

## Article

# Highly Soluble Fluorinated Polyimides Synthesized with Hydrothermal Process towards Sustainable Green Technology

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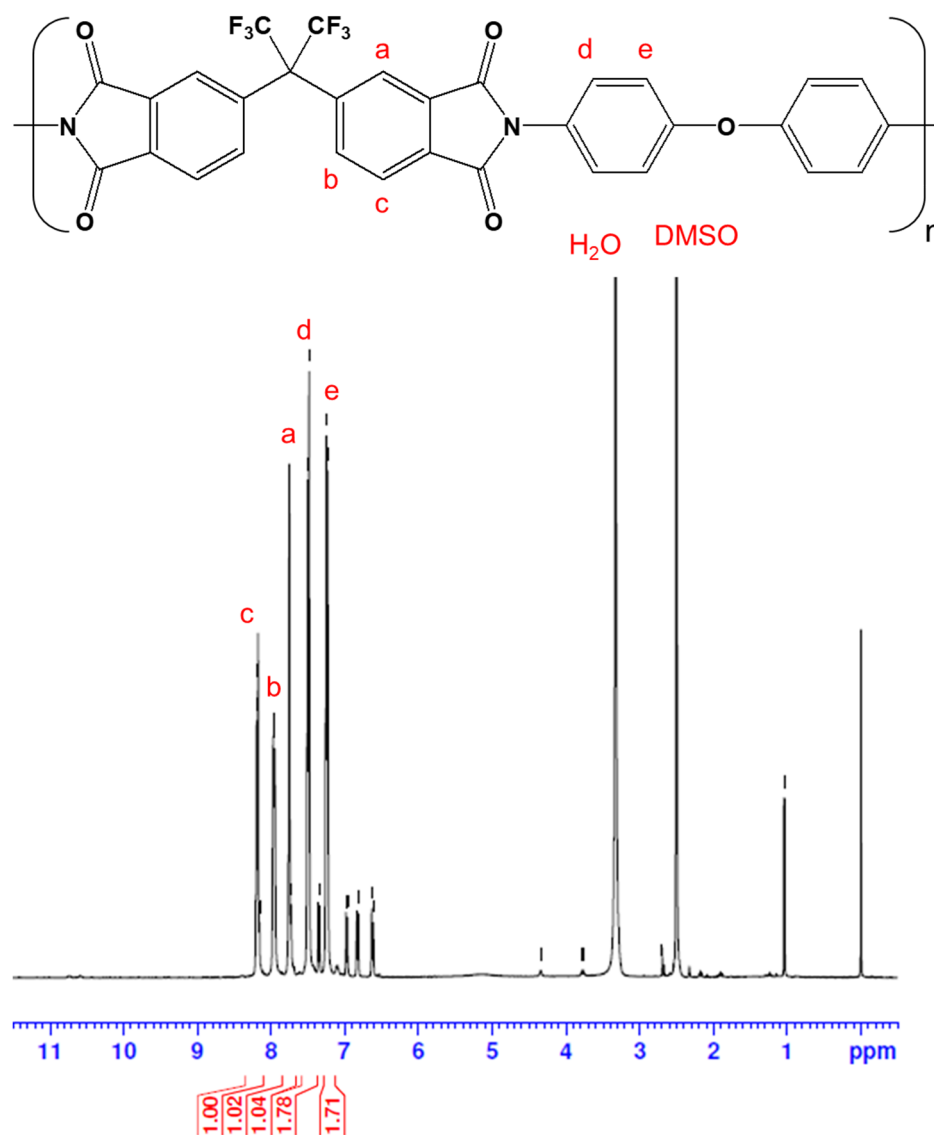
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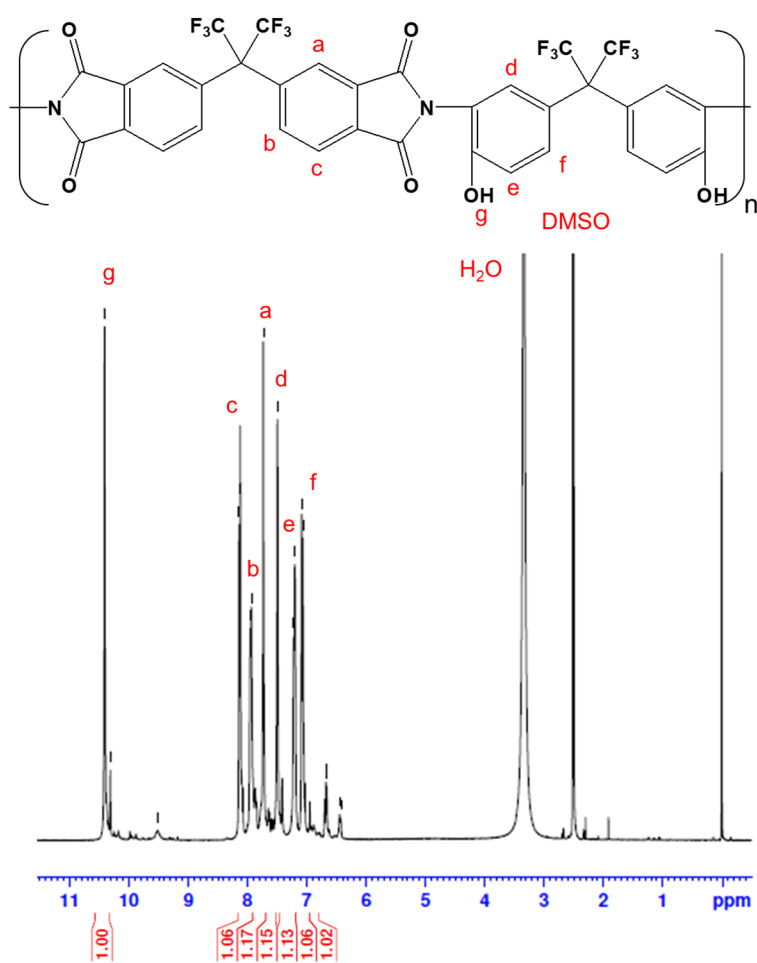
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## SUPPLEMENTARY DATA

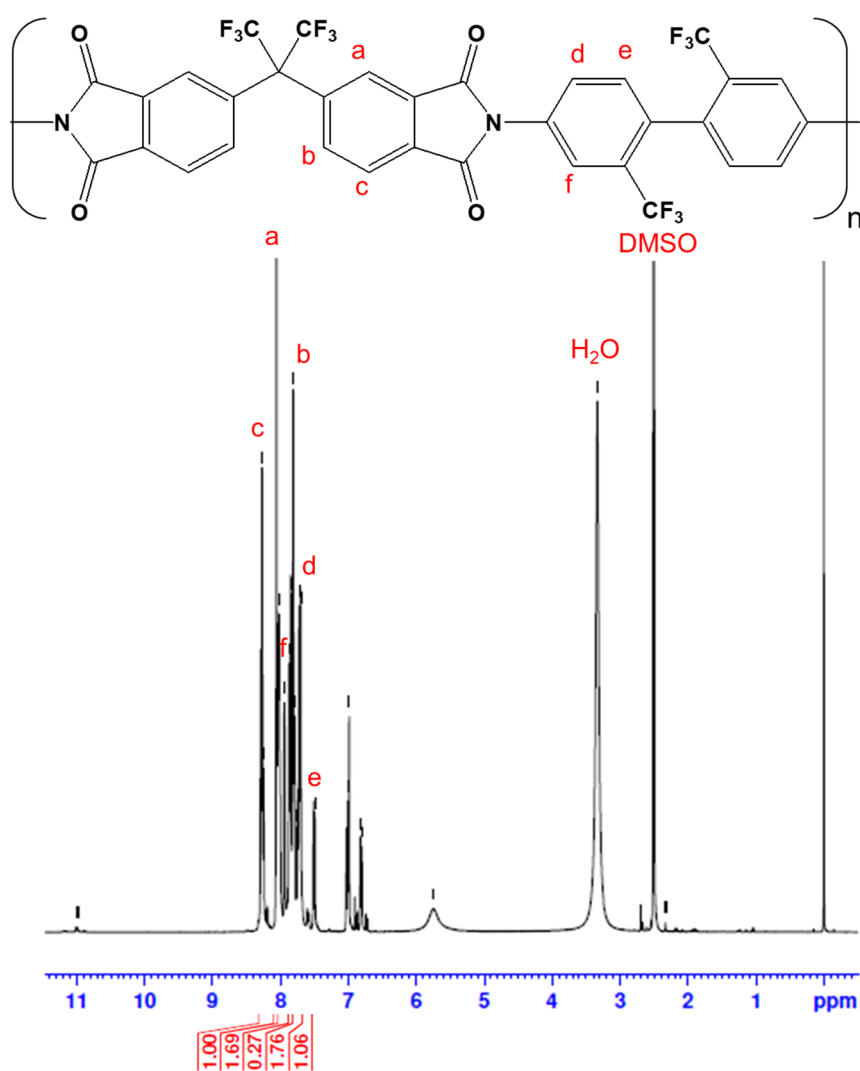
*<sup>1</sup>H NMR of hydrothermally synthesized polyimides***Figure S1.** <sup>1</sup>H NMR of 1H.

<sup>1</sup>H NMR (400 MHz, DMSO-*d*<sub>6</sub>): δ=8.17 (2H, Hc), δ=7.96 (2H, Hb), δ=7.49 (2H, Ha), δ=7.35 (4H, Hd), δ=7.24 (4H, He).



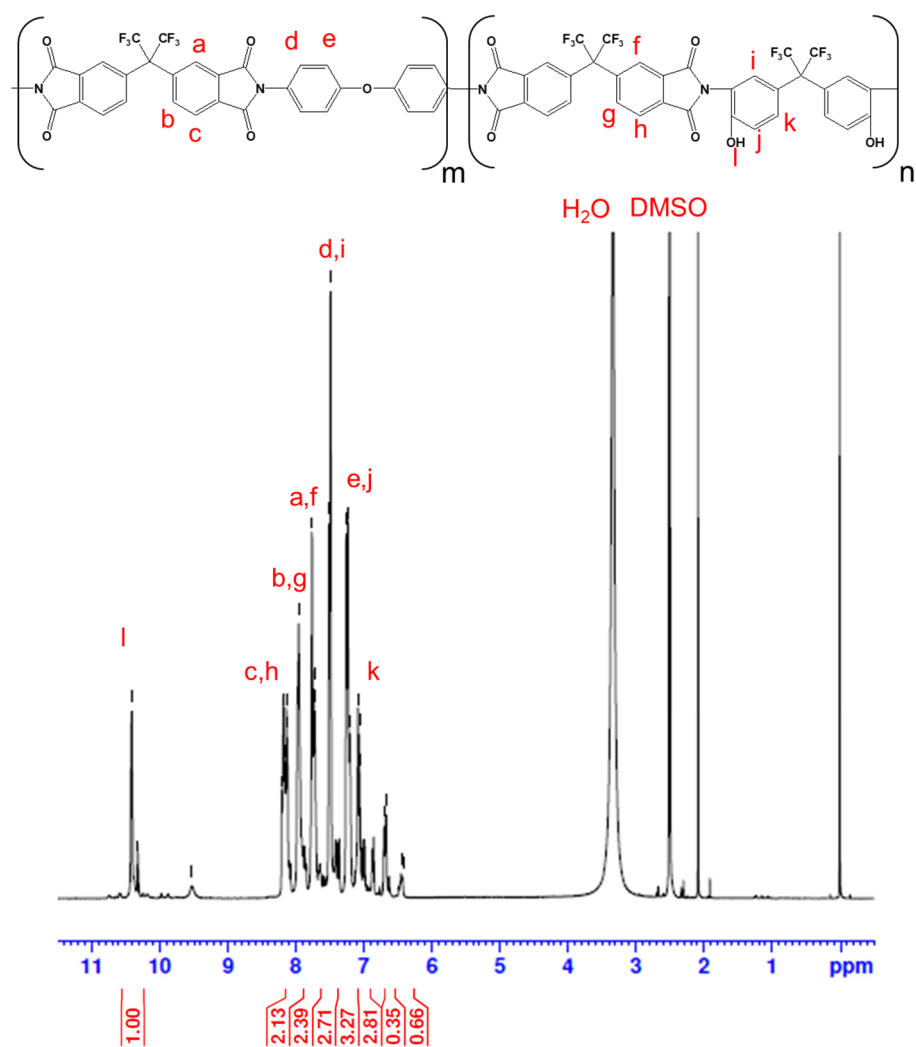
**Figure S2.**  $^1\text{H}$  NMR of 2H.

$^1\text{H}$  NMR (400 MHz,  $\text{DMSO}-d_6$ ):  $\delta=10.41$  (2H, Hg),  $\delta=8.13$  (2H, Hc),  $\delta=7.94$  (2H, Hb),  $\delta=7.73$  (2H, Ha),  $\delta=7.49$  (2H, Hd),  $\delta=7.21$  (2H, He),  $\delta=7.07$  (2H, Hf).



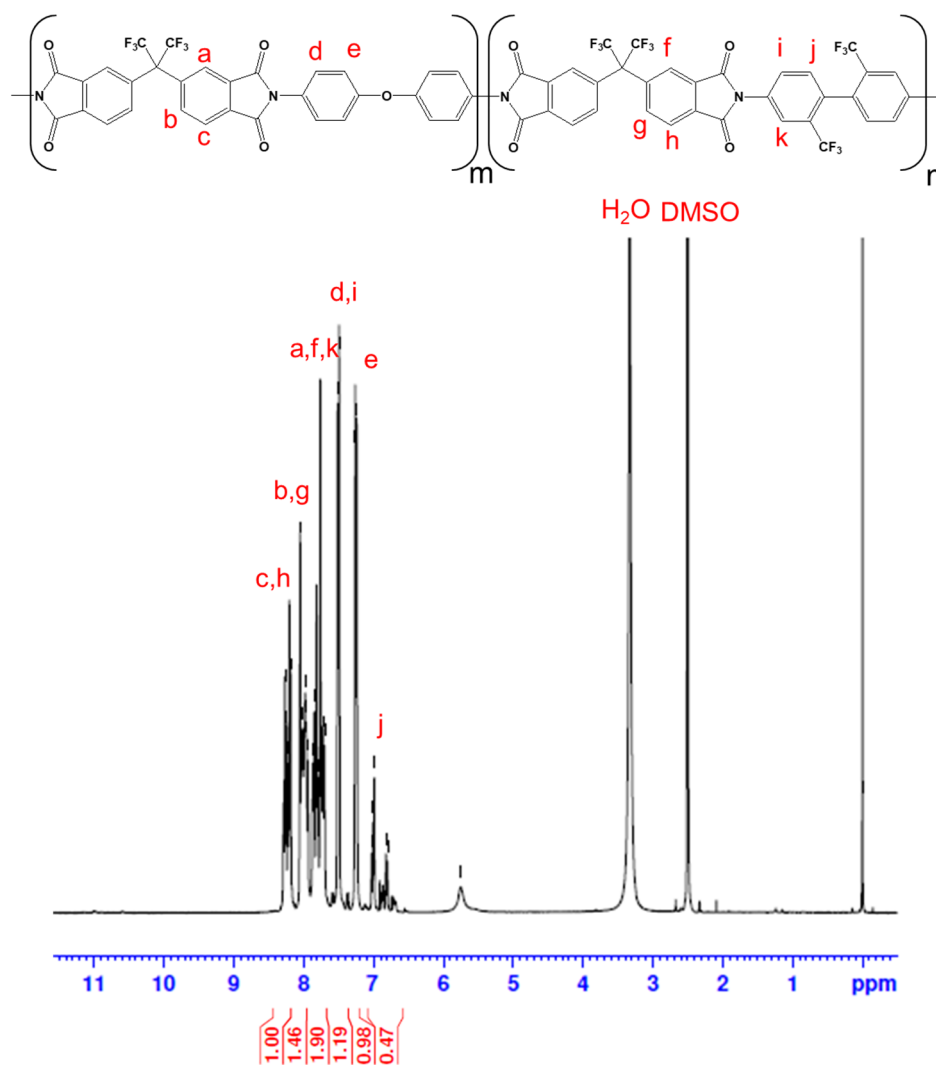
**Figure S3.**  $^1\text{H}$  NMR of 3H.

$^1\text{H}$  NMR (400 MHz,  $\text{DMSO}-d_6$ ):  $\delta=8.25$  (2H, Hc),  $\delta=8.03$  (2H, Ha),  $\delta=7.94$  (2H, Hf),  $\delta=7.76$  (2H, Hb),  $\delta=7.72$  (2H, Hd),  $\delta=7.51$  (2H, He).



**Figure S4.** <sup>1</sup>H NMR of 4H.

<sup>1</sup>H NMR (400 MHz, DMSO-*d*<sub>6</sub>): δ=10.41 (2H, Hl), δ=8.18 (2H, Hc), δ=8.15 (2H, Hh), δ=7.95 (2H, Hb), δ=7.91 (2H, Hg), δ=7.76 (2H, Ha), δ=7.73 (2H, Hf), δ=7.51 (4H, Hd), δ=7.49 (2H, Hi), δ=7.25 (4H, He), δ=7.23 (2H, Hj), δ=7.05 (2H, Hk).



**Figure S5.**  $^1\text{H}$  NMR of 5H.

$^1\text{H}$  NMR (400 MHz,  $\text{DMSO}-d_6$ ):  $\delta=8.26$  (2H, Hc),  $\delta=8.22$  (2H, Hh),  $\delta=8.05$  (2H, Hb),  $\delta=7.95$  (2H, Hg),  $\delta=7.85$  (2H, Ha),  $\delta=7.81$  (2H, Hf),  $\delta=7.79$  (2H, Hk),  $\delta=7.51$  (4H, Hd),  $\delta=7.49$  (2H, Hi),  $\delta=7.23$  (4H, He),  $\delta=7.01$  (2H, Hj).

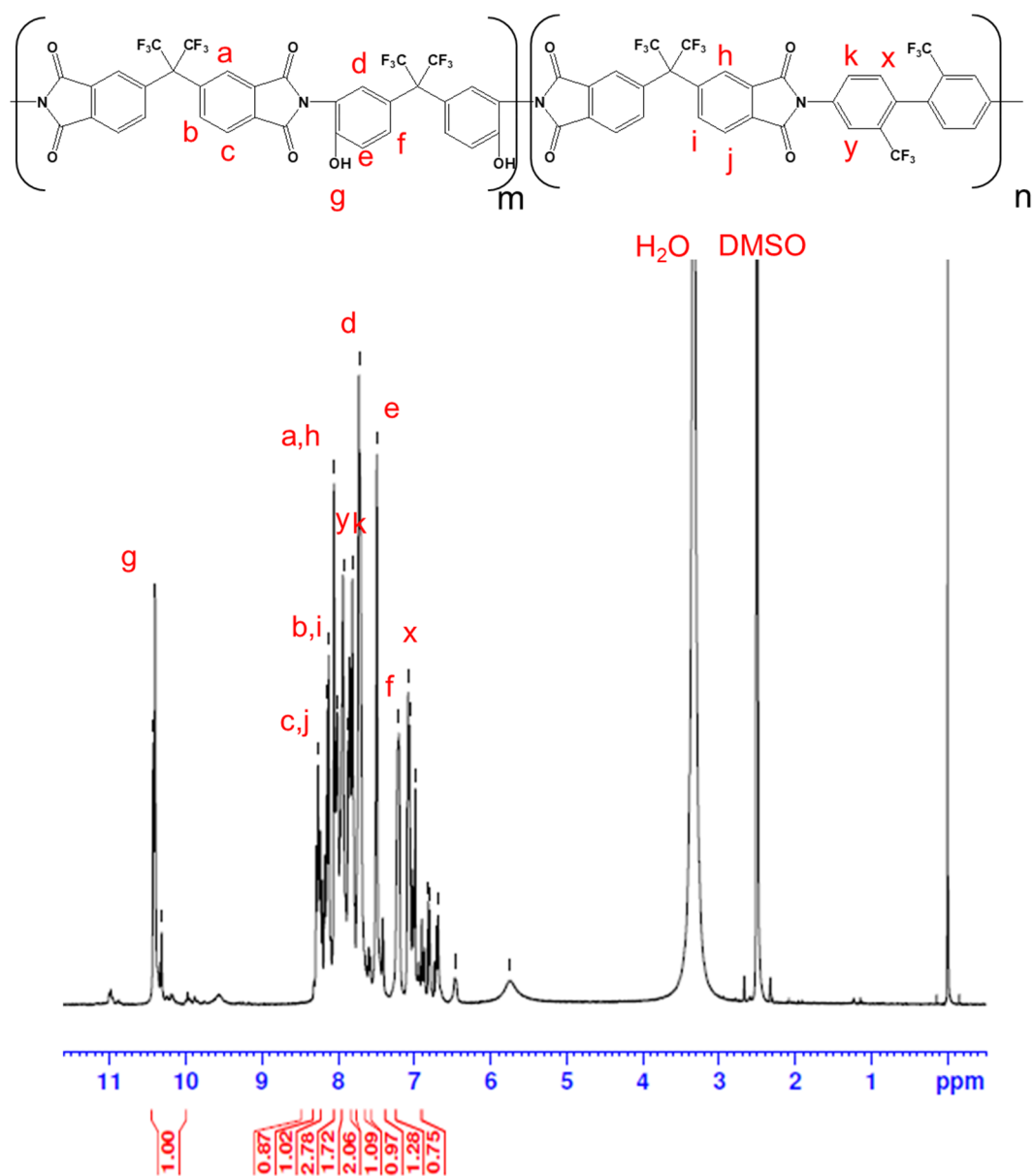


Figure S6.  $^1\text{H}$  NMR of 6H.

$^1\text{H}$  NMR (400 MHz,  $\text{DMSO}-d_6$ ):  $\delta=10.40$  (2H, Hg),  $\delta=8.26$  (2H, Hc),  $\delta=8.24$  (2H, Hj),  $\delta=8.14$  (2H, Hb),  $\delta=8.12$  (2H, Hi),  $\delta=8.05$  (2H, Ha),  $\delta=7.95$  (2H, Hy),  $\delta=7.93$  (4H, Hk),  $\delta=7.72$  (2H, Hd),  $\delta=7.49$  (2H, He),  $\delta=7.21$  (2H, Hf),  $\delta=7.08$  (2H, Hx).

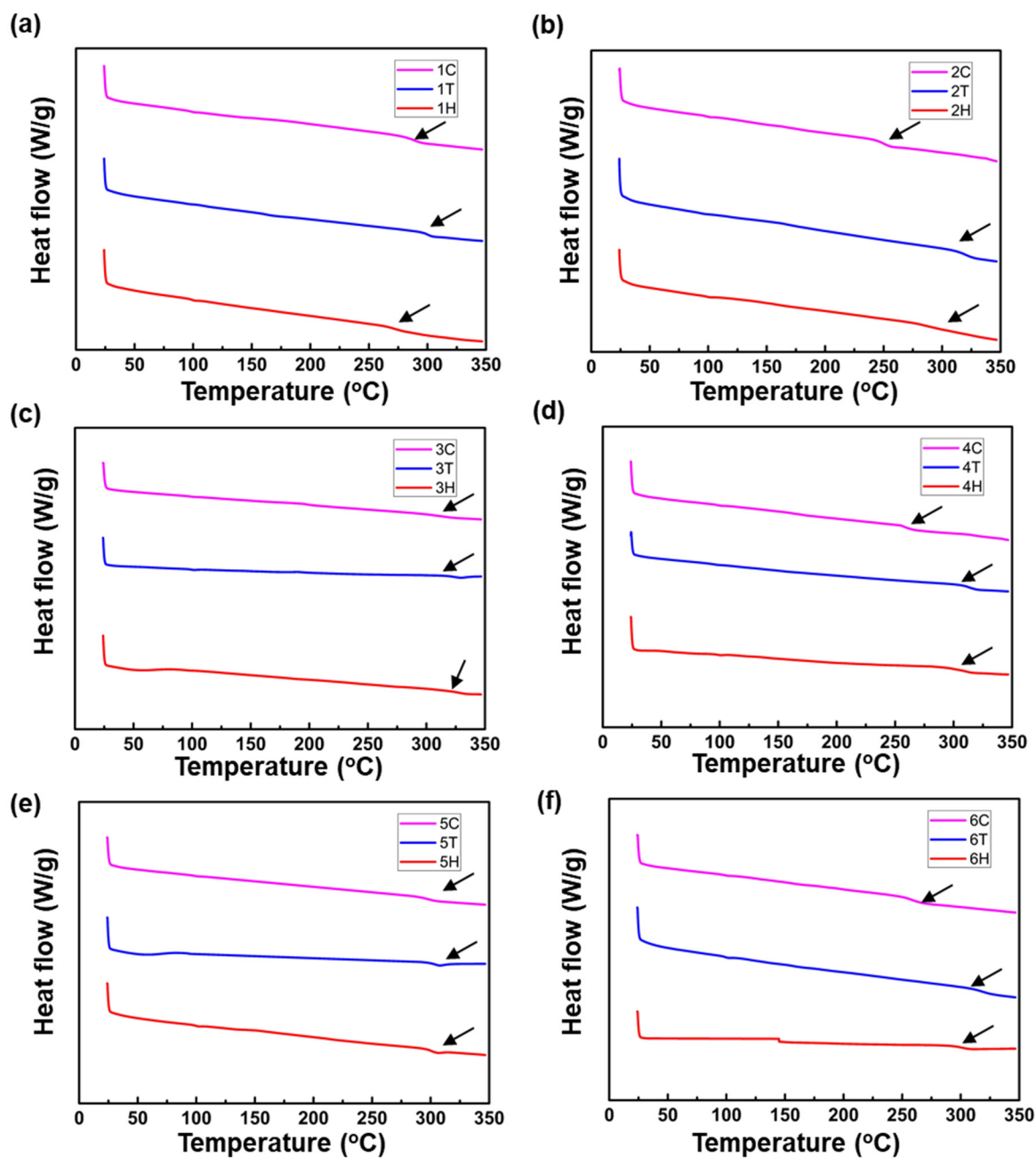
*DSC of synthesized polyimides*

Figure S7. DSC curves of polyimides synthesized with three different methods.

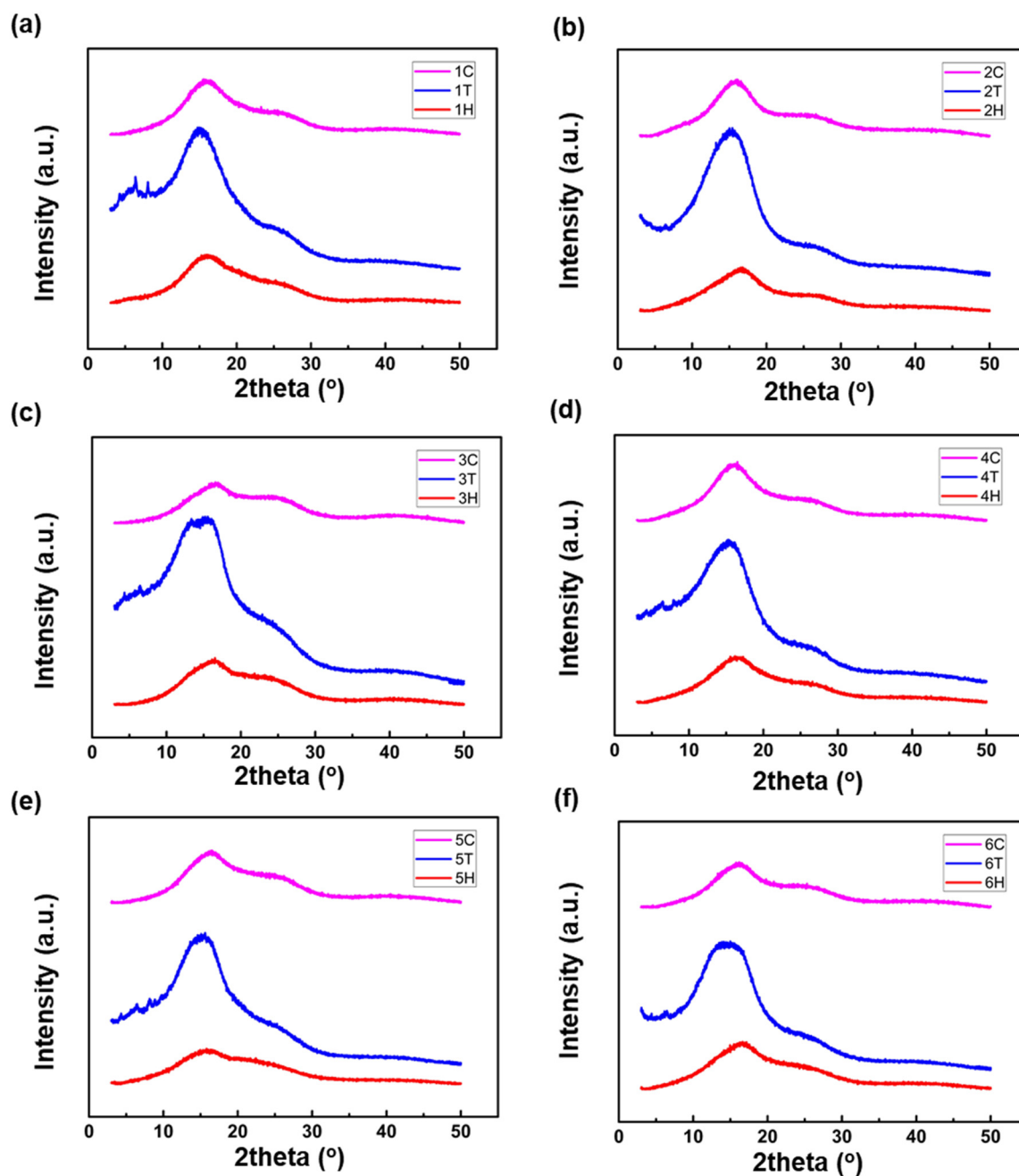
*XRD of synthesized polyimides*

Figure S8. XRD patterns of polyimides synthesized with three different methods.

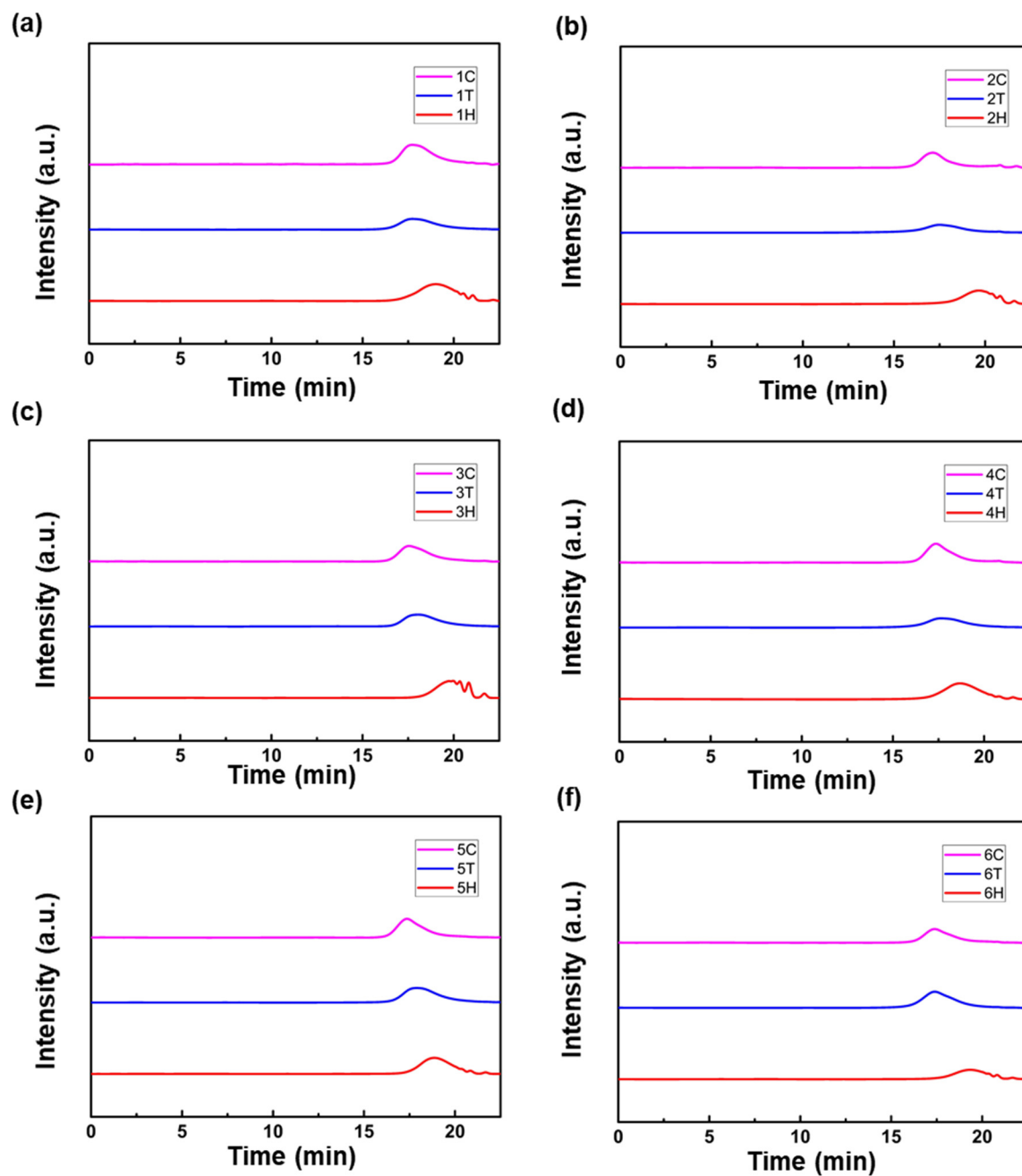
*GPC of synthesized polyimides*

Figure S9. GPC curves of polyimides synthesized with three different methods.