

Supporting information for

Ring-opening metathesis polymerization of ester-functionalized *endo*-tricyclo[4.2.2.0^{2,5}]deca-3,9-dienes and thermal properties of the resulting polymers

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Table S1. Solubility of poly1 and poly2.

	hexane	toluene	xylylene	CH ₂ Cl ₂	CHCl ₃	PhCl	o-DCB	THF	EtOAc	DMF	DMAc	DMSO
poly1	-	-	-	-	-	-	-	-	-	+	+	+
poly2	-	-	-	++	++	+	+	++	-	++	++	++

- : poor + : partially ++ : good

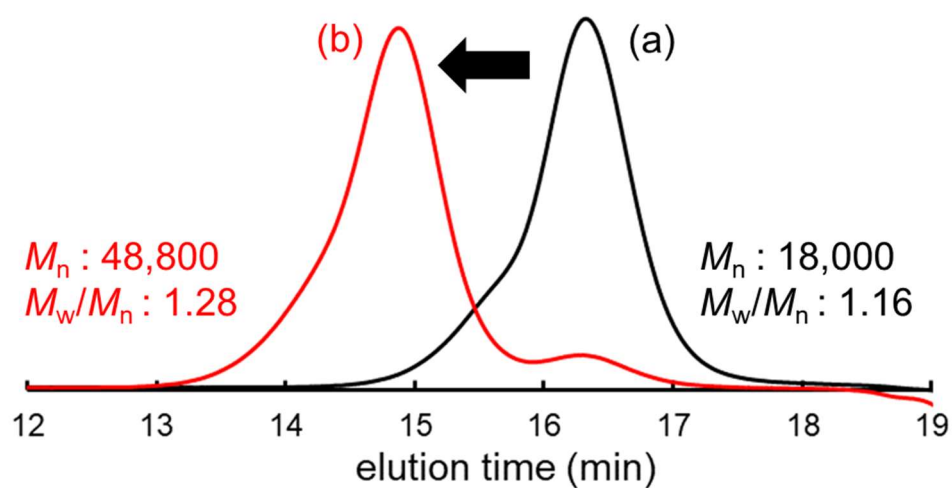


Figure S1. SEC profiles of (a) poly1 obtained by G3 (2.0 mol%) in DMF at r.t. and (b) poly1 after the chain extension experiment by the addition of the same amount of 1 (DMF eluent, PMMA standards).

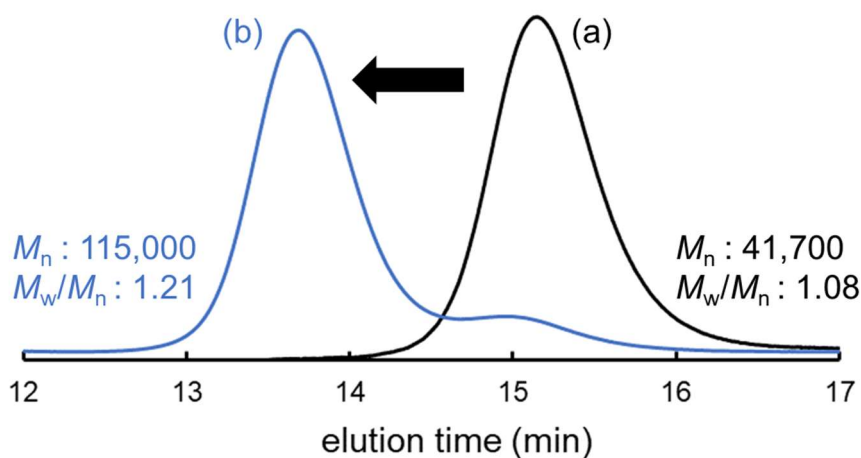


Figure S2. SEC profiles of (a) poly2 obtained by G3 (1.0 mol%) in CH_2Cl_2 at r.t. and (b) poly2 after the chain extension experiment by the addition of the same amount of 2 (DMF eluent, PMMA standards).

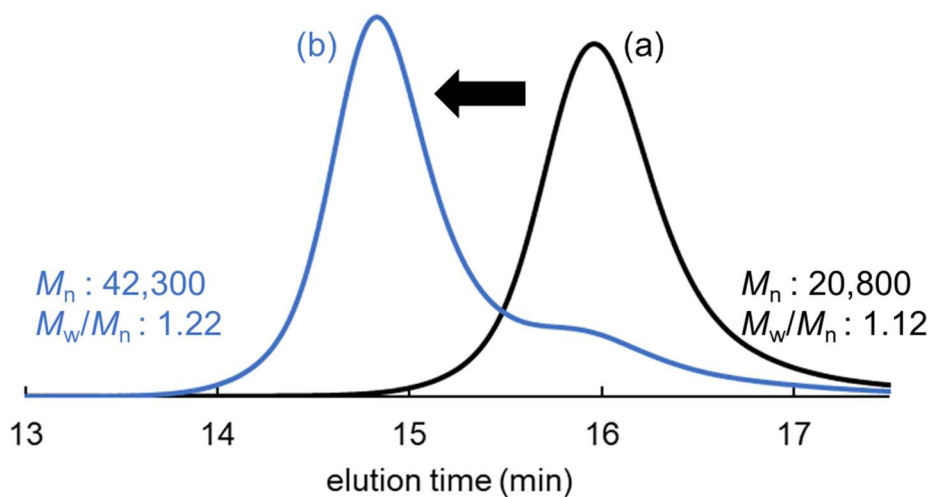


Figure S3. SEC profiles of (a) poly2 obtained by G1 (1.0 mol%) in CH_2Cl_2 at r.t. and (b) poly2 after the chain extension experiment by the addition of the same amount of 2 (DMF eluent, PMMA standards).

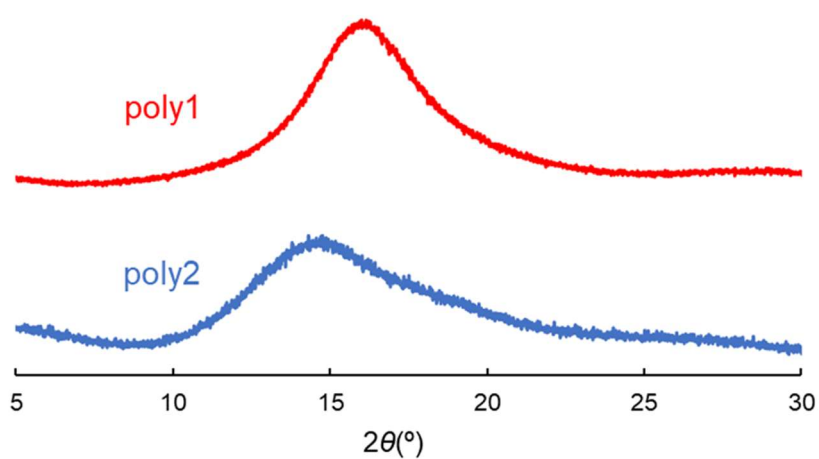


Figure S4. XRD profiles of poly1 and poly2.

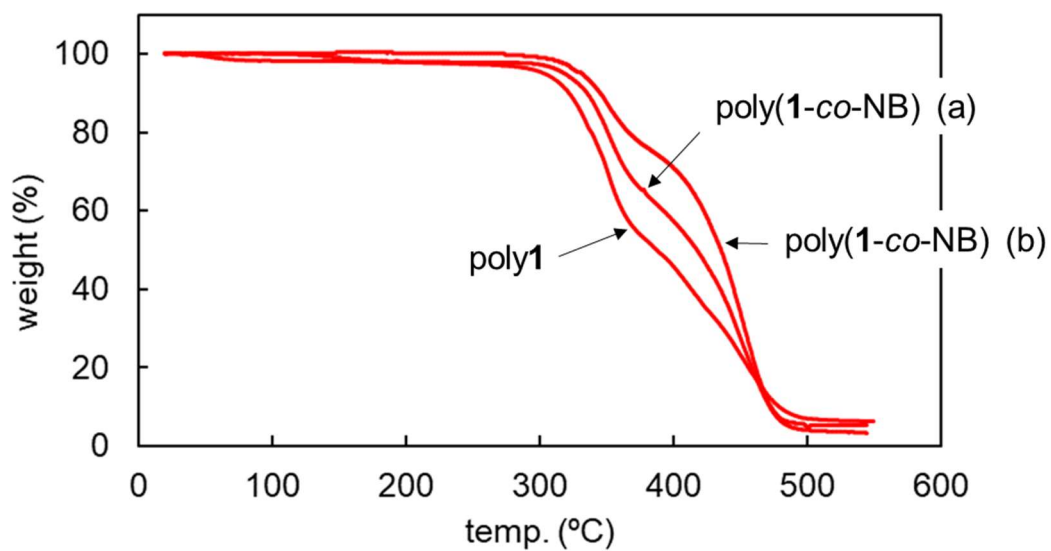


Figure S5. TGA curves of poly1 and poly(1-co-NB) at compositions of 1: 0.50 (a) and 0.20 (b).

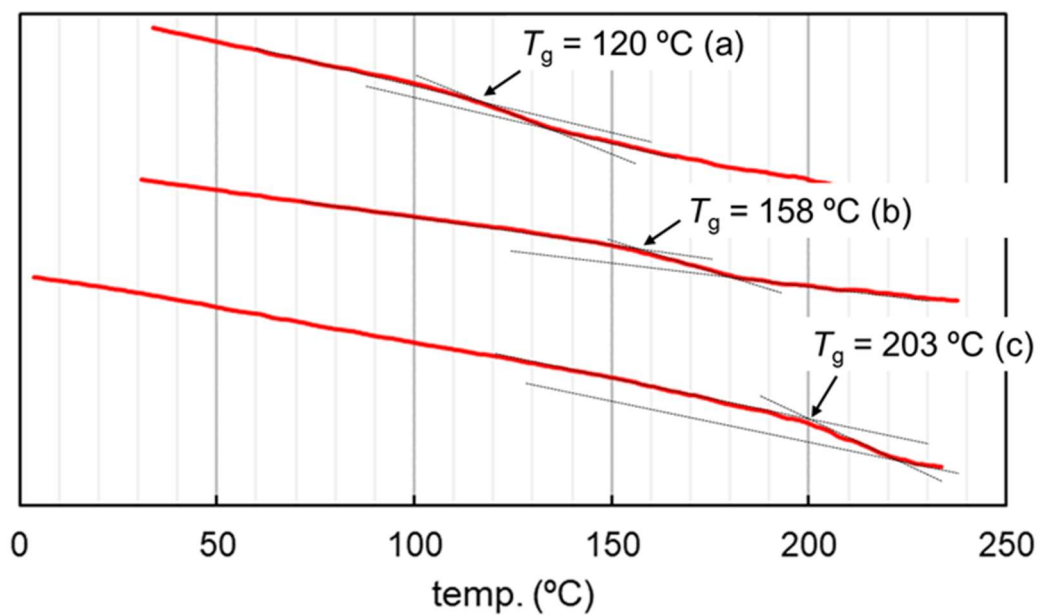


Figure S6. DSC profiles of poly(1-co-NB) at various compositions of 1: 0.20 (a), 0.38 (b), 0.50 (c).

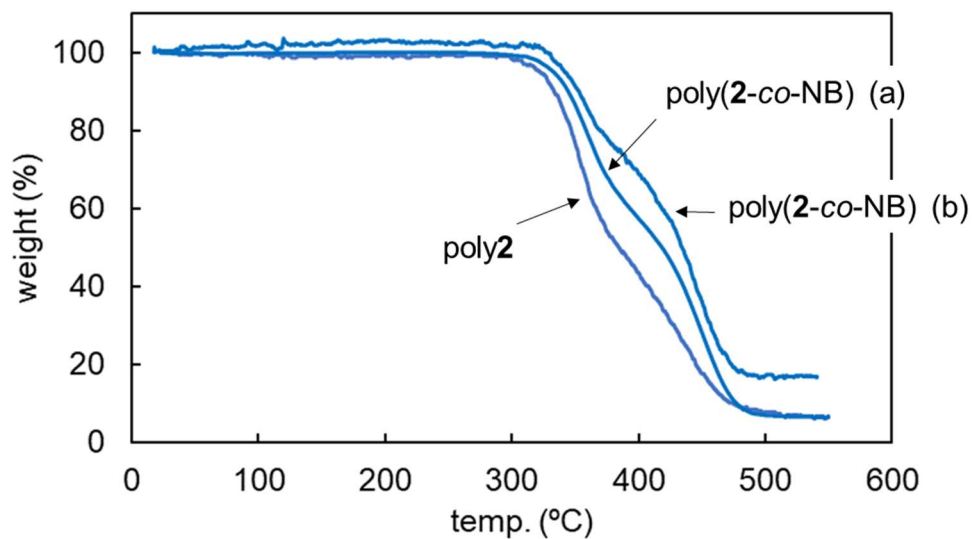


Figure S7. TGA curves of poly2 and poly(2-co-NB) at compositions of 2: 0.53 (a) and 0.40 (b).

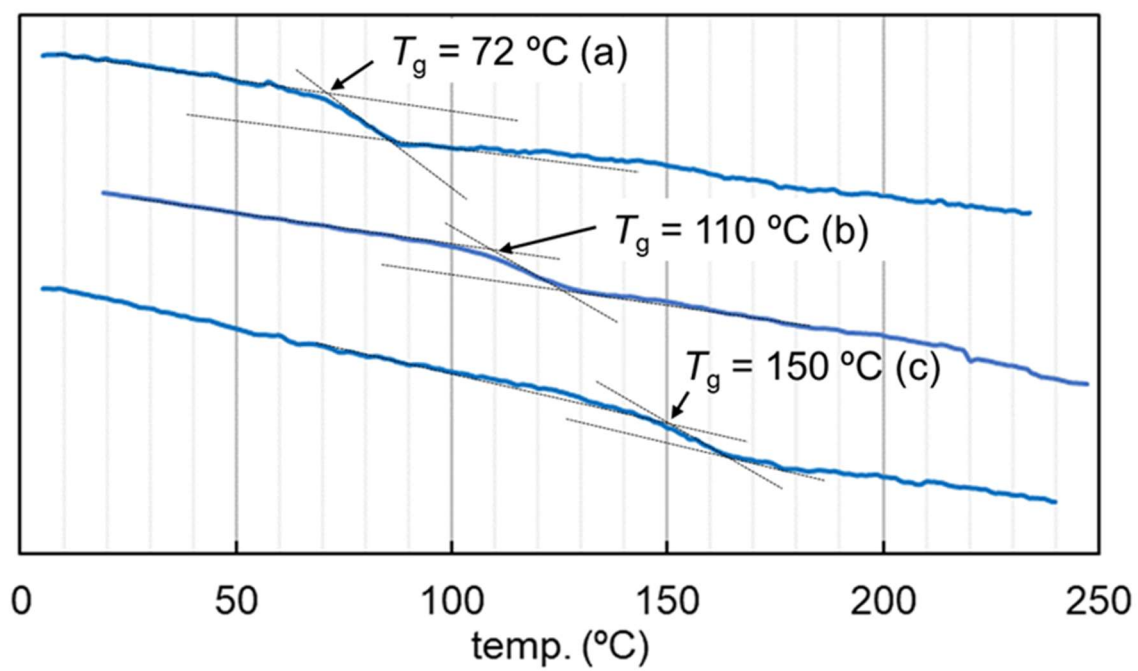


Figure S8. DSC profiles of poly(2-co-NB) at various compositions of 2: 0.25 (a), 0.40 (b), 0.50 (c).

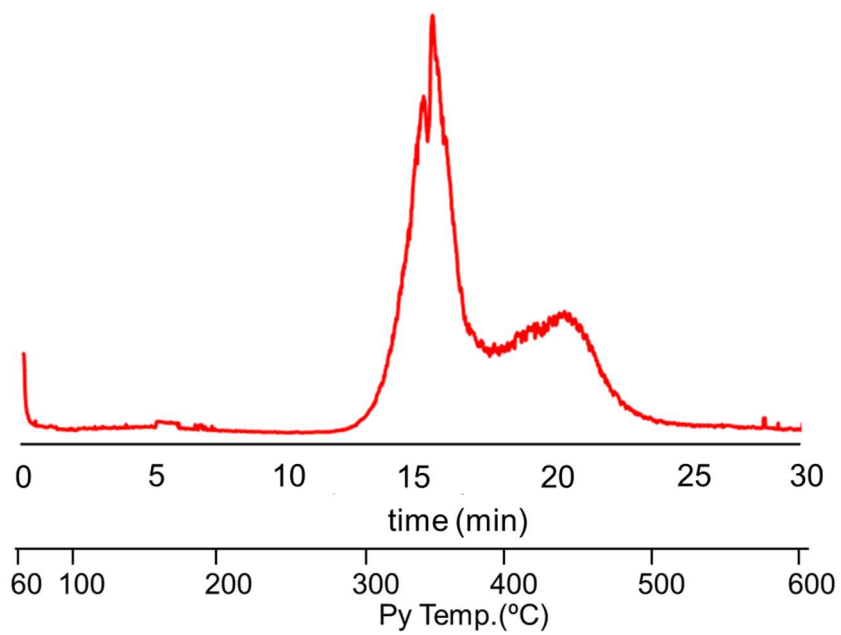
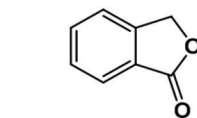
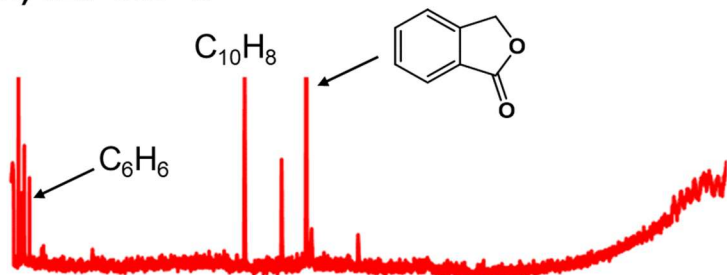


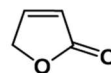
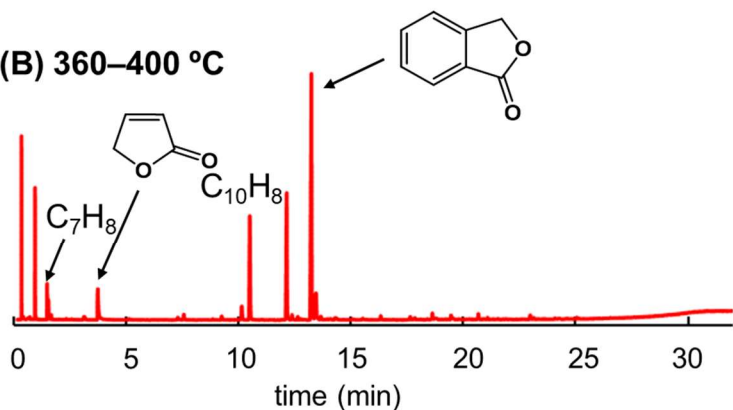
Figure S9. Py-EGA thermograms of poly1.

(A) 320–360 °C



m/z	$[M]^+$	calcd.	134.13
		found	134
	$[M-COH]^+$	calcd.	105.12
		found	105
	$[M-CO_2H]^+$	calcd.	89.14
		found	89
	$[M-CO_2CH]^+$	calcd.	77.11
		found	77

(B) 360–400 °C



m/z	$[M]^+$	calcd.	84.07
		found	84
	$[M-COH]^+$	calcd.	55.03
		found	55
	$[M-CO_2H]^+$	calcd.	39.05
		found	39

Figure S10. EGA-GC/MS analysis and thermal decomposition products of poly1.

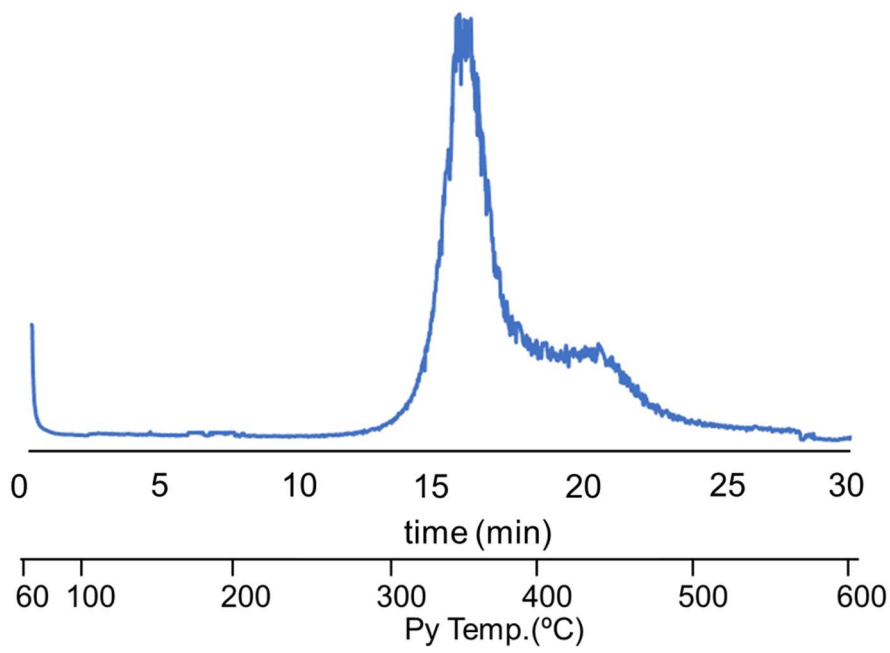
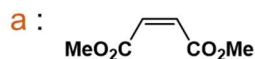
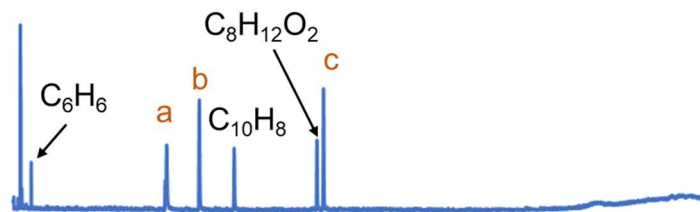
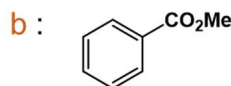


Figure S11. Py-EGA thermograms of poly2.

(A) 320–360 °C

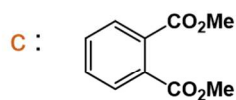
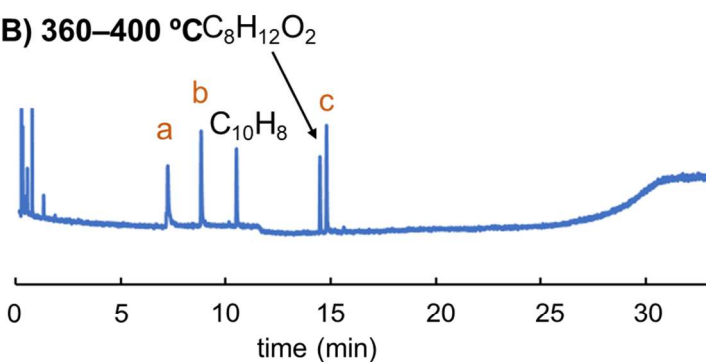


m/z $[M-OCH_3]^+$ calcd. 113.09
found 113
 $[M-CO_2CH_3]^+$ calcd. 85.09
found 85



m/z $[M]^+$ calcd. 136.15
found 136
 $[M-OCH_3]^+$ calcd. 105.12
found 105
 $[M-CO_2CH_3]^+$ calcd. 77.11
found 77

(B) 360–400 °C



m/z $[M]^+$ calcd. 194.19
found 194
 $[M-OCH_3]^+$ calcd. 163.15
found 163
 $[M-C_4O_4H_5]^+$ calcd. 77.11
found 77

Figure S12. EGA-GC/MS analysis and thermal decomposition products of poly2.

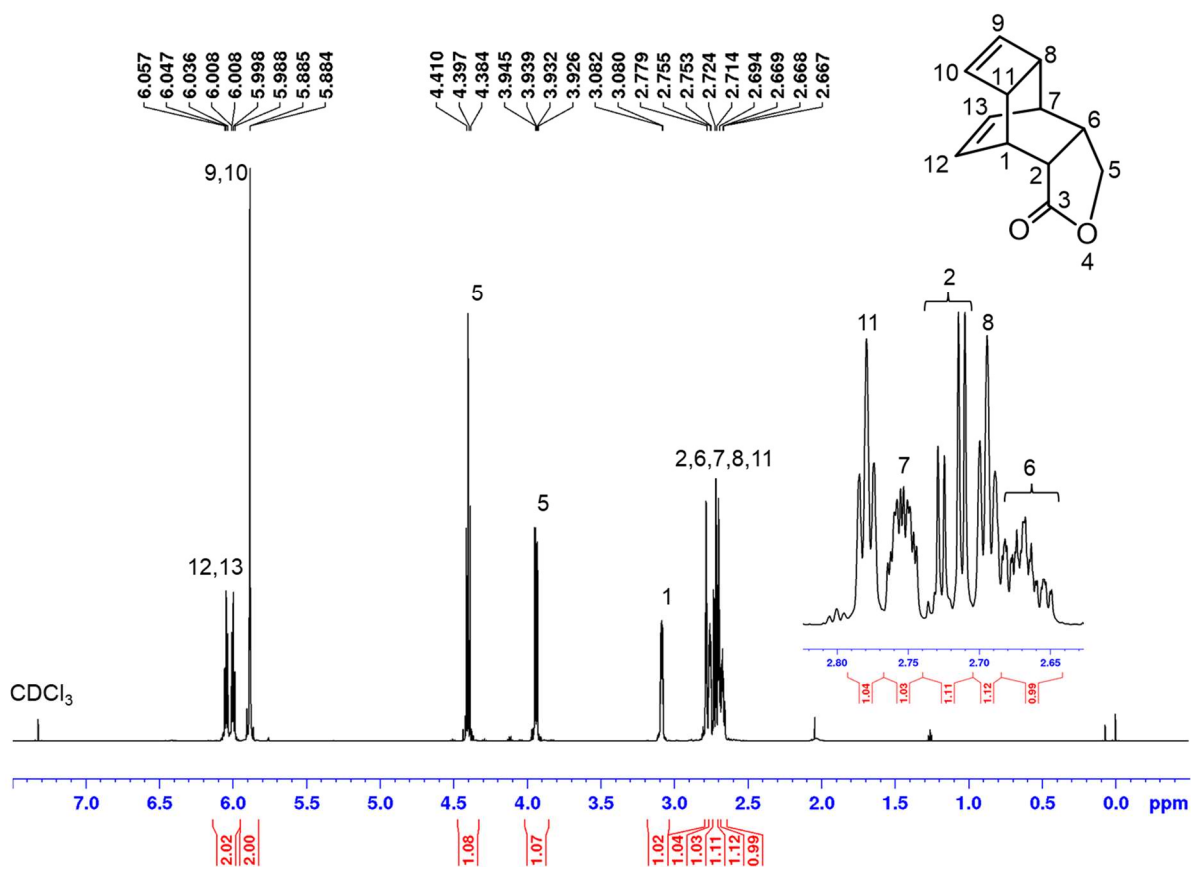


Figure S13. ^1H NMR spectrum of 1 in CDCl_3 (700 MHz).

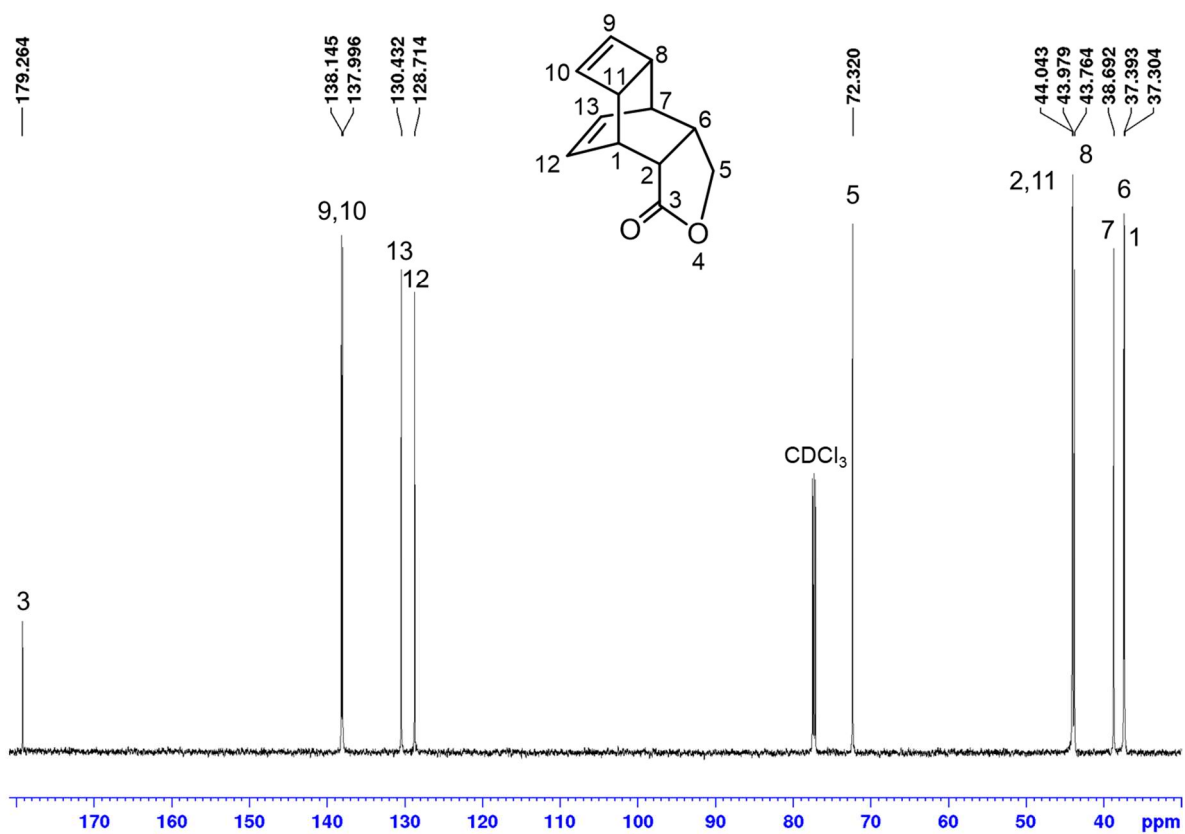


Figure S14. ^{13}C NMR spectrum of 1 in CDCl_3 (175 MHz).

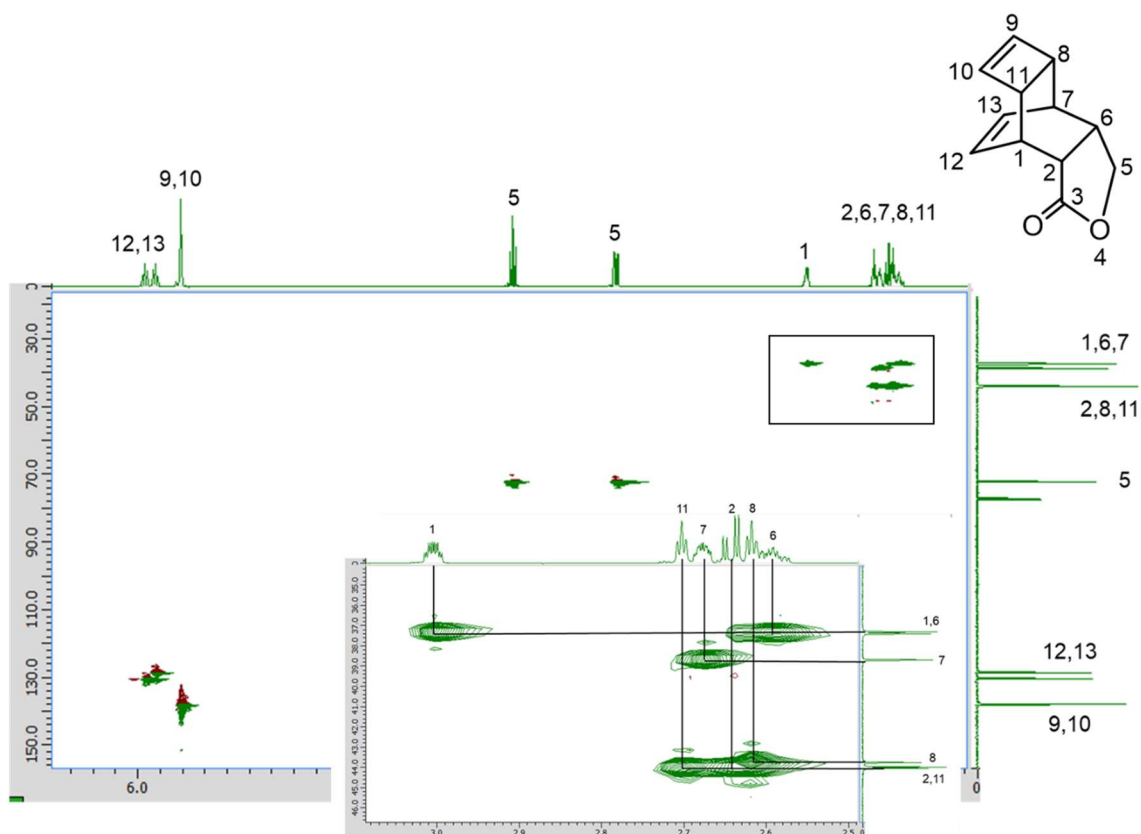


Figure S15. HSQC spectrum of **1**.

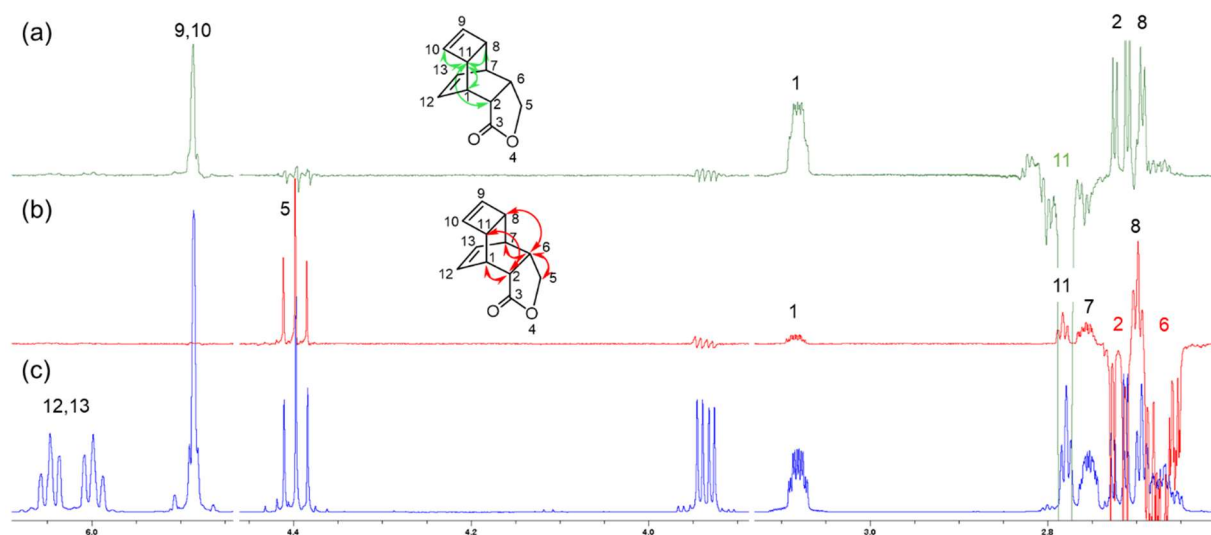


Figure S16. NOE spectra (a) and (b), and ^1H NMR spectrum (c) of **1** in CDCl_3 (700 MHz).

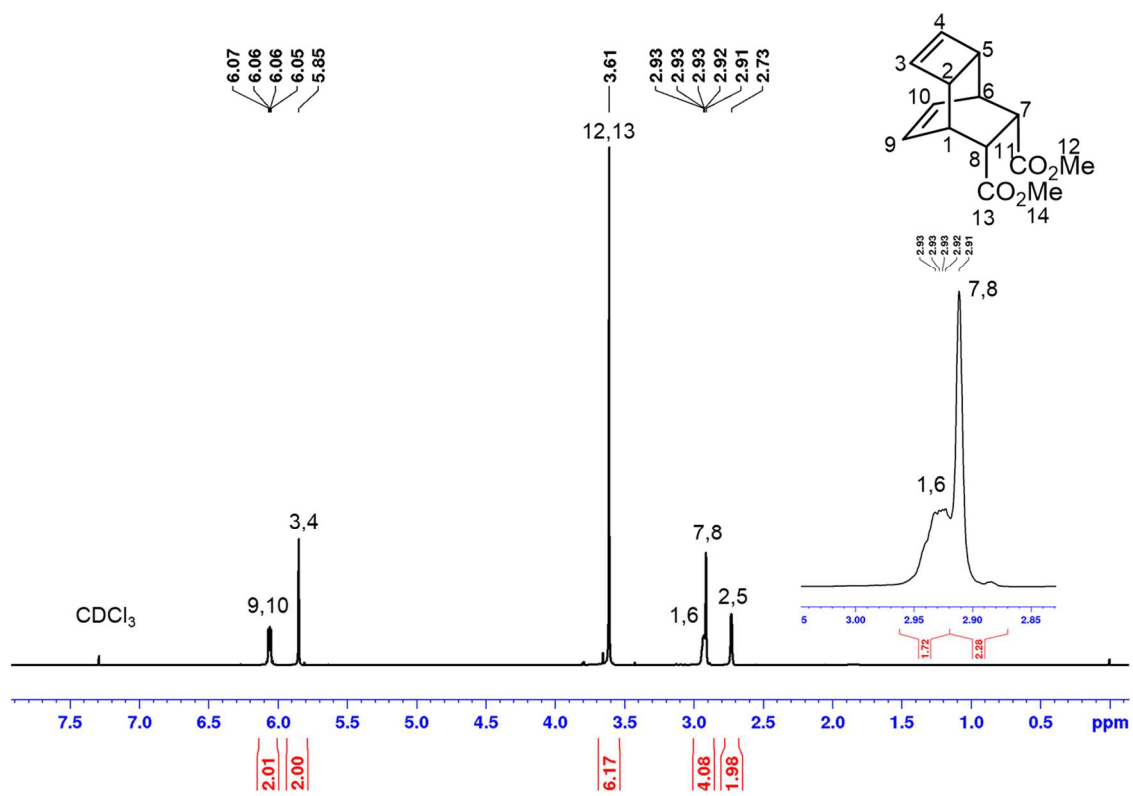


Figure S17. ^1H NMR spectrum of **2** in CDCl_3 (400 MHz).

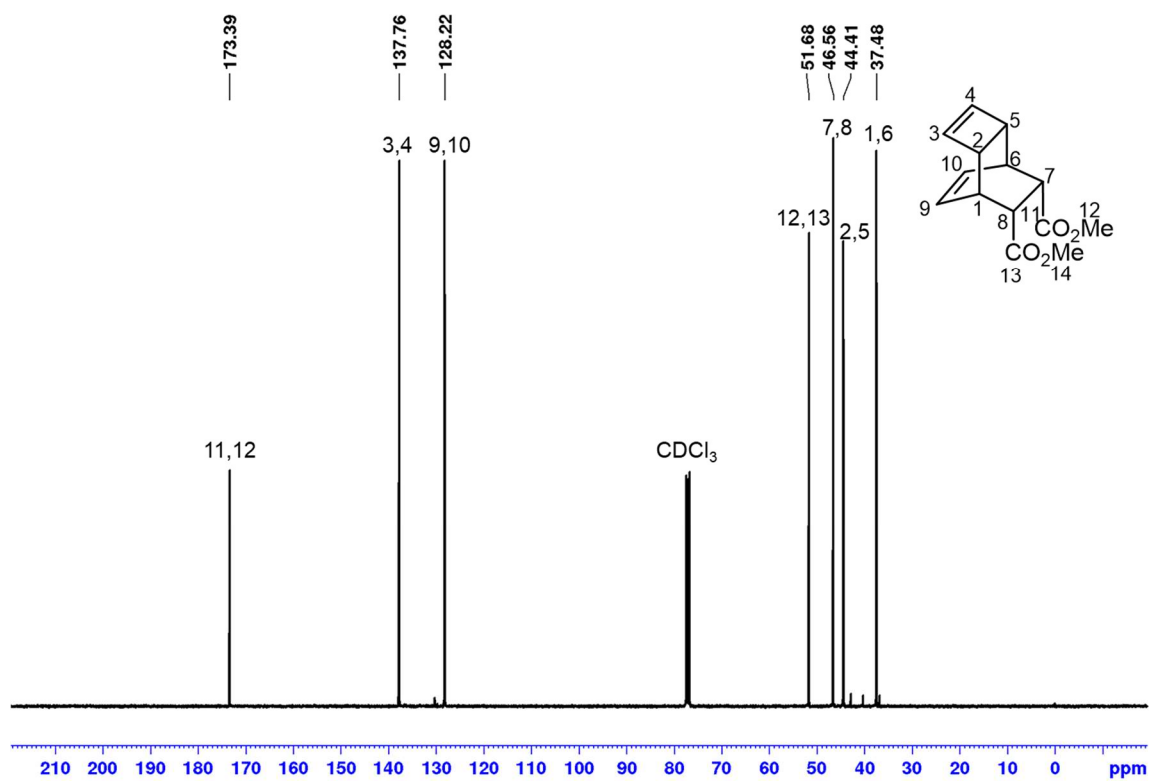


Figure S18. ^{13}C NMR spectrum of **2** in CDCl_3 (100 MHz).

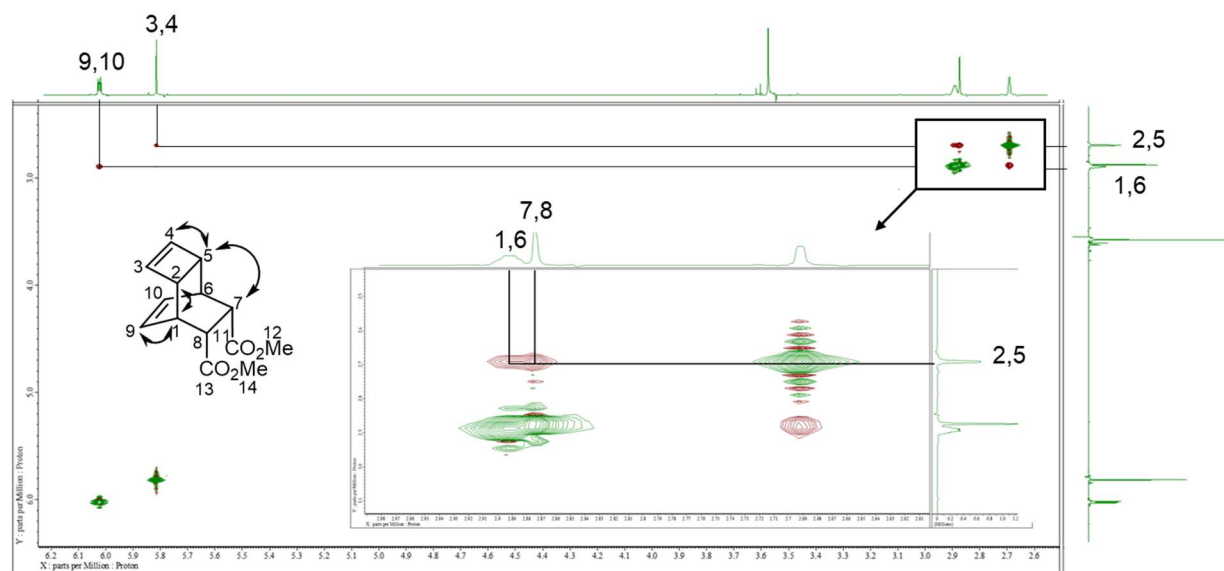
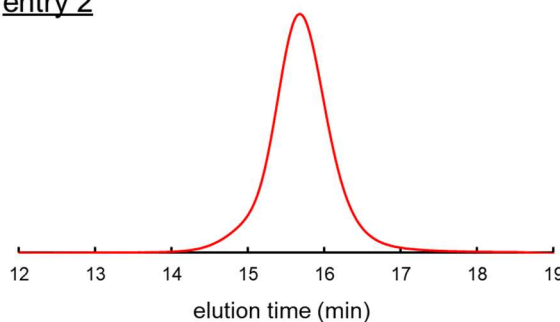
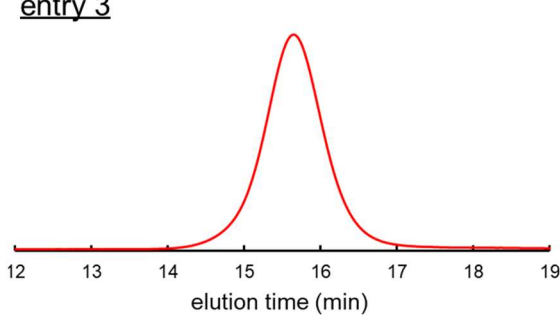


Figure S19. NOESY spectrum of **2**.

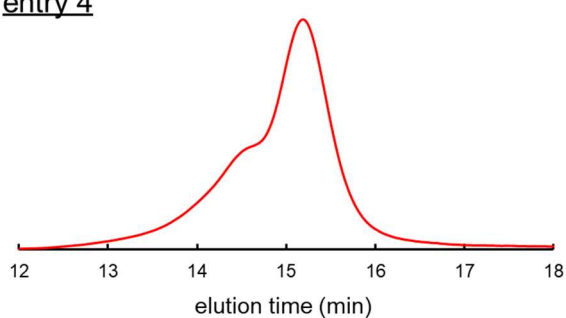
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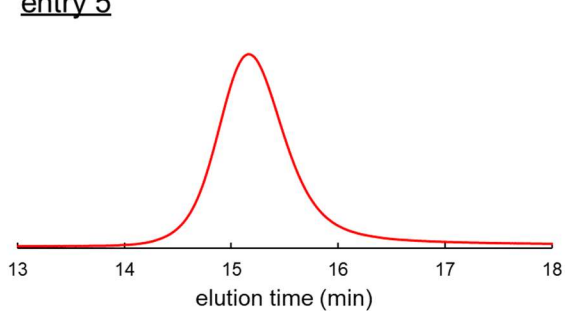
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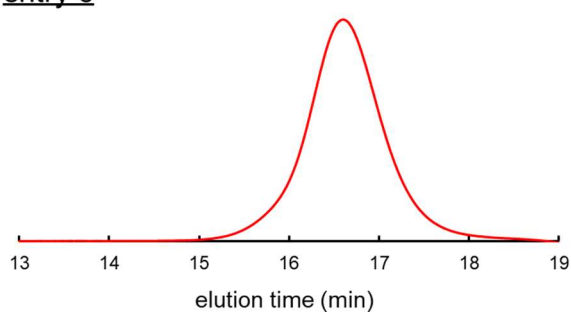
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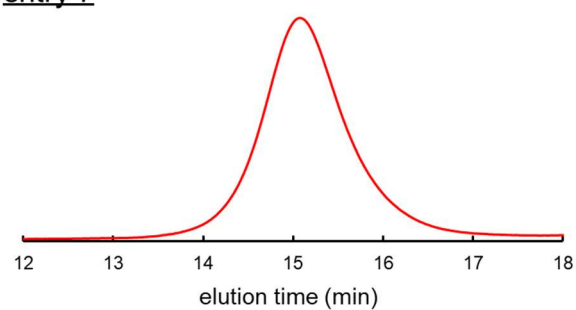
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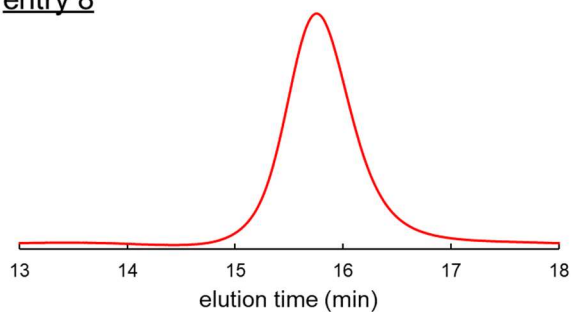
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entry 7



entry 8



entry 9

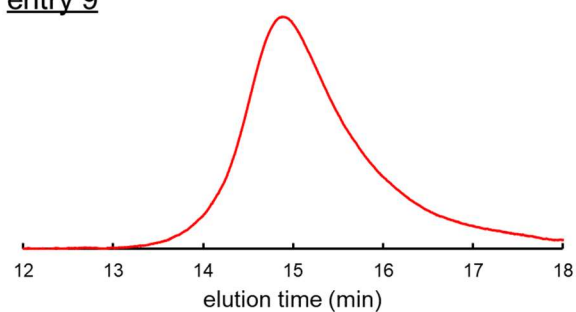
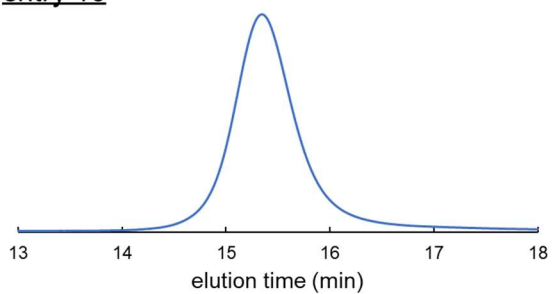
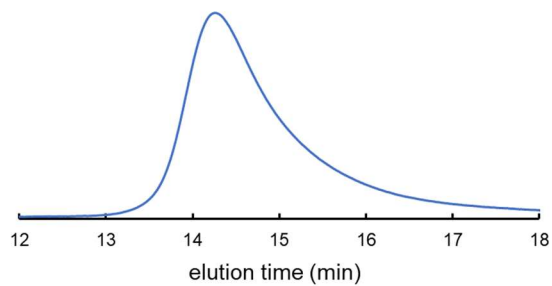


Figure S20. SEC profiles of poly1 shown in Table 1 (DMF eluent, PMMA standards).

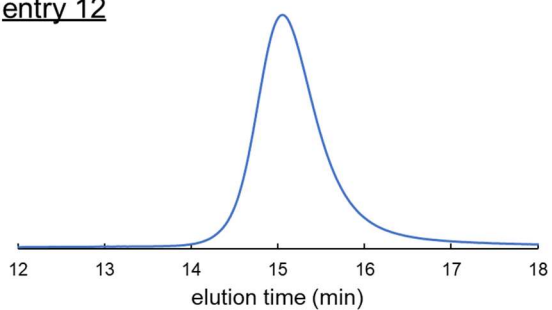
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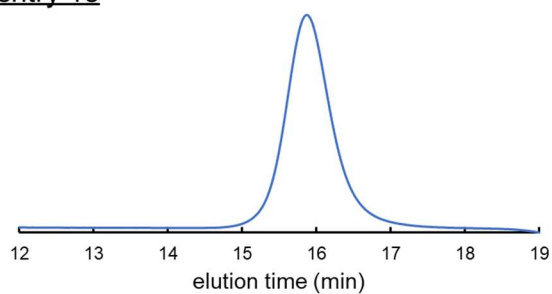
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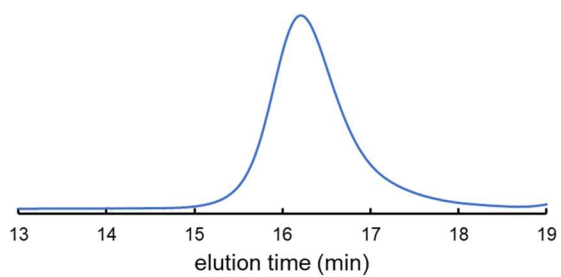
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entry 13



entry 14



entry 15

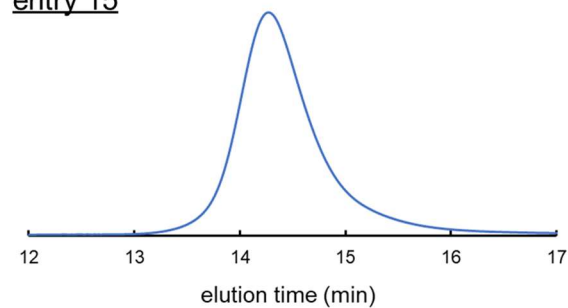


Figure S21. SEC profiles of poly2 shown in Table 1 (DMF eluent, PMMA standards).

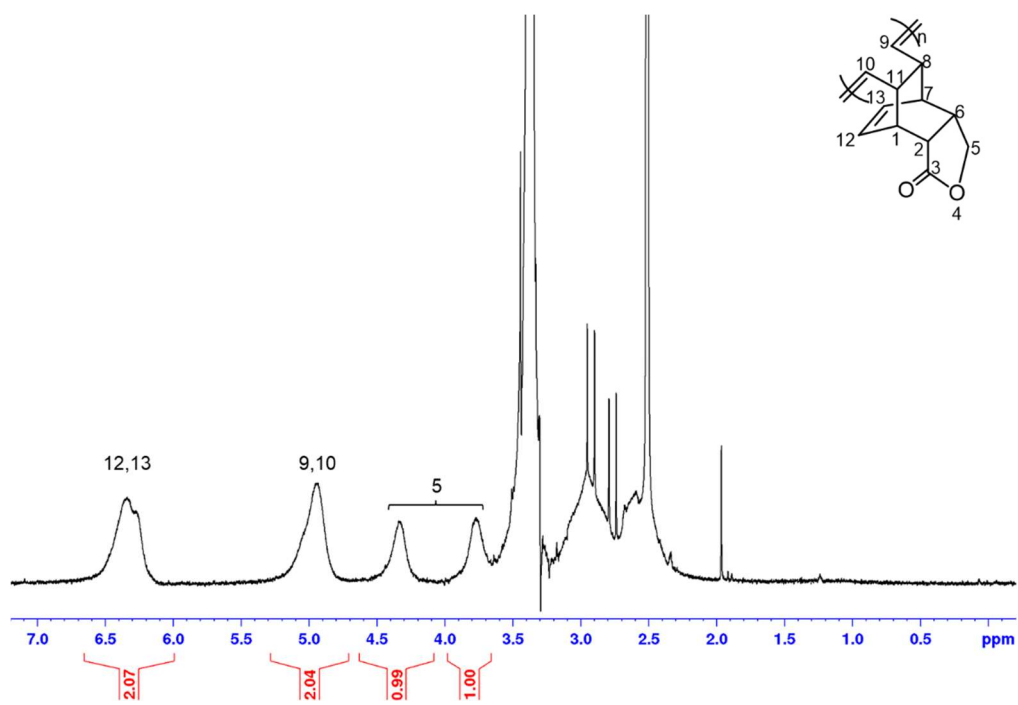


Figure S22. ¹H NMR spectrum of poly1 in DMSO-*d*₆ (400 MHz).

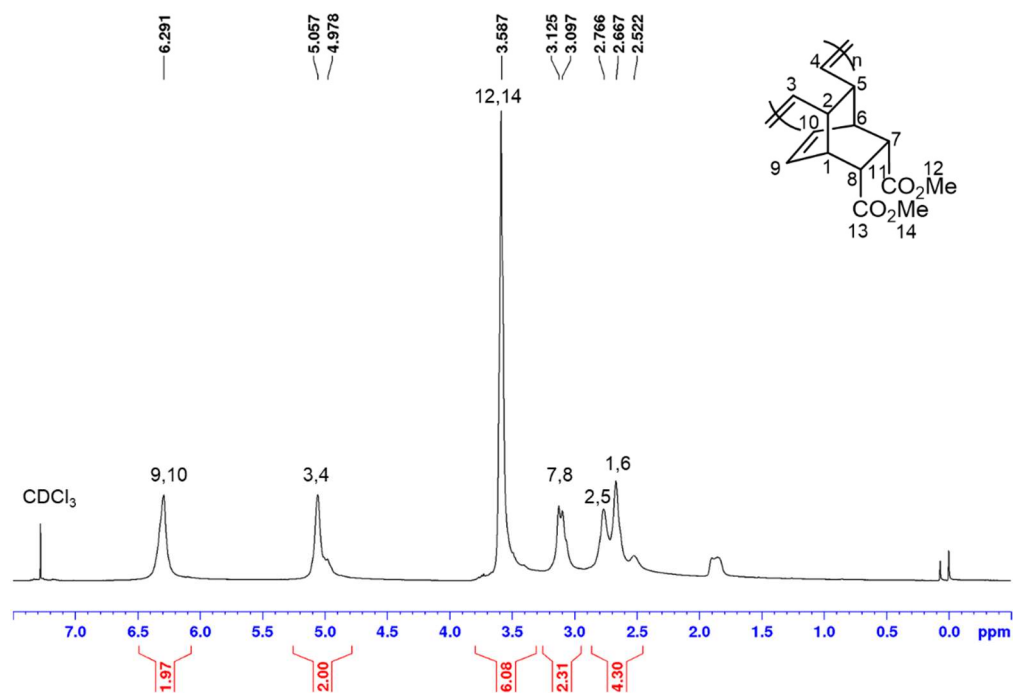


Figure S23. ¹H NMR spectrum of poly2 in CDCl₃ (400 MHz).

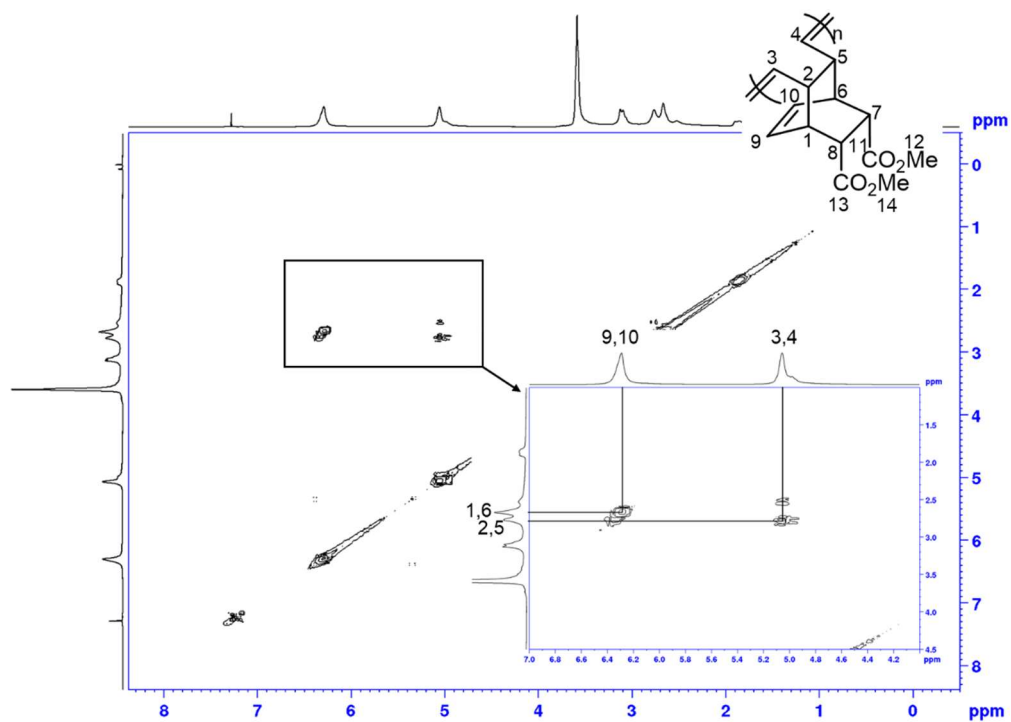


Figure S24. COSY spectrum of poly2.

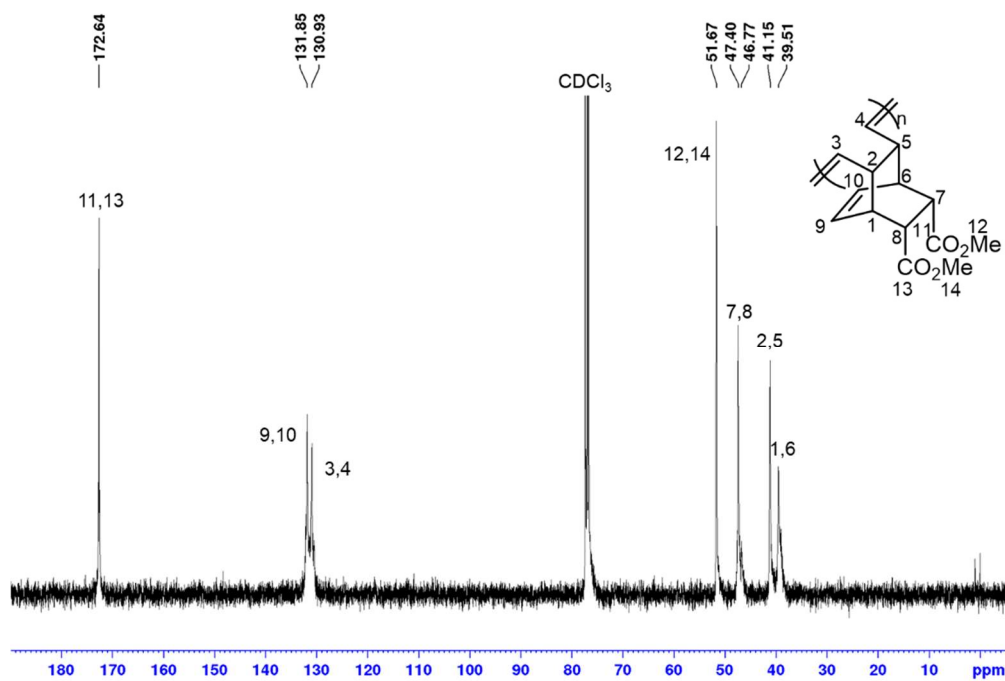


Figure S25. ¹³C NMR spectrum of poly2 in CDCl₃ (100 MHz).

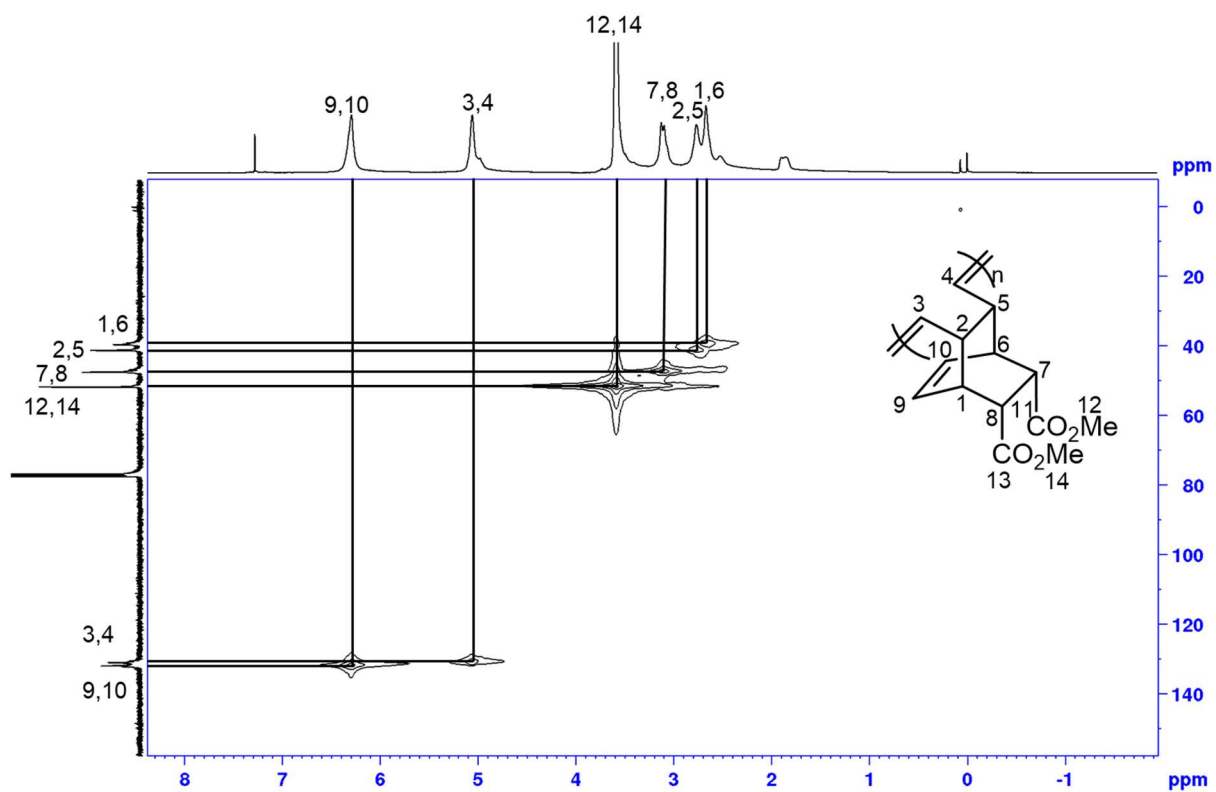


Figure S26. HMBC spectrum of poly2.

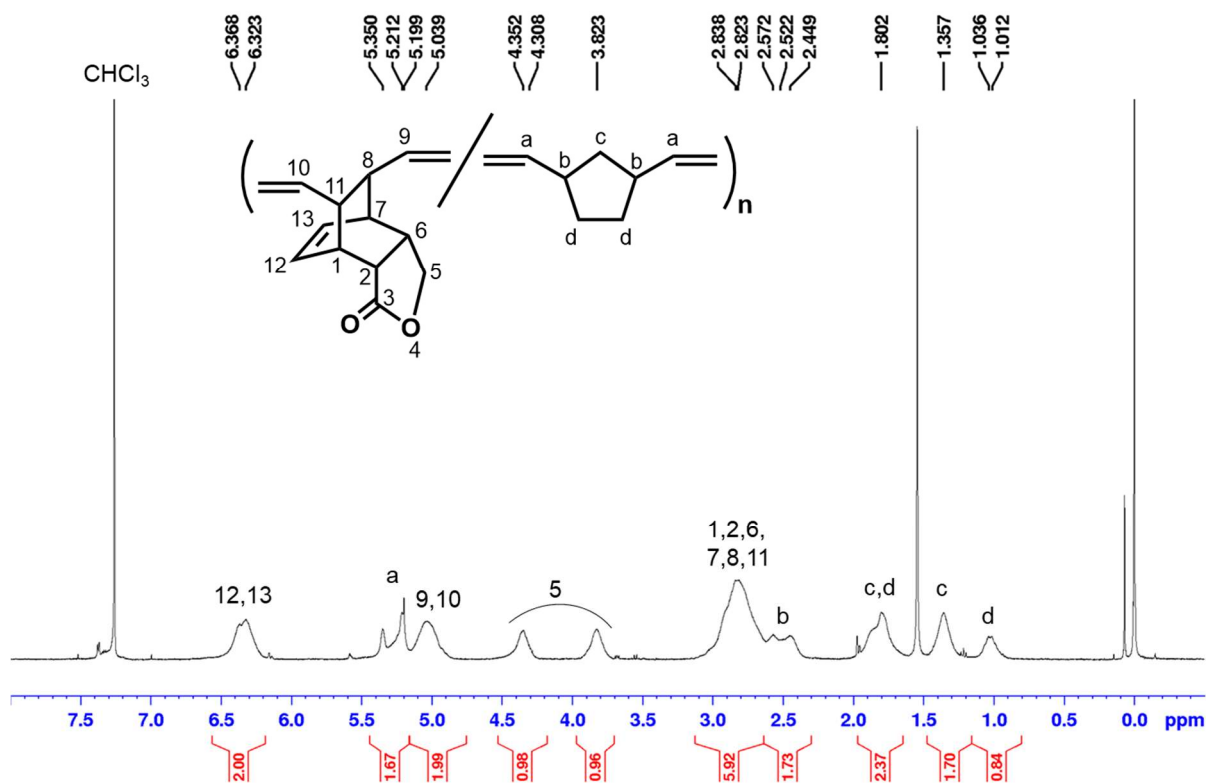


Figure S27. ¹H NMR spectrum of poly(1-co-NB) in CDCl₃ (400 MHz).

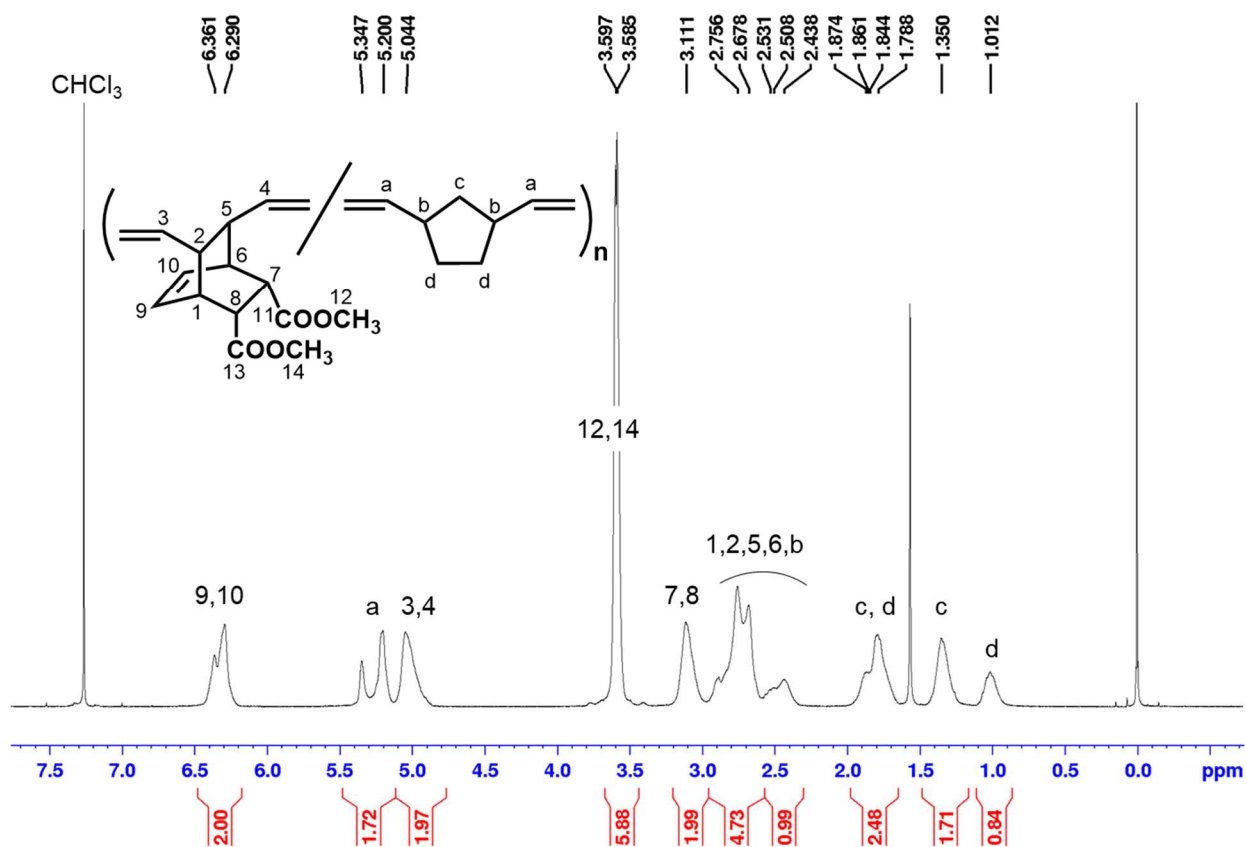


Figure S28. ^1H NMR spectrum of poly(2-co-NB) in CDCl_3 (400 MHz).