Electronic Supplementary Information

Flame retardant and anti-dripping properties of polylactic acid/poly(bis(phenoxy)phosphazene)/expandable graphite composite and its flame retardant mechanism

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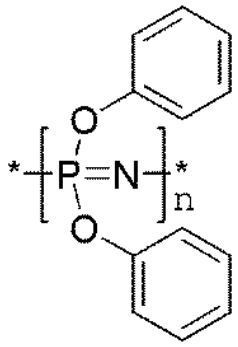

Fig. S1. Chemical structure of SPB-100.

In Fig. S2, the absorption peak at 3418 cm^{-1} corresponds to O-H vibration adsorption and of H_2O. The absorption peaks at 2958, 2924 and 2856 cm^{-1} are assigned to the vibration adsorption of $-CH_3$ and $-CH_2-$. The absorption peak at 1635 cm^{-1} is ascribed to the vibration adsorption of C=C in graphite material.[1] The absorption peak at 1005 cm^{-1} belongs to the vibration adsorption of C-O-C.[2] The composition of the char residue of neat PLA is graphitic materials with oxygen functional groups. In the FTIR spectrum of char residue of PLA3, the peak at 1162 cm^{-1} is stretching vibration of PO_2/PO_3 in phosphate carbon complexes.[3,4] The FTIR spectrum of char residue of PLA4 is similar to that of neat PLA.

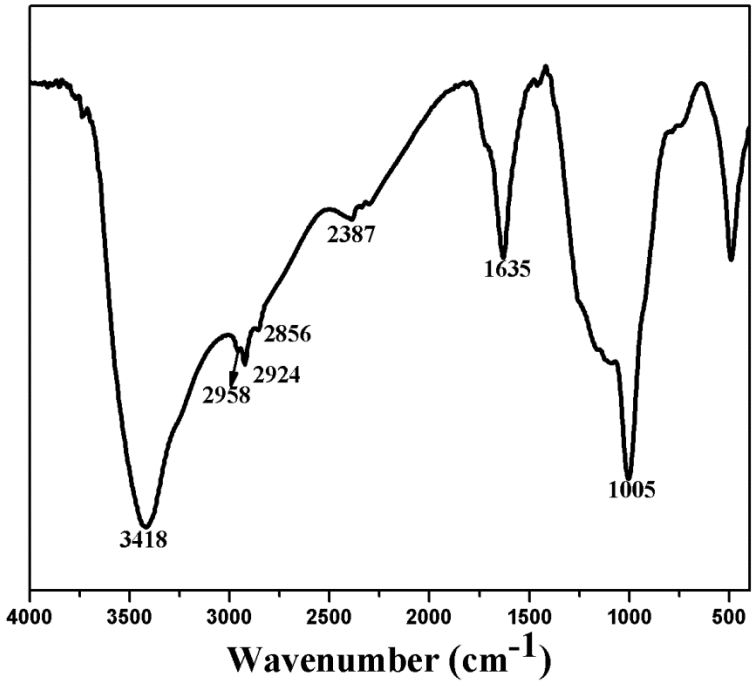

Fig. S2. FTIR spectrum of char residue of PLA0 after cone calorimeter test.

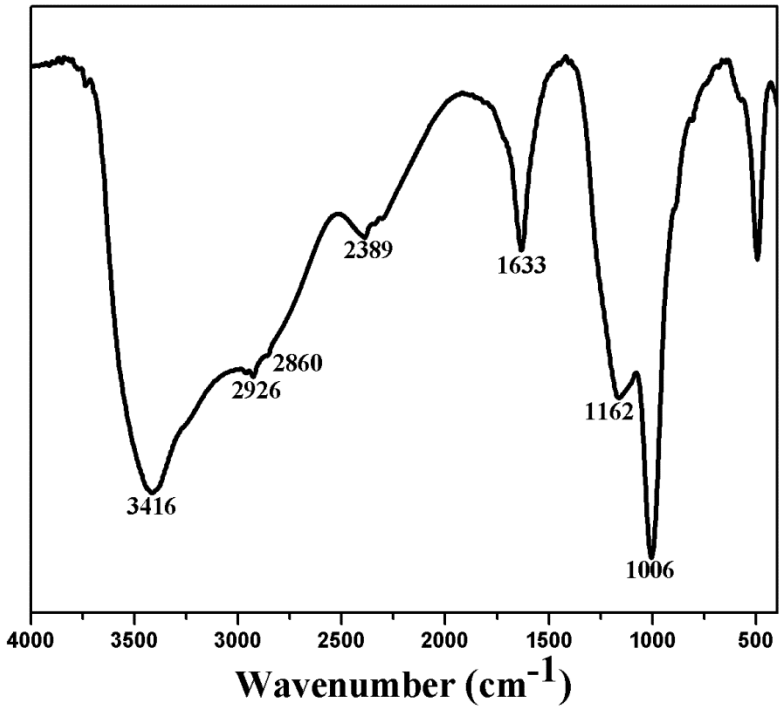

Fig. S3. FTIR spectrum of char residue of PLA3 after cone calorimeter test.

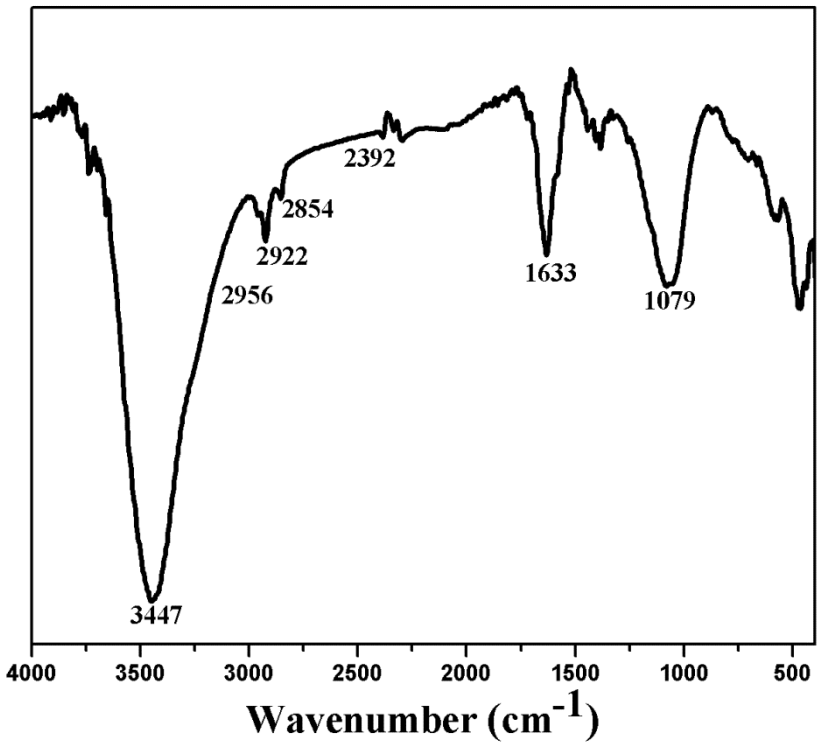

Fig. S4. FTIR spectrum of char residue of PLA4 after cone calorimeter test.

Reference:

1. Y. Bihe, B. Chenlu, Q. Xiaodong, S. Lei, T. Qilong, L. Kim Meow and H. Yuan, *Carbon*, 2014, **75**, 178.

2. L. F. Wang, D. Q. He, W. Chen and H. Q. Yu, *Water Res.*, 2015, **81**, 325.

3. W. Liu, D.-Q. Chen, Y.-Z. Wang, D.-Y. Wang and M.-H. Qu, *Polym. Degrad. Stabil.*, 2007, **92**, 1046.

4. M. Bugajny, S. Bourbigot, M. Le Bras and R. Delobel, *Poly. Int.*, 1999, **48**, 264.