Electronic Supplementary Material (ESI) for Polymer Chemistry.

Synthesis and characterization of a nematic fully aromatic polyester utilizing biphenyl 3,4'-dicarboxylic acid

Supporting Information

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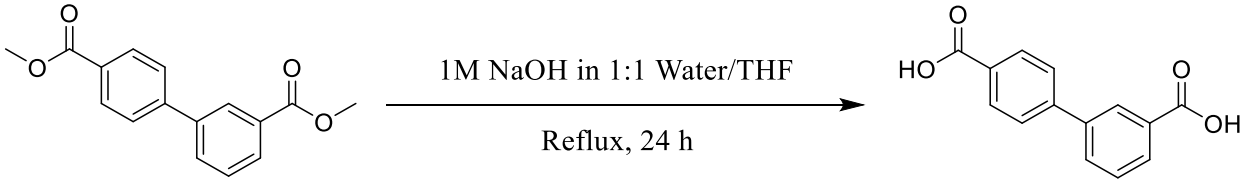


Scheme S1. Hydrolysis of dimethyl 3,4'- bibenzoate (3,4'BB) to synthesize diacid monomer, biphenyl 3,4'-dicarboxylic acid (3,4'BB-COOH), for acidolysis polymerization.

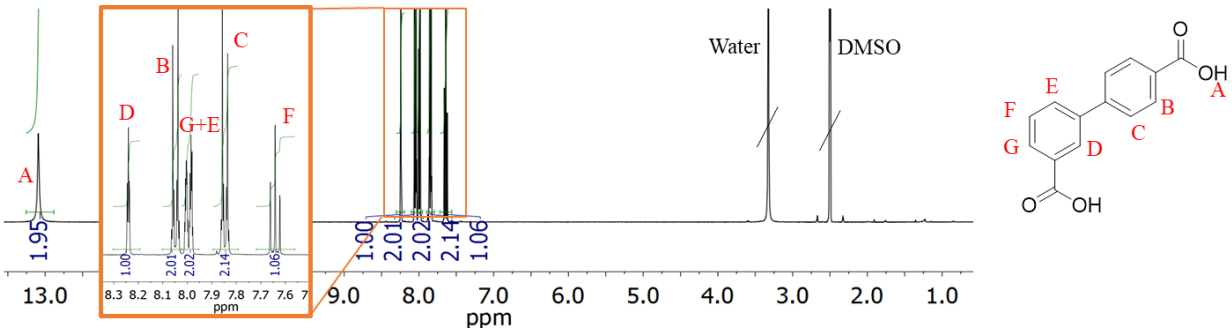


Figure S1. Successful hydrolysis of biphenyl 3,4'-dicarboxylic acid confirmed by ^{1}H NMR spectroscopy (DMSO-d_6, 400 MHz).

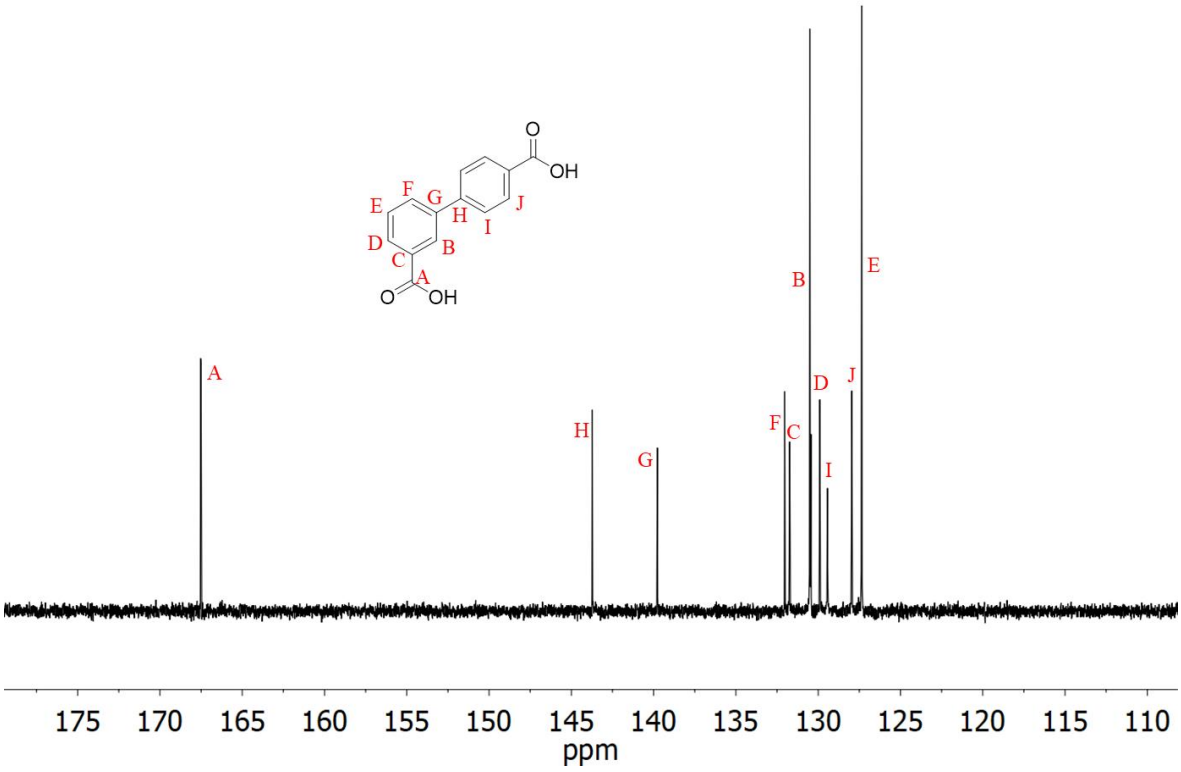
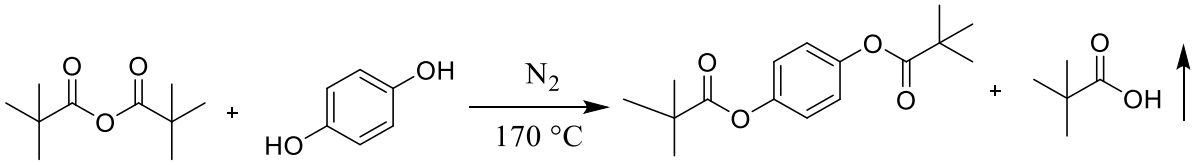


Figure S2. Successful hydrolysis of biphenyl 3,4'-dicarboxylic acid confirmed by ^{13}C NMR spectroscopy (DMSO-d_6, 400 MHz).



Scheme S2. Pivilation of hydroquinone with pivalic anhydride yields hydroquinone dipivilate for acidolysis polymerization.

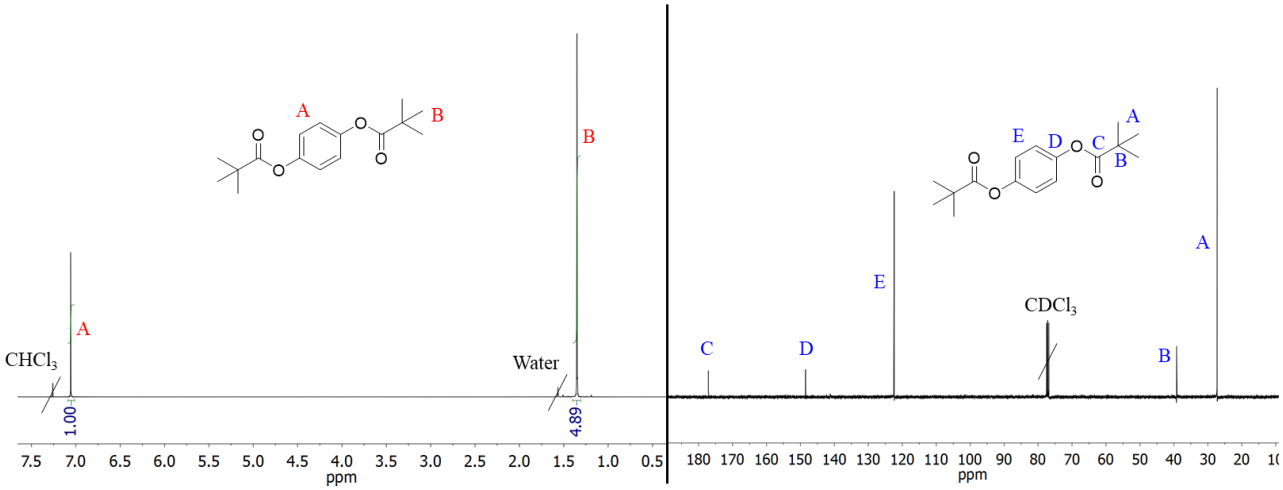


Figure S3. Successful pivalation of hydroquinone confirmed through ^{1}H and ^{13}C NMR spectroscopy. Left: Peak assignment and ^{1}H NMR ($CDCl_3$, 400 MHz). Right: Peak assignment and ^{13}C NMR ($CDCl_3$, 400 MHz).

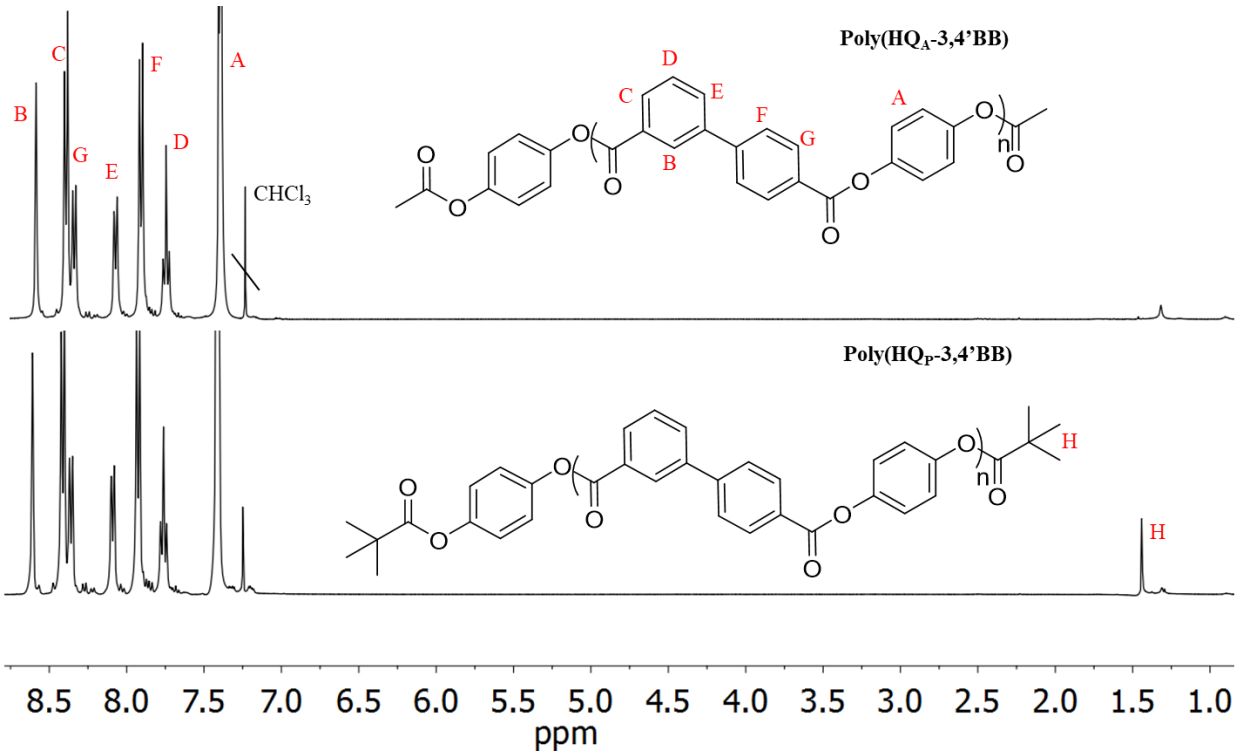


Figure S4. ^{1}H NMR ($CDCl_3$:TFA-*d*, 400 MHz) spectroscopy of poly(HQ_a-3,4'BB) (top) and poly(HQ_p-3,4'BB) (bottom).

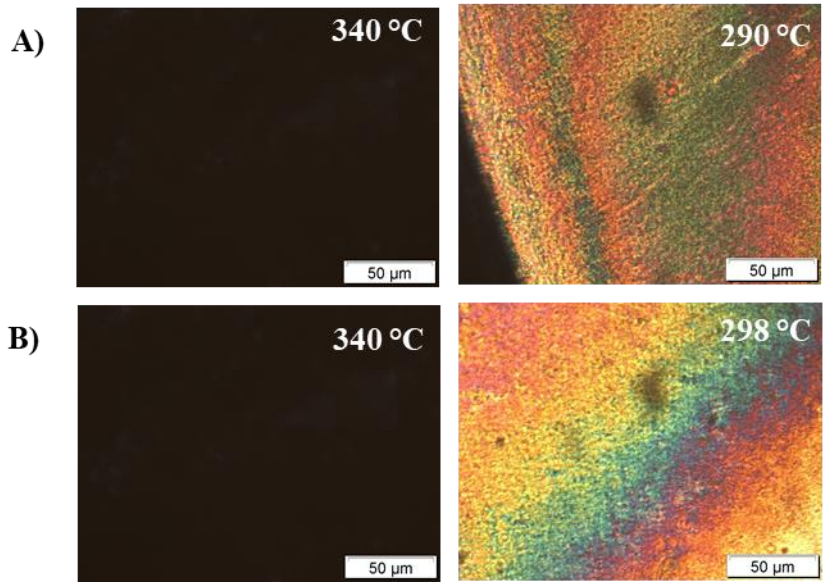


Figure S5. Polarized optical microscopy of poly(HQ-3,4'BB) with higher molecular weight due to receiving 30 m of vacuum during the polymerization reveals possible mosaic nematic texture birefringence. Both sets of images were taken during a slow cool at 10 °C/min from the isotropic phase. A) poly(HQ_p-3,4'BB) B) poly(HQ_a-3,4'BB).

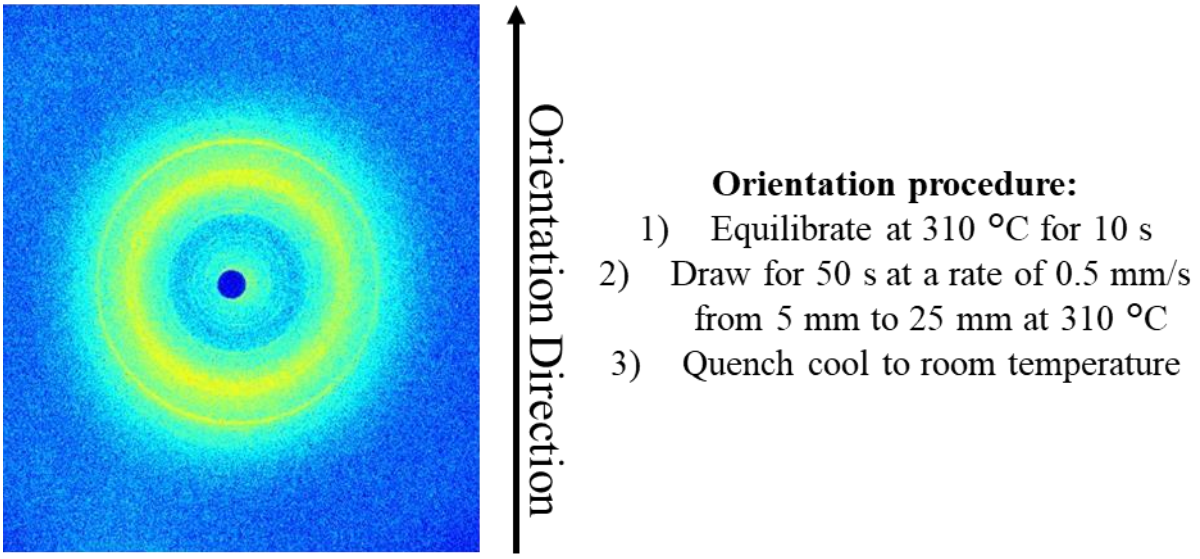


Figure S6. 2D WAXS profile of poly(HQ_p-3,4'BB) after attempts to orient the polymer below the T_i resulting in crystallization.