of PET, MIL-PET, P-PET and MIL-P-PET at different temperature.

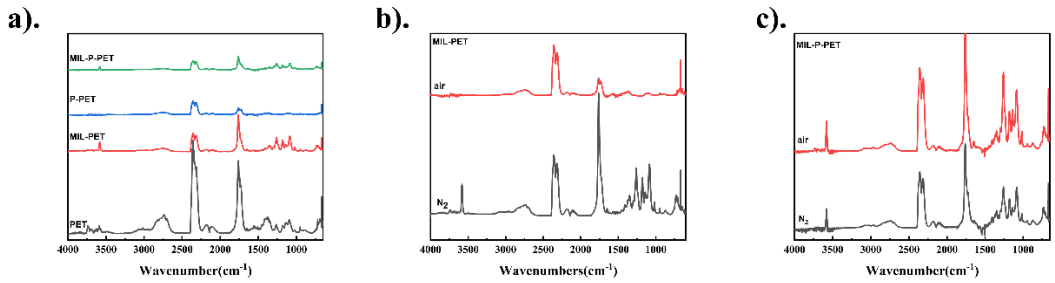

Figure S7. The TG-FTIR spectra of the highest concentration of PET, MIL-PET, P-PET, and MIL-P-PET in N_2 atmosphere (a). and the contrast between the first step degradation in air and highest concentration in N_2 atmosphere of MIL-PET (b)and MIL-P-PET (c).

Table S1. Raman results of PET, 0.2MIL-PET, 0.6MIL-PET, P-PET, 0.6MIL-P-PET

Sample	I_D(×10⁵)	I_{D4}(×10⁵)	I_{D3}(×10⁵)	I_G(×10⁵)	I_{D3}/I_G	$(I_{D3}+I_{D4})/I_G$	I_D/I_G
PET	16.52	1.703	6.026	8.228	0.73	0.94	2.01
MIL-PET	9.232	1.827	3.820	6.064	0.63	0.93	1.52
P-PET	10.42	1.349	3.990	5.501	0.72	0.97	1.89
MIL-P-PET	7.024	1.046	3.21	4.588	0.70	0.93	1.53