Supporting Information

Well-Defined Polyamide Synthesis from Diisocyanates and Diacids Involving Hindered Carbodiimide Intermediates

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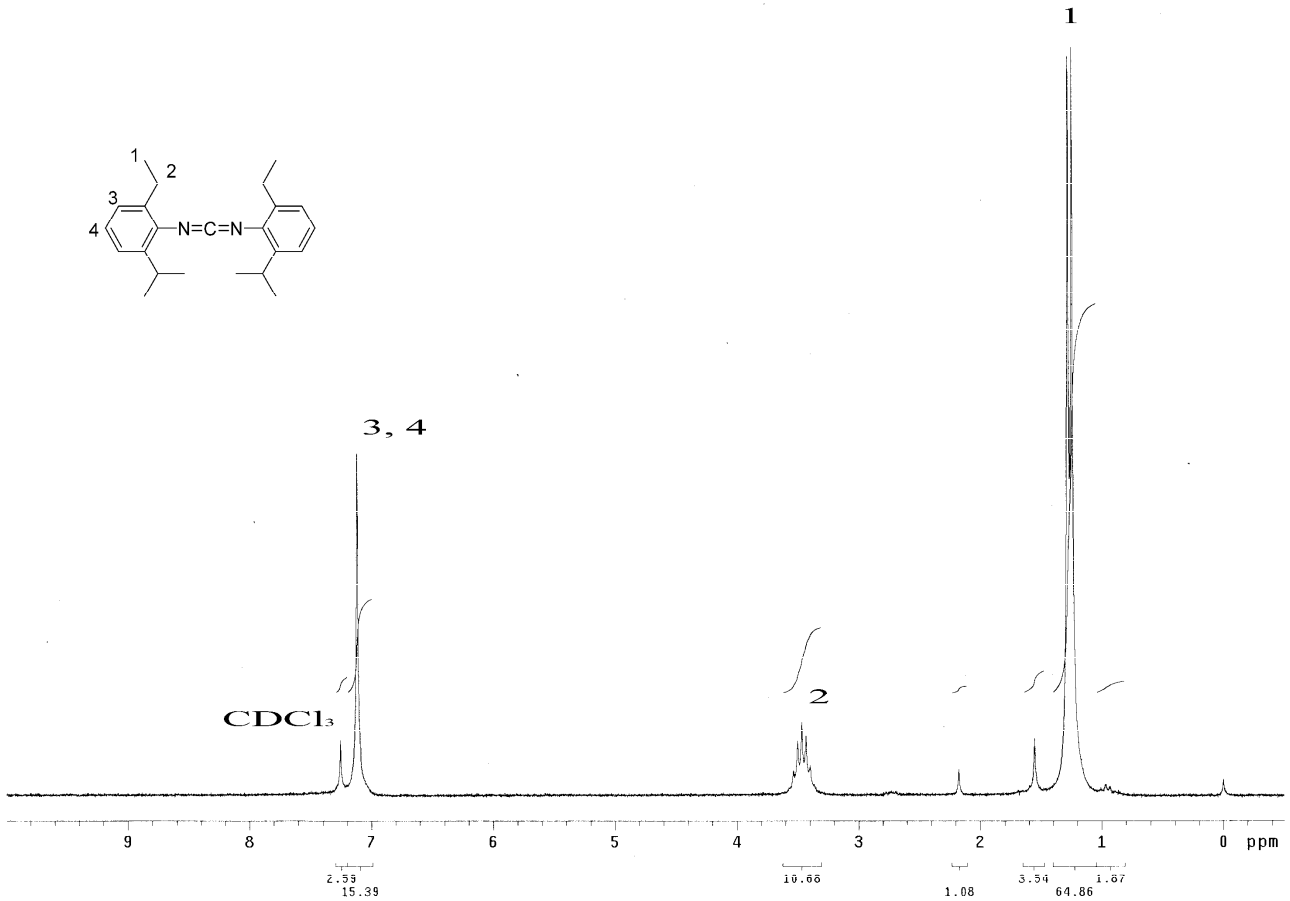

Figure S1. ^{1}H-NMR Spectra of N,N'-Bis(2,6-diisopropylphenyl)carbodiimide, iPr-CDI **1**.

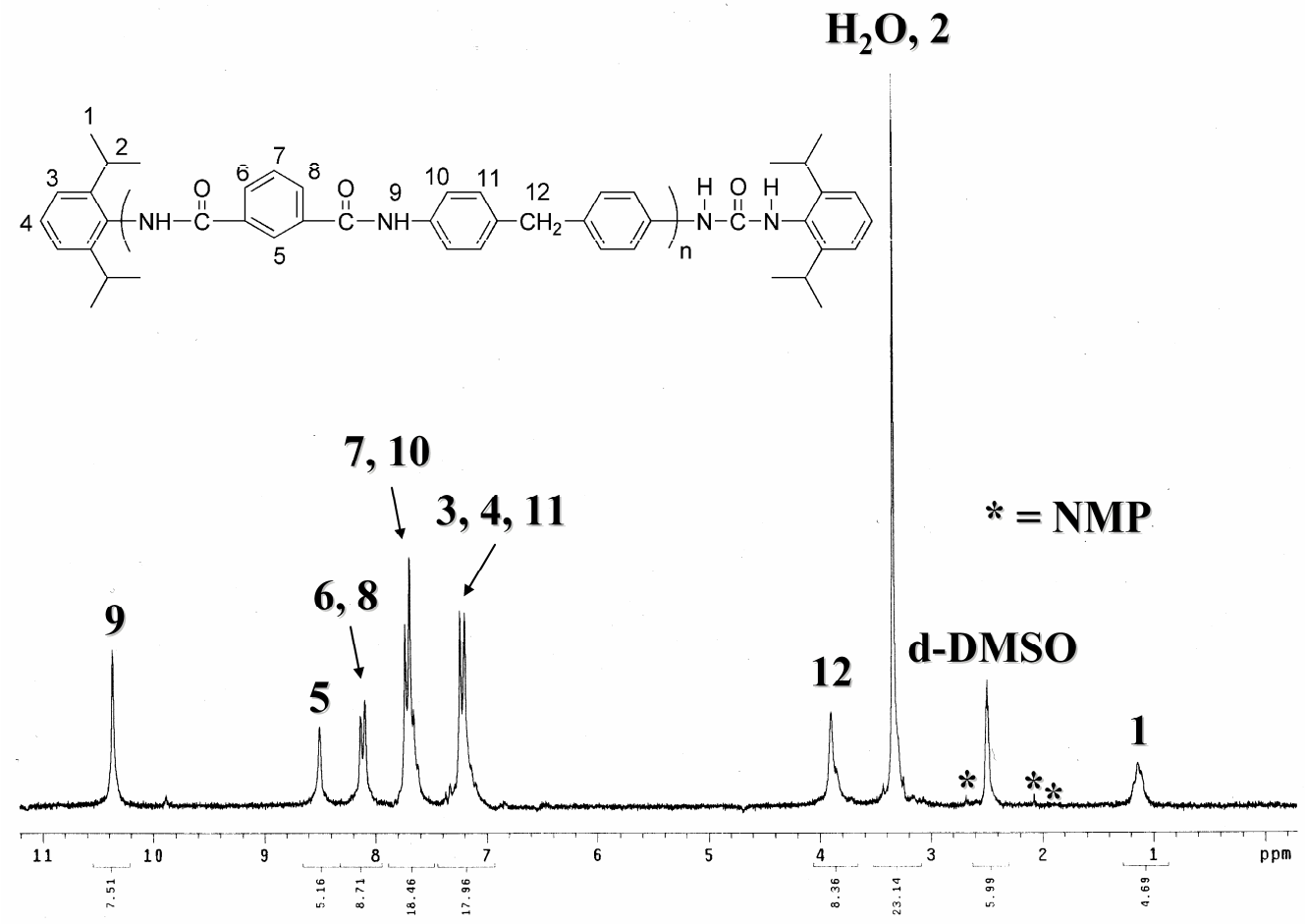

Figure S2. ^{1}H-NMR Spectra of Aromatic Polyamide **4a'-1** (iPr-CDI/MDI/IA = 1/5/5).

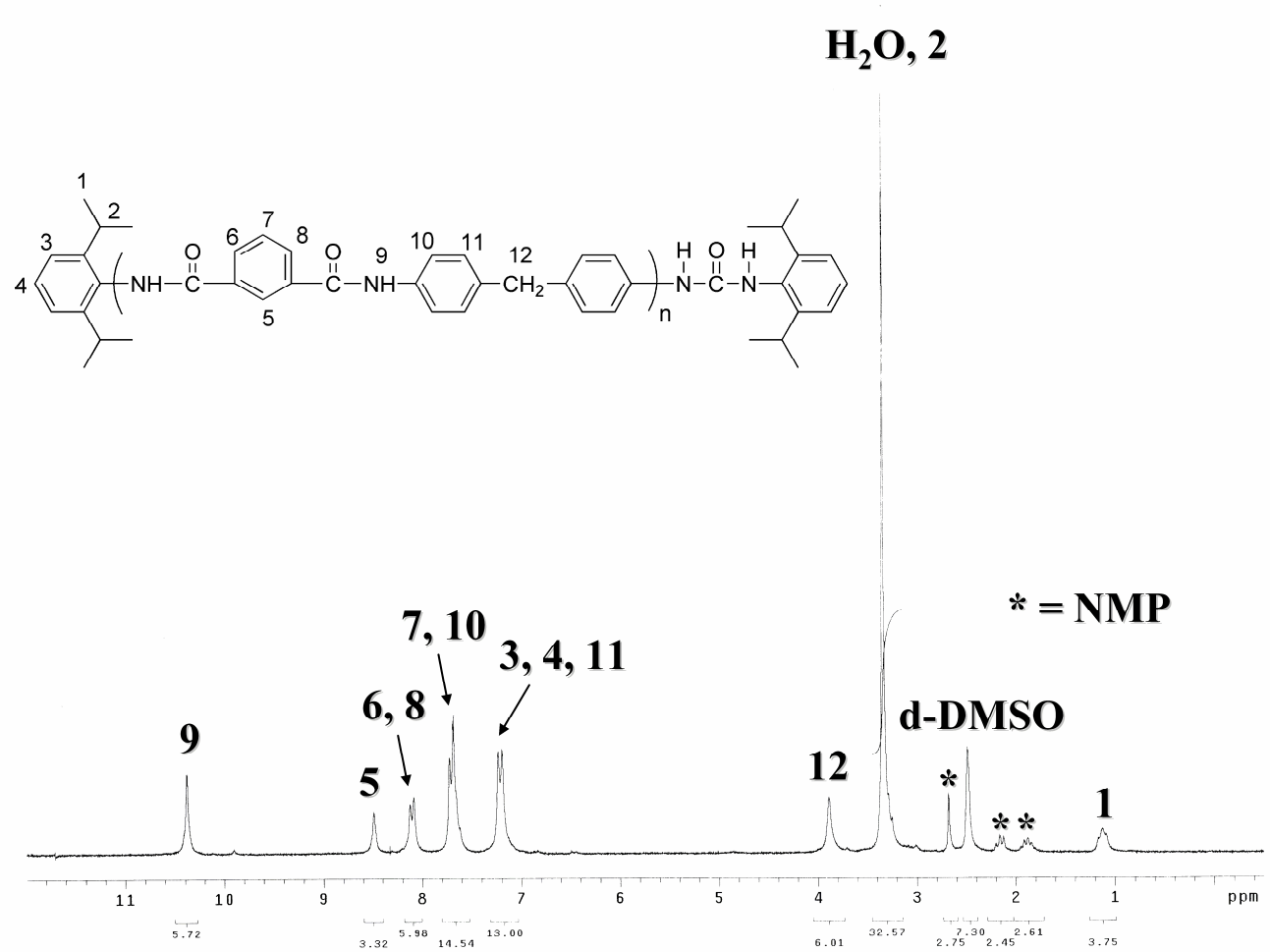

Figure S3. ^{1}H-NMR Spectra of Aromatic Polyamide **4a'-2** (iPr-CDI/MDI/IA = 1/10/10).

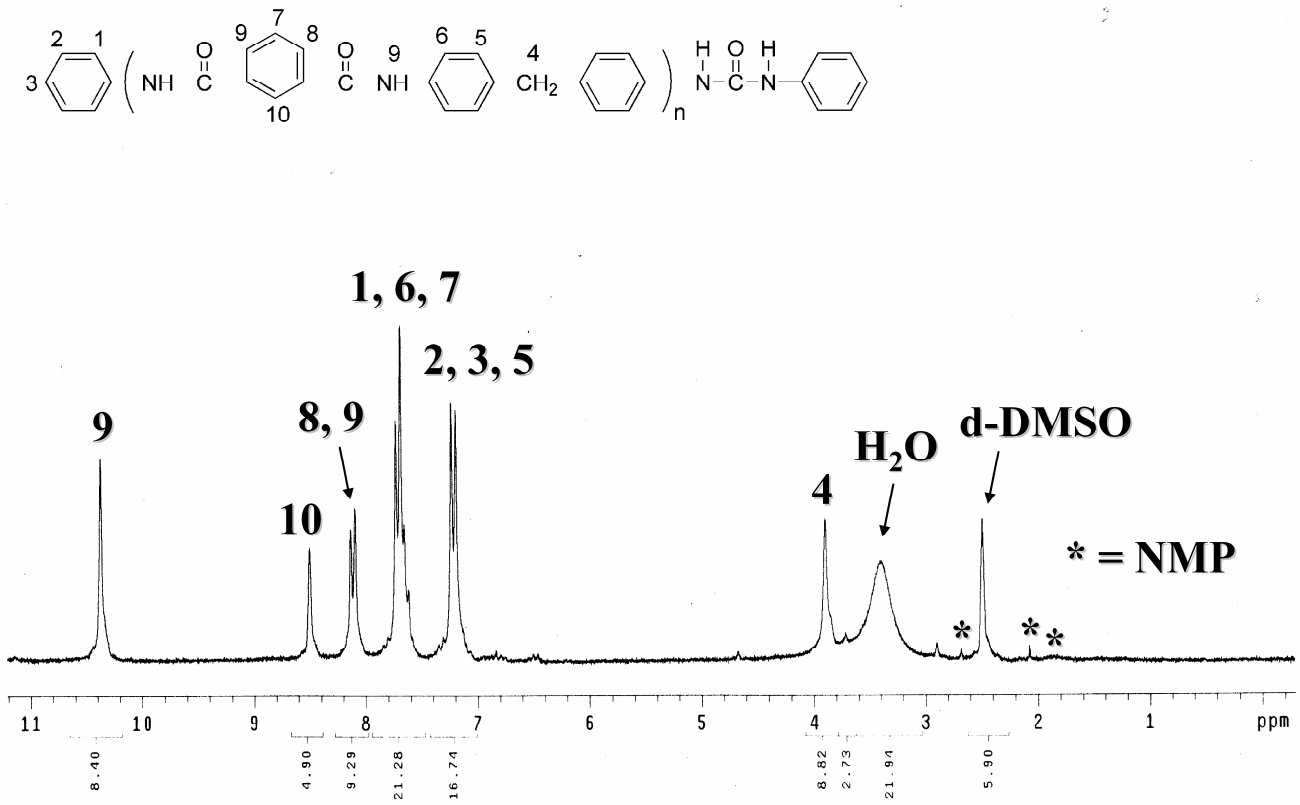

Figure S4. ^{1}H-NMR Spectra of Aromatic Polyamide **4a'-3** (iPr-CDI/MDI/IA = 0/1/1).

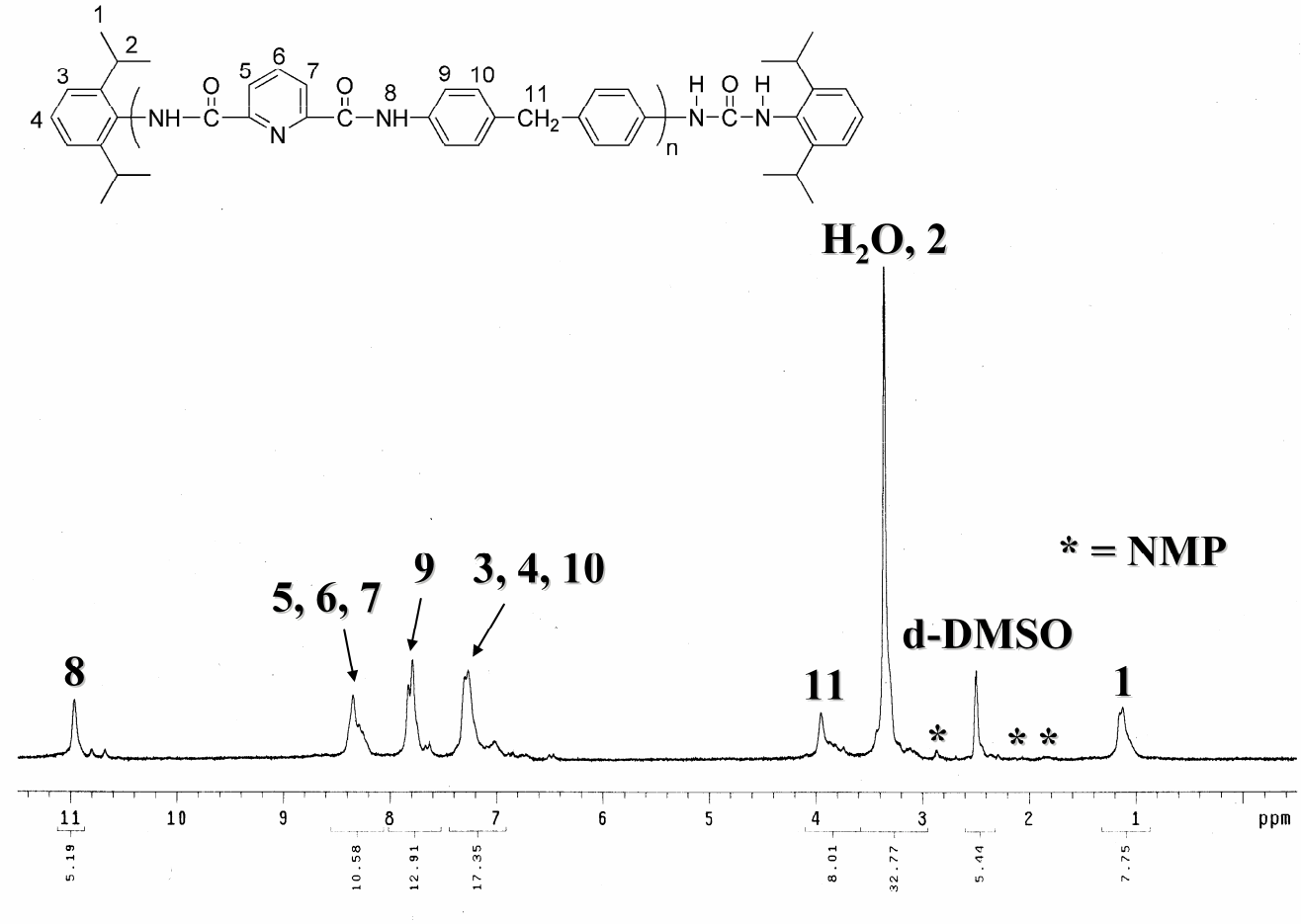

Figure S5. ^{1}H-NMR Spectra of Aromatic Polyamide **4b'-1** (iPr-CDI/MDI/PA = 1/5/5).

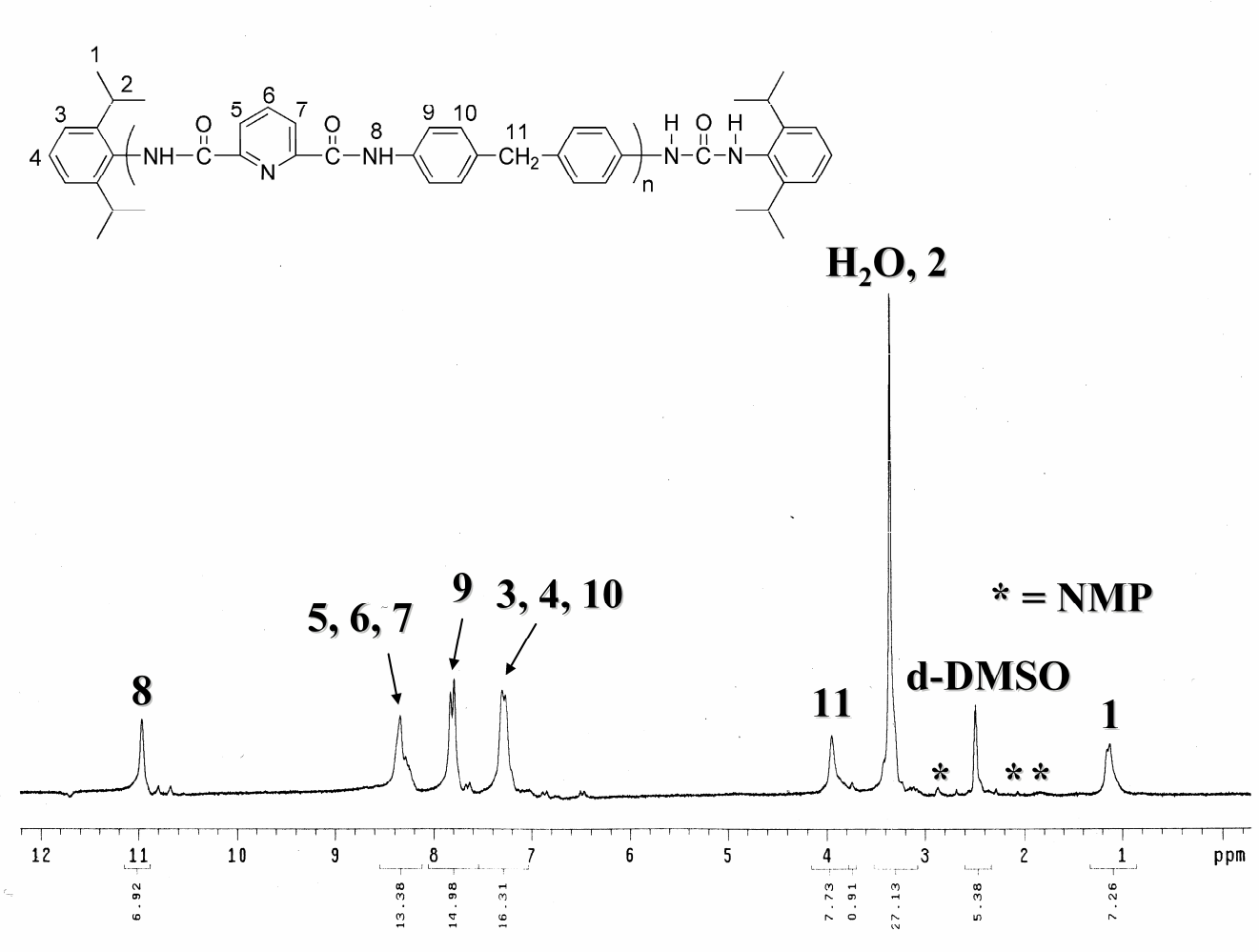

Figure S6. ^{1}H-NMR Spectra of Aromatic Polyamide **4b'-2** (iPr-CDI/MDI/PA = 1/7.5/7.5).

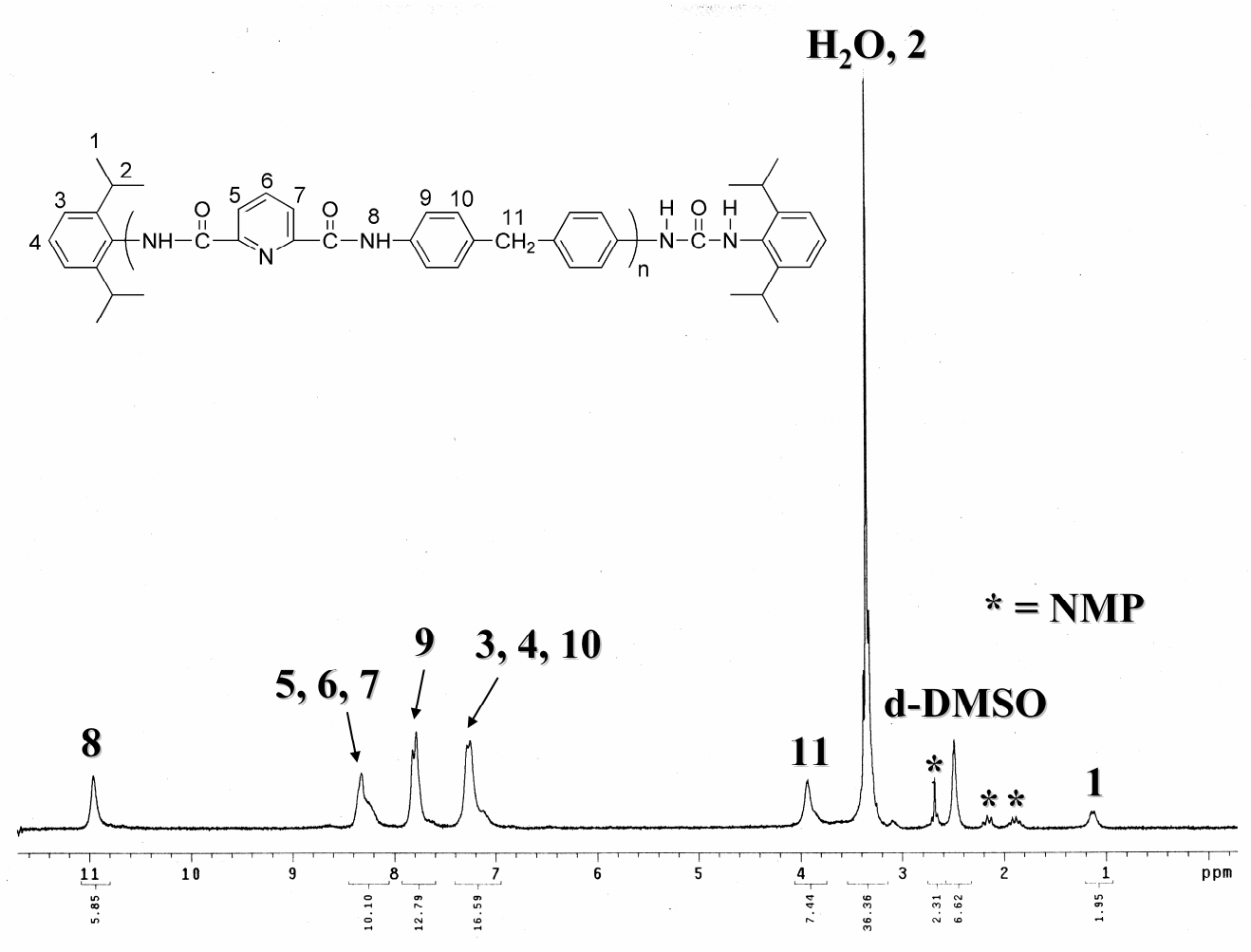

Figure S7. ^{1}H-NMR Spectra of Aromatic Polyamide **4b'-3** (iPr-CDI/MDI/PA = 1/10/10).

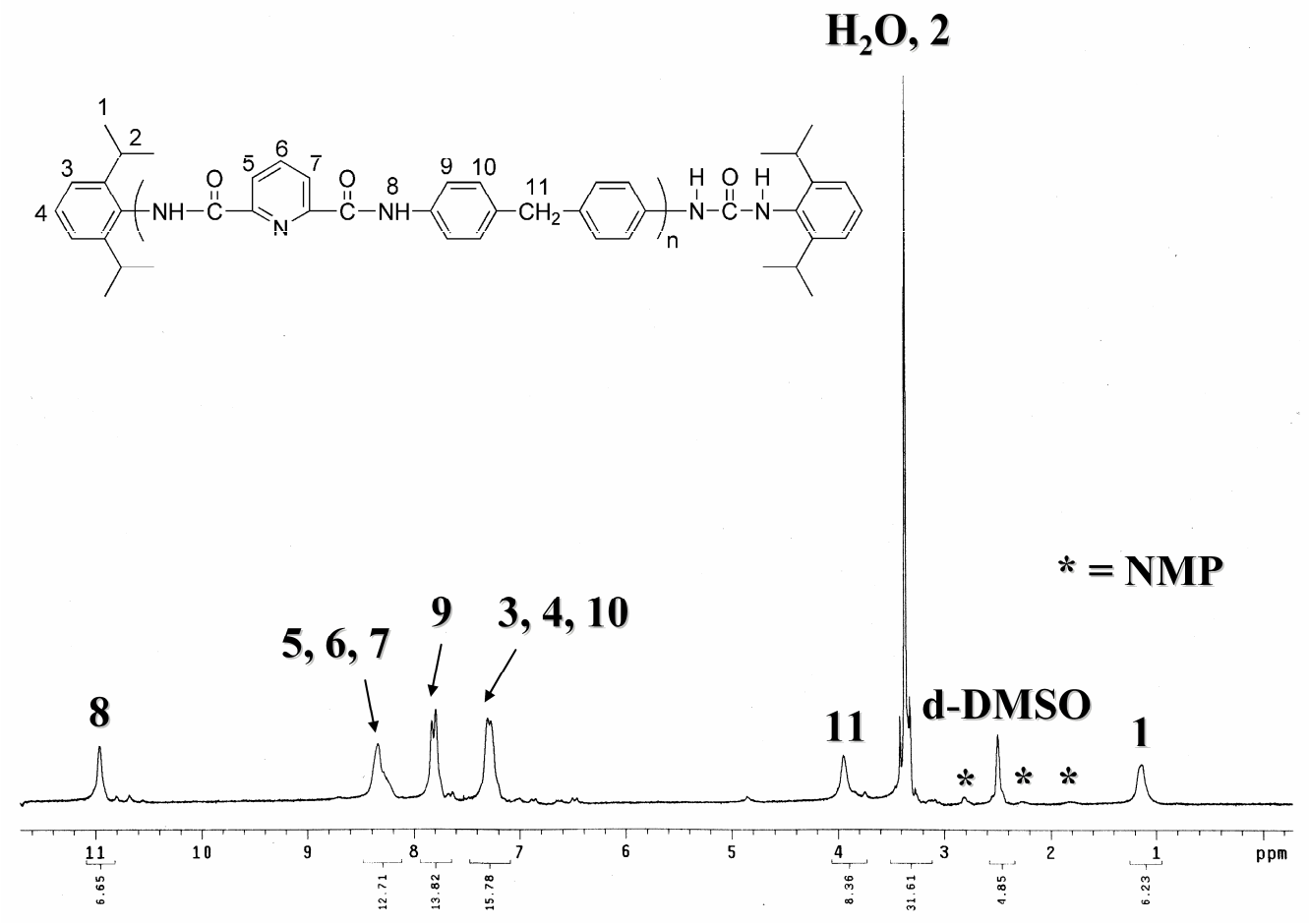

Figure S8. ^{1}H-NMR Spectra of Aromatic Polyamide **4b'-4** (iPr-CDI/MDI/PA = 1/12.5/12.5).

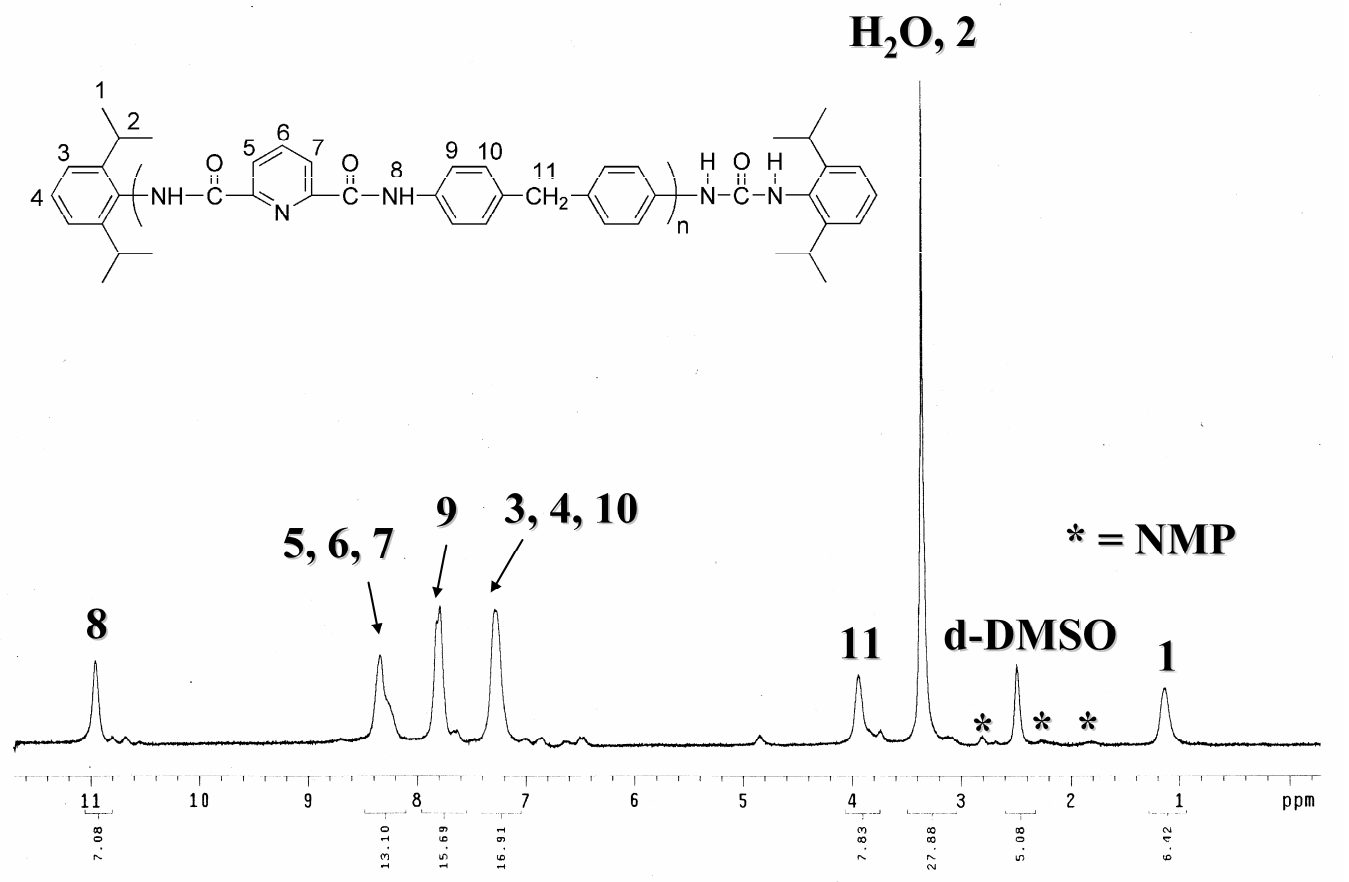

Figure S9. ^{1}H-NMR Spectra of Aromatic Polyamide **4b'-5** (iPr-CDI/MDI/PA = 1/15/15).

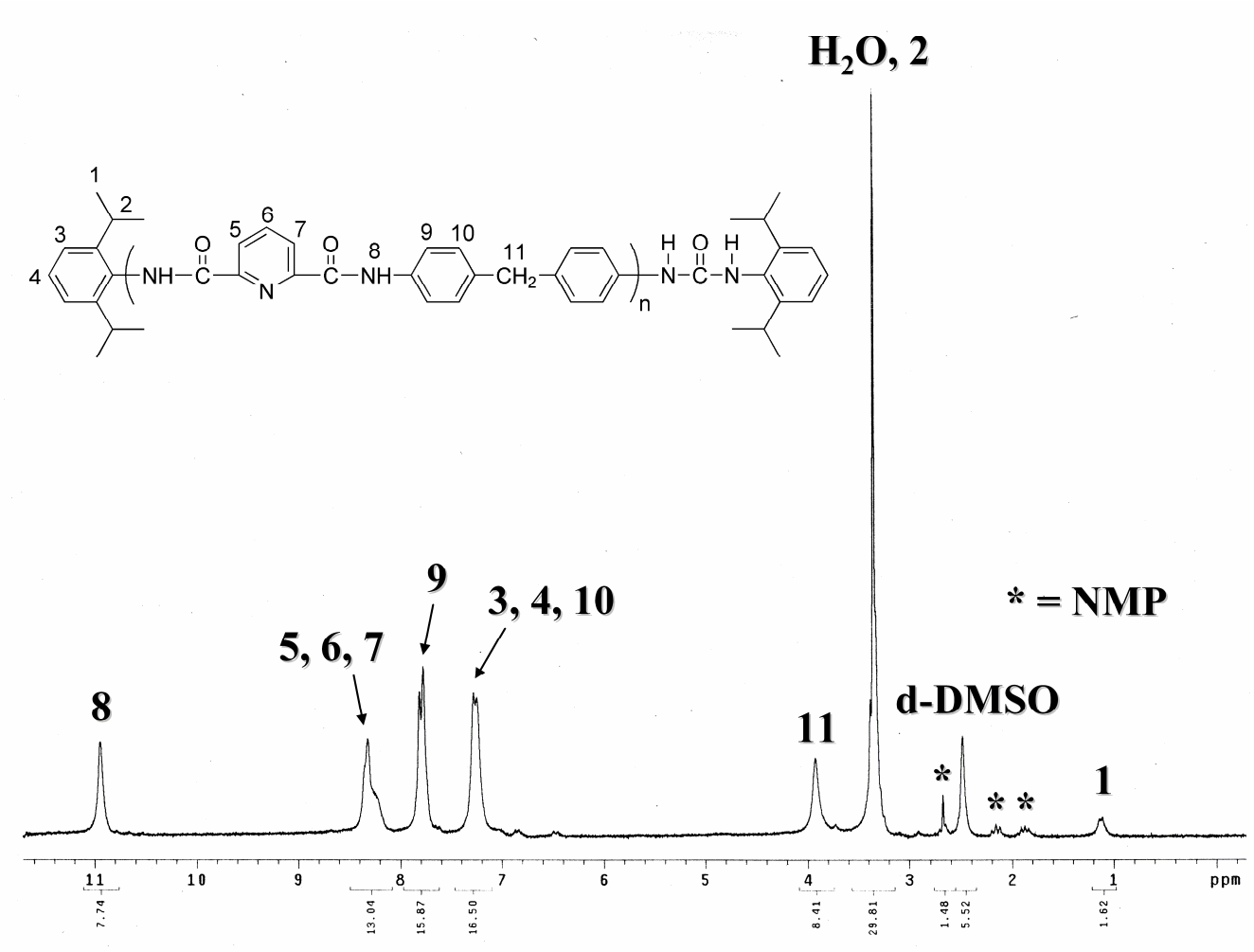

Figure S10. ^{1}H-NMR Spectra of Aromatic Polyamide **4b'-6** (iPr-CDI/MDI/PA = 1/17.5/17.5).

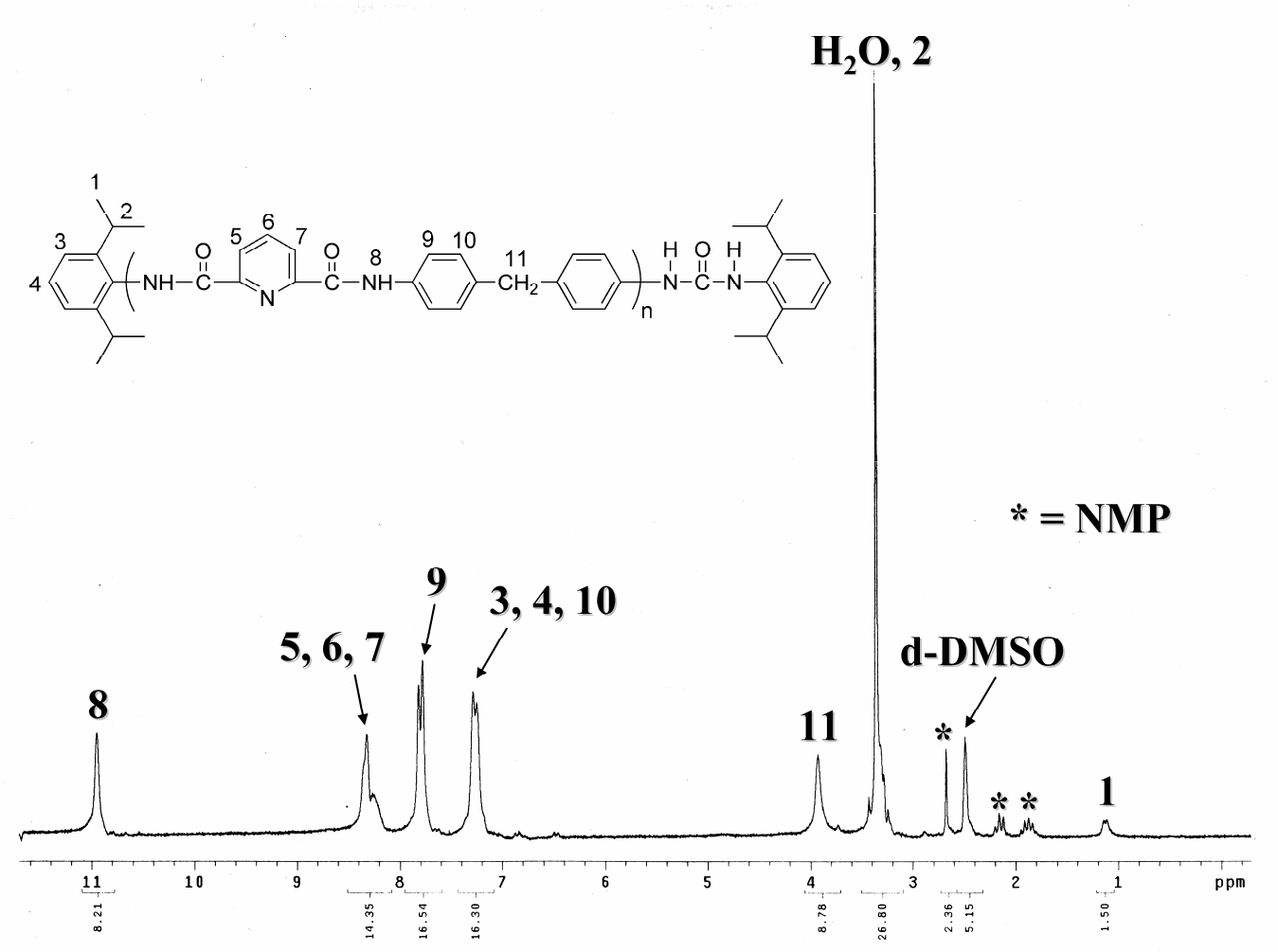

Figure S11. ^{1}H-NMR Spectra of Aromatic Polyamide **4b'-7** (iPr-CDI/MDI/PA = 1/20/20).

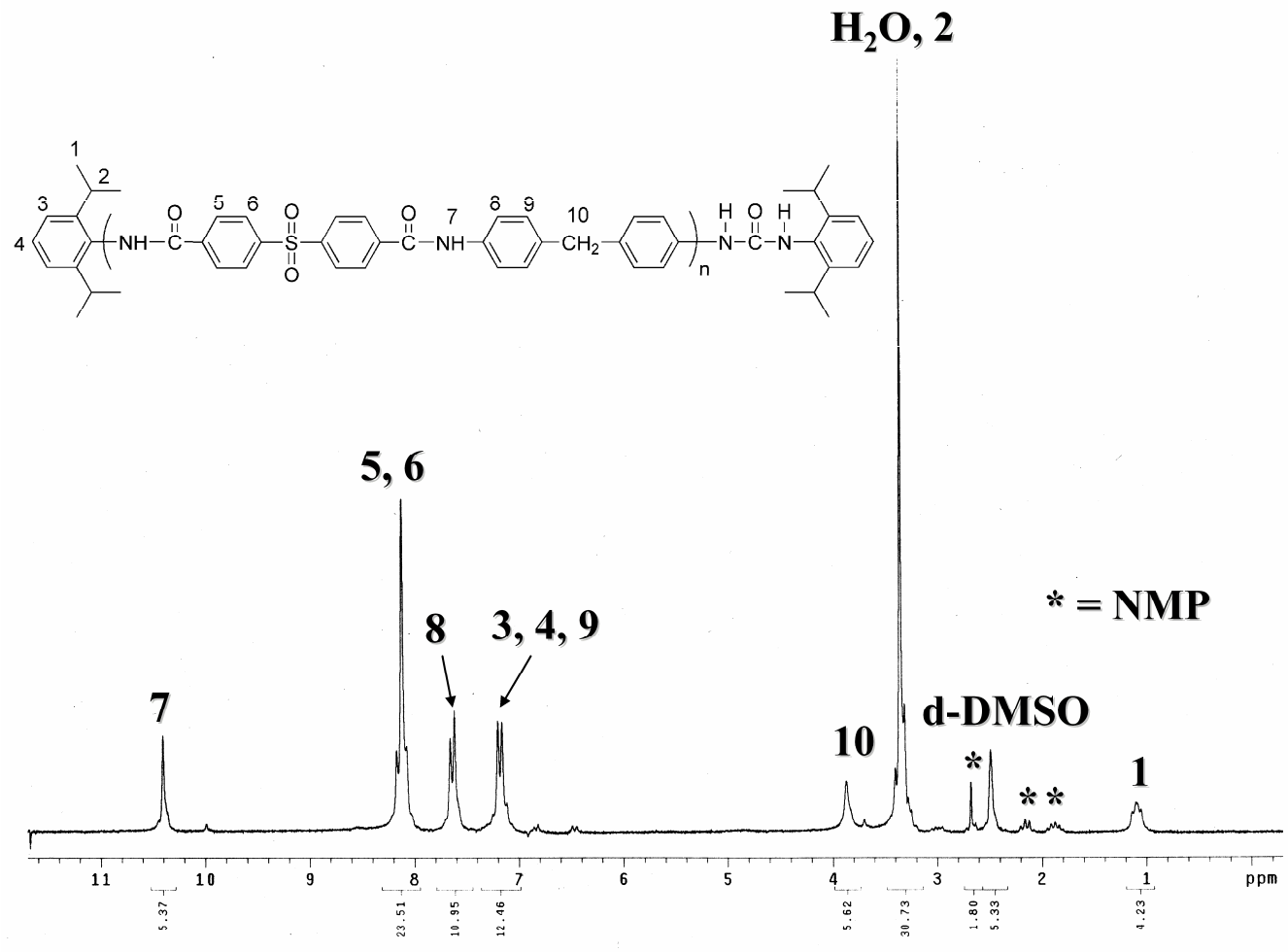

Figure S12. ^{1}H-NMR Spectra of Aromatic Polyamide **4c'-1** (iPr-CDI/MDI/SA = 1/10/10).

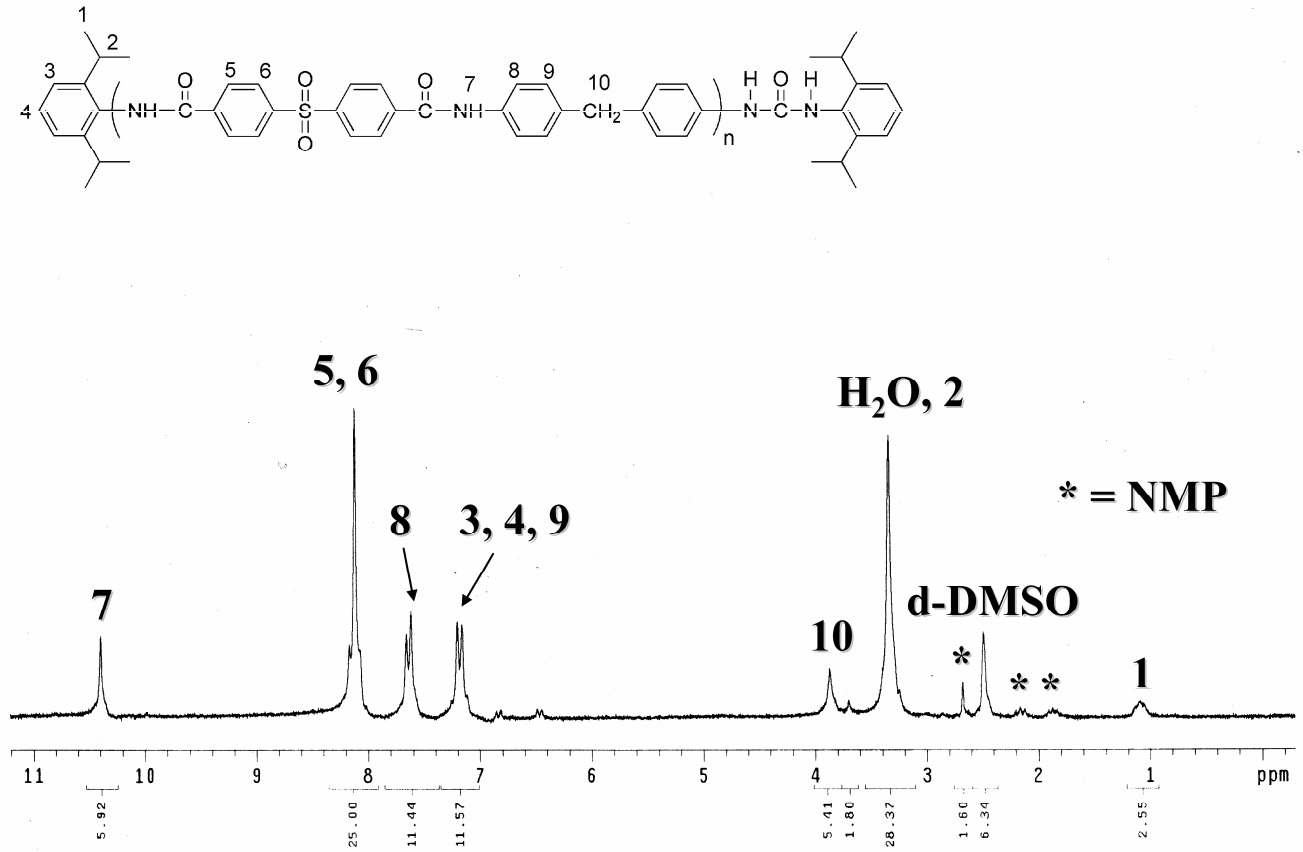

Figure S13. ^{1}H-NMR Spectra of Aromatic Polyamide **4c'-2** (iPr-CDI/MDI/SA = 1/10/10).

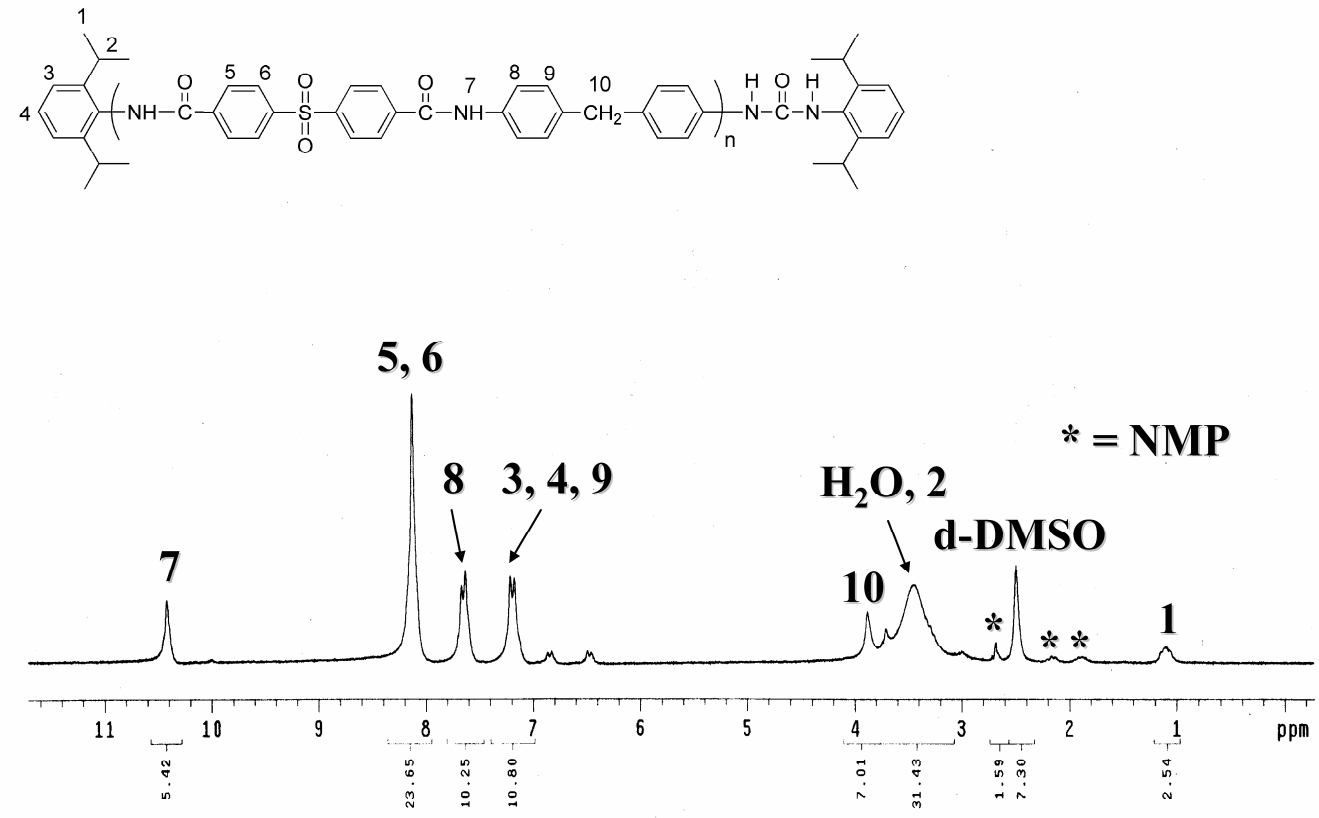

Figure S14. ^{1}H-NMR Spectra of Aromatic Polyamide **4c'-3** (iPr-NCO/MDI/SA = 2/10/10).

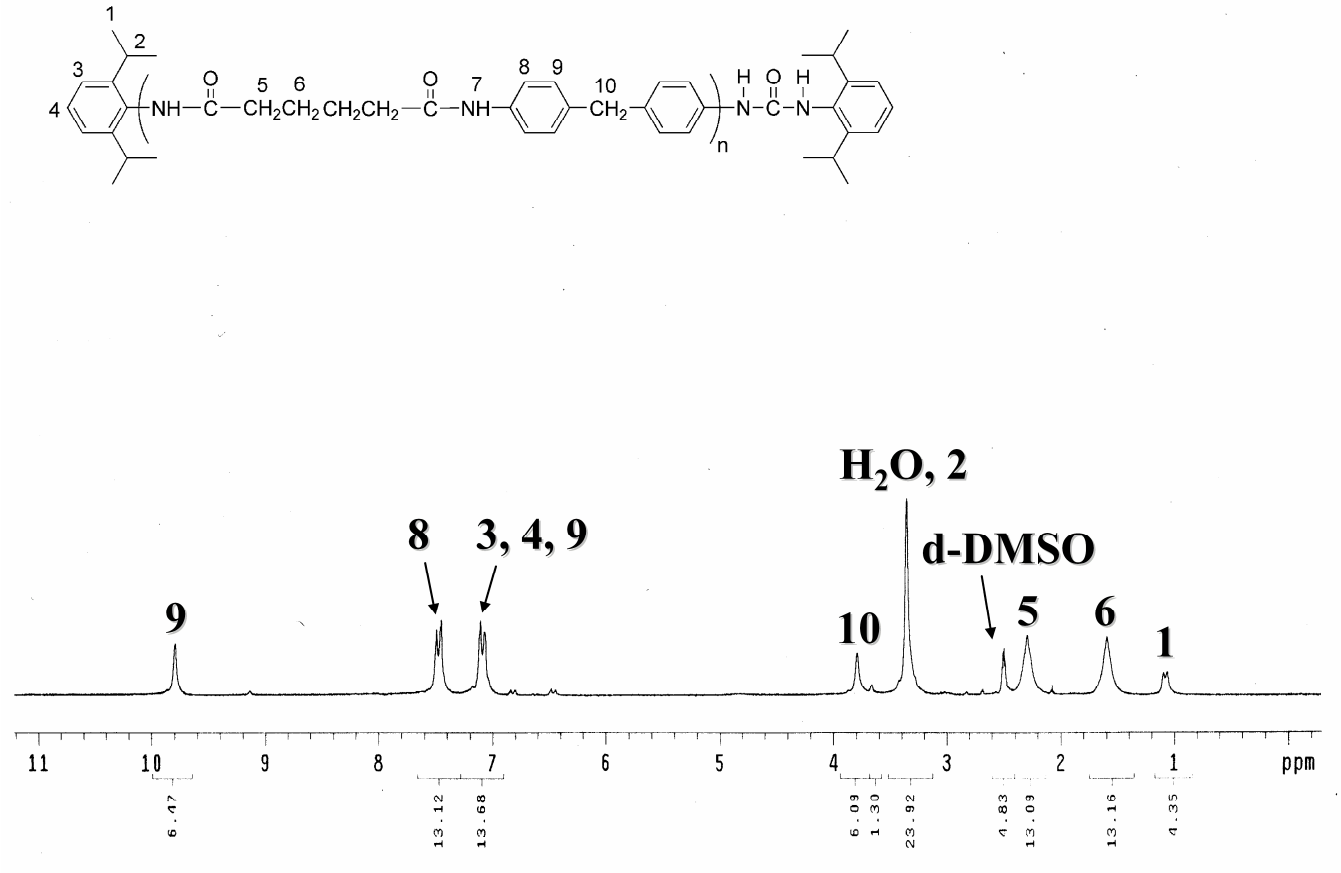

Figure S15. ^{1}H-NMR Spectra of Aliphatic Polyamide **4d'** (iPr-CDI/MDI/AA = 1/10/10).

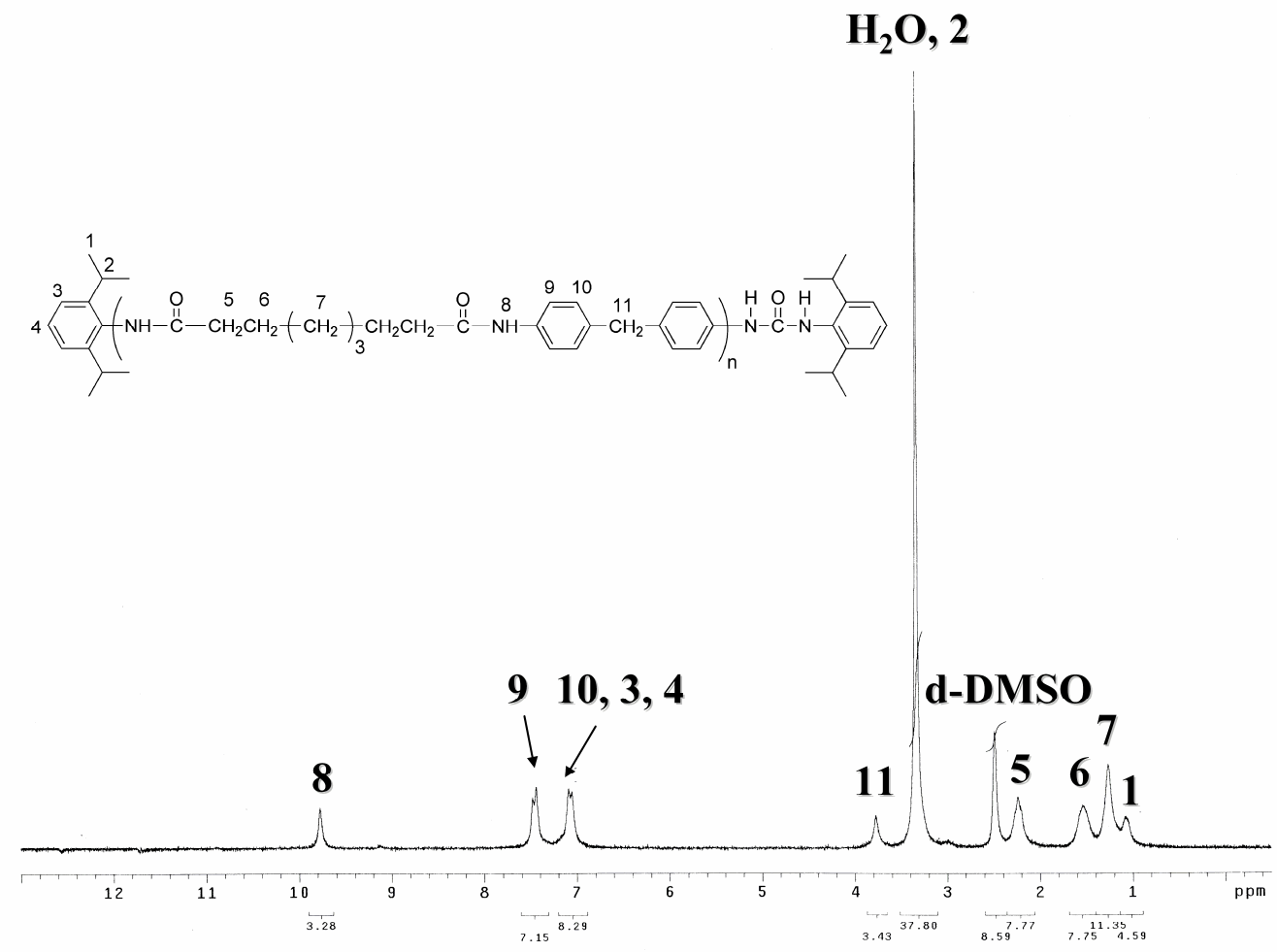

Figure S16. ^{1}H-NMR Spectra of Aliphatic Polyamide **4e'** (iPr-CDI/MDI/AZA = 1/10/10).

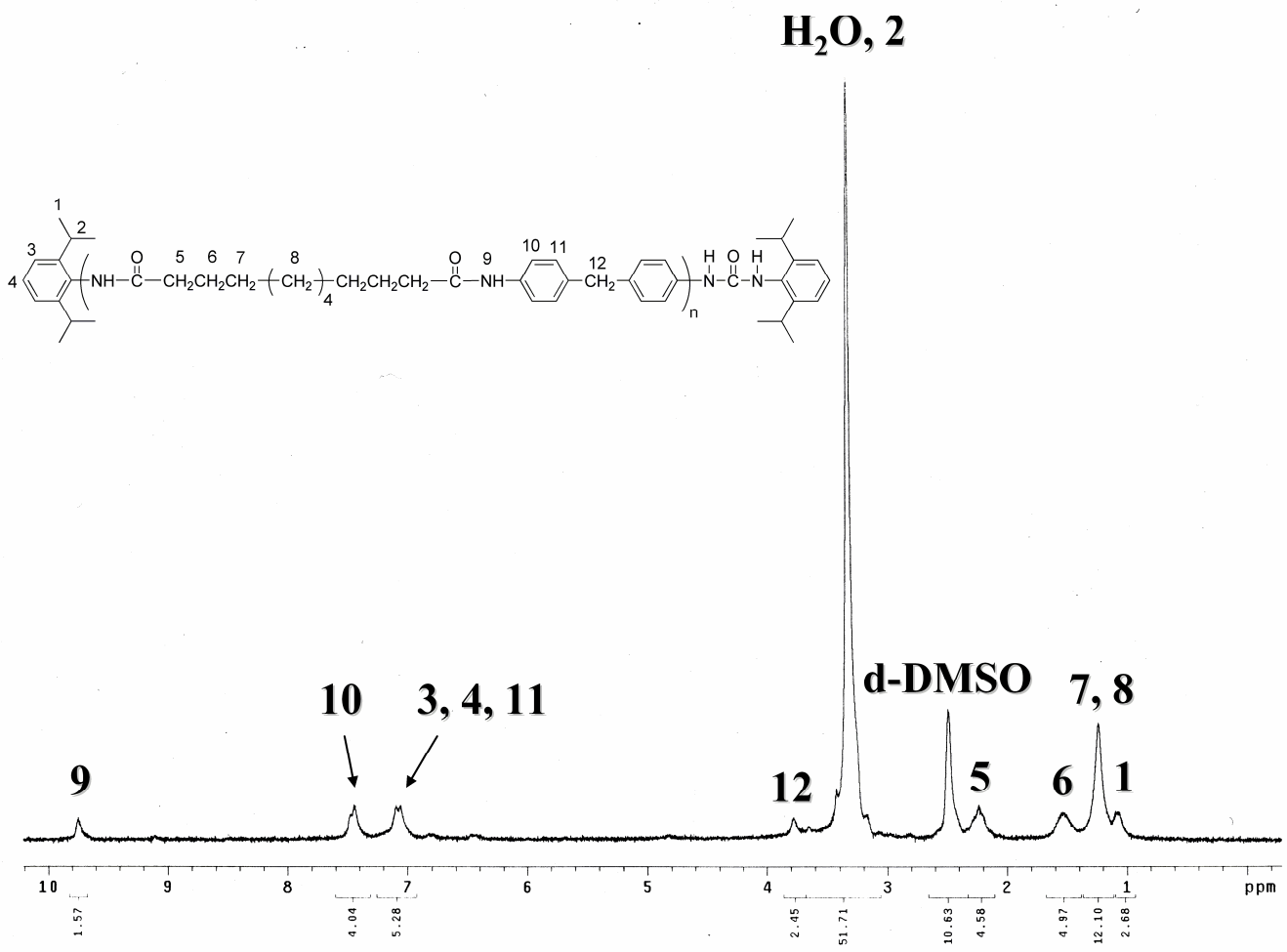

Figure S17. ^{1}H-NMR Spectra of Aliphatic Polyamide **4f'** (iPr-CDI/MDI/DA = 1/10/10).

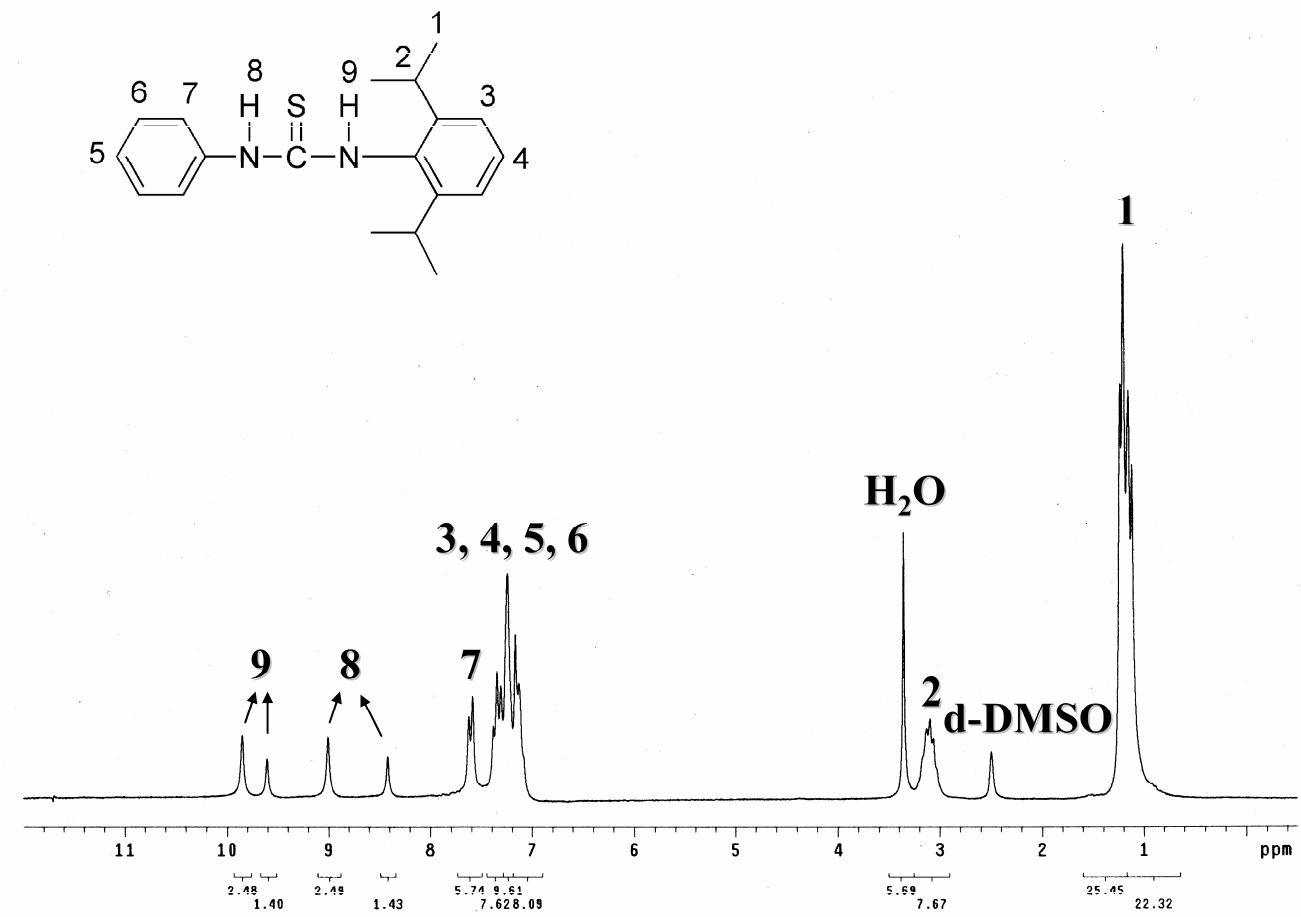

Figure S18. ^{1}H-NMR Spectra of N'-Phenyl-N-(2,6-diisopropylphenyl) Thiourea **19** in DMSO-d6.

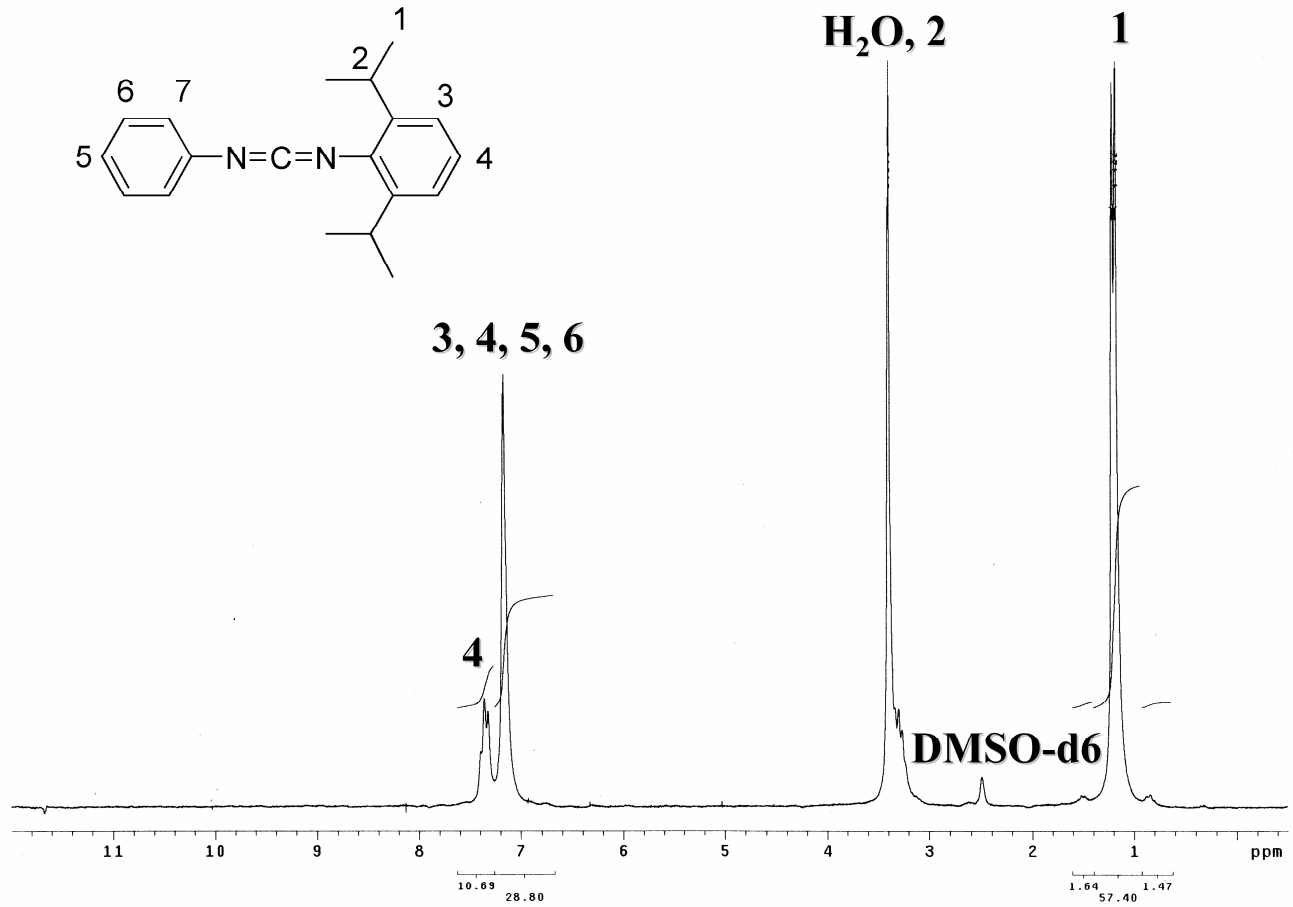

Figure S19. ^{1}H-NMR Spectra of N'-Phenyl-N-(2,6-diisopropylphenyl) Carbodiimide **20** (PiPr-CDI) in DMSO-d6

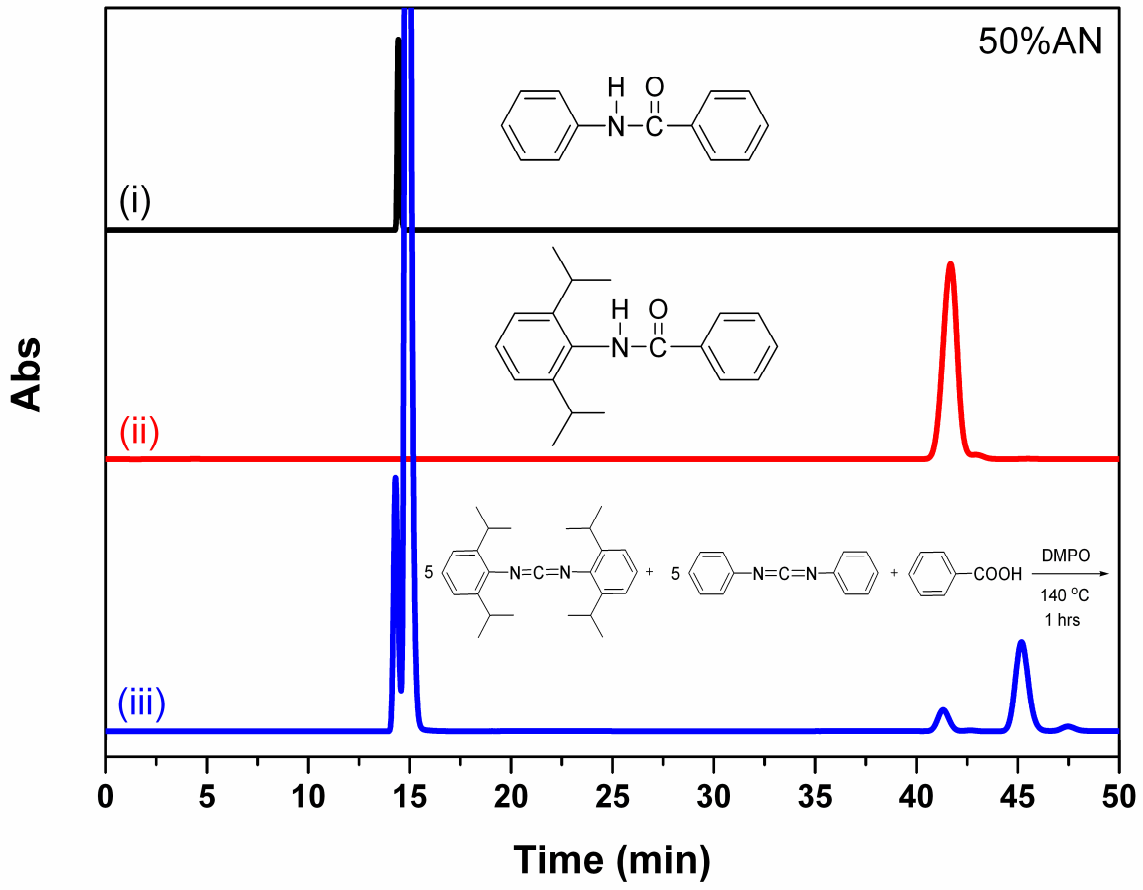

Figure S20. HPLC Analysis of Model Competitive Study for Scheme 8(a): (i) Phenyl Benzamide **23**; (ii) N-(2,6-Diisopropylphenyl) Benzamide **24**; (iii) Diphenyl Carbodiimide **21** and N,N'-Bis(2,6-diisopropylphenyl)carbodiimide **1** Reacted with Benzoic Acid **22**.

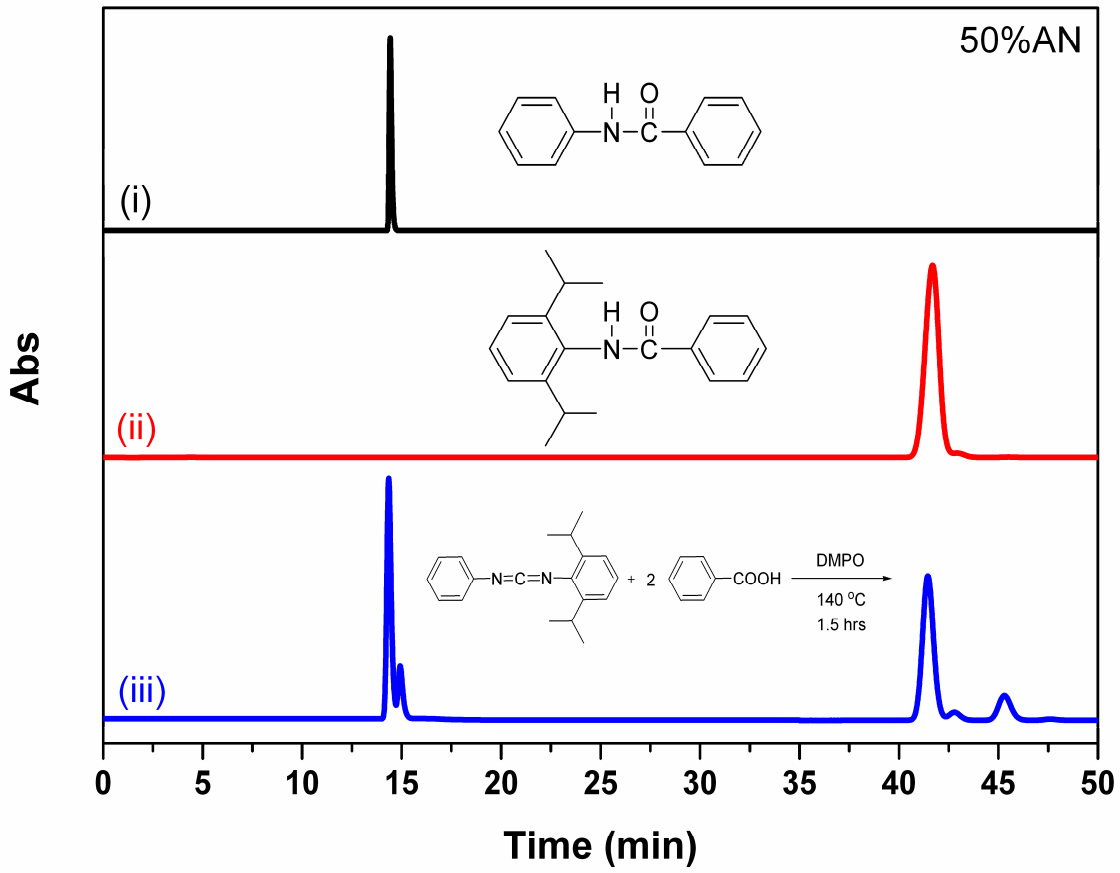

Figure S21. HPLC Analysis of Model Competitive Study for Scheme 8(b): (i) Phenyl Benzamide **23**; (ii) N-(2,6-Diisopropylphenyl) Benzamide **24**; (iii) N'-Phenyl-N-(2,6-diisopropylphenyl) Carbodiimide **20** (PiPr-CDI) Reacted with Benzoic Acid **22**.

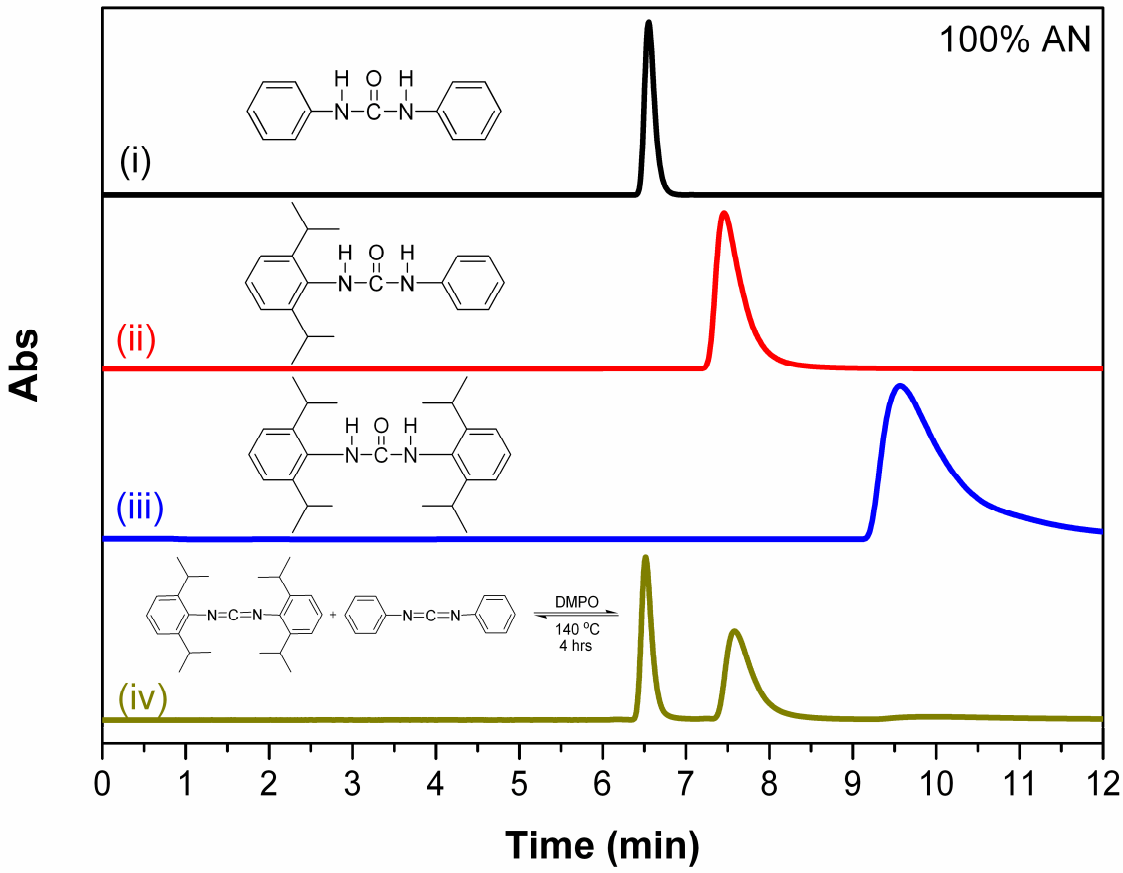

Figure S22. HPLC Analysis of Trans-CDI disproportion Reaction for Scheme 9(a): (i) Diphenyl Urea; (ii) N'-Phenyl-N-(2,6-diisopropylphenyl) Urea; (iii) N,N'-Bis(2,6-diisopropylphenyl) Urea; (iv) Reaction of N,N'-Bis(2,6-diisopropylphenyl)carbodiimide **1** with Diphenyl Carbodiimide **21**.

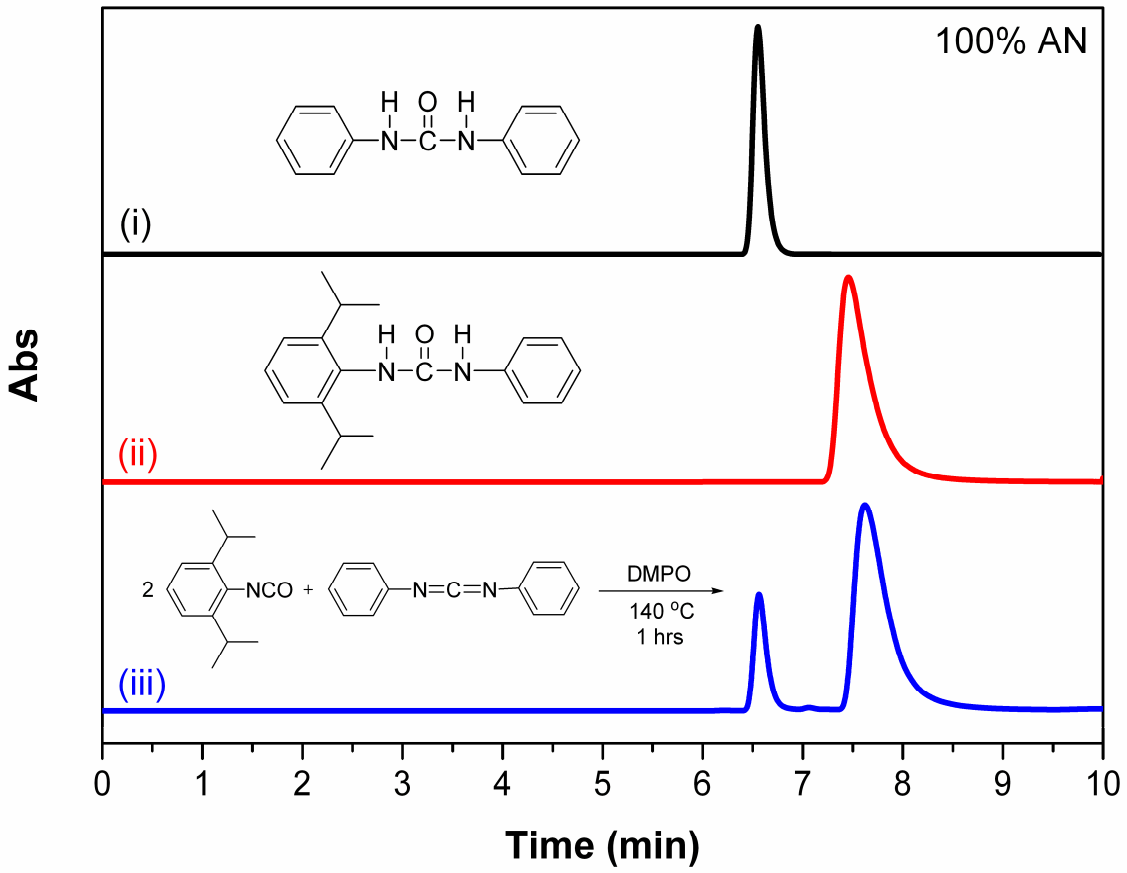

Figure S23. HPLC Analysis of Isocyanate-CDI Exchange Reaction for Scheme 9(b): (i) Diphenyl Urea; (ii) N'-Phenyl-N-(2,6-diisopropylphenyl) Urea; (iii) Reaction of 2,6-Diisopropylphenyl Isocyanate **7** with Diphenyl Carbodiimide **21**.

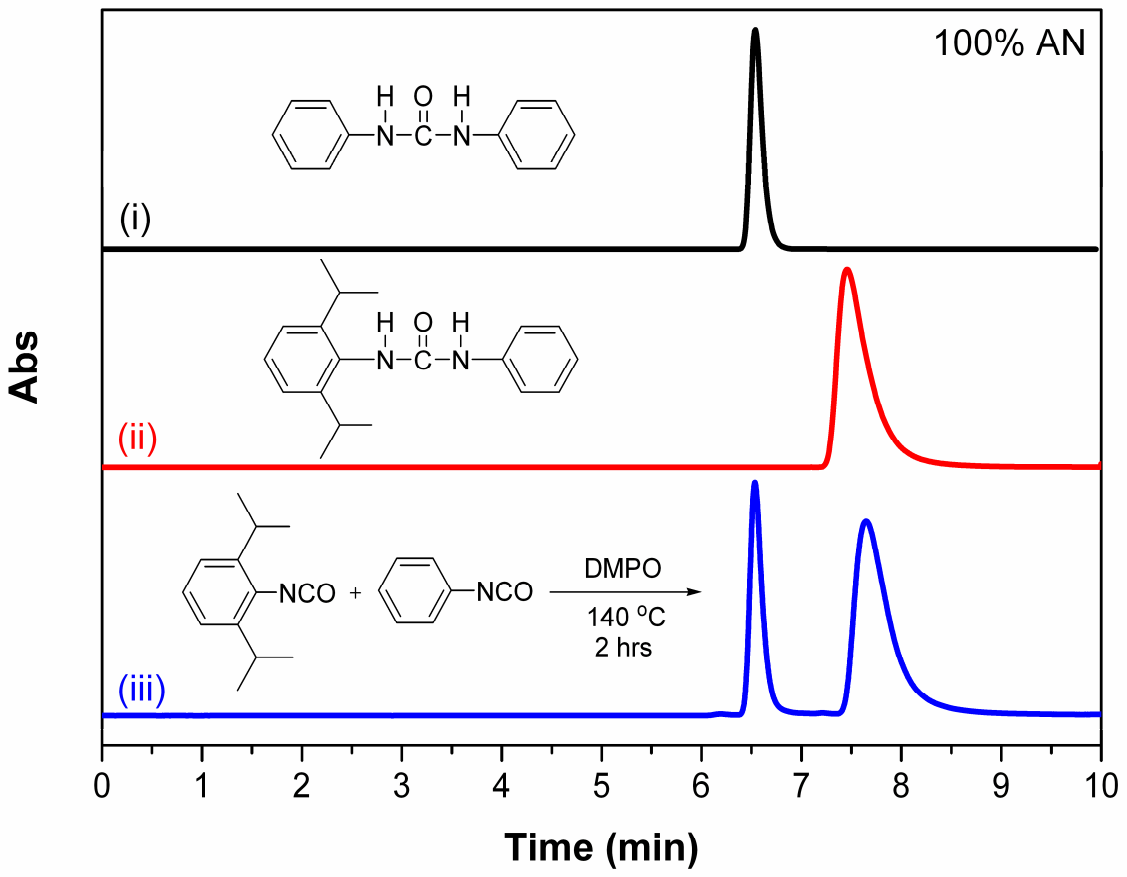

Figure S24. HPLC Analysis of Isocyanate-CDI Exchange Reaction for Scheme 9(c): (i) Diphenyl Urea; (ii) N'-Phenyl-N-(2,6-diisopropylphenyl) Urea; (iii) Reaction of 2,6-Diisopropylphenyl Isocyanate **7** with Phenyl Isocyanate **25**.