

Electronic Supplementary Information (ESI)

Cyclic-hanging-multicyclic polymer synthesized by ladderphane-mediated blocking-cyclization technique for direct visualization of cyclic macromolecular topology

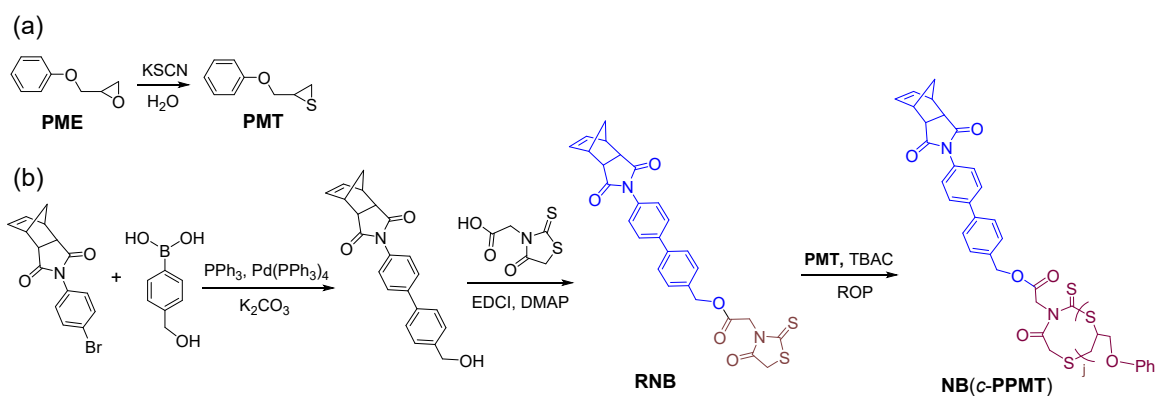
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Supplementary Data



Scheme S1 Synthetic routes of **PMT** (a) and cyclic side chain-containing macromonomer **NB(c-PPMT)** (b).

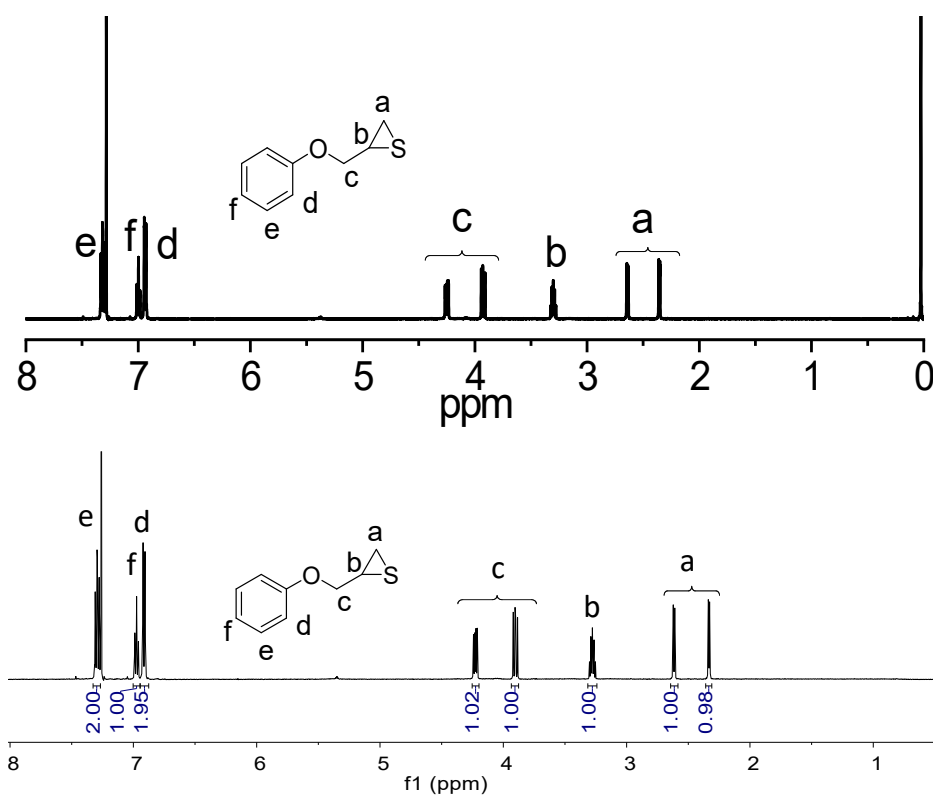


Fig. S1 ¹H NMR (500 MHz) spectrum of **PMT** measured in CDCl₃ at 25 °C.

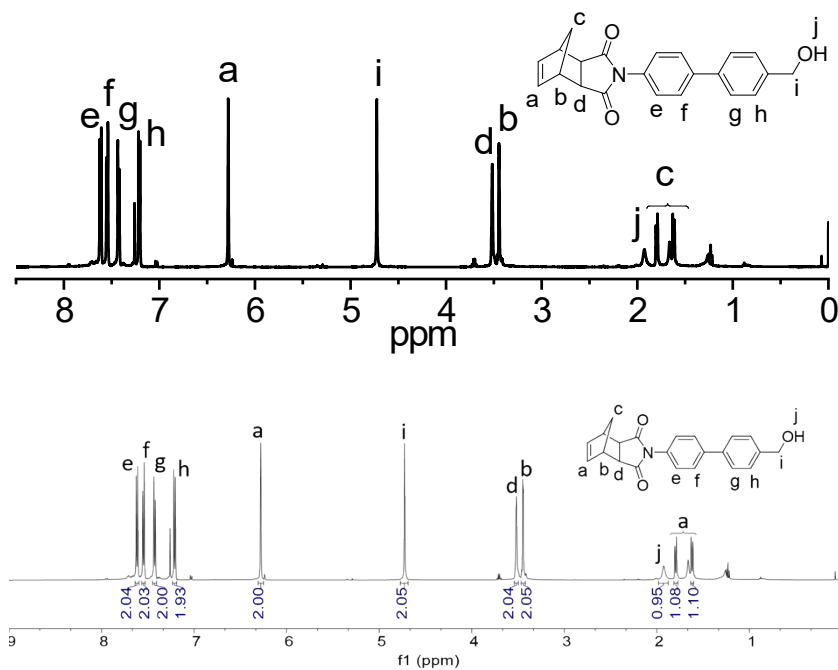


Fig. S2 ^1H NMR (500 MHz) spectrum of N-(4-hydroxymethylbiphenyl)-norbornene dicarboximide measured in CDCl_3 at 25 $^\circ\text{C}$.

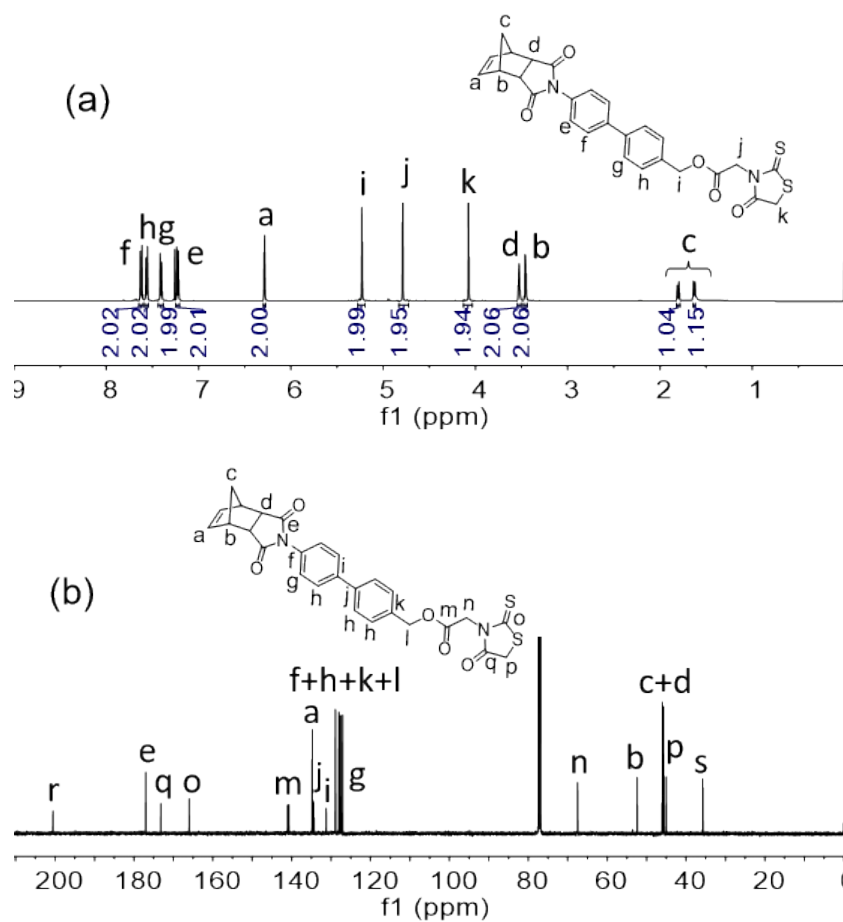


Fig. S3 ^1H NMR (a) and ^{13}C NMR (b) spectra of **RNB** measured in CDCl_3 at 25 $^\circ\text{C}$.

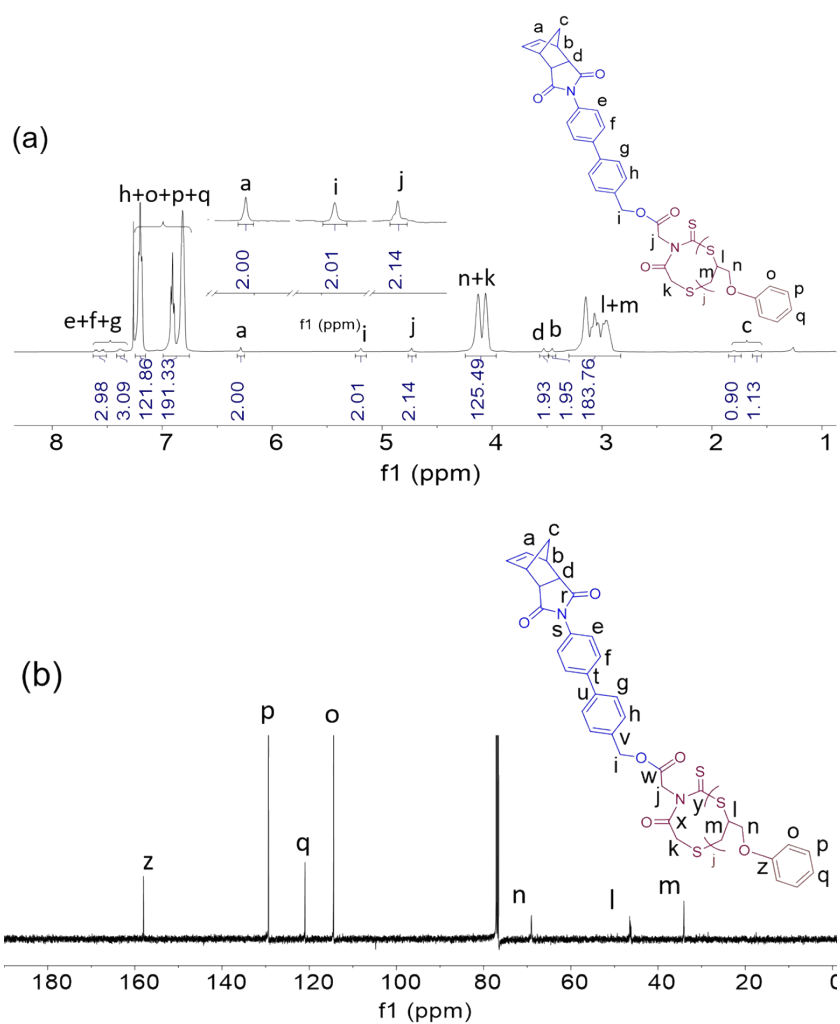


Fig. S4 ^1H NMR (a) and ^{13}C NMR (b) spectra of cyclic side chain-contained macromonomer **NB(c-PPMT)** measured in CDCl_3 at 25°C .

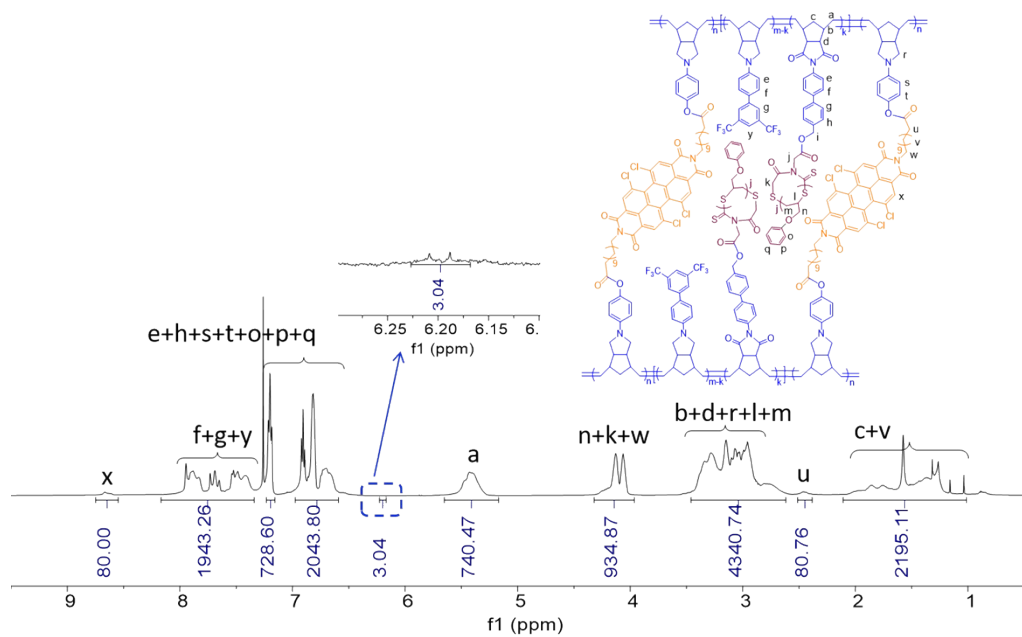


Fig. S5 ^1H NMR spectrum of $c\text{-}\{\text{PBNP}_{10}\text{-}[b\text{-P}(\text{TNP}_{195}\text{-CO-NB}(c\text{-PPMT})_5)_2\text{-}b\text{-PBNP}_{10}]\}$ in CDCl_3 .

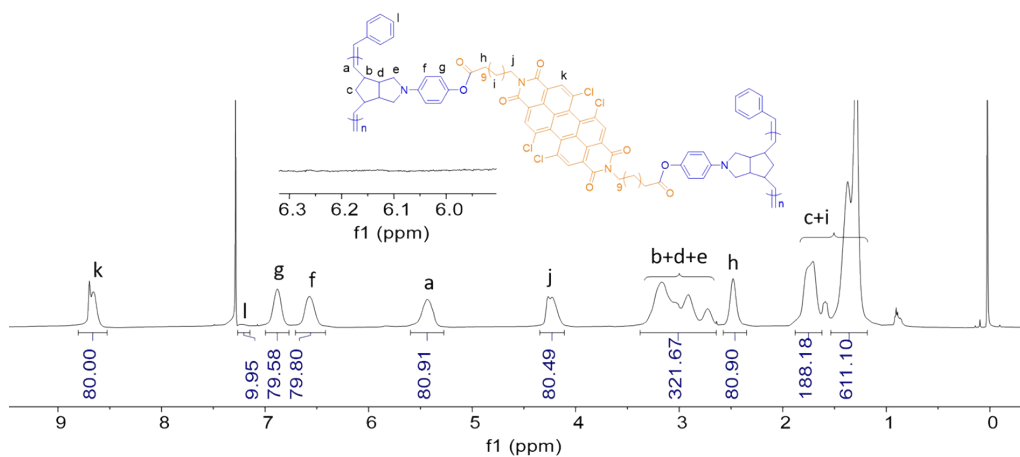


Fig. S6 ¹H NMR spectrum of PBNP₂₀ in CDCl₃.

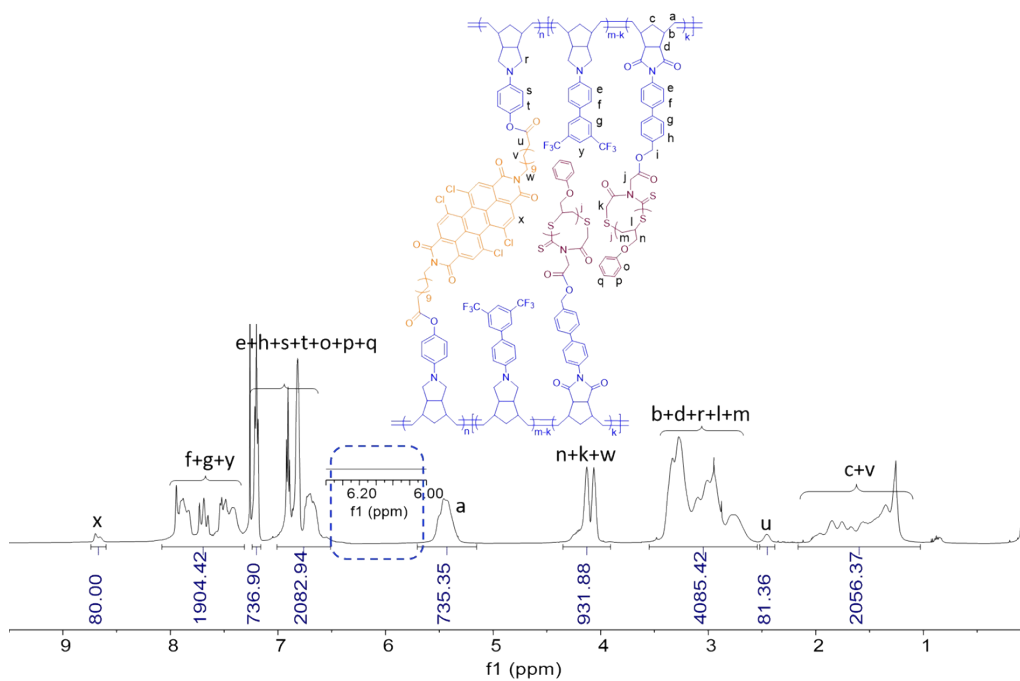


Fig. S7 ¹H NMR spectrum of *l*-{PBNP₂₀-*b*-[P(TNP₁₉₅-*co*-NB(*c*-PPMT)₅)]₂} in CDCl₃.

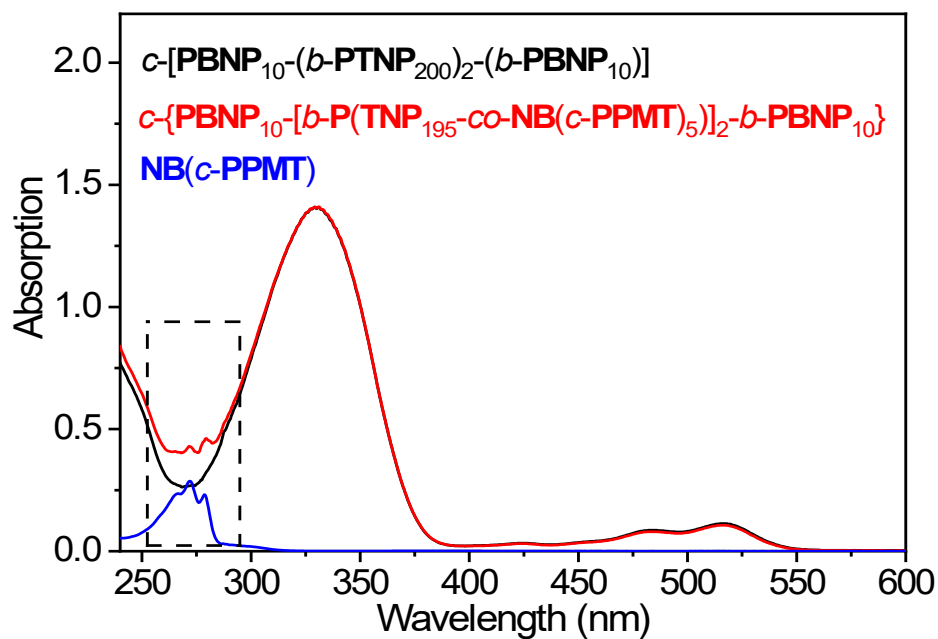


Fig. S8 UV-vis spectra of polymers.

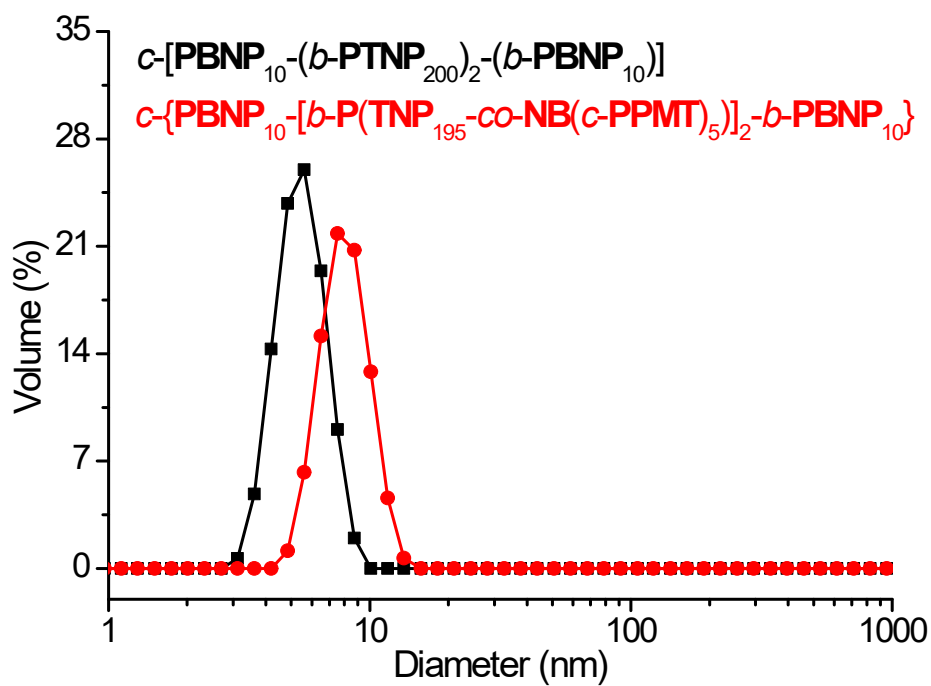


Fig. S9 DLS diagrams of cyclic polymers in THF at 2 mg mL^{-1} .