Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

2.Experimental

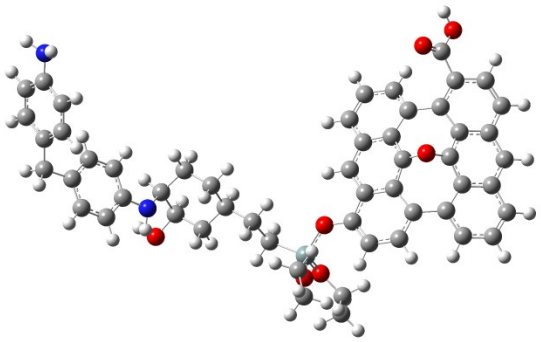

Fig. S1 Molecular structures of FR-*f*GO

3.Results and discussion

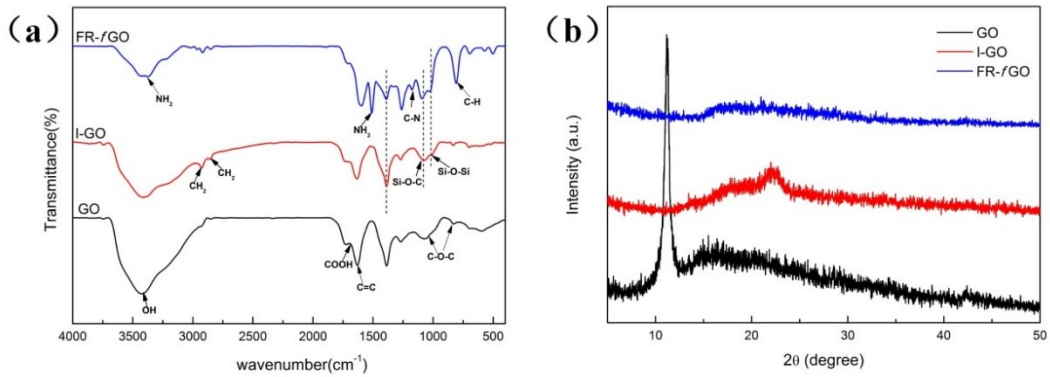

Fig. S2 FTIR spectra (a) and XRD patterns (b) of GO, I-GO, and FR-*f*GO.

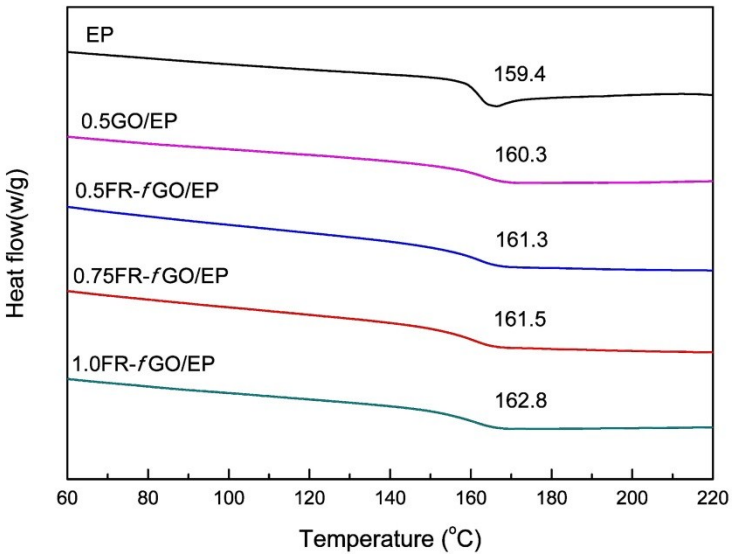

Fig. S3 DSC thermograms of EP and its composites

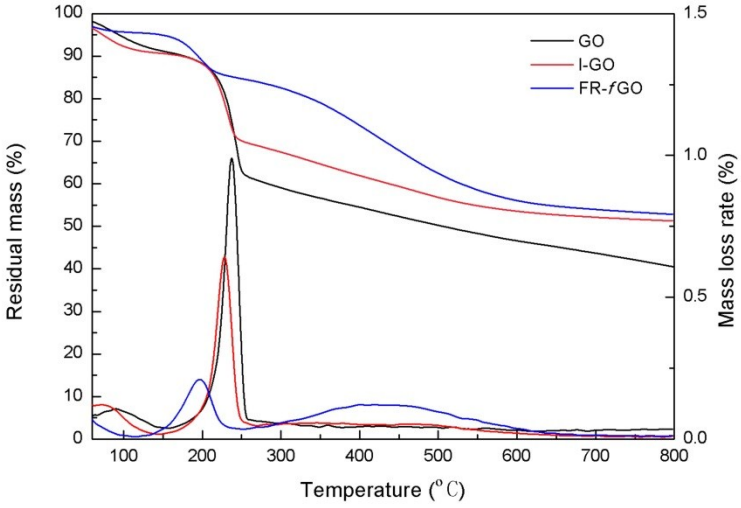

Fig. S4 TGA and DTG curves of GO, I-GO, and FR-*f*GO under nitrogen atmosphere.

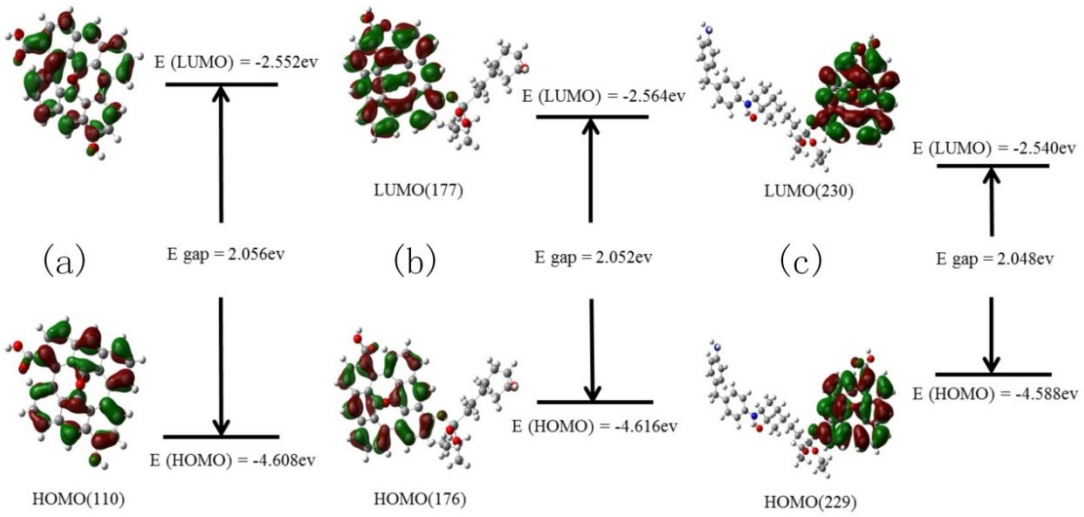

Fig. S5 HOMO and LUMO patterns of (a) GO, (b) I-GO, and (C) FR-*f*GO obtained at B3LYP/6-31++G (d, p) level.

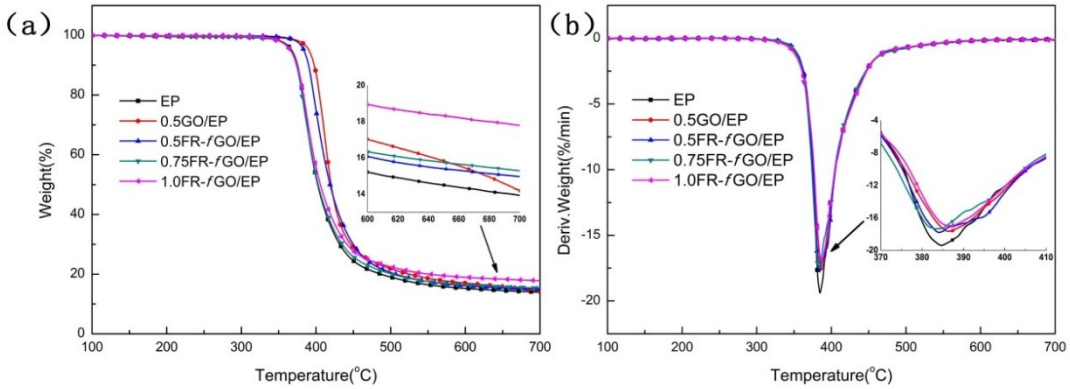

Fig. S6 TGA and DTG curves of EP and its composites (a and b) under nitrogen atmosphere.

Table S1 Cone calorimetry data of pure EP and its composites.

Samples	PHRR (kw/m²)	THR (MJ/m²)	PSPR (m²/s)	TSP (m²)	COP (g/s)	CO_2P (g/s)	Residue (wt%)
EP	1497.8	126.7	0.5	53.5	0.05	0.96	14.3
1.0FR-*f*GO/EP	927.2	74.3	0.3	25.1	0.02	0.29	17.2

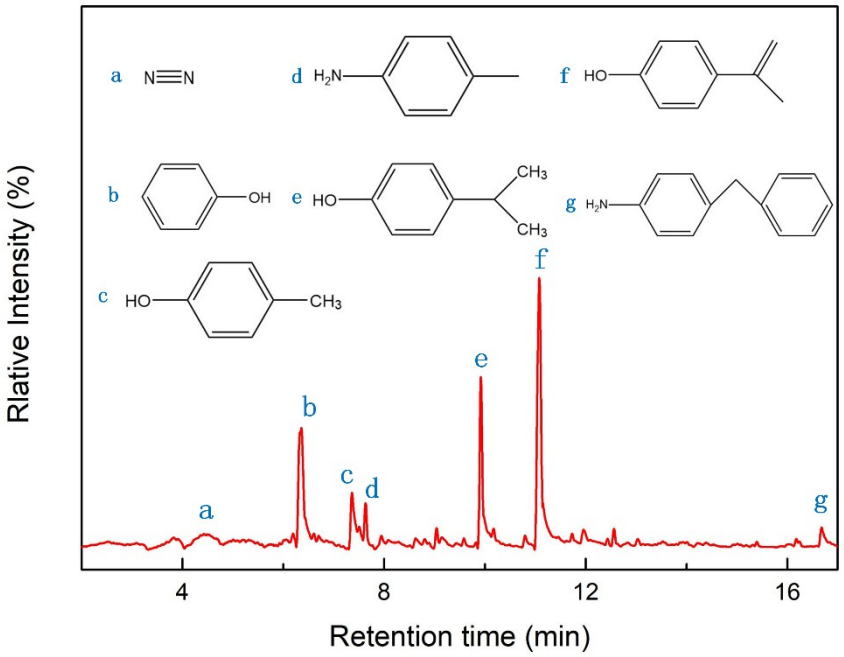

Fig. S7 Gas chromatography spectra of DDM and its corresponding pyrolysis products.

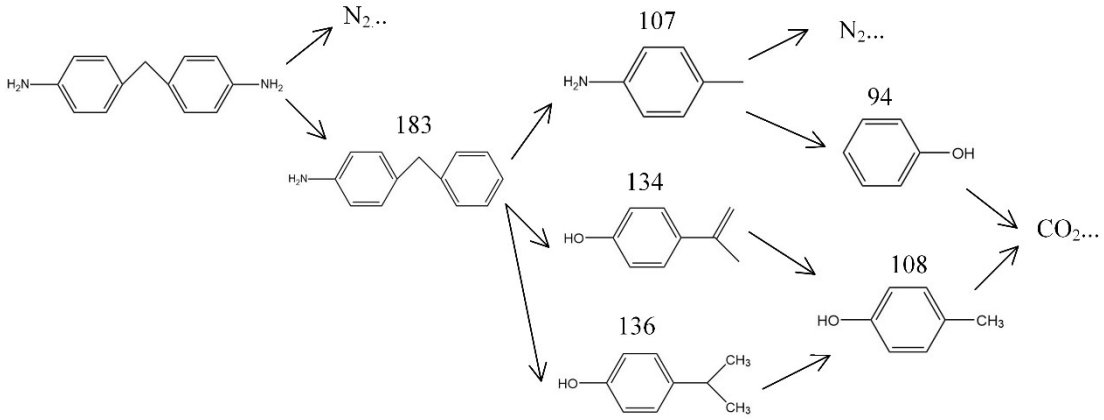

Fig. S8 Proposed pyrolysis process of DDM

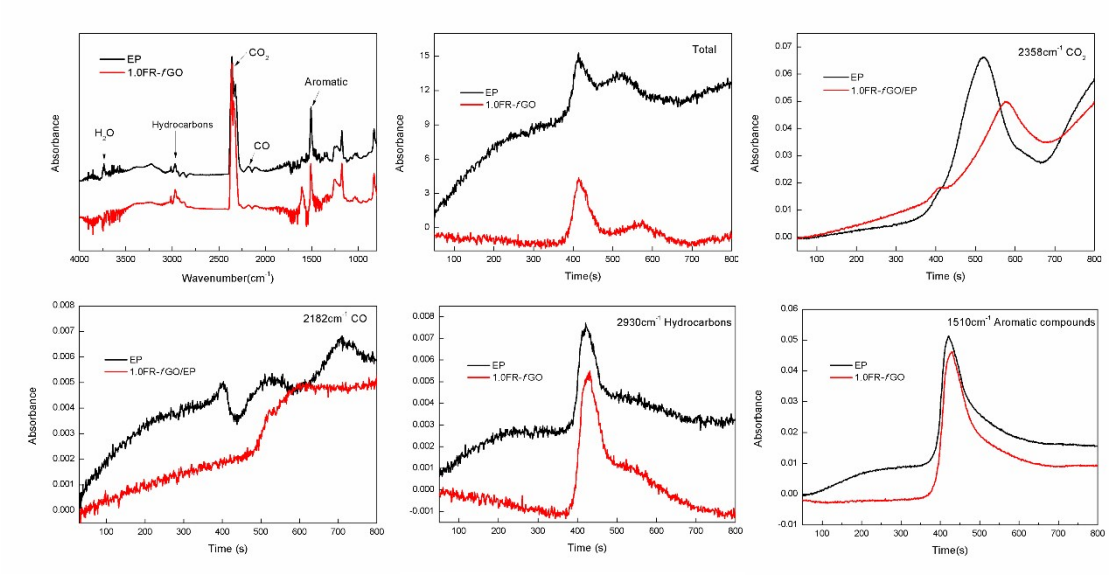

Fig. S9 FTIR spectra of pyrolysis gaseous products emitted from pure EP and 1.0FR-*f*GO/EP composites at maximum degradation rate (a); total absorbance of pyrolysis products for pure EP and 1.0FR-*f*GO/EP composites (b); absorbance of pyrolysis products for pure EP and 1.0FR-*f*GO/EP composites versus time: CO_2 (c), CO (d), hydrocarbons (e), and aromatic compounds (f).

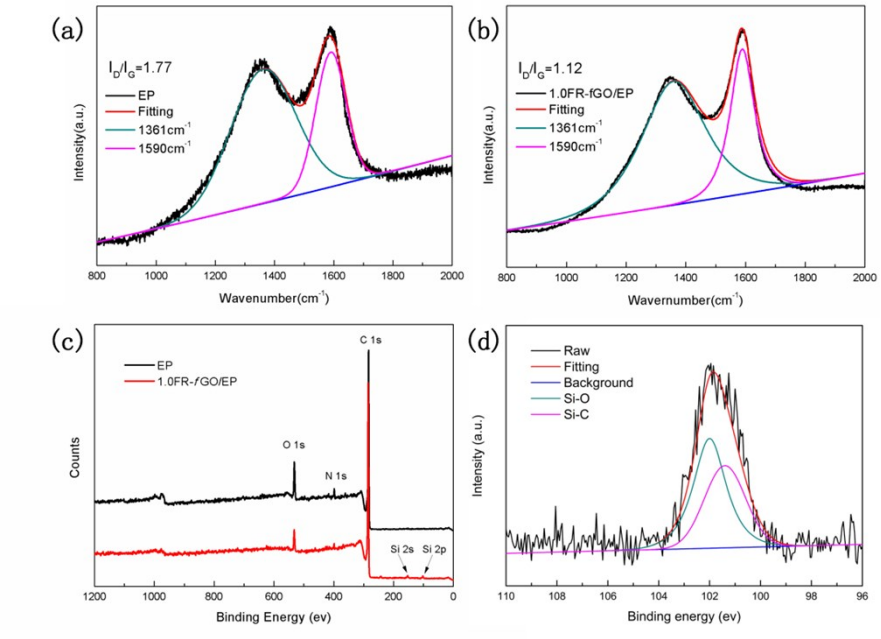

Fig. S10 Raman spectra of residual chars of pure EP (a) and 1.0FR-*f*GO/EP composites (b); XPS spectra of EP and 1.0FR-*f*GO/EP composites of residual chars (c) and Si 2p spectra of char layers of 1.0FR-*f*GO/EP composites.

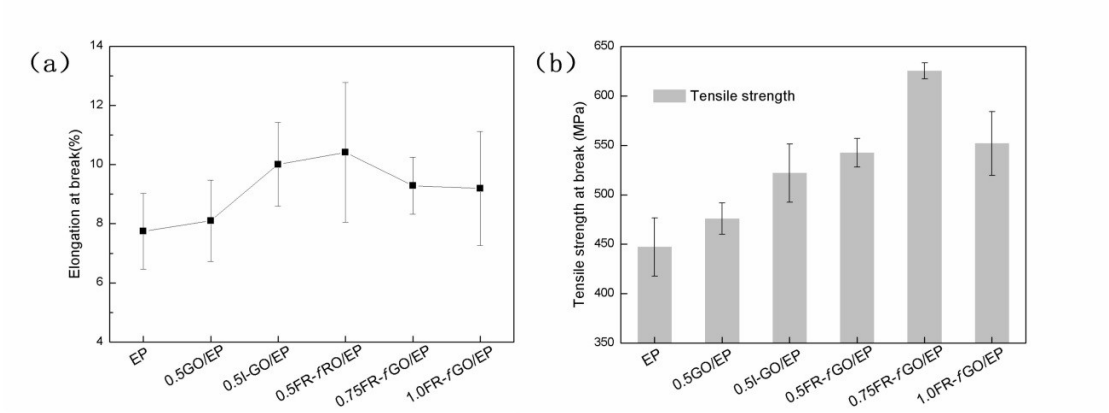

Fig. S11 Mechanical properties of pure EP and its composites: (a) Elongation at break and (b) tensile strength.