

Supporting Information

Molecular Design of a Discrete Chain-folding Polyimide for Controlled Inkjet Deposition of Supramolecular Polymers

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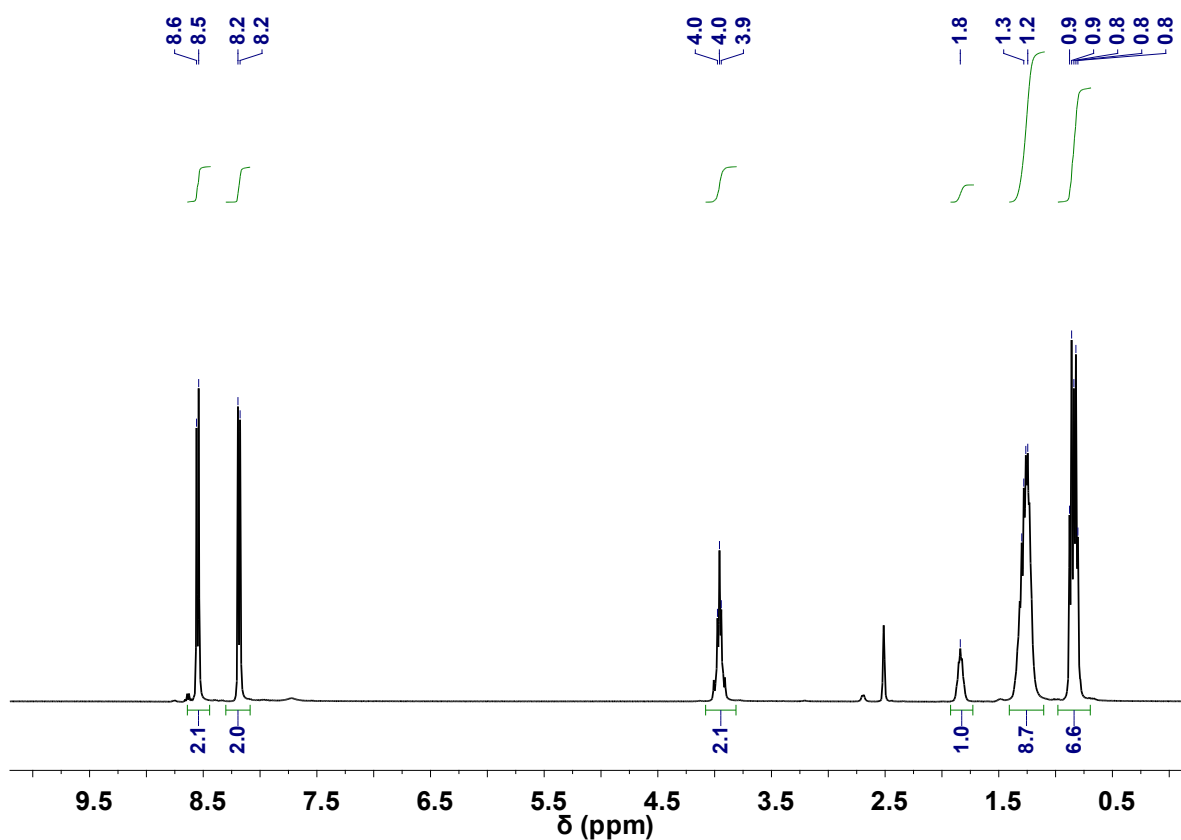
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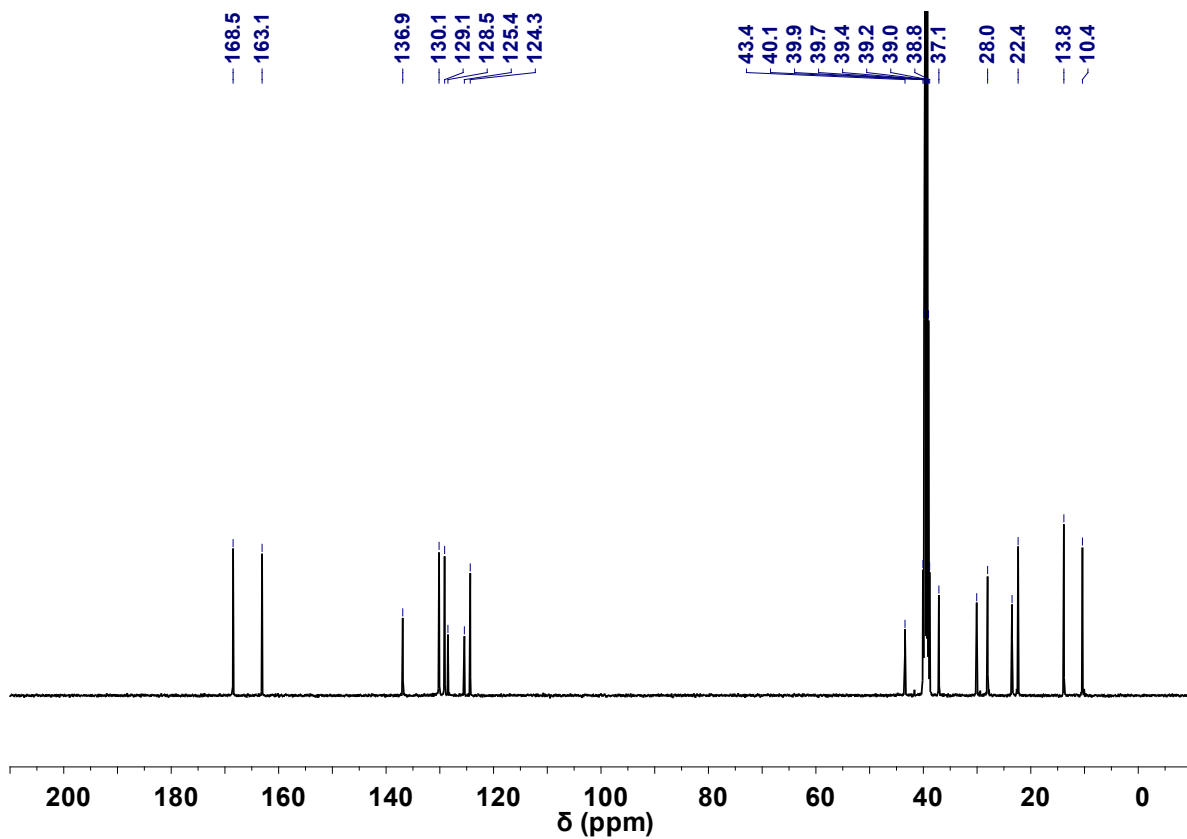
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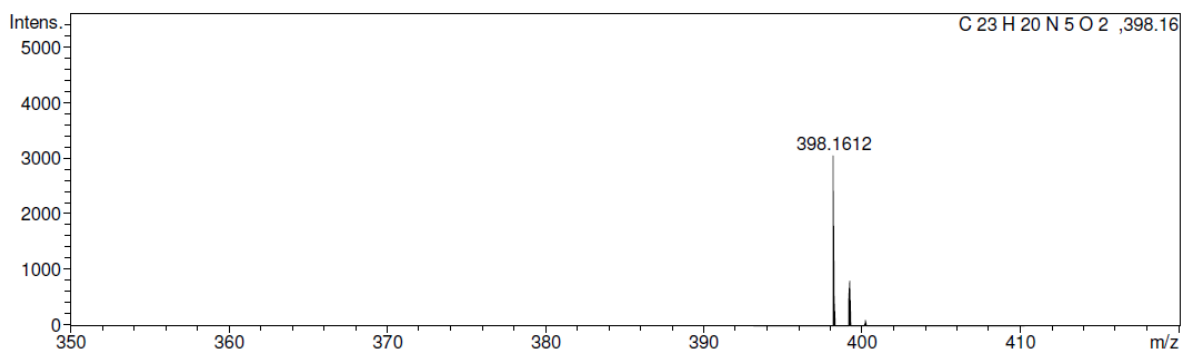
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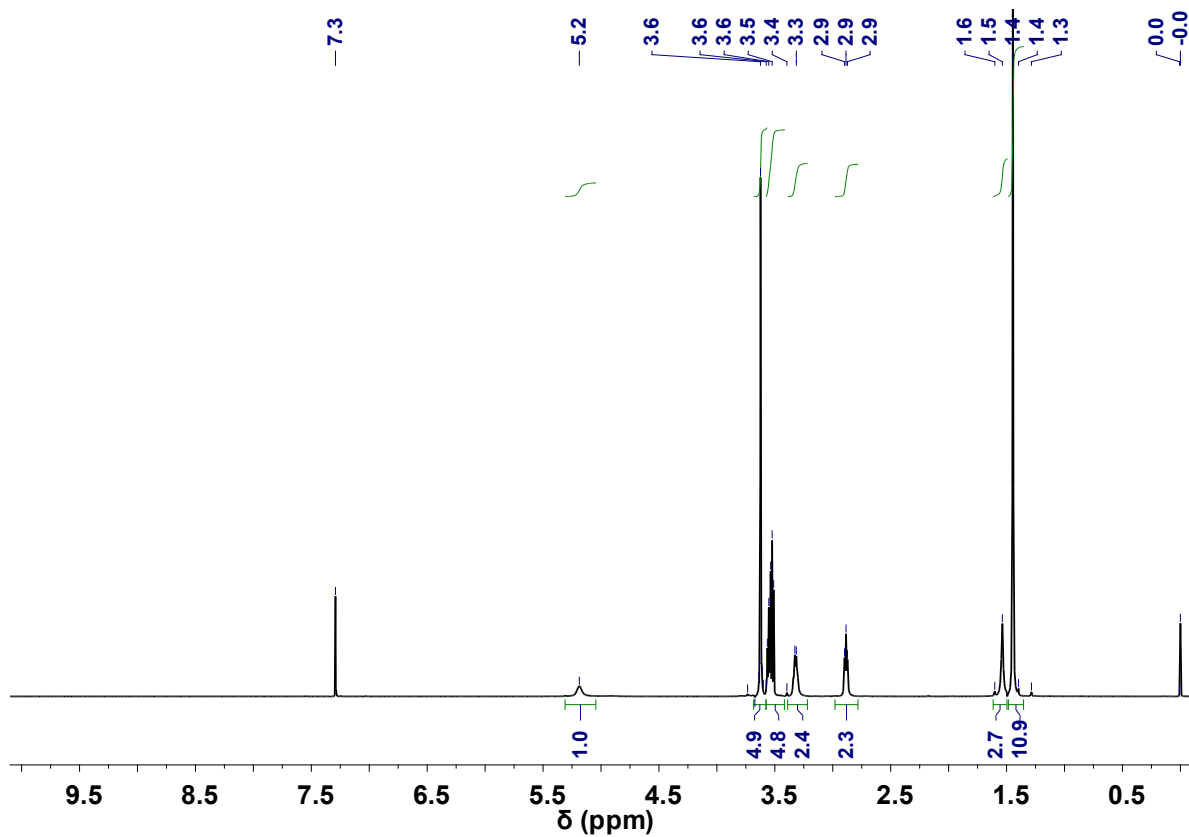
S1: ¹H NMR spectra of the ethylhexyl imide-anhydride **4**.



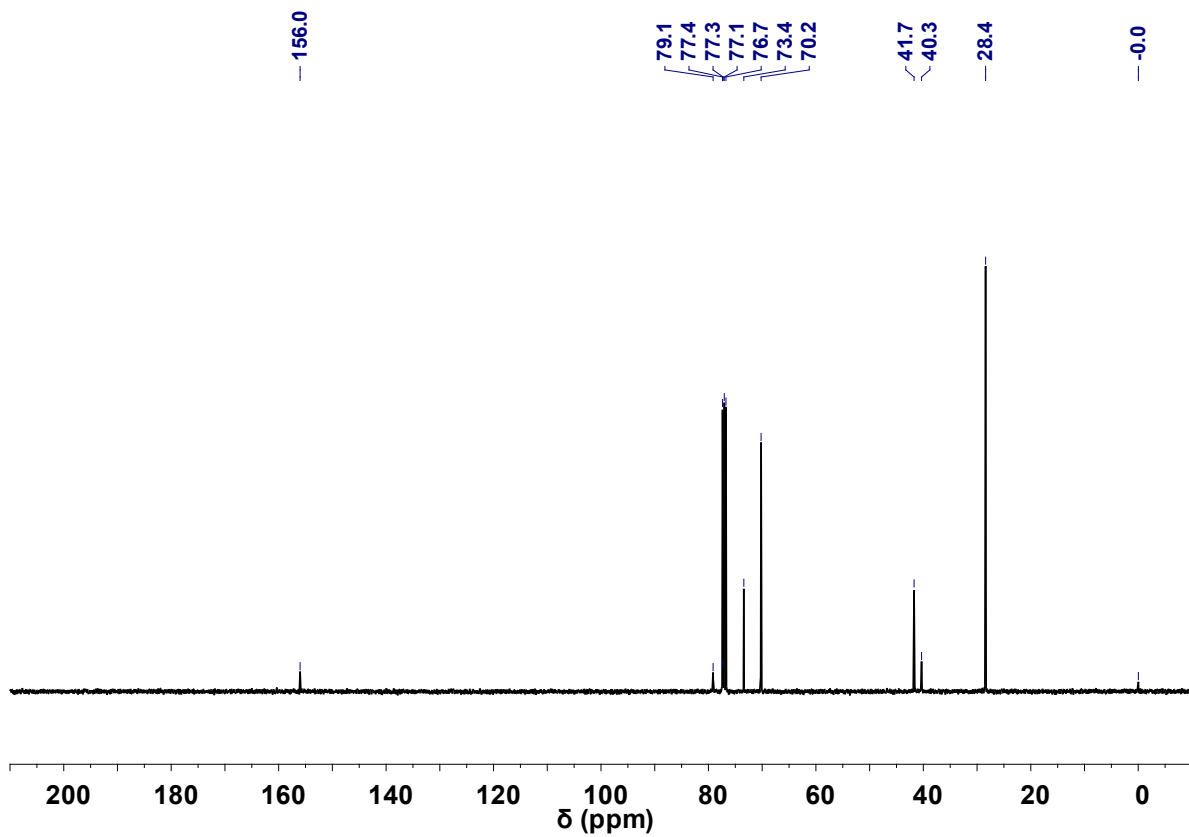
S2: ^{13}C NMR spectra of the ethylhexyl imide-anhydride 4.



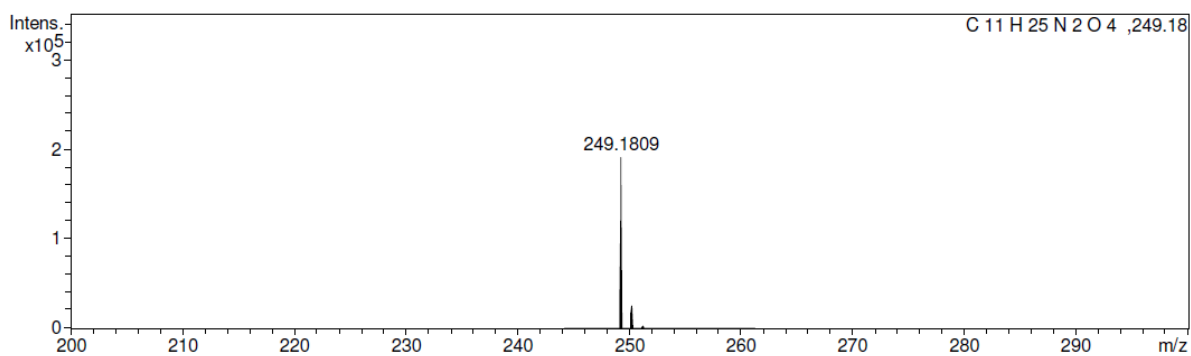
S3: Mass spectra of the ethylhexyl imide-anhydride 4.



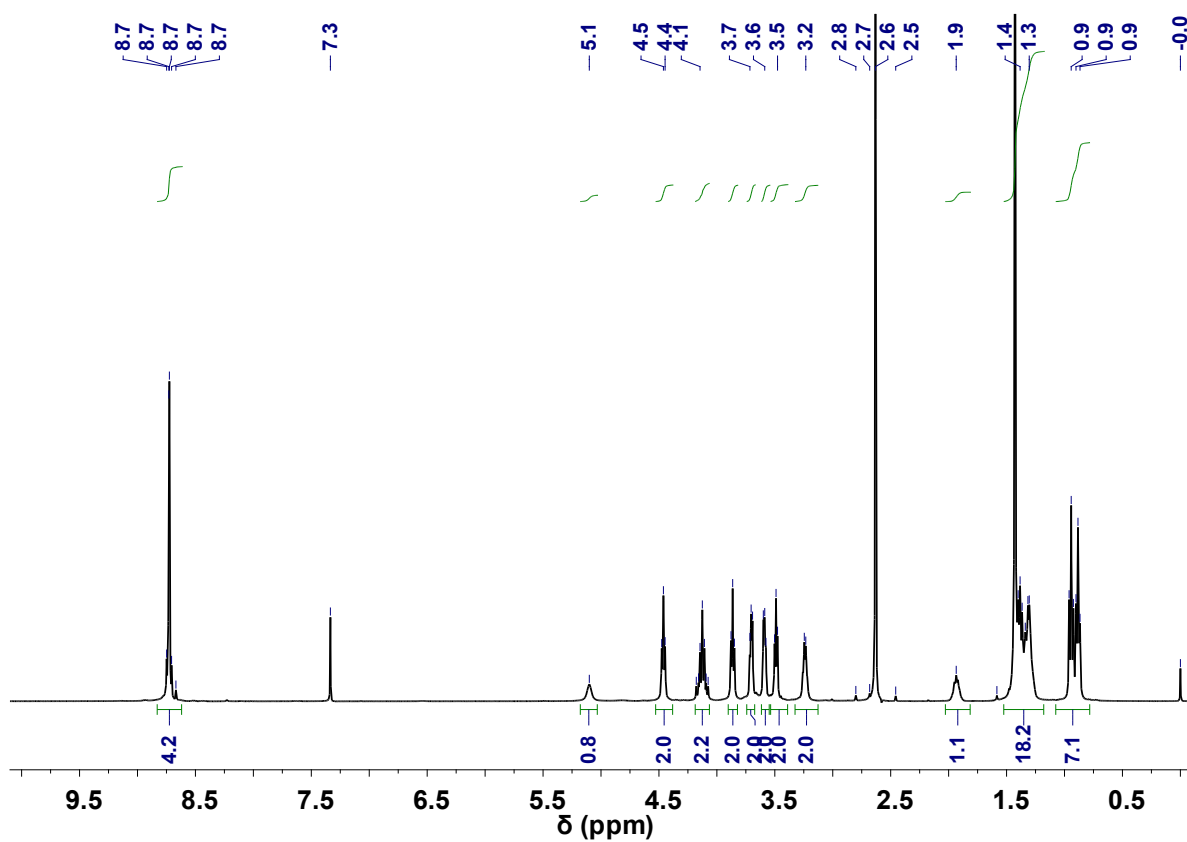
S4: ^1H NMR spectra of mono-Boc-protected 2,2'-(ethylenedioxy)bis(ethylamine) **6**.



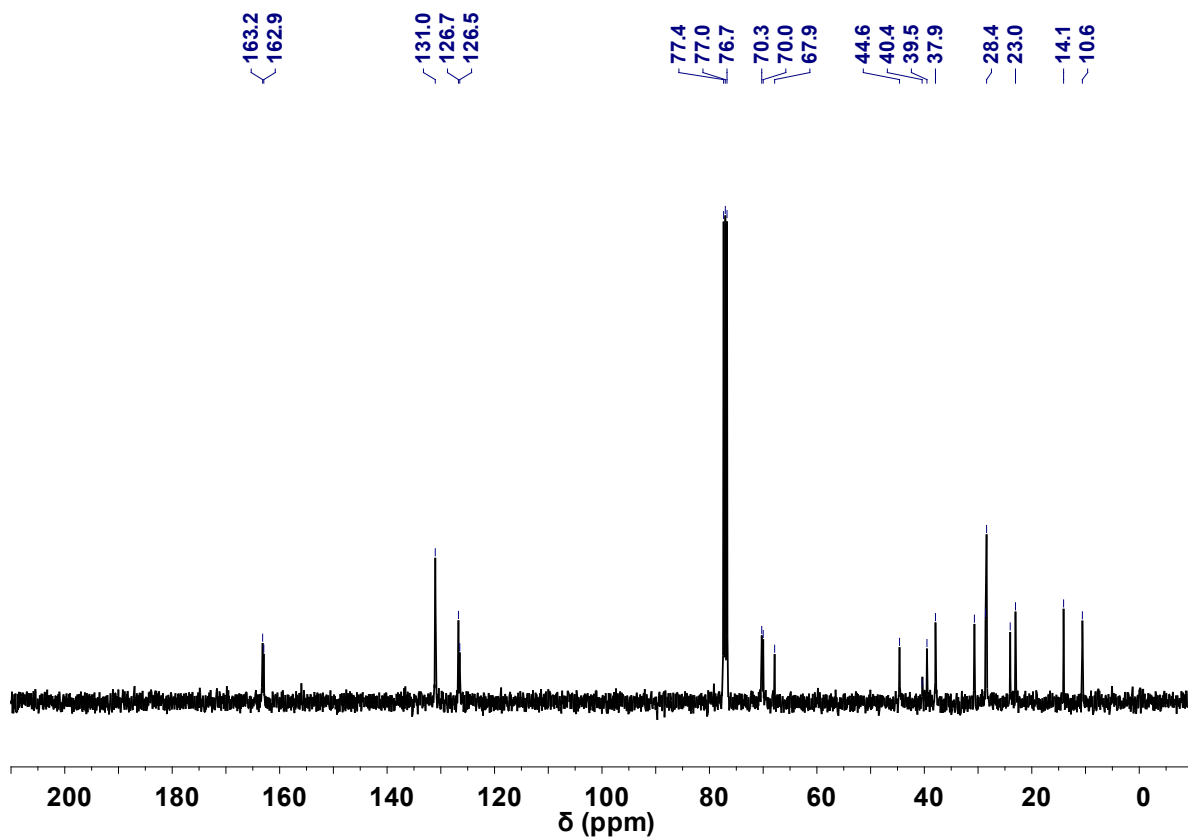
S5: ^{13}C NMR spectra of mono-Boc-protected 2,2'-(ethylenedioxy)bis(ethylamine) **6**.



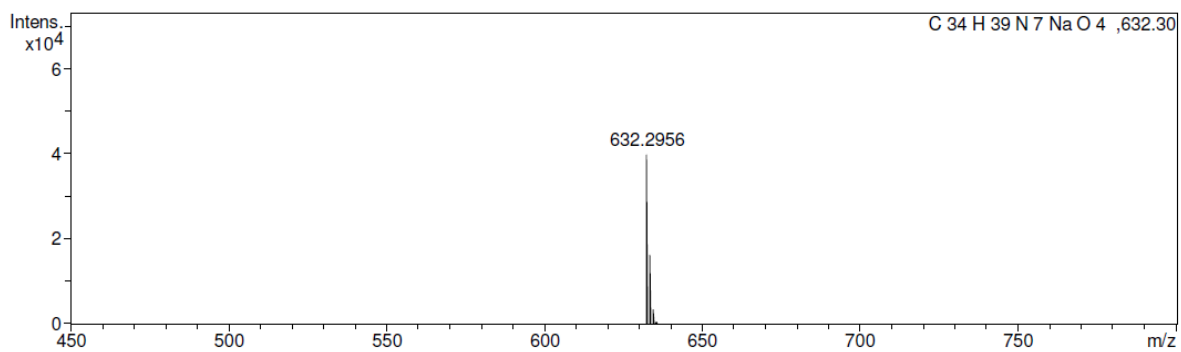
S6: Mass spectra of mono-Boc-protected 2,2'-(ethylenedioxy)bis(ethylamine) 6.



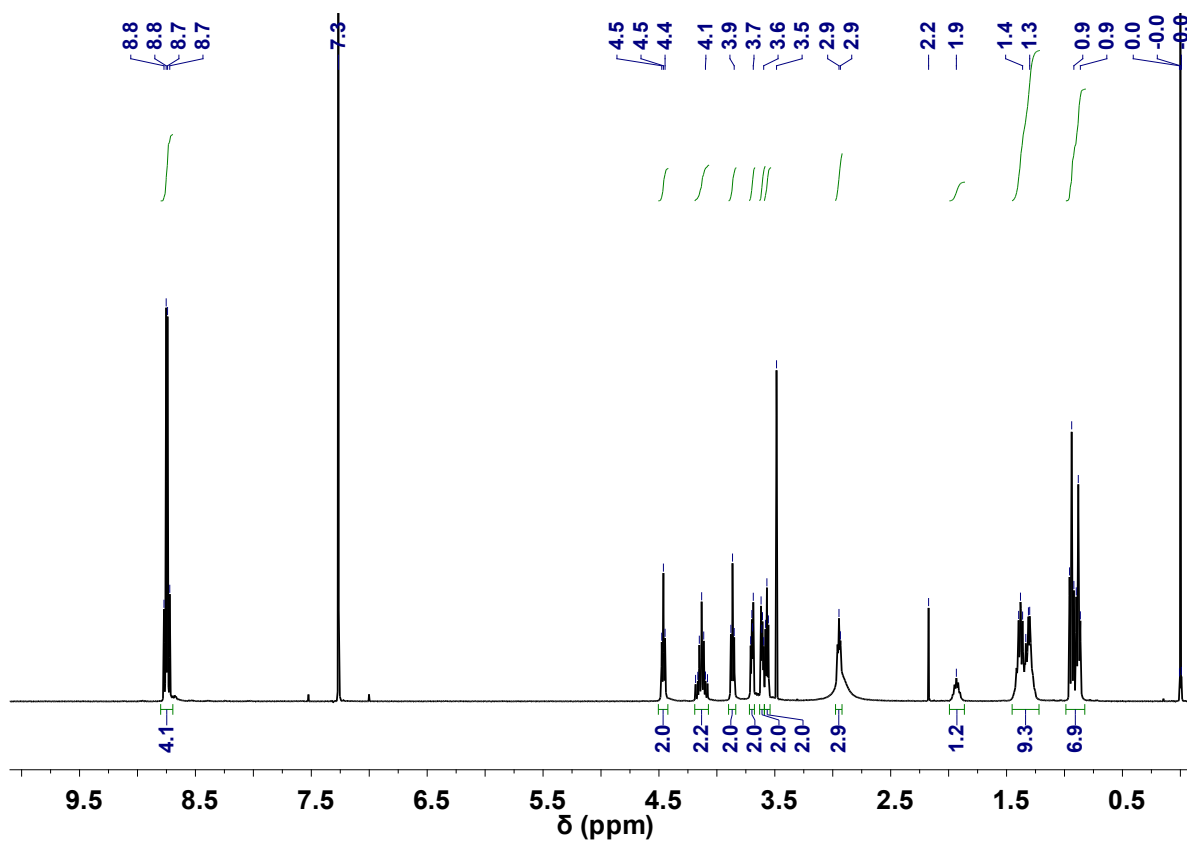
S7: 1H NMR spectra of Boc-protected diimide 7.



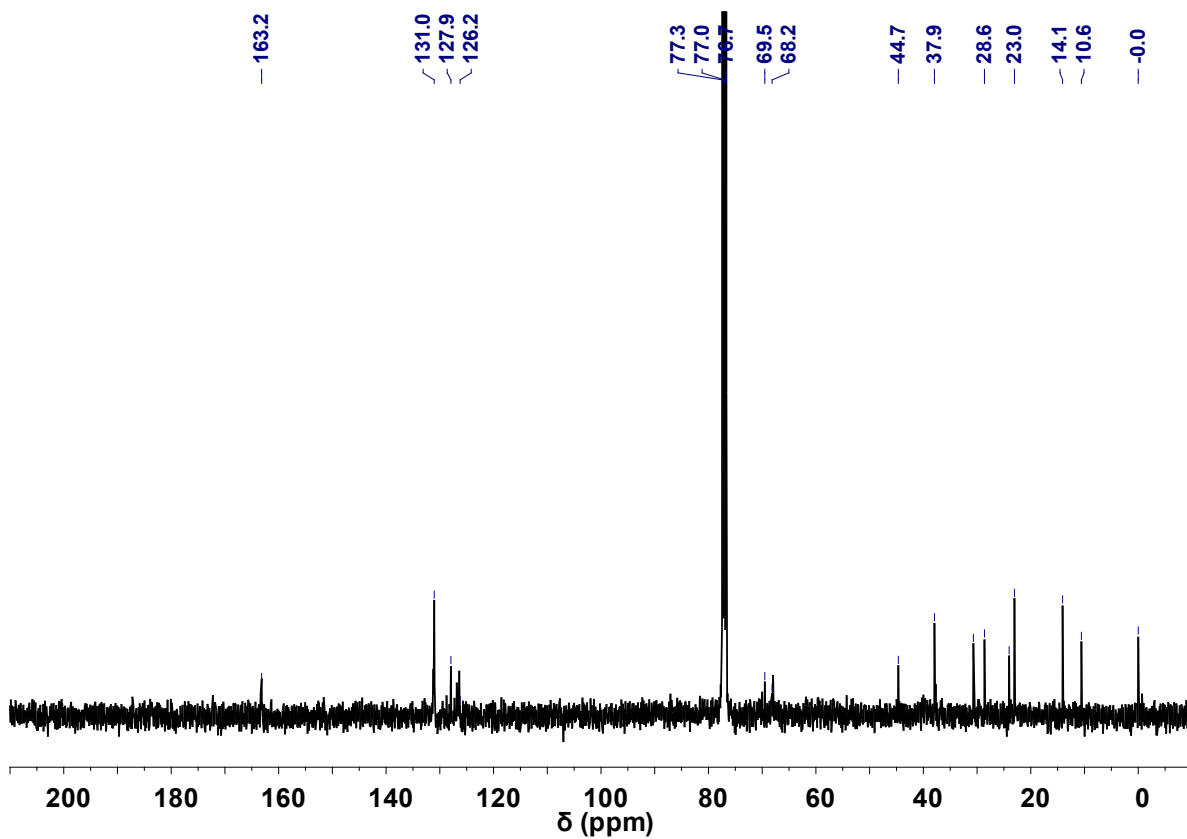
S8: ^{13}C NMR spectra of Boc-protected diimide 7.



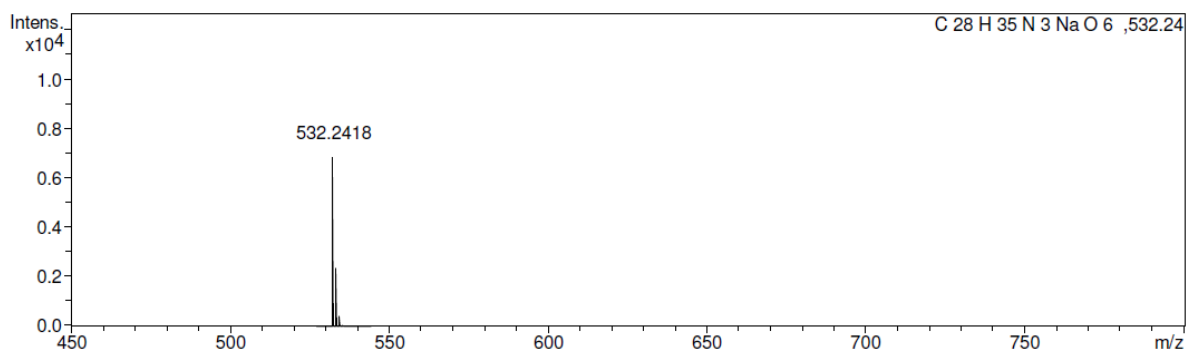
S9: Mass spectra of Boc-protected diimide 7.



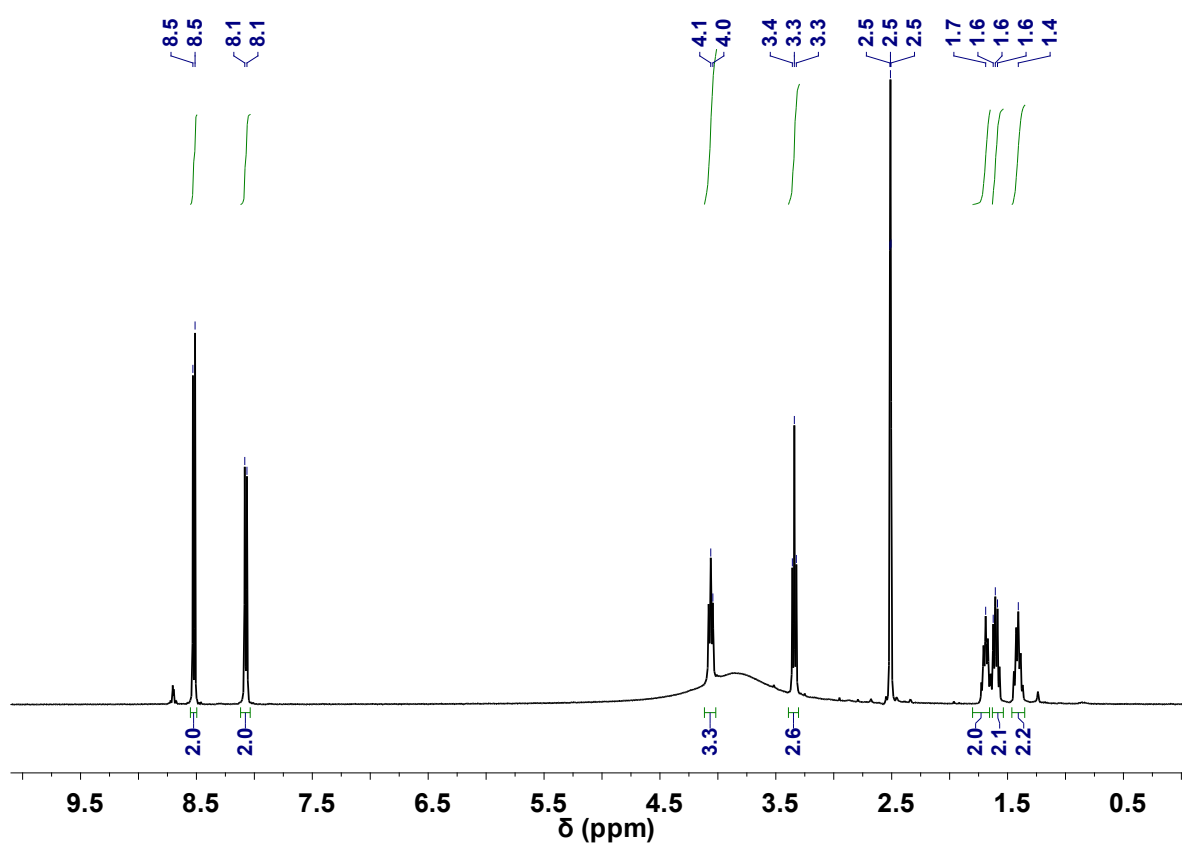
S10: ^1H NMR spectra of the amino-terminated diimide **1**.



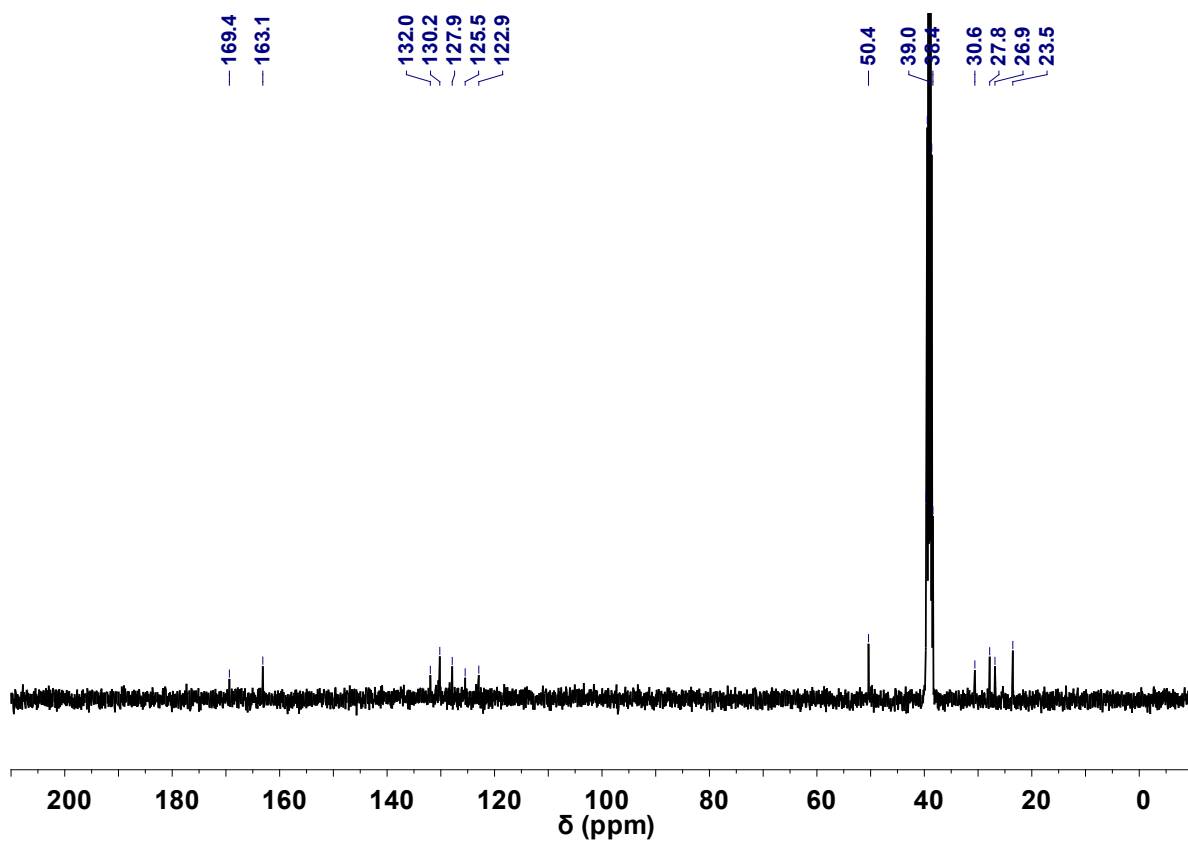
S11: ^{13}C NMR spectra of the amino-terminated diimide **1**.



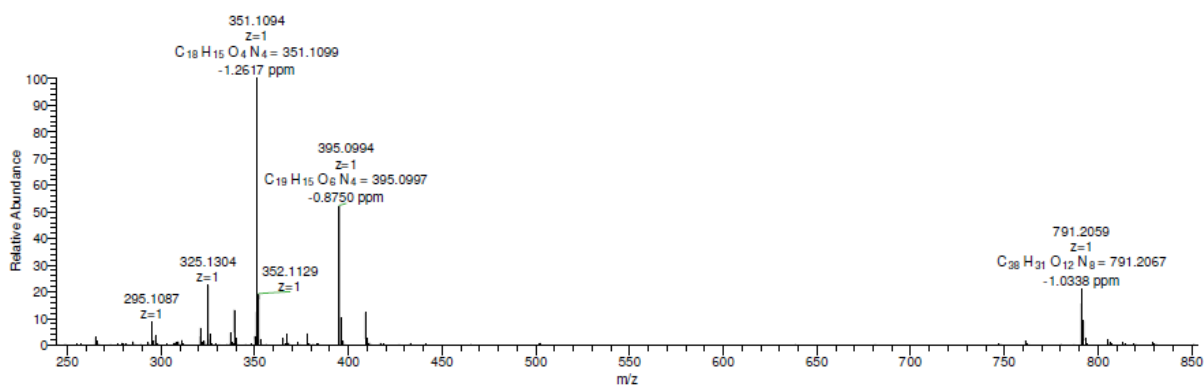
S12: Mass spectra of the amino-terminated diimide **1**.



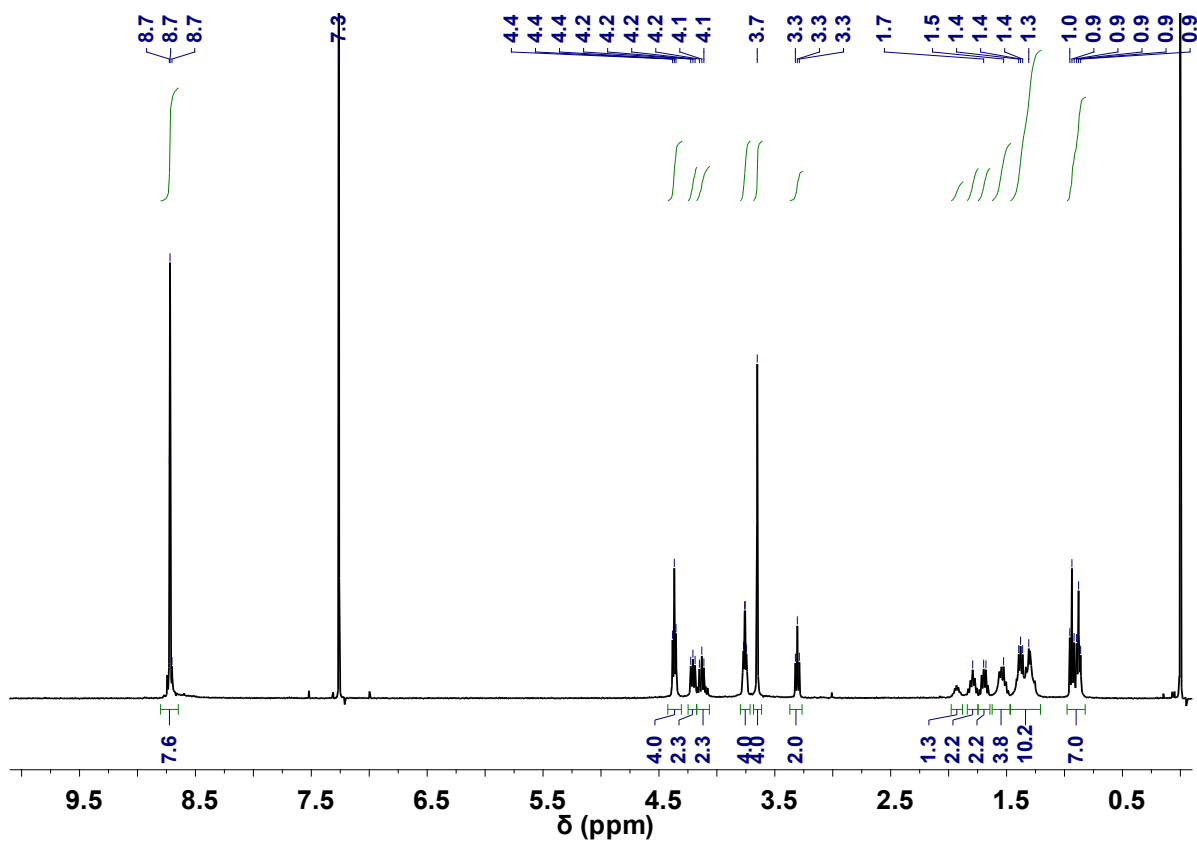
S13: 1H NMR spectra of azide-terminated imide-diacid **9**.



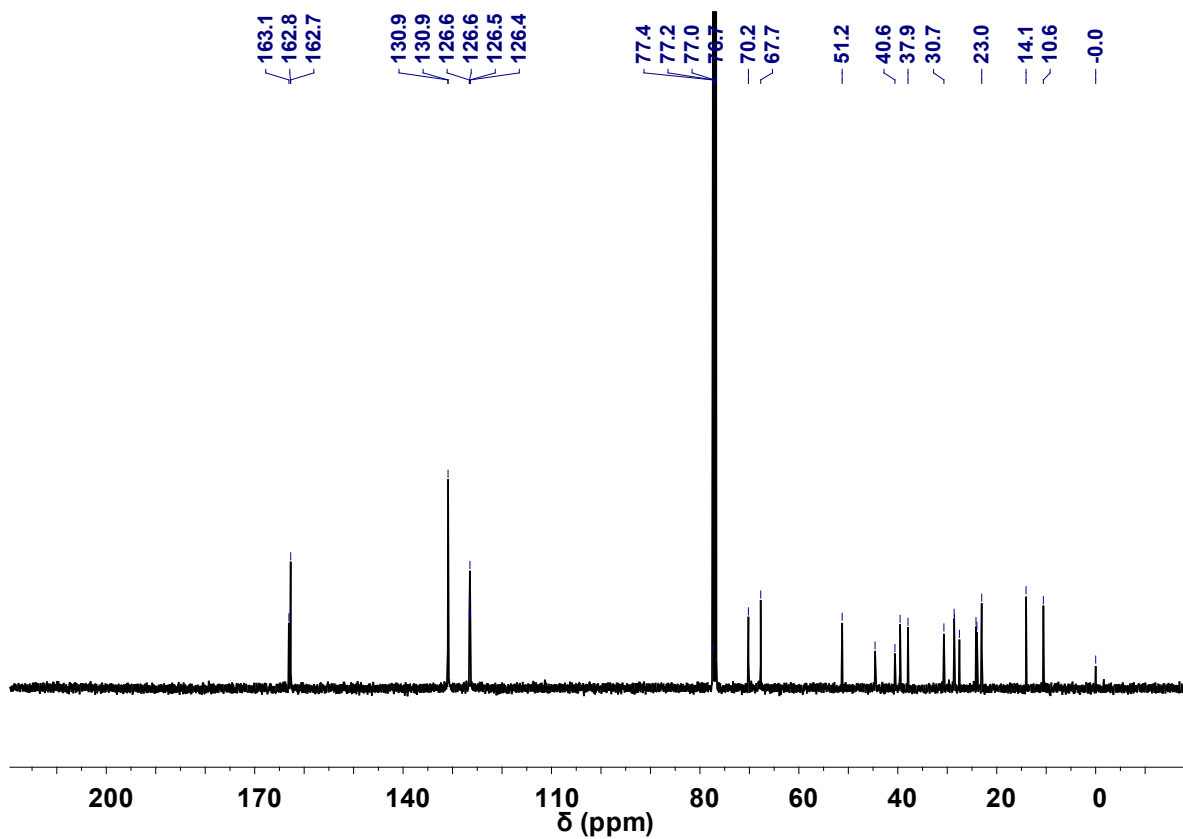
S14: ^{13}C NMR spectra of azide-terminated imide-diacid **9**.



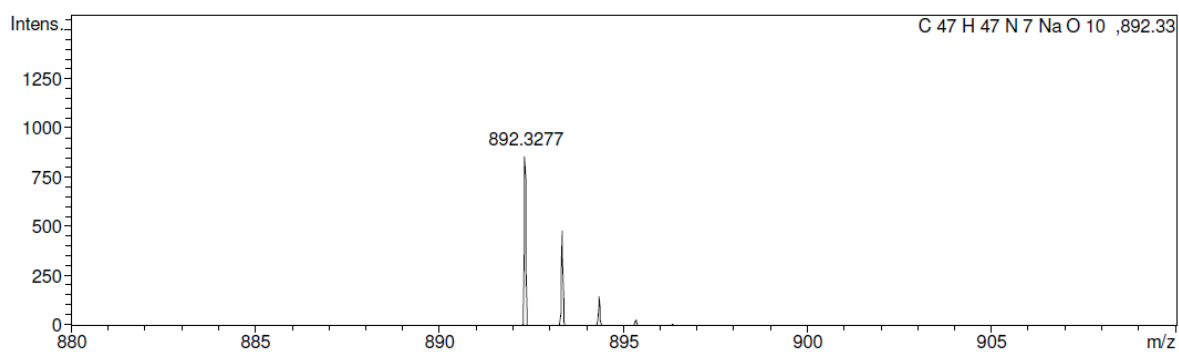
S15: Mass spectra of azide-terminated imide-diacid **9** in negative mode, showing the desired species and the associated dimer.



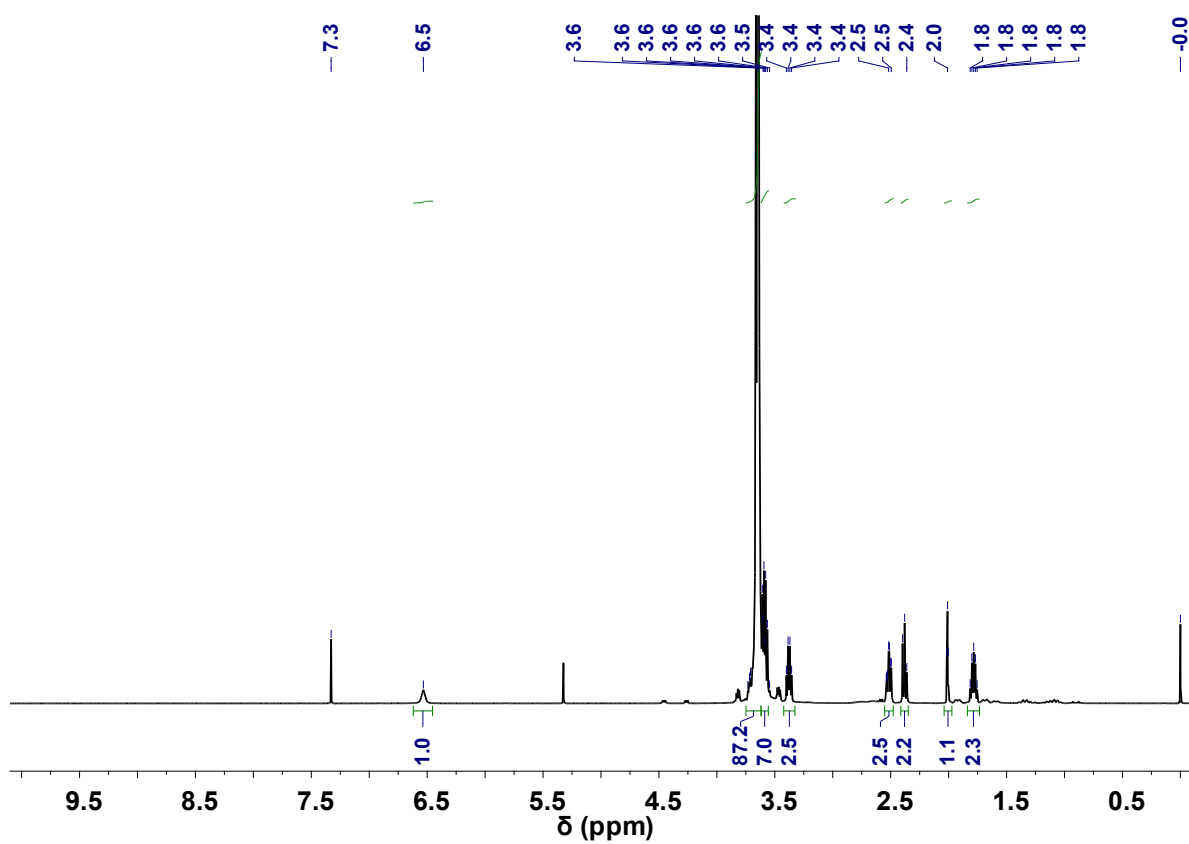
S16: ^1H NMR spectra of the azide-terminated chain-folding diimide **10**.



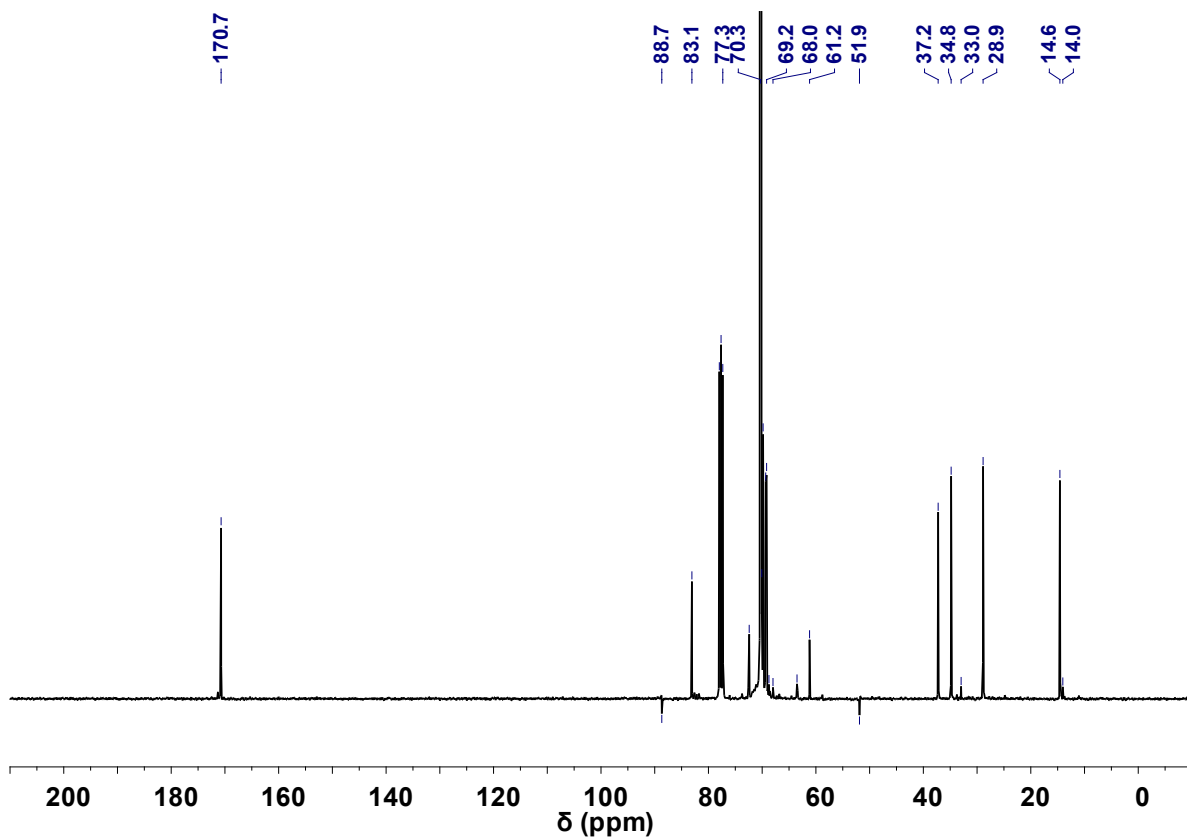
S17: ^{13}C NMR spectra of the azide-terminated chain-folding diimide **10**.



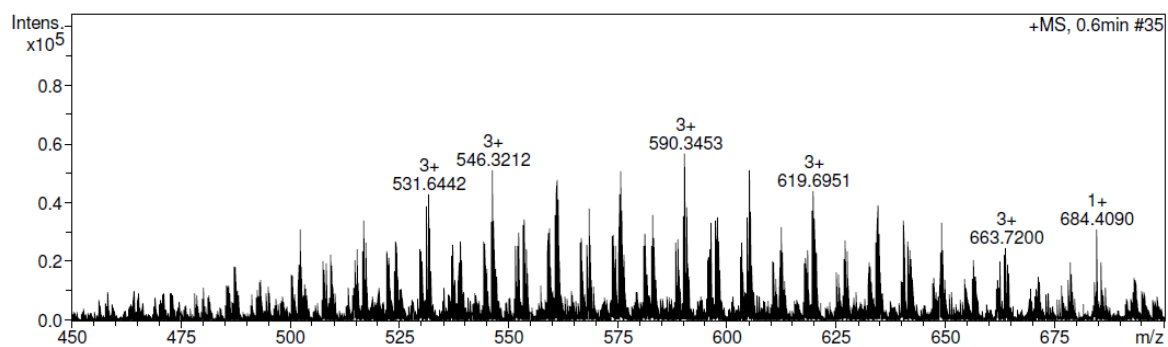
S18: Mass spectra of the azide-terminated chain-folding diimide **10**.



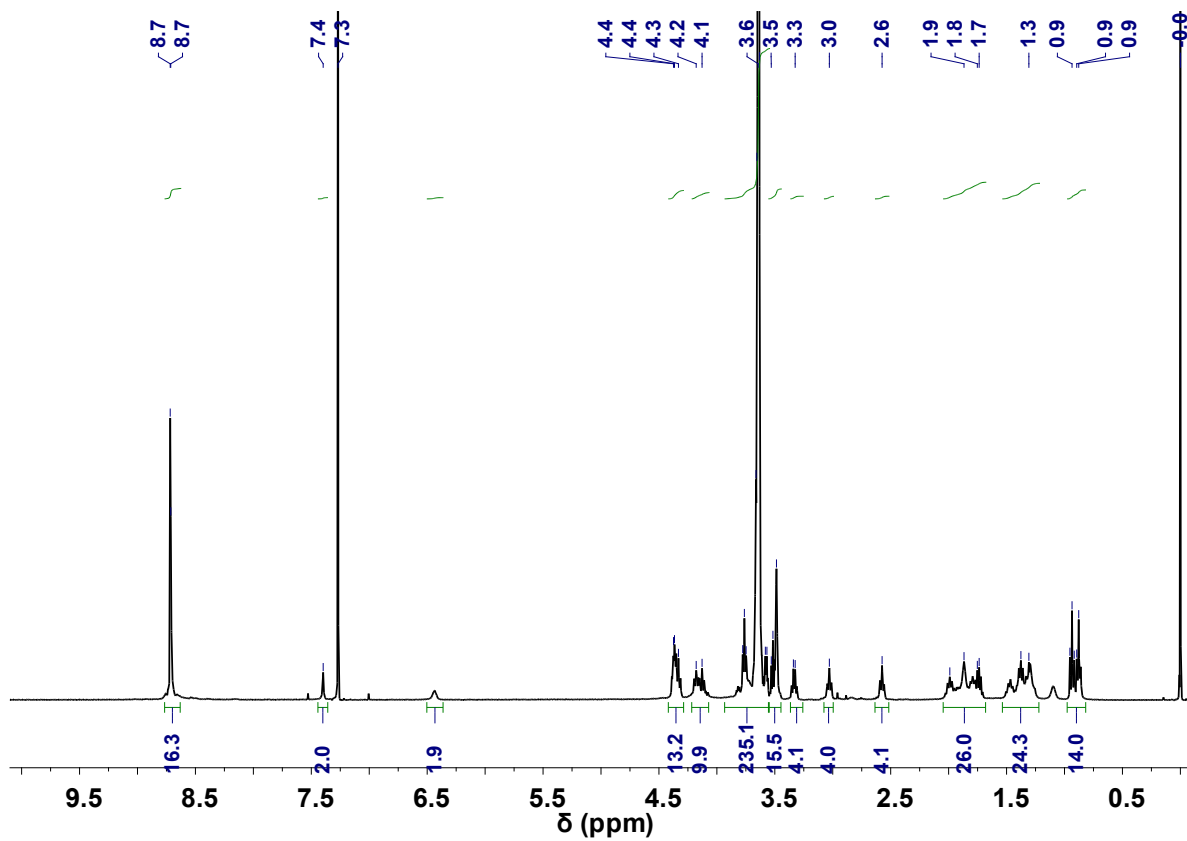
S19: ¹H NMR spectra of bis-alkyne-terminated poly(ethylene glycol) **13**.



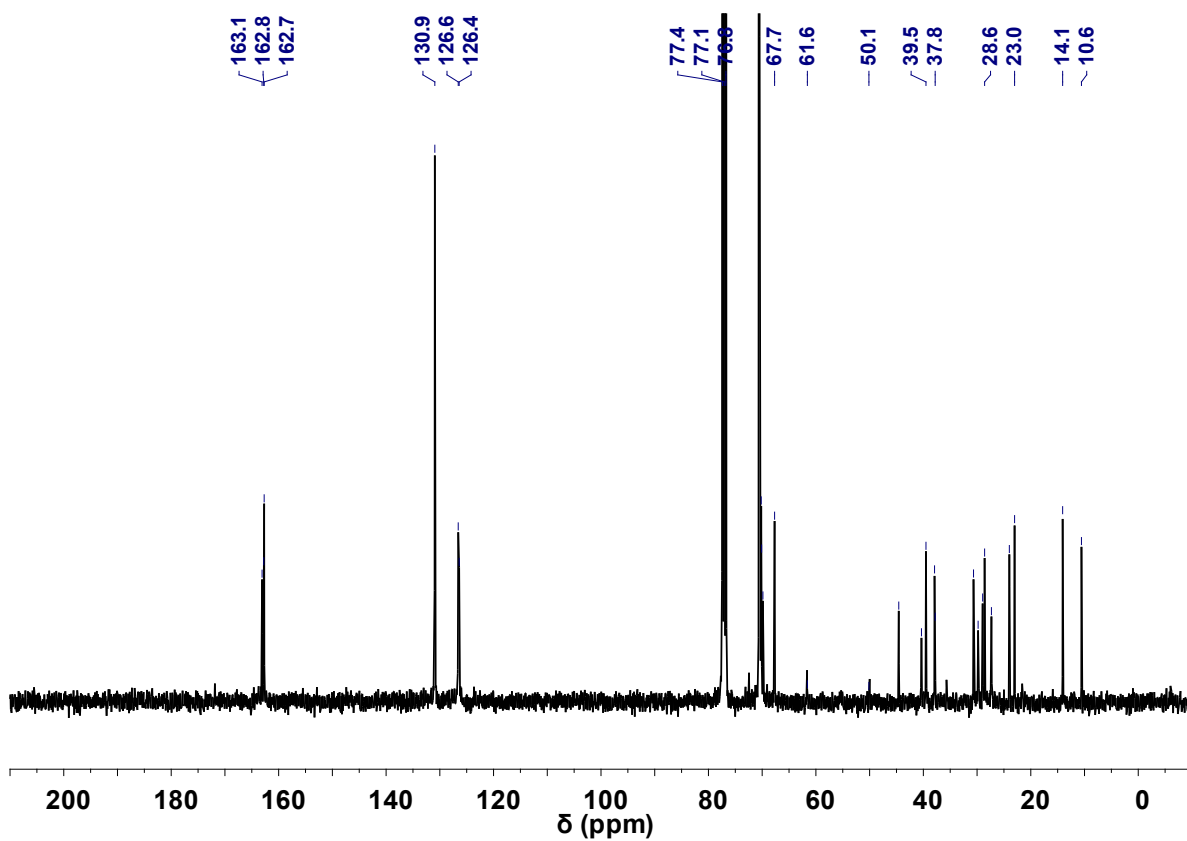
S20: ^{13}C NMR spectra of bis-alkyne-terminated poly(ethylene glycol) **13**.



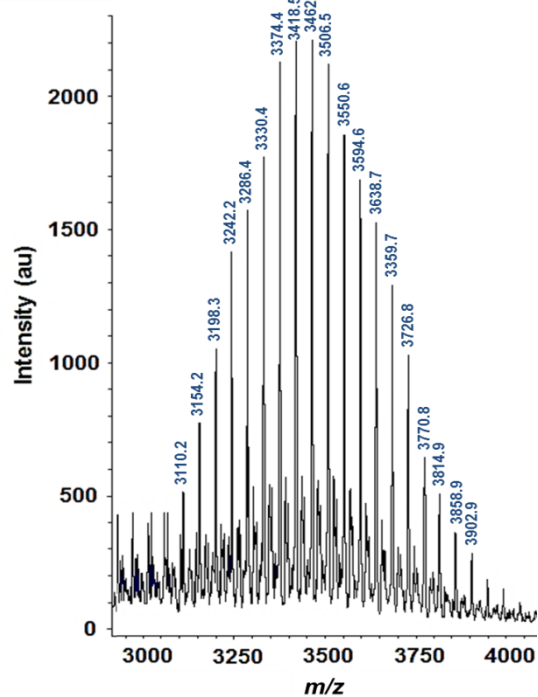
S21: Mass spectra of bis-alkyne-terminated poly(ethylene glycol) **13**.



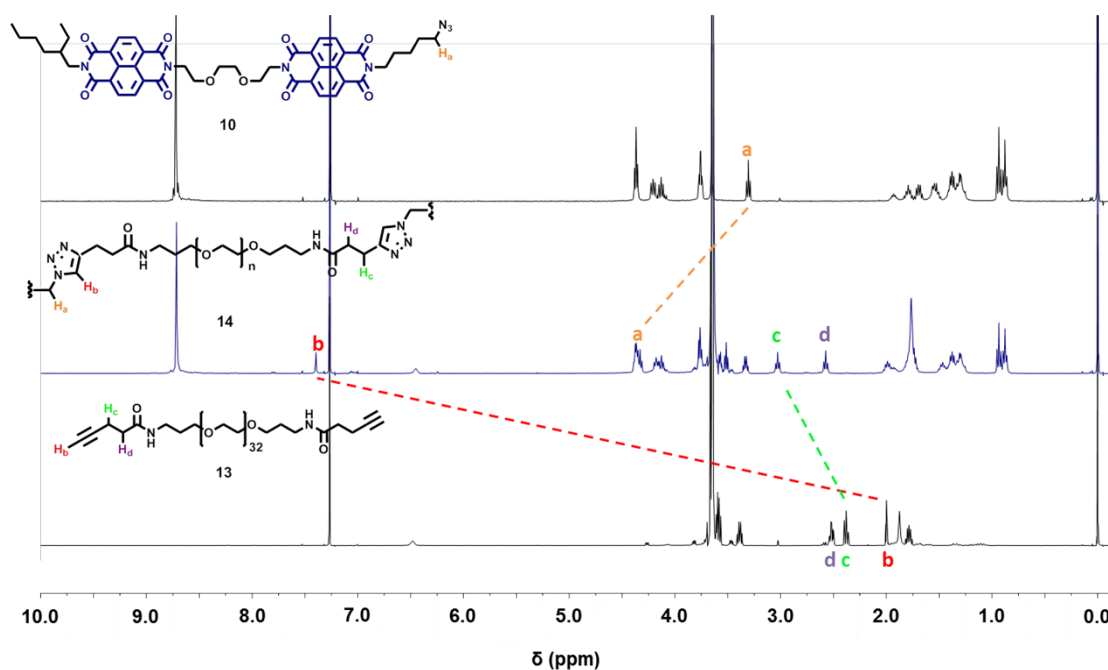
S22: ^1H NMR spectra of the 'clicked' chain-folding polydiimide 14.



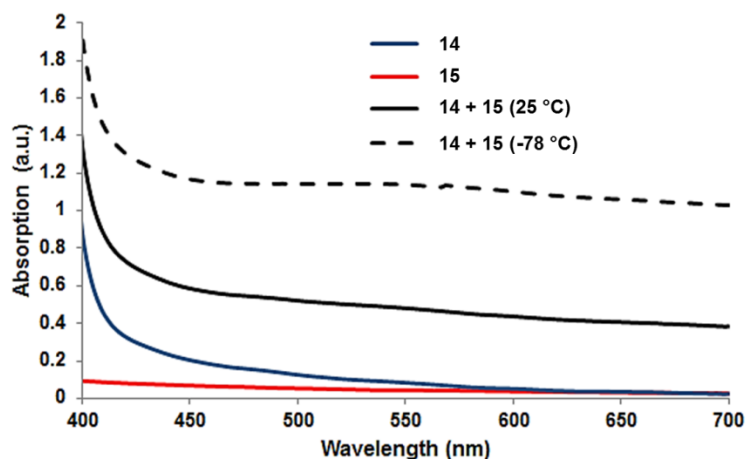
S23: ^{13}C NMR spectra of the 'clicked' chain-folding polydiimide 14.



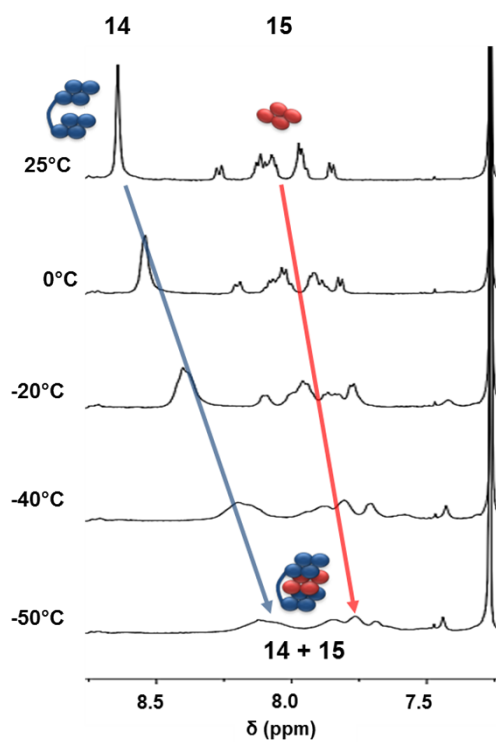
S24: MALDI-TOF mass spectrometric analysis of the ‘clicked’ chain-folding polydiimide **14**. The spacing between signals (44 Da) corresponds to a single repeat unit of poly(ethylene glycol).



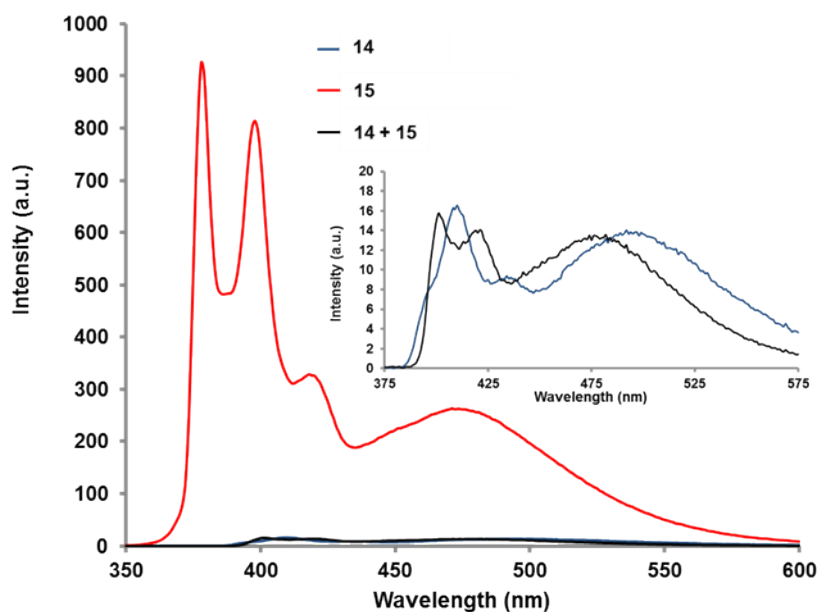
S25: ^1H NMR spectra of precursors **10** and **13** showing triazole formation through the appearance of the singlet at 7.45 ppm in the polydiimide **14**.



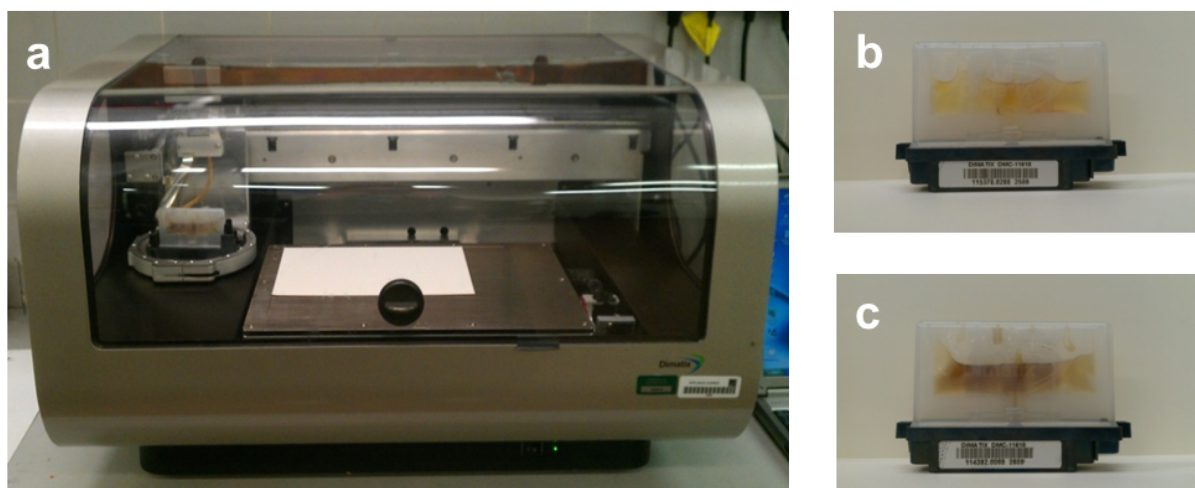
S26: UV-Vis spectra of the chain-folding polyimide **14** and pyrenyl terminated polymer **15** and on blending (**14** + **15**) at room temperature and -78 °C at a concentration of 3×10^{-3} M with respect to binding motifs in CHCl_3/TFA (9:1 v/v).



S27: Partial ^1H NMR spectra of the blend between the discrete chain-folding polymer **14** and the divalent pyrenyl polymer **15** showing significant complexation only at low temperature.



S28: Fluorescence spectra of emission inactive polyimide **14** and pyrenyl terminated poly(ethylene glycol) **15** and the equimolar (with respect to the binding motifs) blend (**14+15**). Insert shows expanded region between 375 nm and 575 nm, revealing the quenching of pyrenyl emissions in the blend (**14+15**) at room temperature.



S29: **a.** Fujifilm Dimatix™ Materials Printer (DMP-2800), **b.** Dimatix™ materials cartridge containing π -electron-rich polymer and **c.** π -electron deficient polydiimide containing cartridge