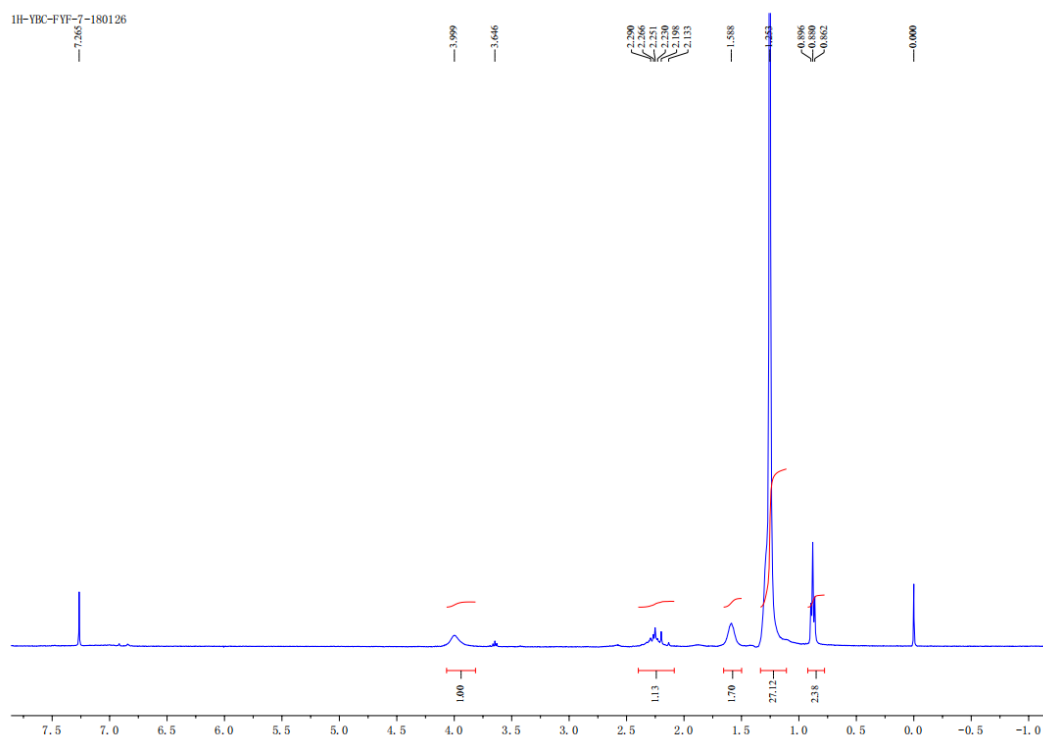


## Instrumentation

The Fourier transform infrared spectrometry (FT-IR) analyses were measured on a Nicolet 5700 spectrophotometer in the range 400-4000  $\text{cm}^{-1}$ .  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR spectra were recorded on 400 MHz (Bruker) instrument,  $\text{CDCl}_3$  (7.26 ppm for  $^1\text{H}$  NMR, 77.16 ppm for  $^{13}\text{C}$  NMR) was used as a reference [1,2,3].

## 1. NMR spectra of products

### Pour Point Depressant 1 (PPD-1)



**Figure S1.**  $^1\text{H}$  NMR spectra of product PPD-1

13C-YBC-FYP-7-180126

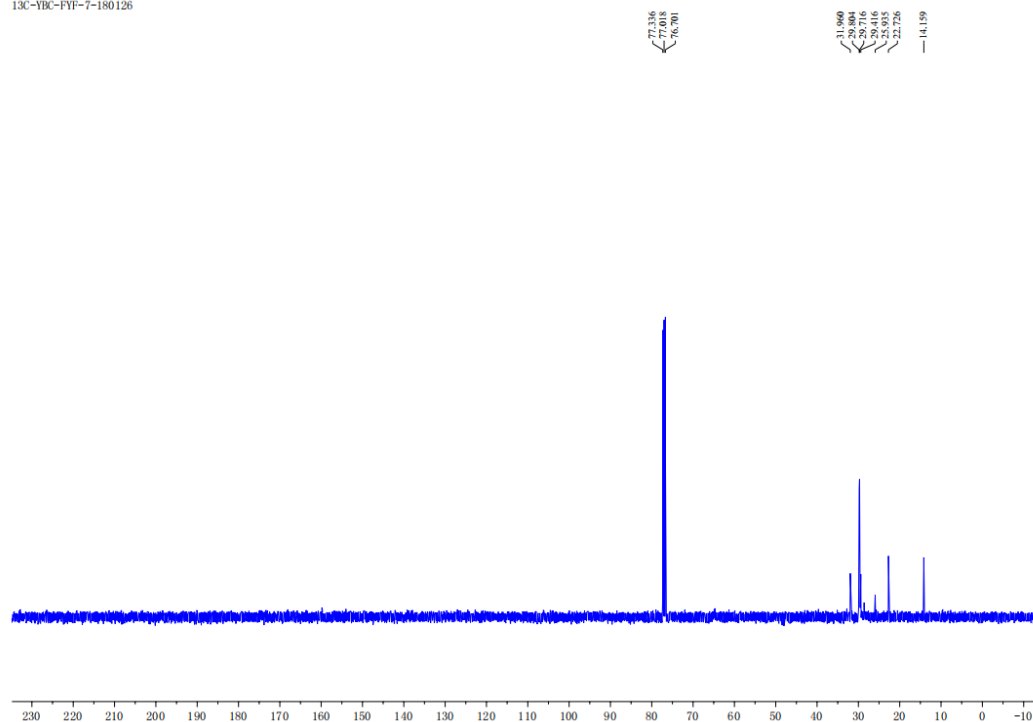


Figure S2.  $^{13}\text{C}$  NMR spectra of product PPD-1

## Pour Point Depressant 2 (PPD-2)

1H-YBC-FYP-1-180124

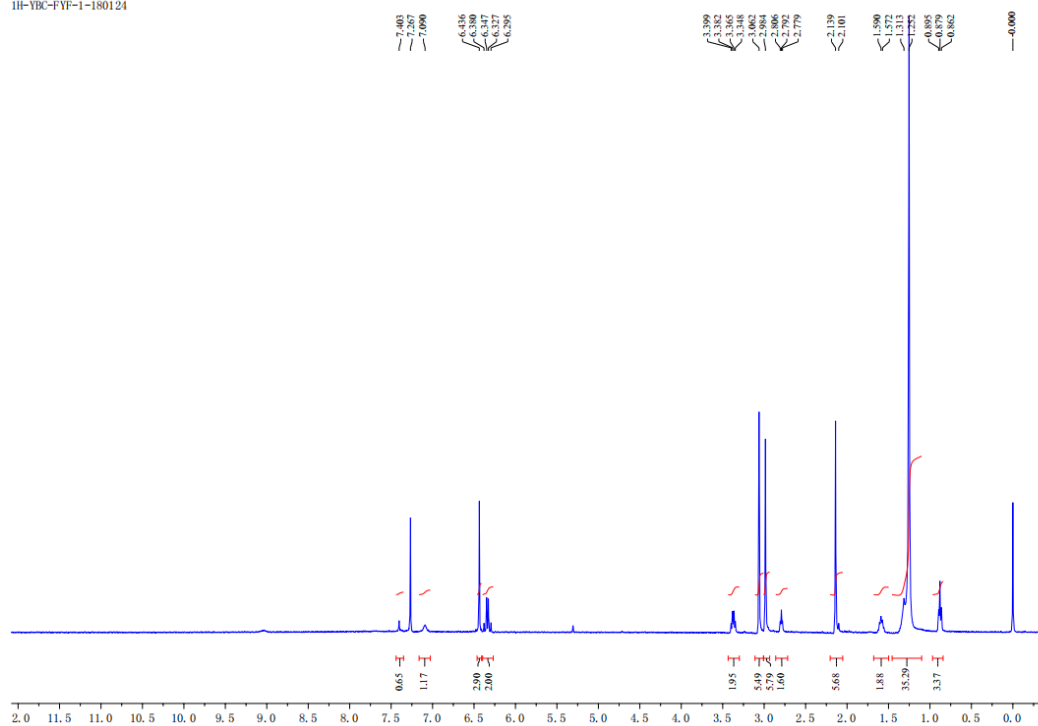
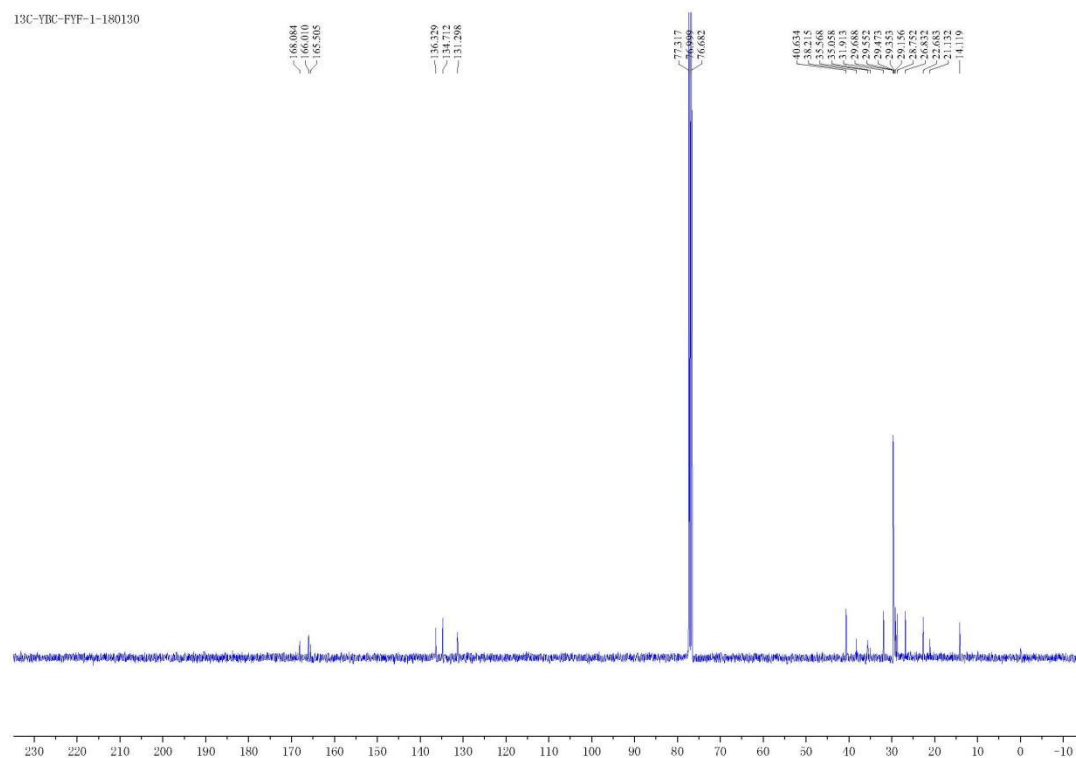
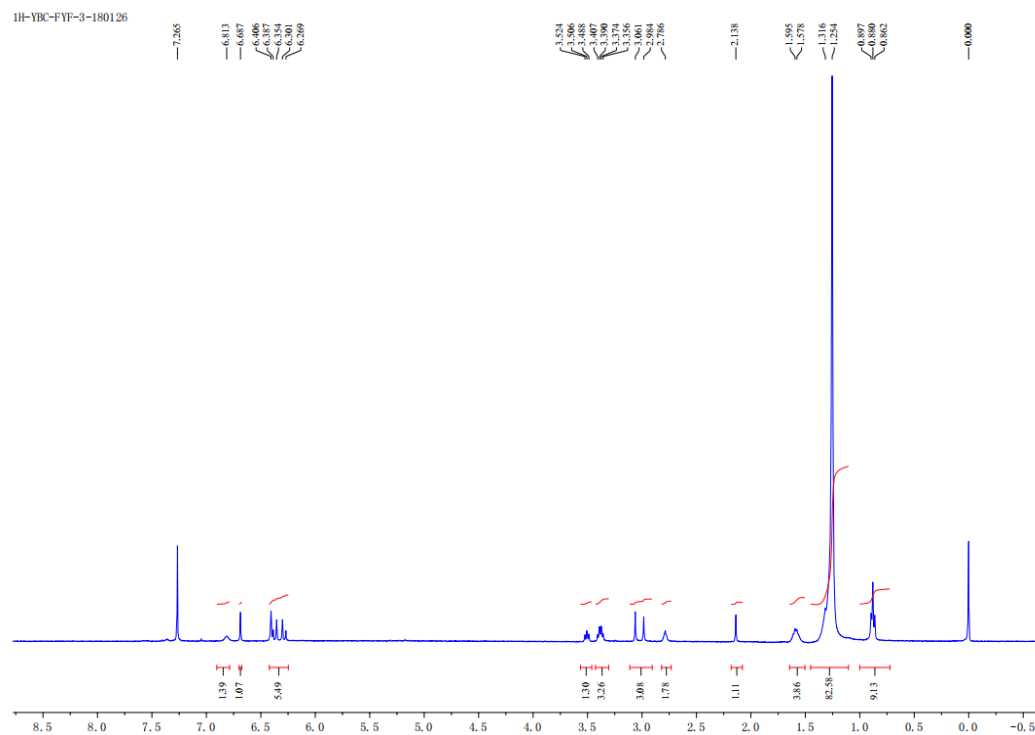


Figure S3.  $^1\text{H}$  NMR spectra of product PPD-2

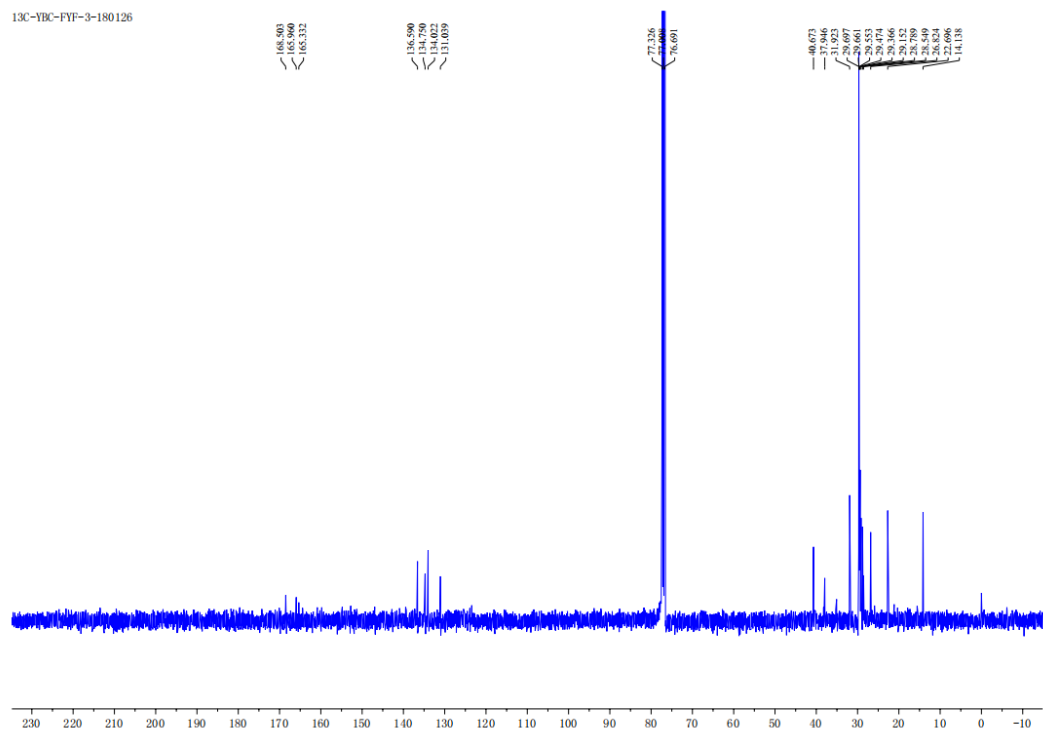


**Figure S4.** <sup>13</sup>C NMR spectra of product PPD-2

### Pour Point Depressant 3 (PPD-3)

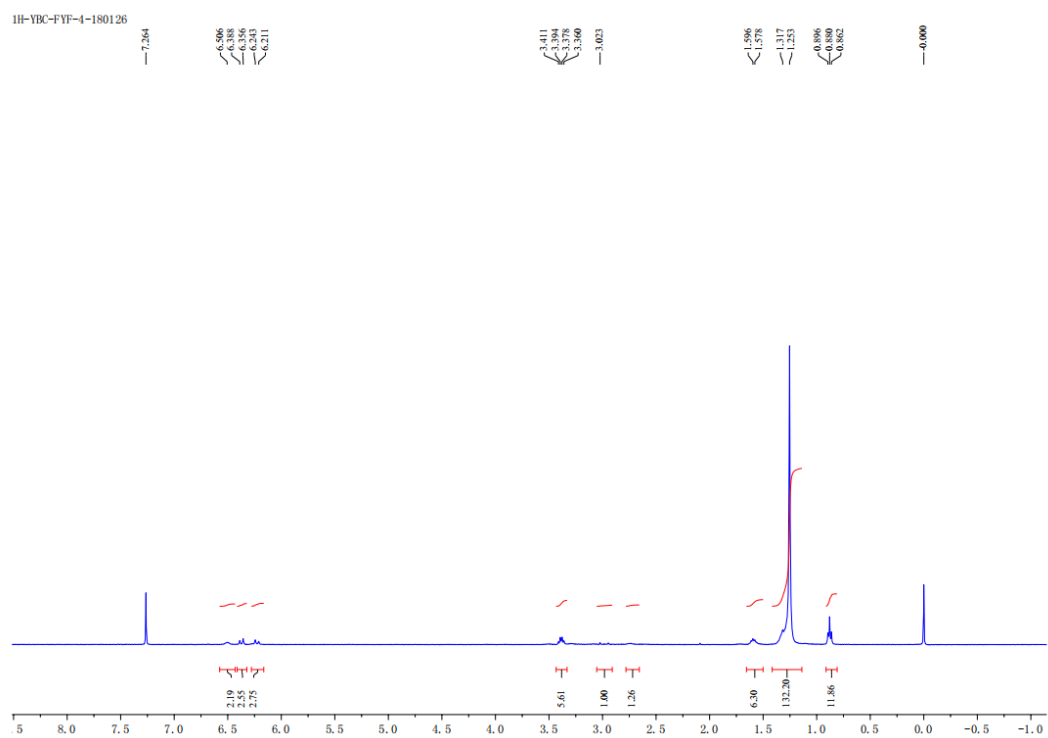


**Figure S5.** <sup>1</sup>H NMR spectra of product PPD-3



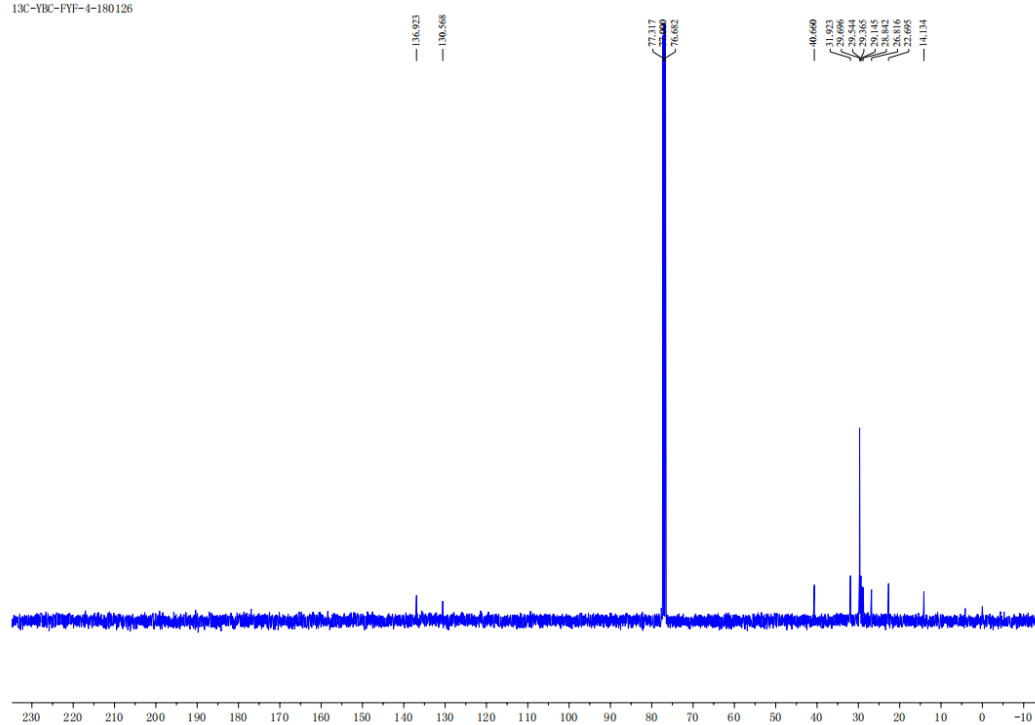
**Figure S6.** <sup>13</sup>C NMR spectra of product PPD-3

## Pour Point Depressant 4 (PPD-4)



**Figure S7.** <sup>1</sup>H NMR spectra of product PPD-4

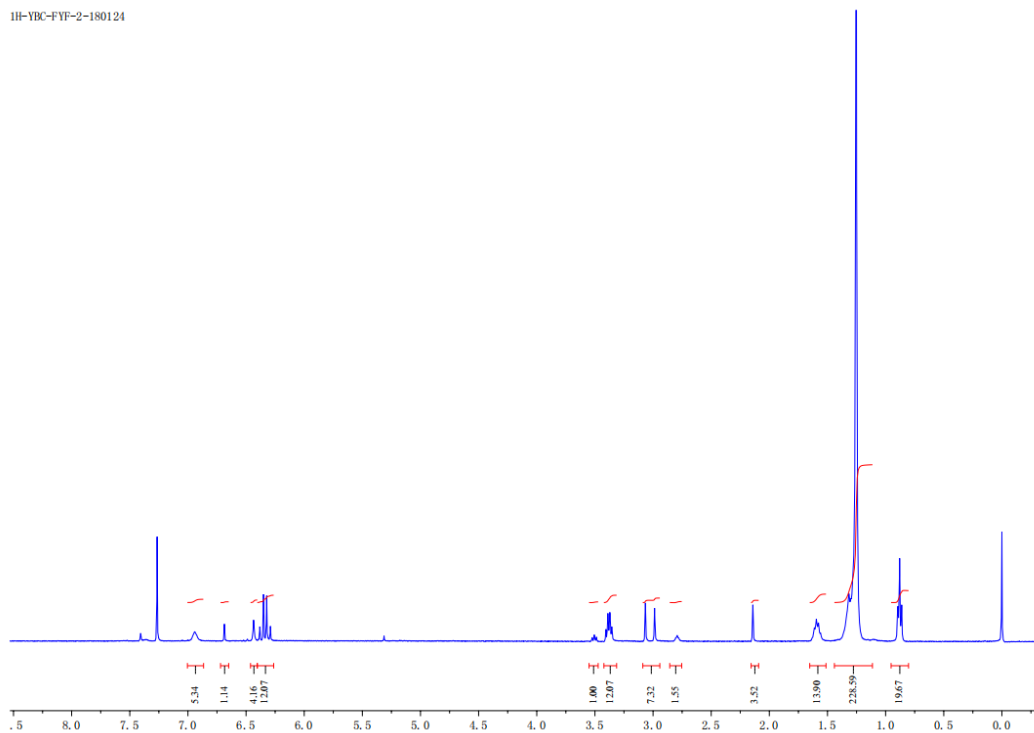
<sup>13</sup>C-YBC-FYF-4-180126



**Figure S8** <sup>13</sup>C NMR spectra of product PPD-4

## Pour Point Depressant 5 (PPD-5)

<sup>1</sup>H-YBC-FYF-2-180124



**Figure S9.** <sup>1</sup>H NMR spectra of product PPD-5

13C-YBC-FYP-2-180124

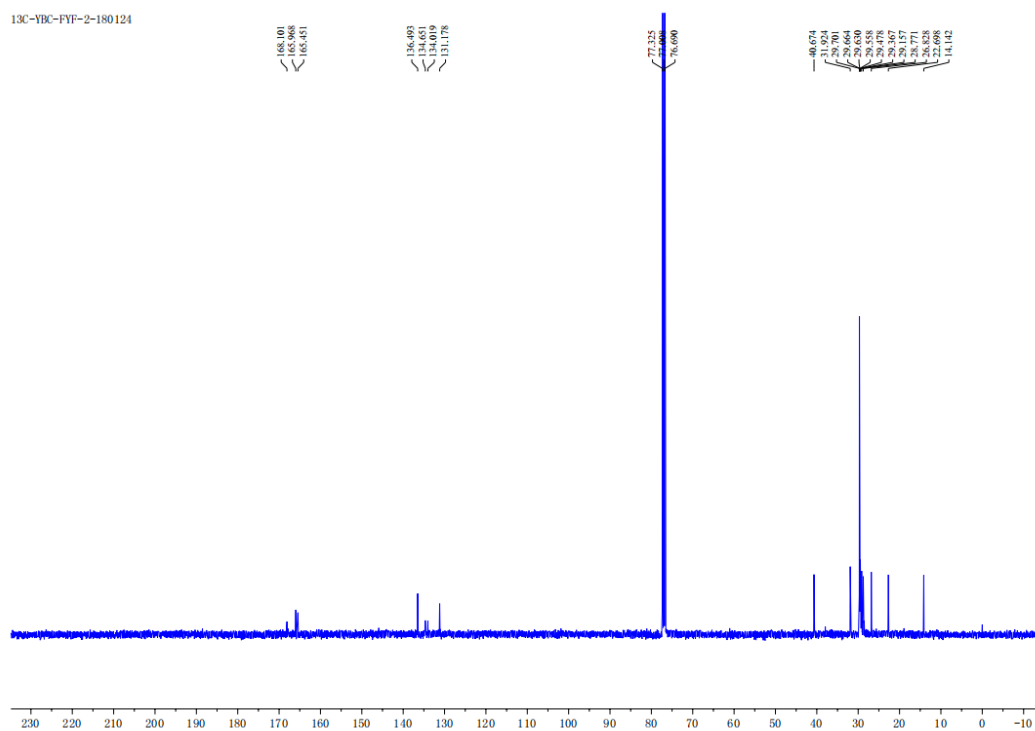


Figure S10.  $^{13}\text{C}$  NMR spectra of product PPD-5

## Pour Point Depressant 6 (PPD-6)

1H-YBC-FYP-6-180124

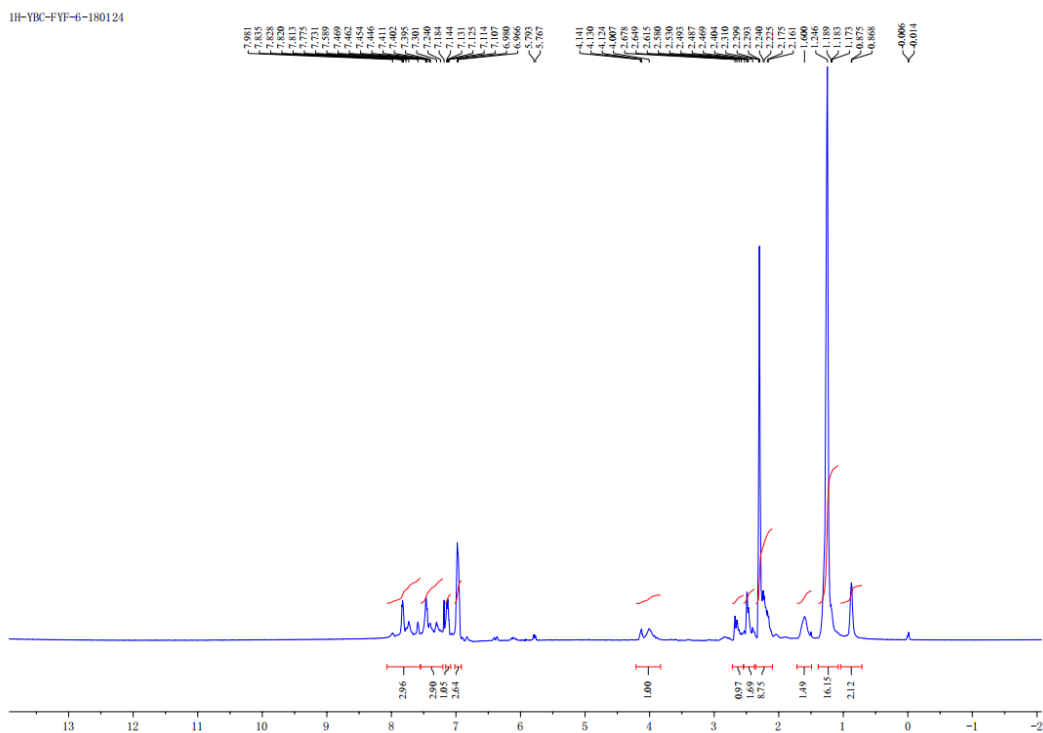


Figure S11.  $^1\text{H}$  NMR spectra of product PPD-6



13C-YBC-FYF-8-180126

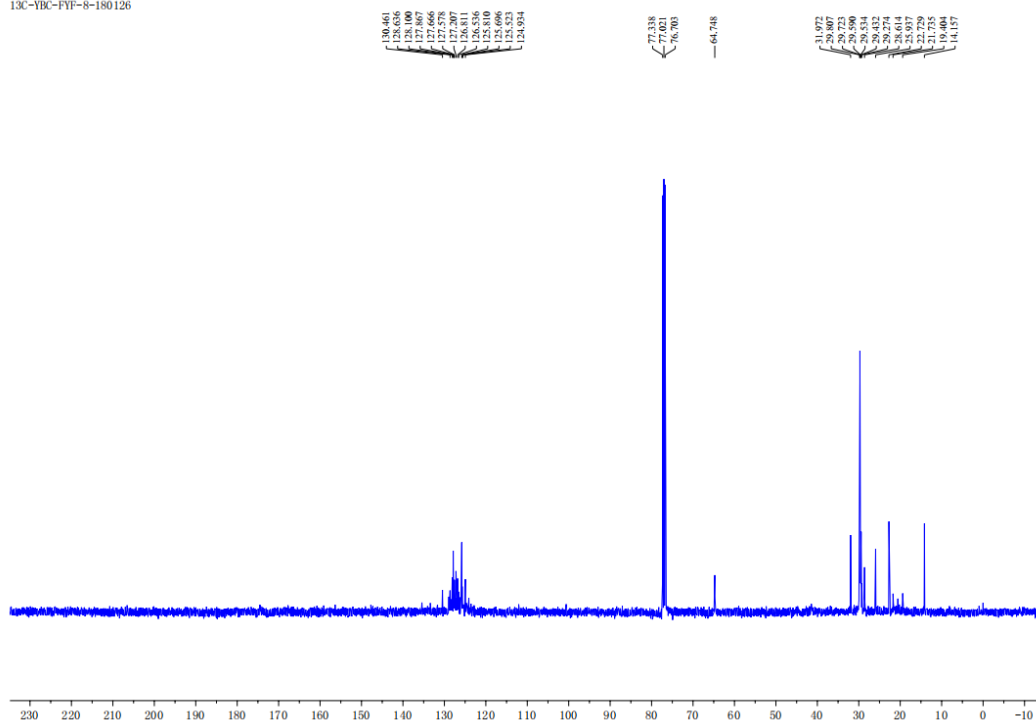


Figure S14.  $^{13}\text{C}$  NMR spectra of product PPD-7

## Pour Point Depressant 8 (PPD-8)

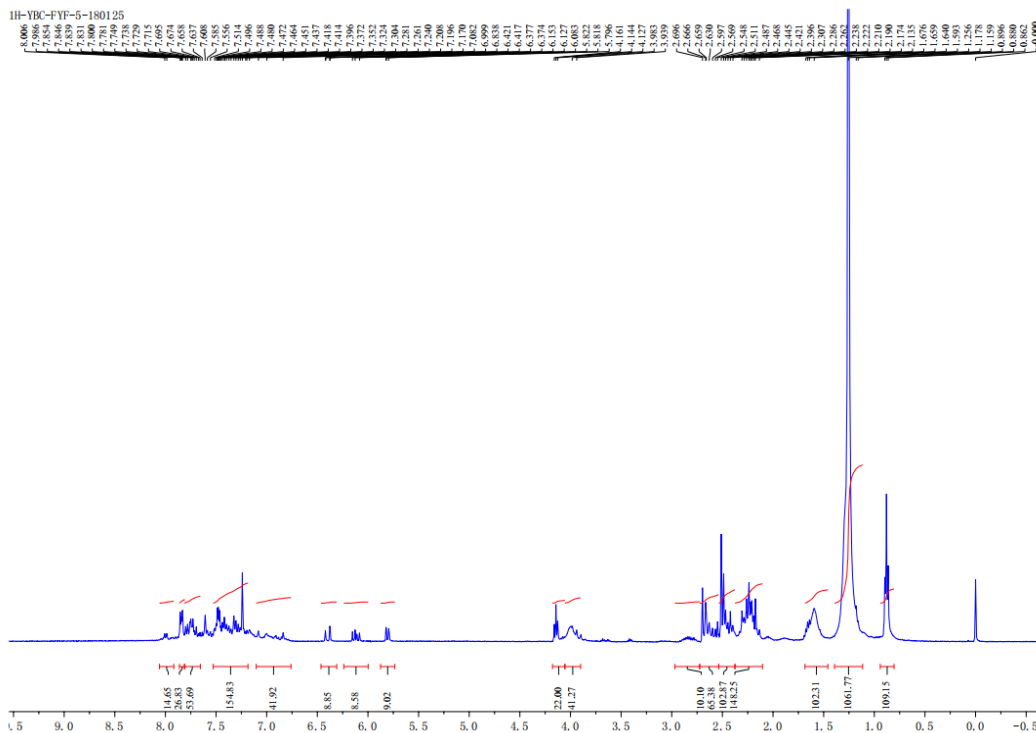
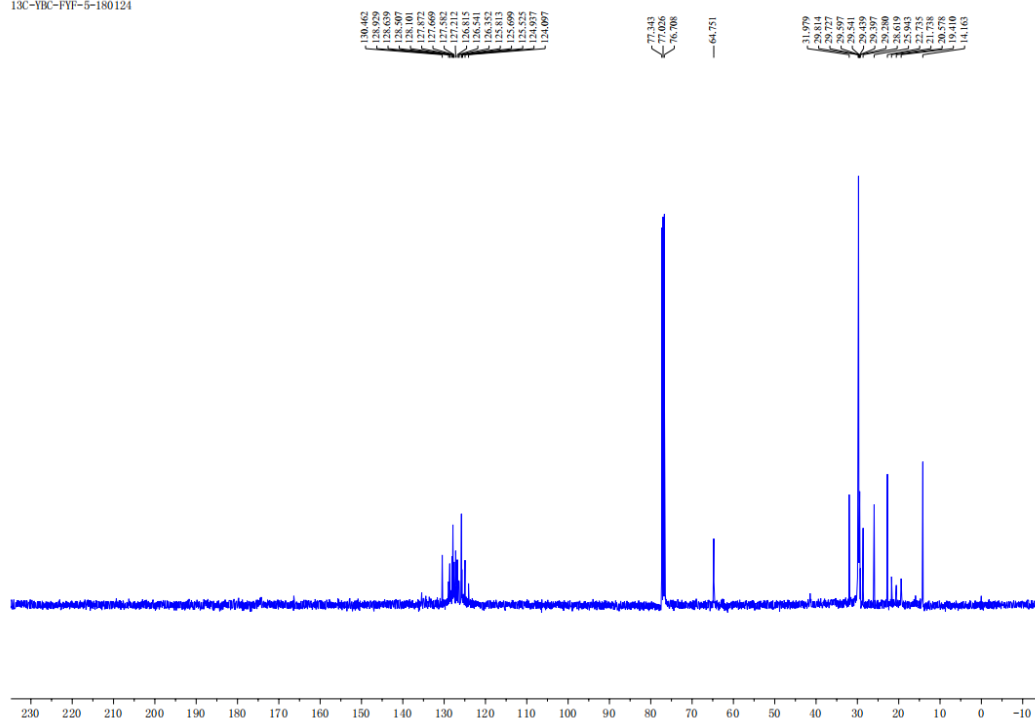


Figure S15.  $^1\text{H}$  NMR spectra of product PPD-8

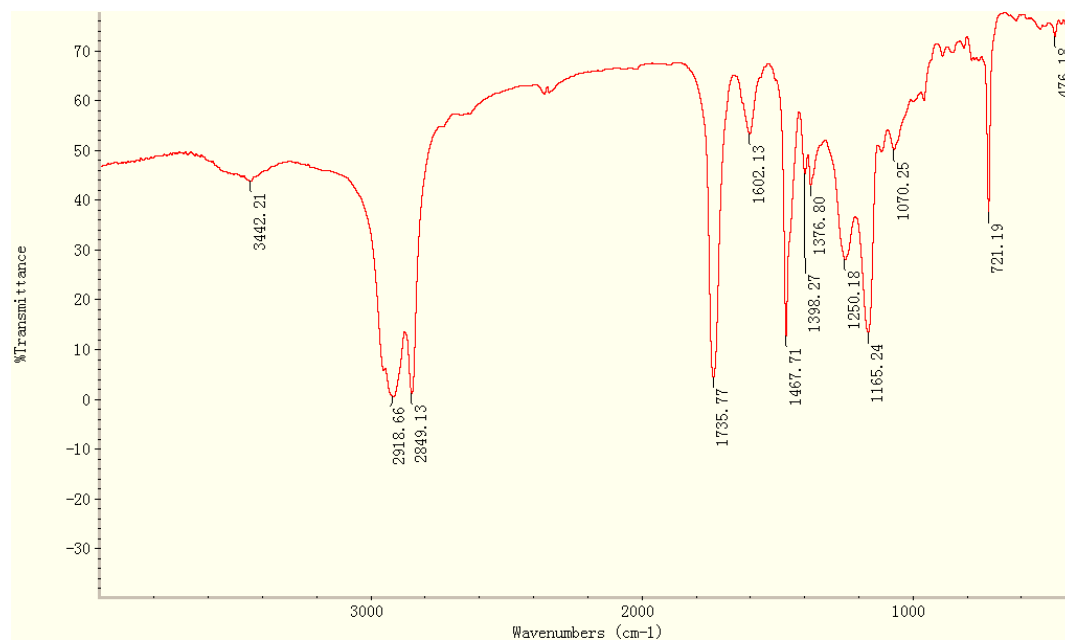


13C-YBC-PYF-5-180124

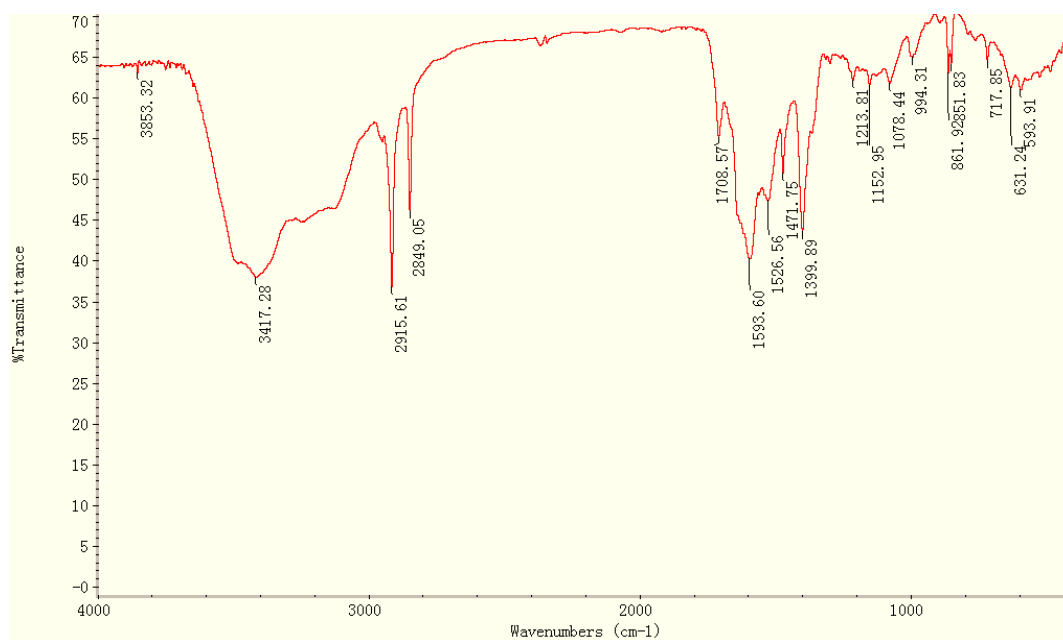


**Figure S16.**  $^{13}\text{C}$  NMR spectra of product PPD-8

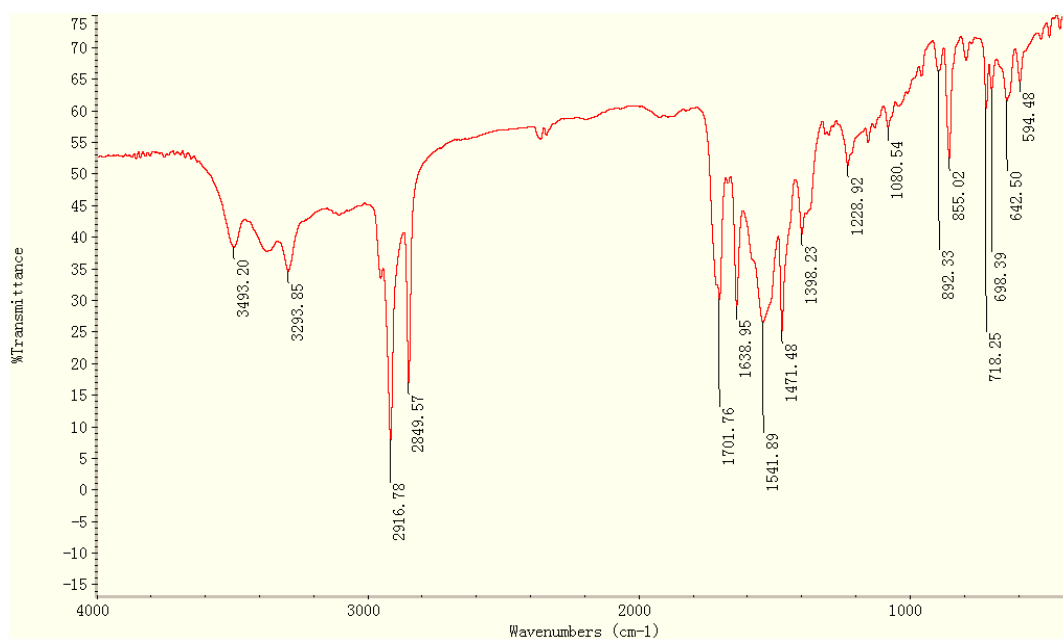
## 2. FTIR spectra of products



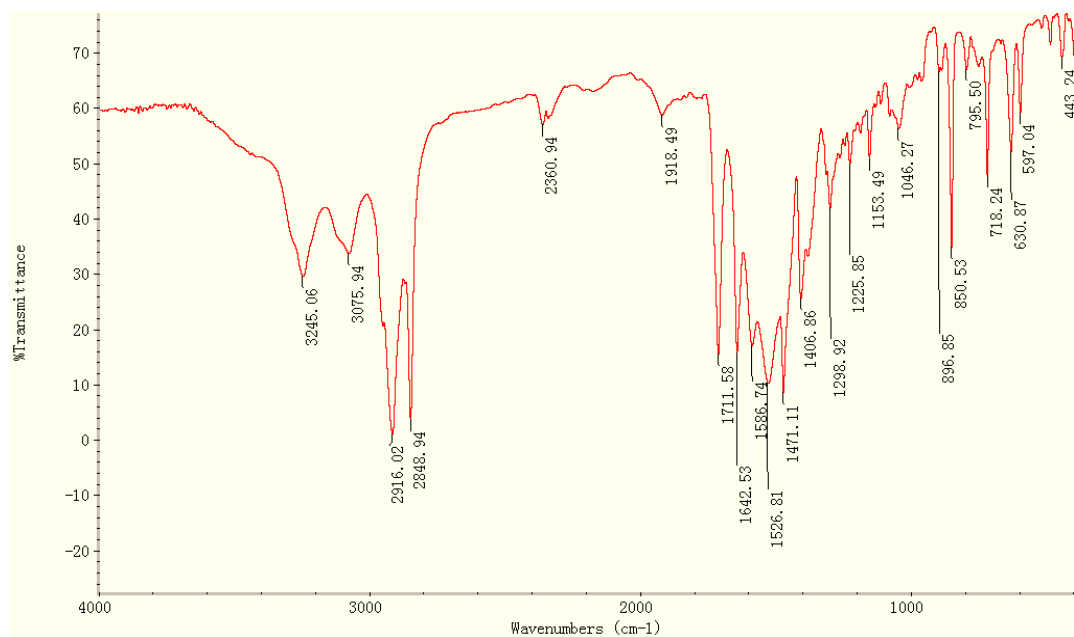
**Figure S17.** FTIR spectra of PPD-1



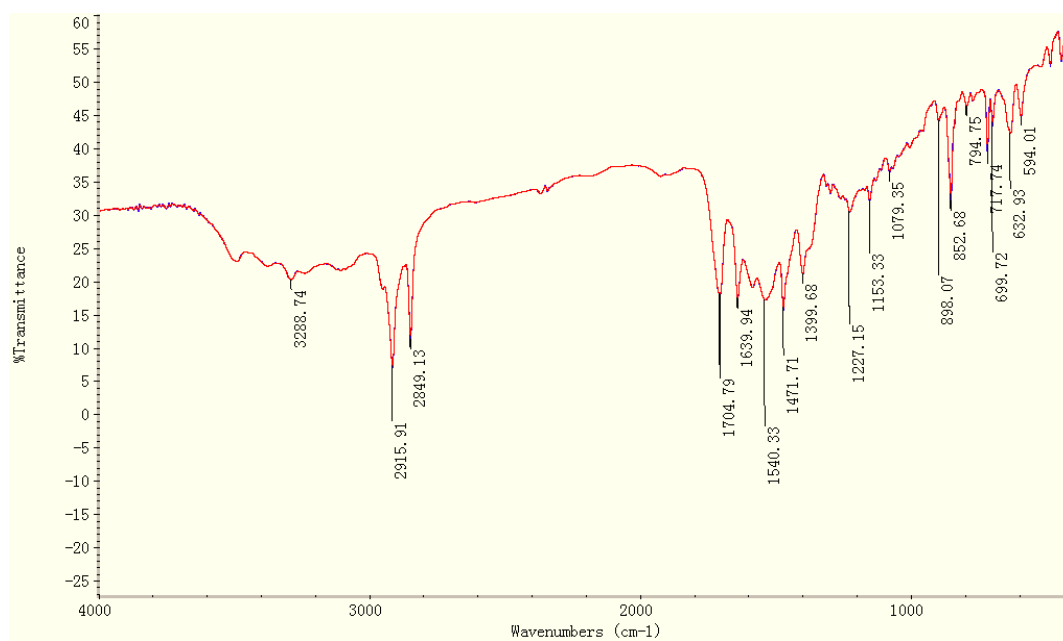
**Figure S18.** FTIR spectra of PPD-2



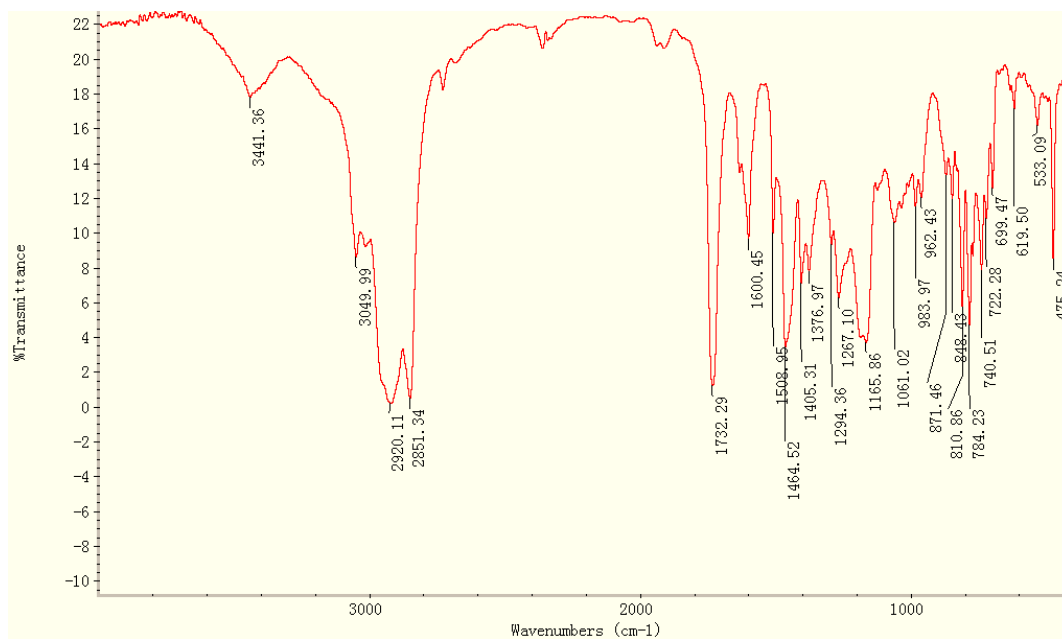
**Figure S19.** FTIR spectra of PPD-3



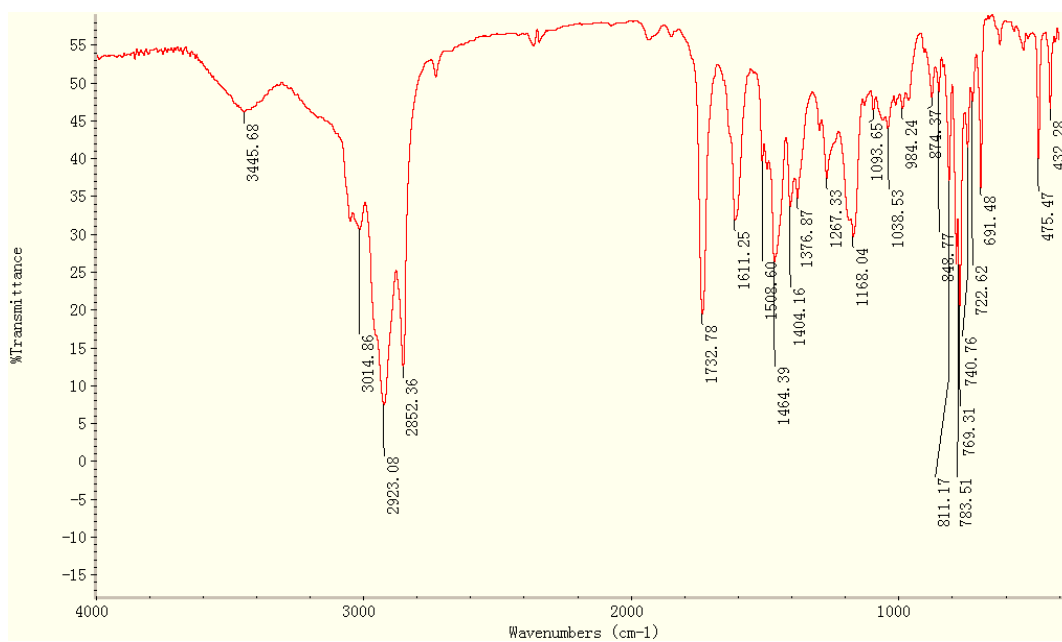
**Figure S20.** FTIR spectra of PPD-4



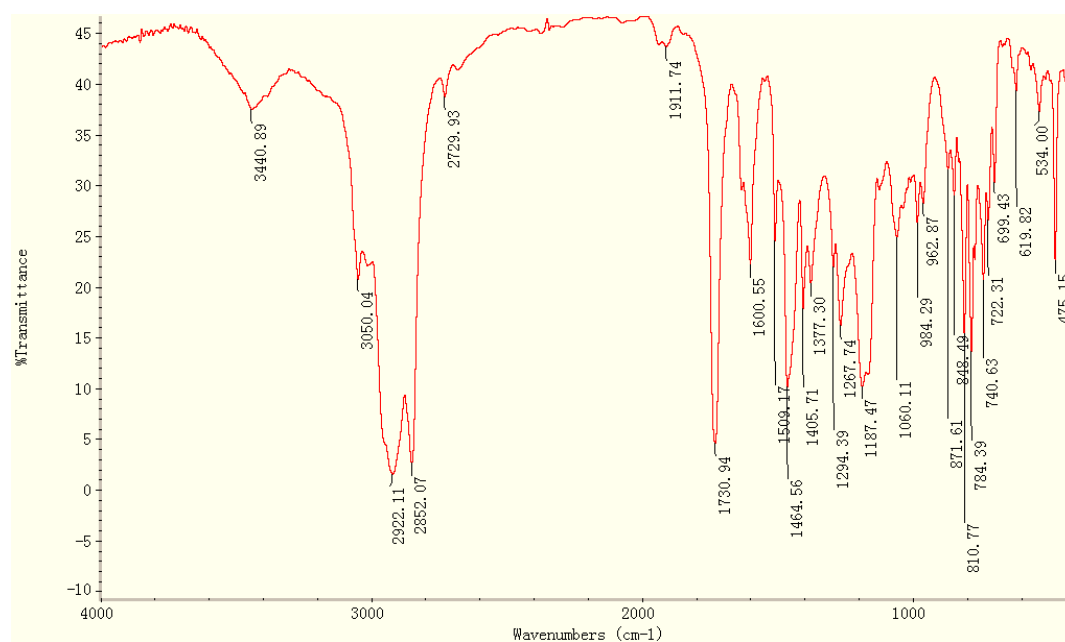
**Figure S21.** FTIR spectra of PPD-5



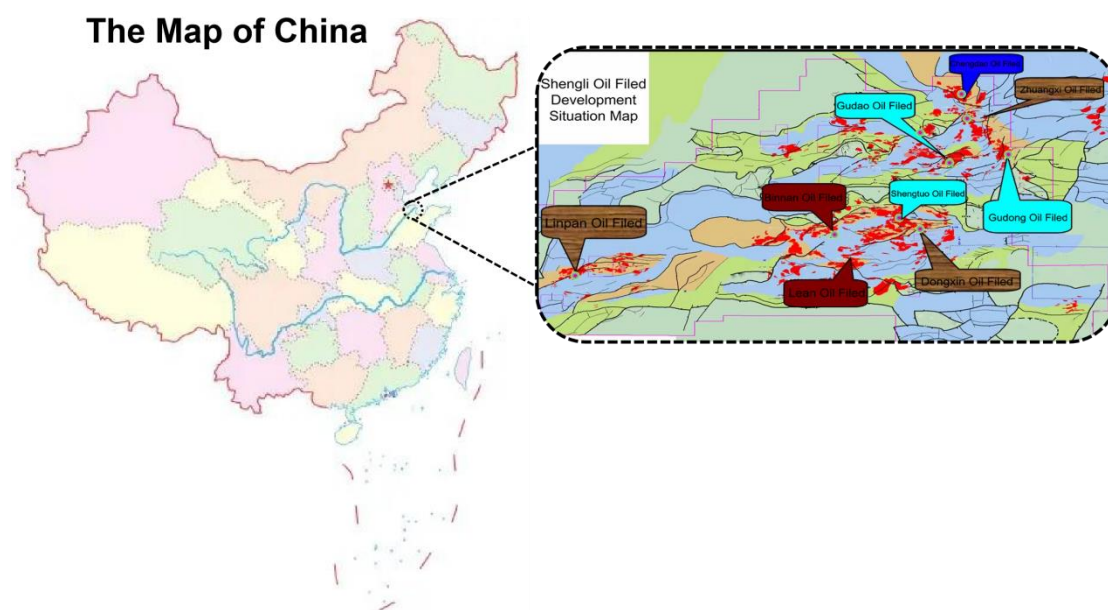
**Figure S22.** FTIR spectra of PPD-6



**Figure S23.** FTIR spectra of PPD-7



**Figure S24.** FTIR spectra of PPD-8



**Figure S25.** The map locating the Shengli oil field in China.

## References

1. Xie, M.; Chen, F.; Liu. Synthesis and evaluation of benzyl methacrylate-methacrylate copolymers as pour point depressant in diesel fuel. *Fuel*. **2019**, 255, 115880.
2. Fang, L.; Zhang, X.; Ma, J. Investigation into a pour point depressant for Shengli crude oil. *Industrial & engineering chemistry research*. **2012**, 51(36), 11605-11612.
3. Pucko, I.; Racar, M.; Faraguna, F. Synthesis, characterization, and performance of alkyl methacrylates and tert-butylaminoethyl methacrylate tetra polymers as pour point depressants for diesel Influence of polymer composition and molecular weight. *Fuel*. **2022**, 324, 124821.