Supplementary Information

Accelerating the "one-pot" melt polycondensation for thermotropic liquid crystalline polymers by introducing a second acetylating agent

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Supplementary text for characterization.

Supplementary figure-1 ^{1}H NMR of PGAc, PO, and their mixture at room temperature.

Supplementary figure-2 ^{1}H NMR of POAc.

Supplementary figure-3 IR absorption spectrum of Vectra A950.

Supplementary figure-4 (a) TGA, and (b) DTG of TLCPs prepared by adding PGAc, HQAc, RCAc, and BPAc without catalyst.

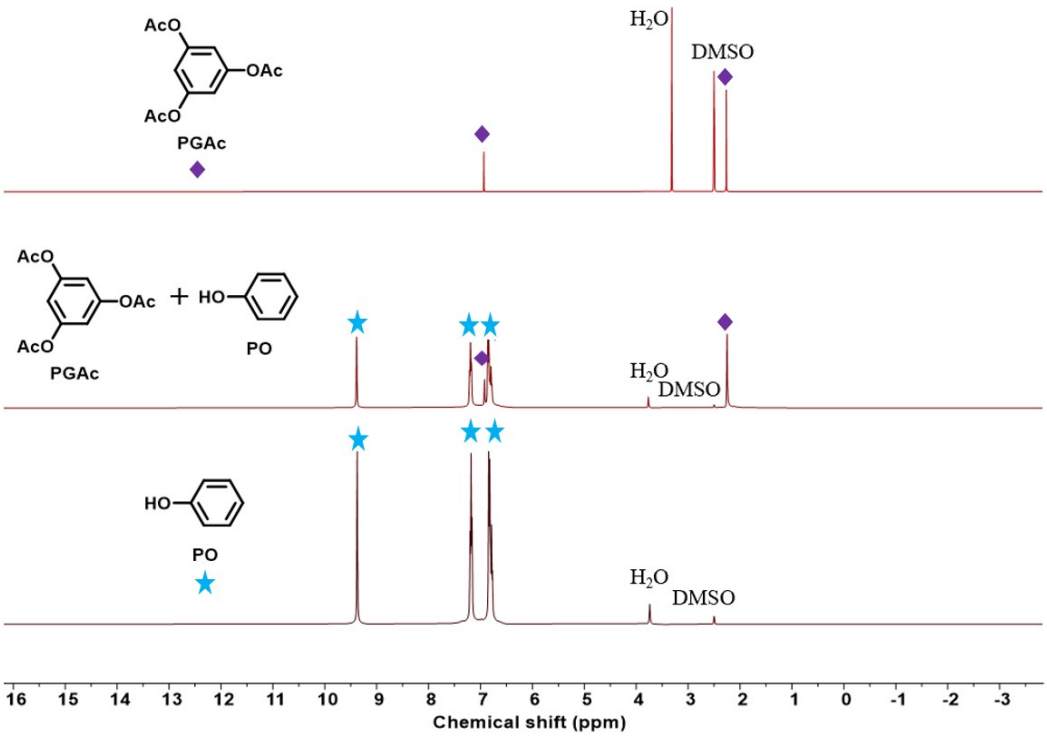
Supplementary figure-5 (a) the second heating curves, and (b) the first cooling curves from DSC of TLCPs prepared by adding PGAc, HQAc, RCAc, and BPAc without catalyst.

Some related 1H NMR spectra.

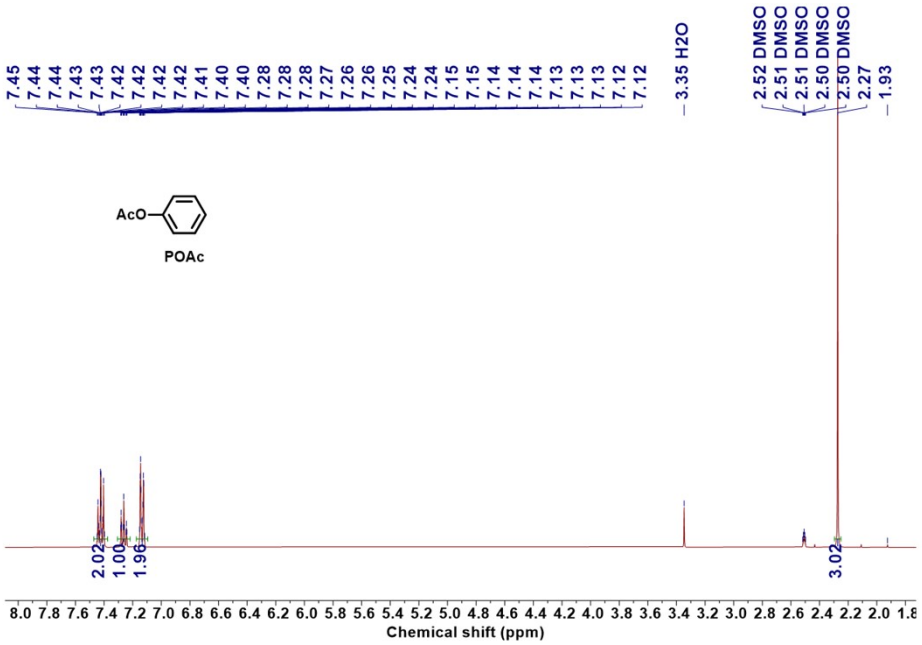
Supplementary text for characterization.

^{1}H nuclear magnetic resonance (^{1}H NMR) spectra and fourier transform infrared (FTIR) spectroscopy were used to analyze the structure of products. DMSO-d^6 was used as the testing solvent. FTIR was obtained by total internal reflection with 64 scans and a wavenumber range of 4000 cm^{-1} to 400 cm^{-1}. 100 mg of TLCP was added to a three-necked round-bottom flask containing 50 mL of pentafluorophenol and dissolved at 80 ℃ for 4 h to obtain a homogeneous solution. The solution was subjected to hot filtration, and the filtrate was placed in an Ubbelohde viscometer and maintained at 60 ℃ for 30 min. The outflow time of the solution was tested and compared with that of pure pentafluorophenol solvent to calculate the intrinsic viscosity ([η]) of TLCP.

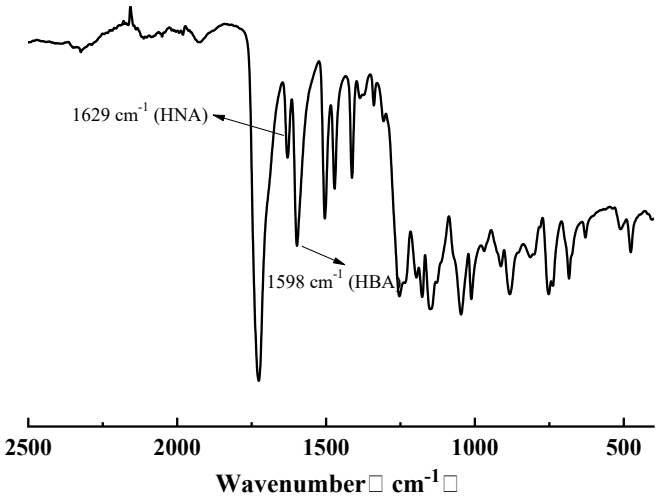
Thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC) analysis were used to study thermal performance of TLCP. After drying in vacuum, TLCP was heated from 100 ℃ to 800 ℃ at a rate of 20 ℃/min under nitrogen, and TGA, DTG curves as well as related data were obtained. TLCP was heated to 350 ℃ at a rate of 10 ℃/min in a nitrogen atmosphere. After 5 min of constant temperature, the temperature was reduced to 50 ℃ at a rate of 10 ℃/min to obtain crystallization point (T_c). Maintain a constant temperature for 5 min, the temperature was raised at a rate of 10 ℃/min to 350 ℃ to obtain melting point (T_m).



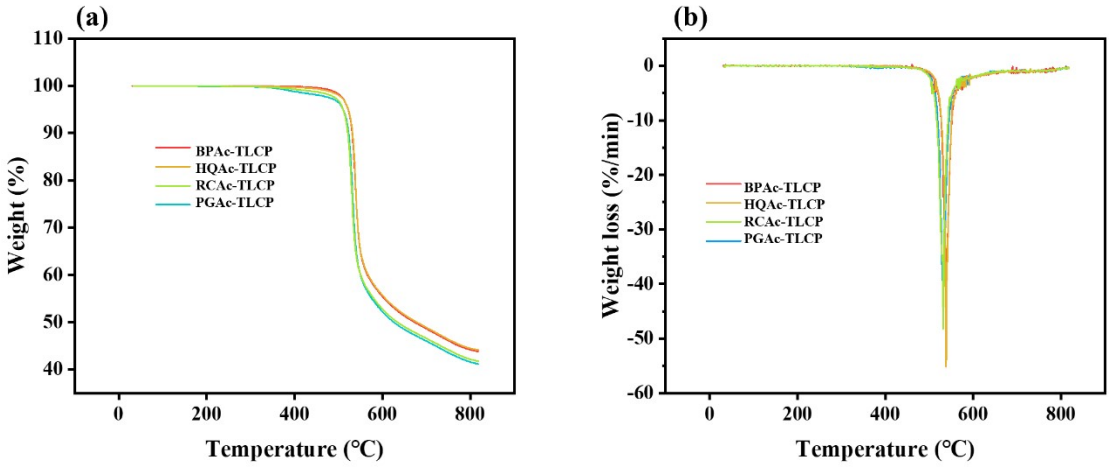
Supplementary figure-1 ^{1}H NMR of PGAc, PO, and their mixture at room temperature (400 MHz, DMSO-d^{6}).



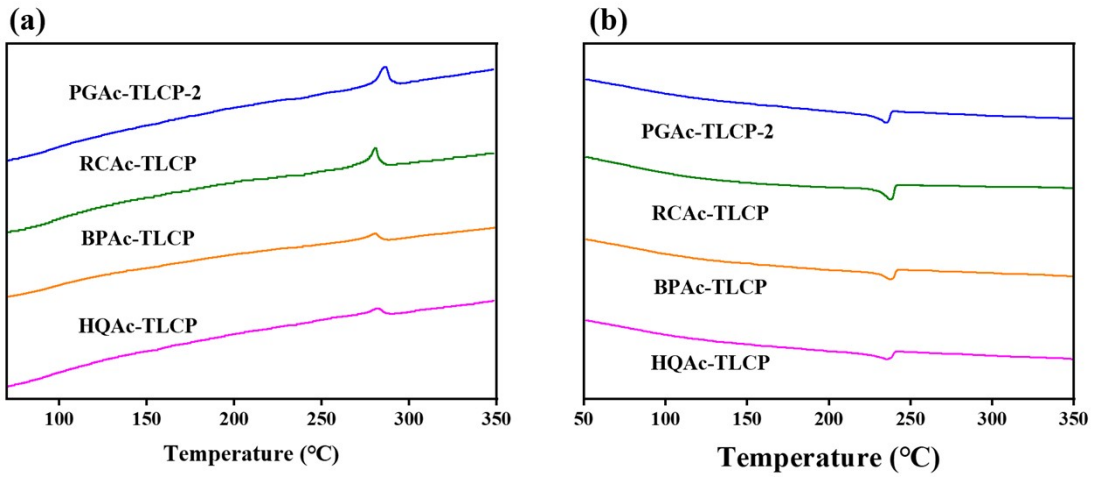
Supplementary figure-2 ^{1}H NMR of POAc (400 MHz, DMSO-d^{6}).



Supplementary figure-3 IR absorption spectrum of Vectra A950.



Supplementary figure-4 (a) TGA, and (b) DTG of TLCPs prepared by adding PGAc, HQAc, RCAc, and BPAc without catalyst.



Supplementary figure-5 (a) the second heating curves, and (b) the first cooling curves from DSC of TLCPs prepared by adding PGAc, HQAc, RCAc, and BPAc without catalyst.

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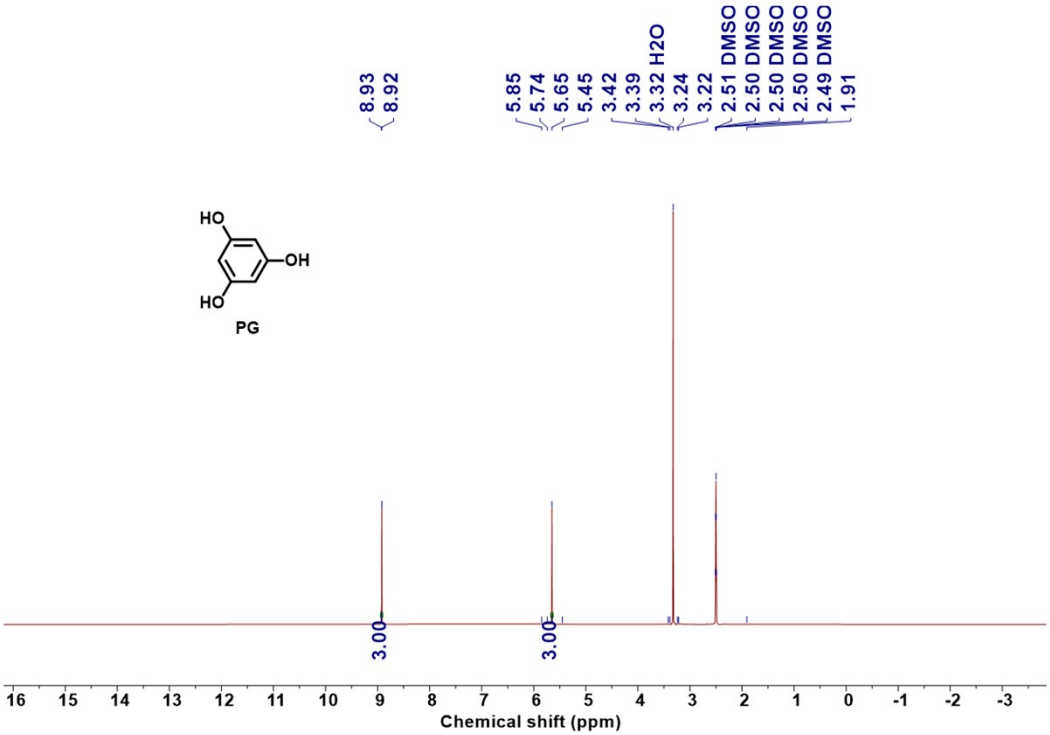
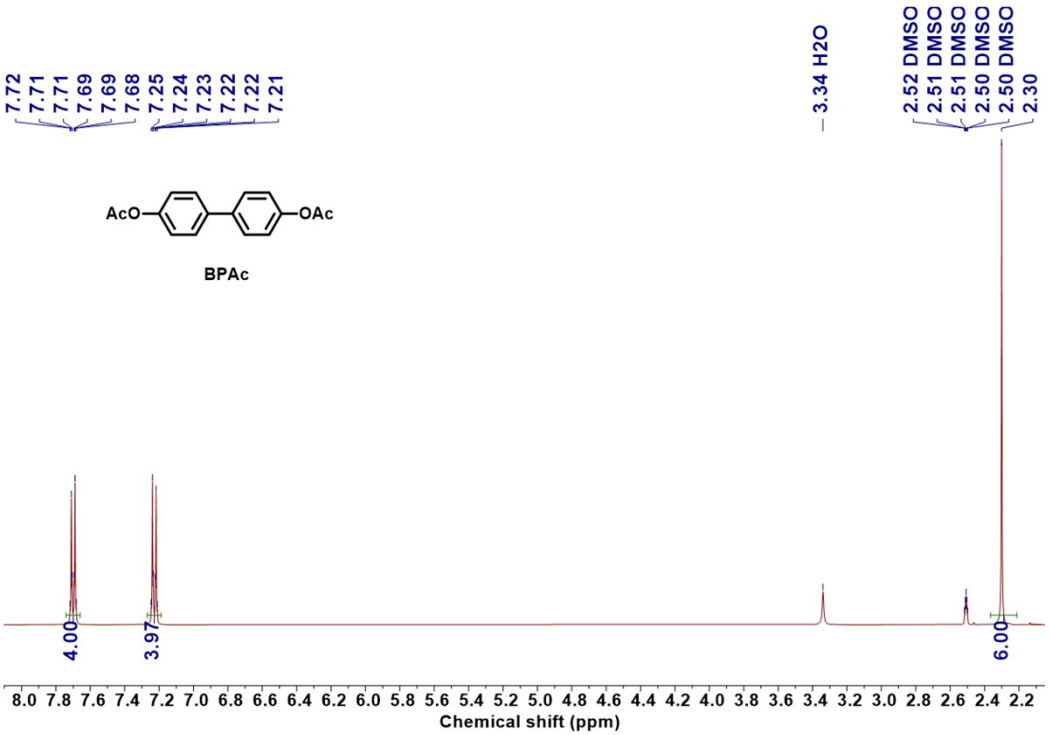
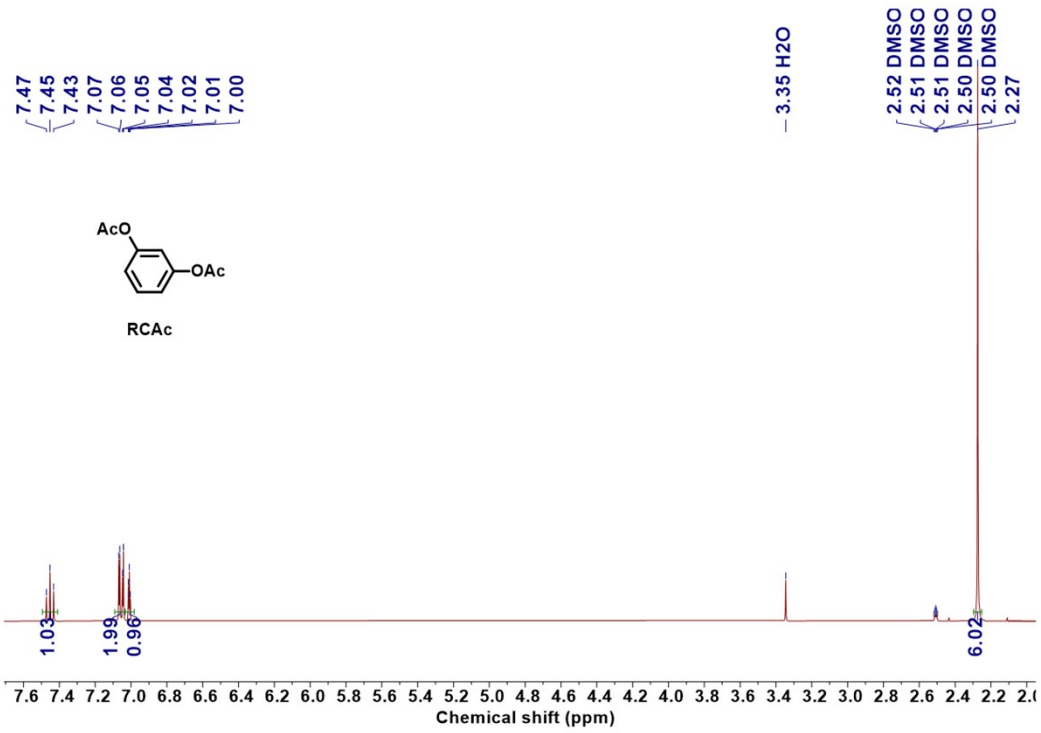
PGAc (400 MHz, DMSO-d^6)



BPAc (400 MHz, DMSO-d^6)



RCAc (400 MHz, DMSO-d^6)



HQAc (400 MHz, DMSO-d^6)