

SUPPORTING INFORMATION

Cationic Ring Opening Polymerization Of Five Membered Cyclic Dithiocarbonate Having Tertiary Amine Moiety

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Fig-S1. ¹H NMR of *N,N*-dibenzyl glycidylamine (DBGA)

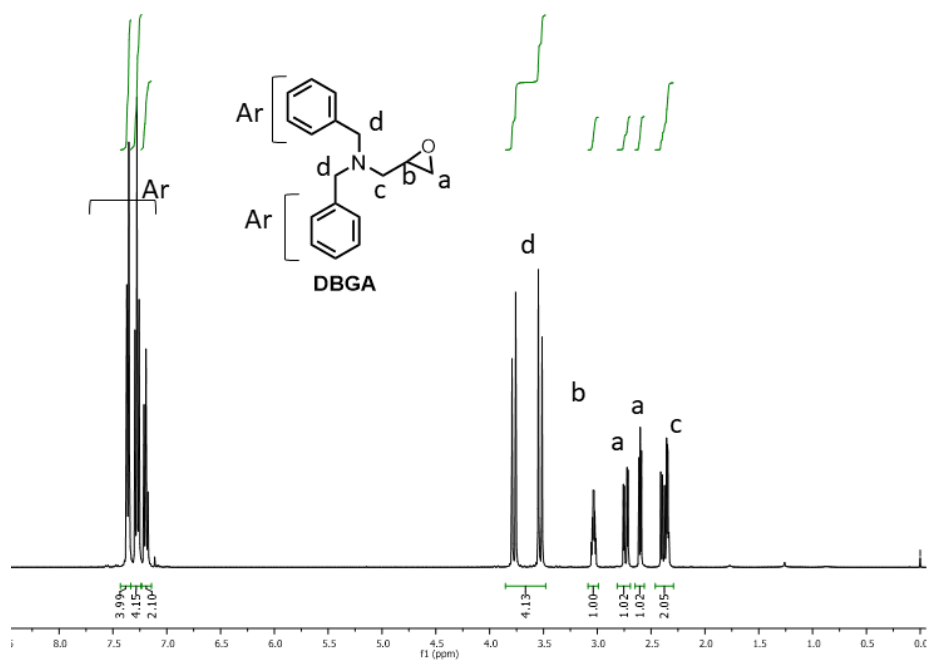


Fig-S2. ¹³C NMR *N,N*-dibenzyl glycidylamine (DBGA)

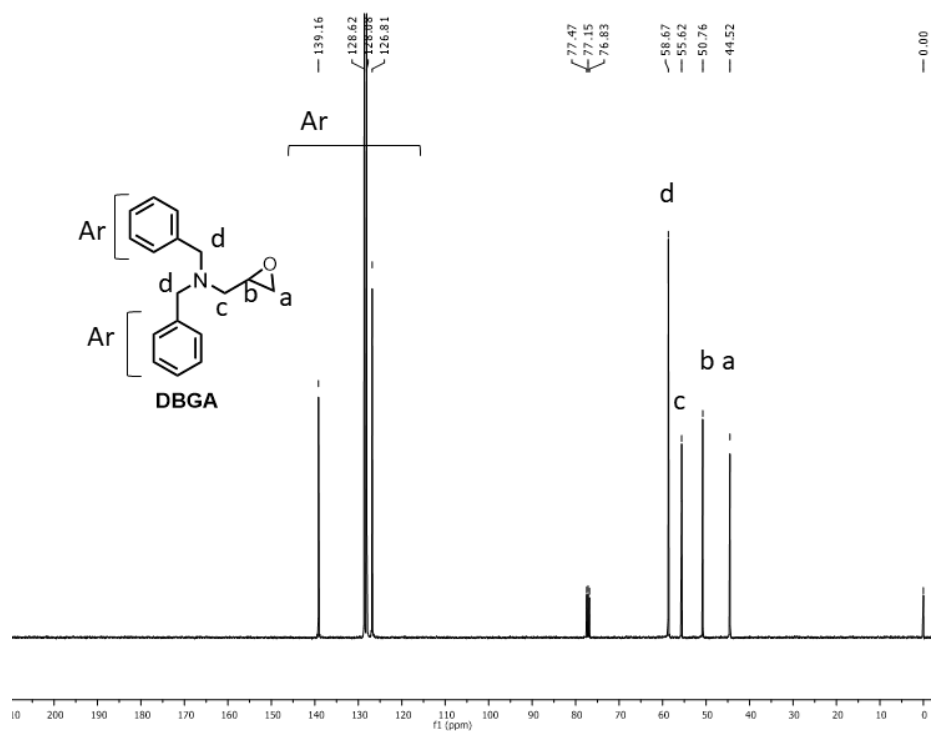


Fig-S3. ¹H NMR of 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (1)

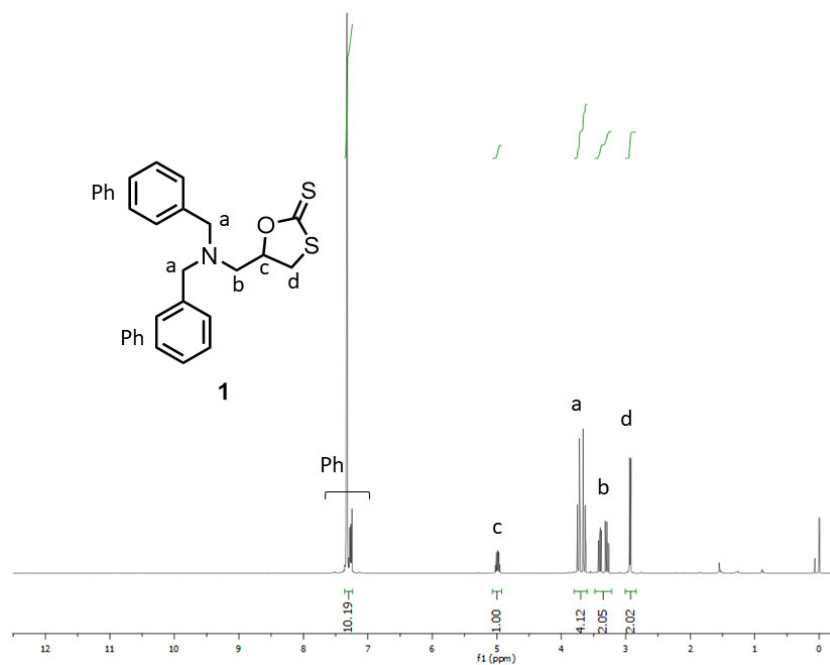


Fig-S4. ¹³C NMR of 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (1)

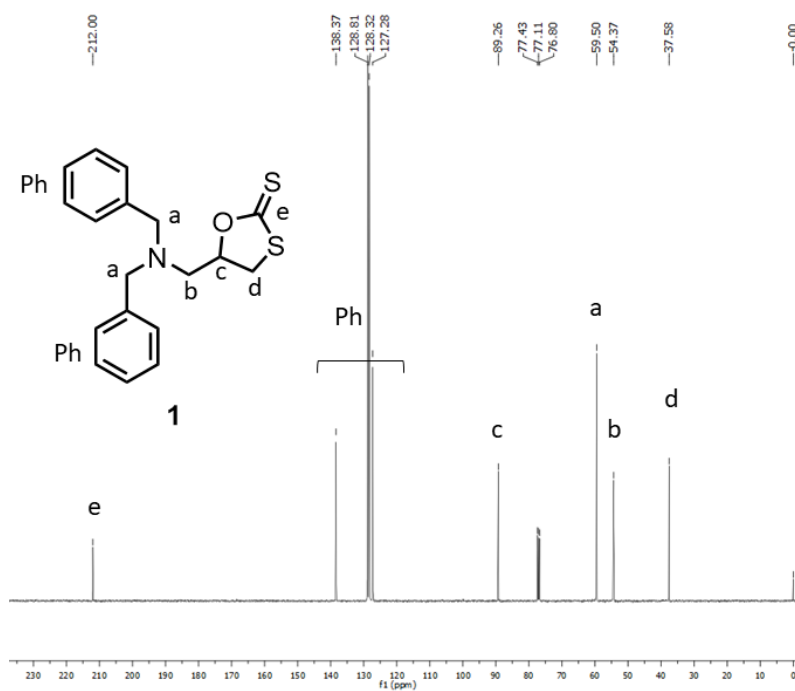


Fig-S5. ^1H NMR of 5-((diethylamino)methyl)-1,3-oxathiolane-2-thione (4)

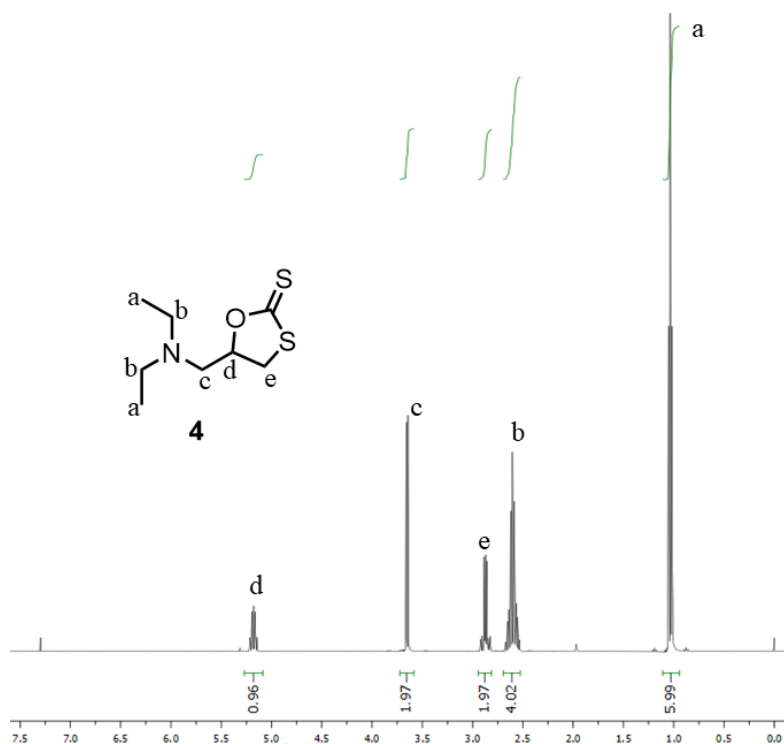


Fig-S6. ^{13}C NMR of 5-((diethylamino)methyl)-1,3-oxathiolane-2-thione (4)

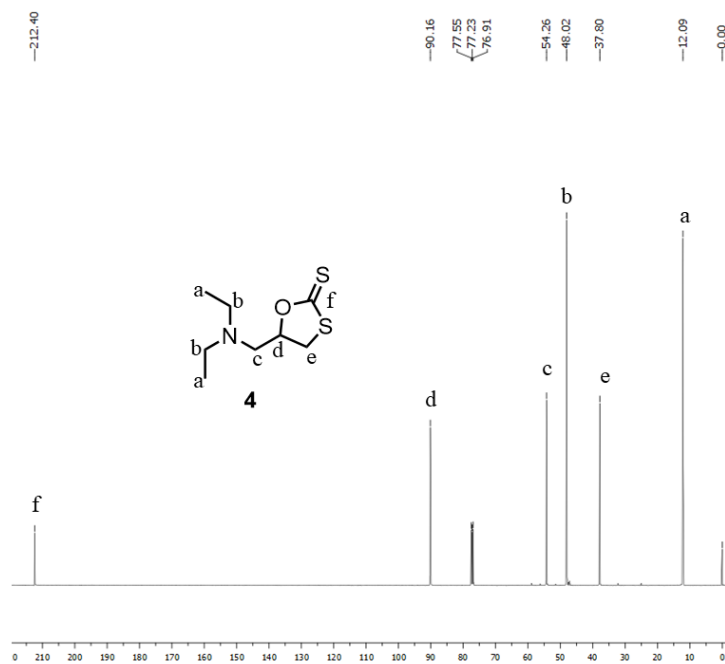


Fig-S7. ¹H NMR of Poly-1

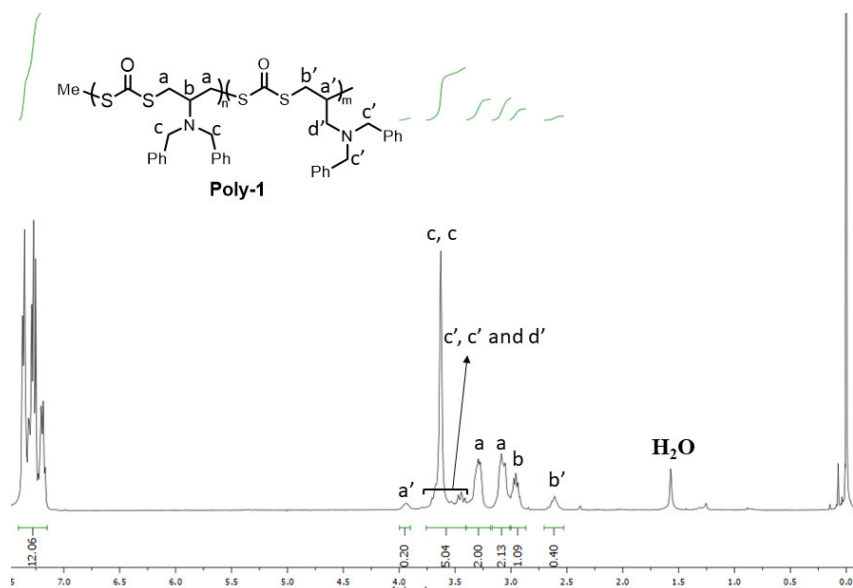


Fig-S8. ¹³C NMR of Poly-1

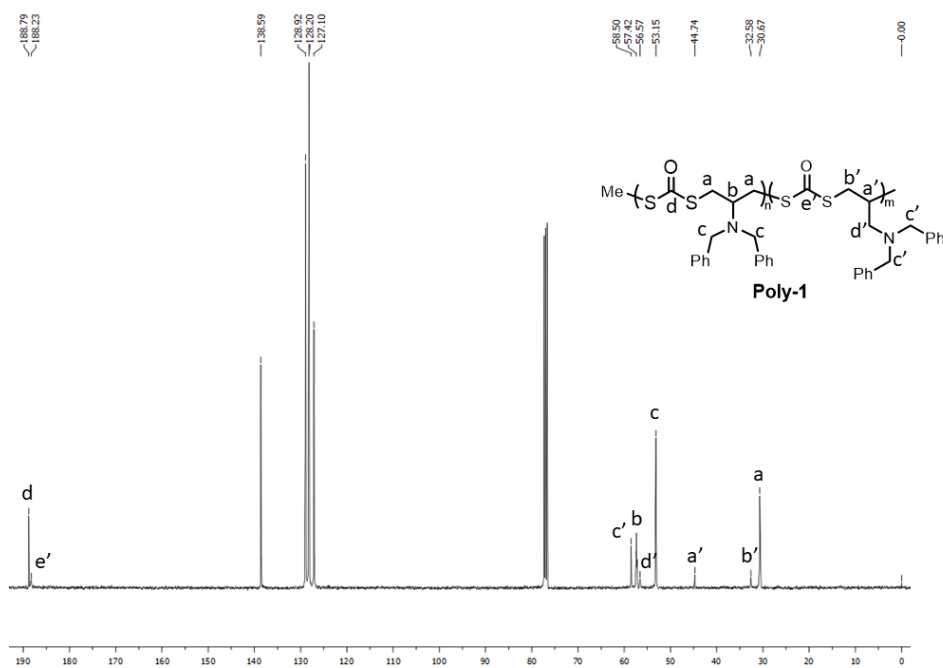


Fig-S9. DEPT135 of Poly-1

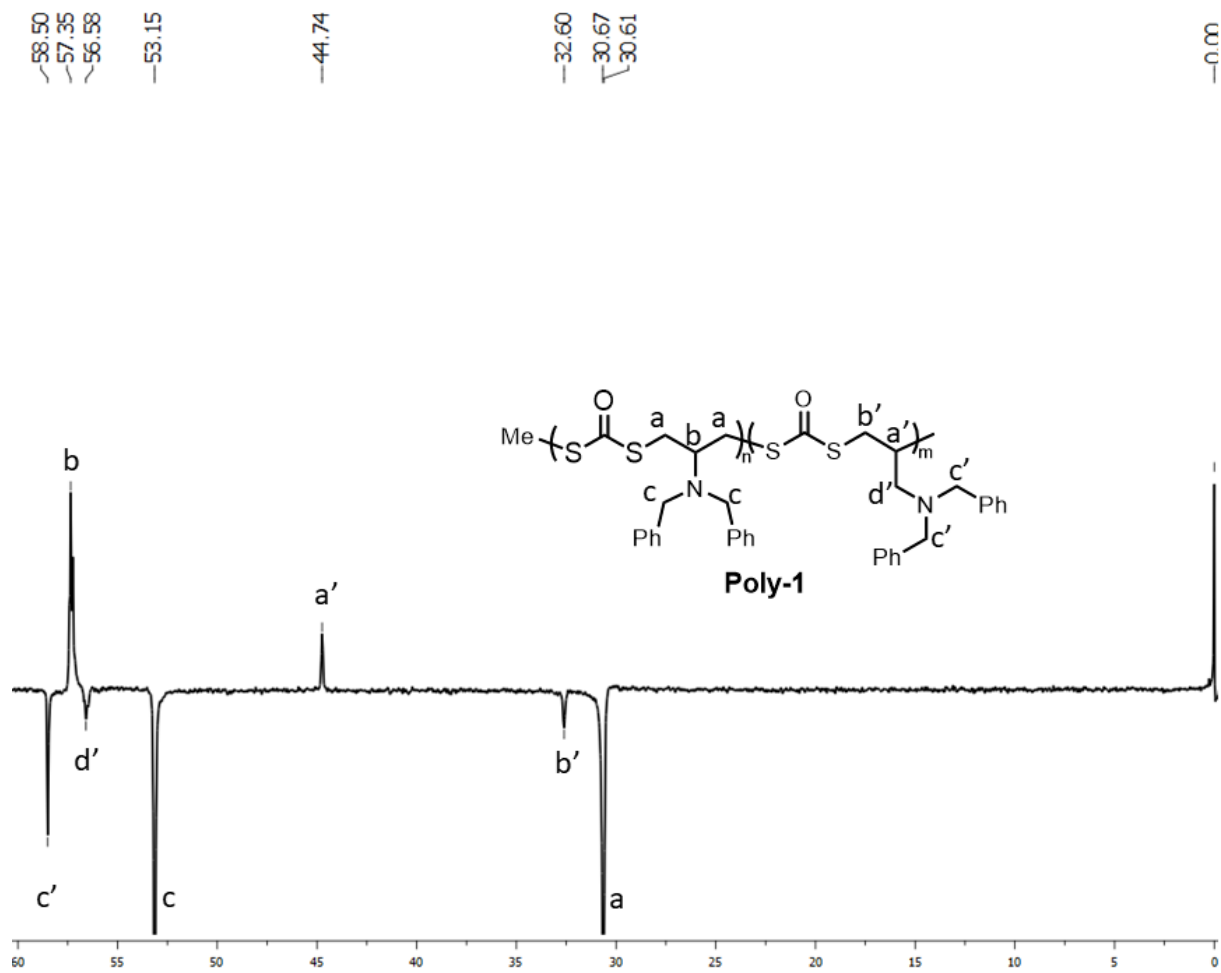


Fig-S10. ¹H NMR of polymerization solution of 4

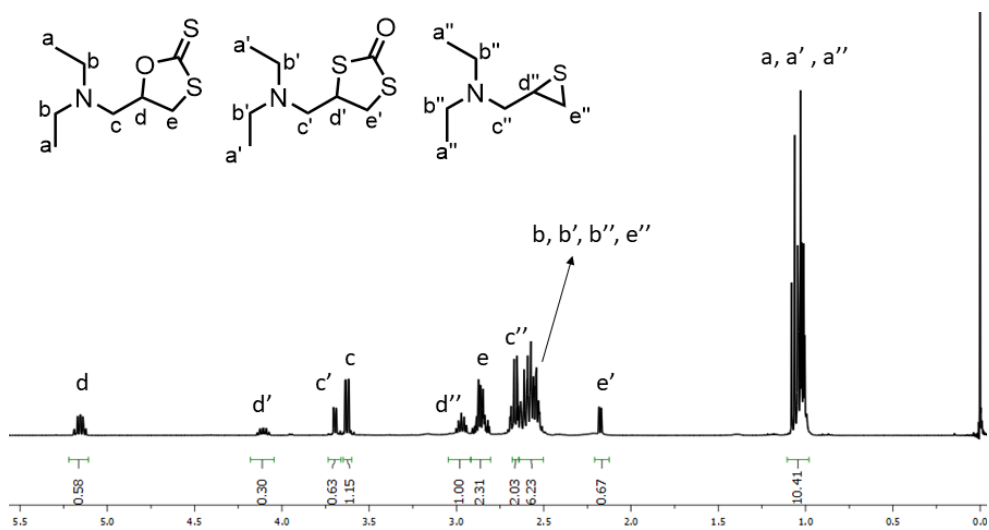


Fig-S11. ¹³C NMR of polymerization solution of 4

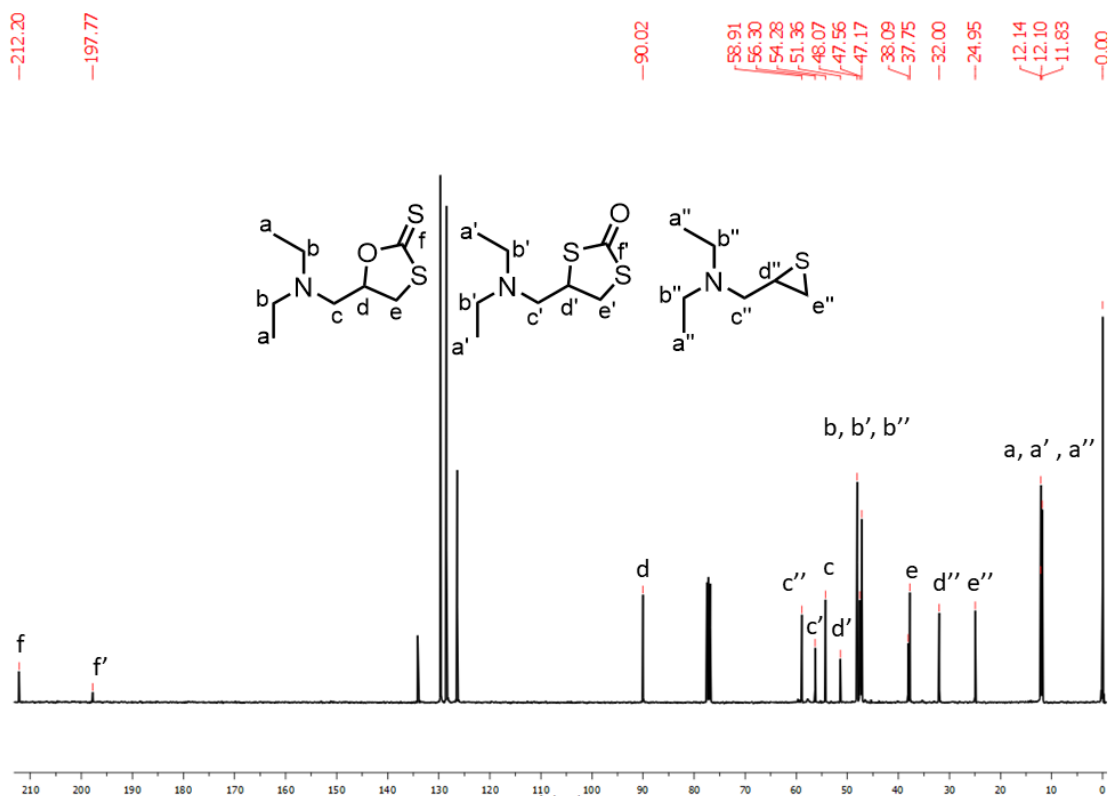


Fig-S12. DEPT-135 of polymerization solution of 4

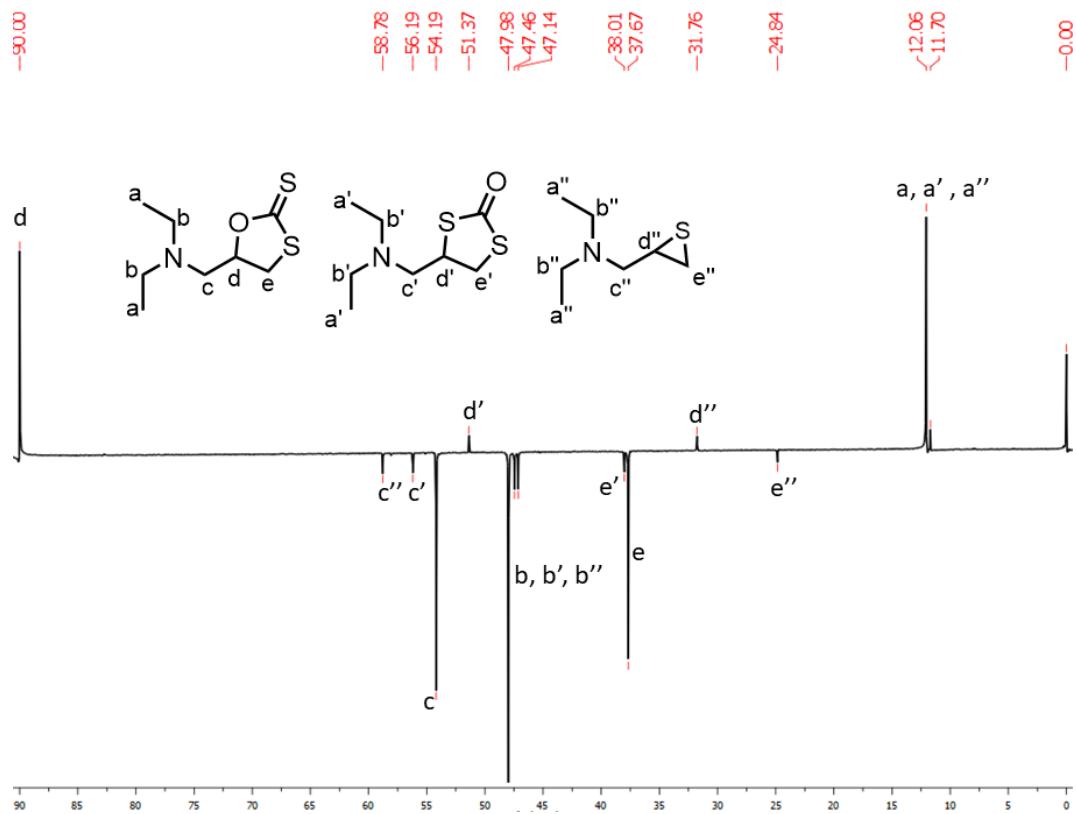


Fig-S13. ^1H NMR of stoichiometric reaction of 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (**1**) with MeOTf

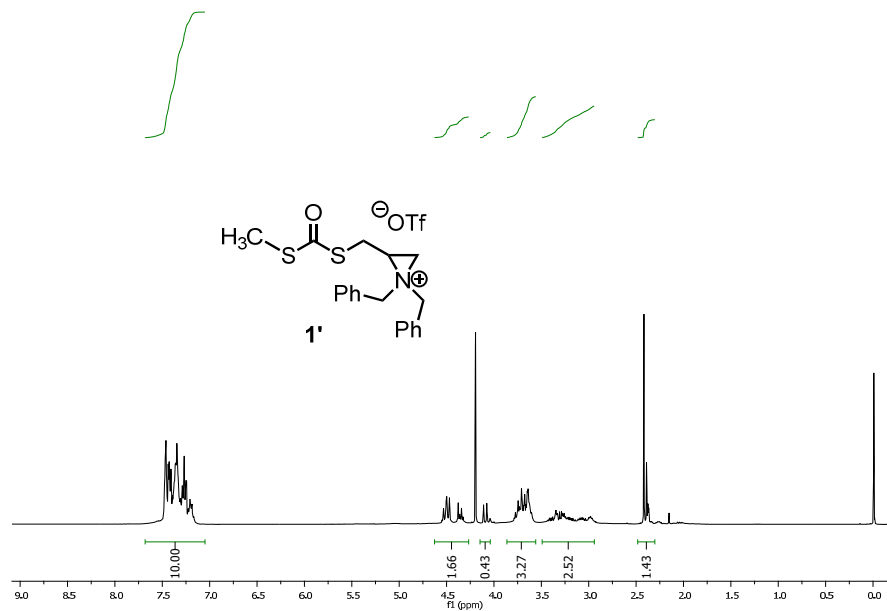


Fig-S14. ^{13}C NMR of stoichiometric reaction of 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (**1**) with MeOTf

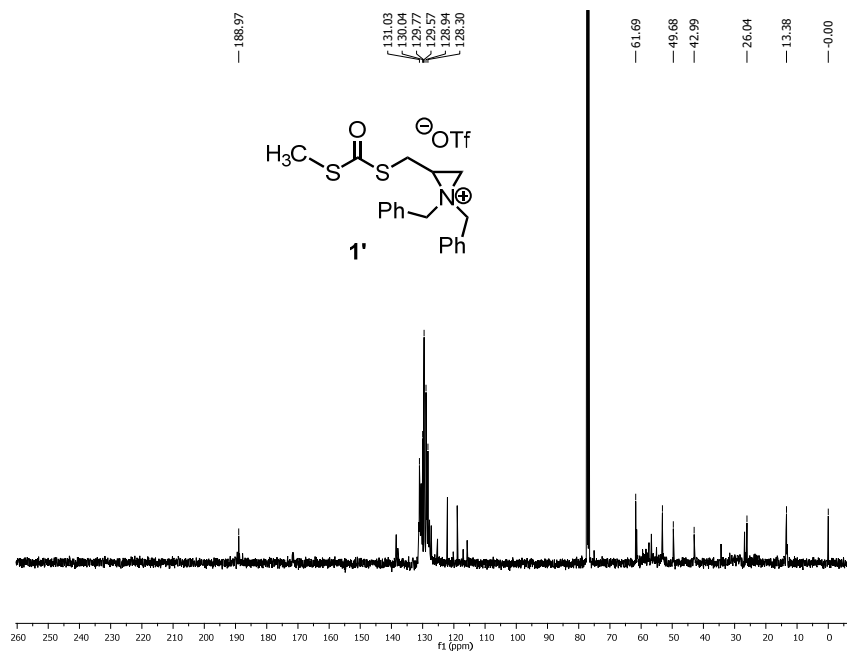


Fig-S15 ¹H NMR of *N,N,N*-tribenzyl-*N*-methyl ammonium triflate

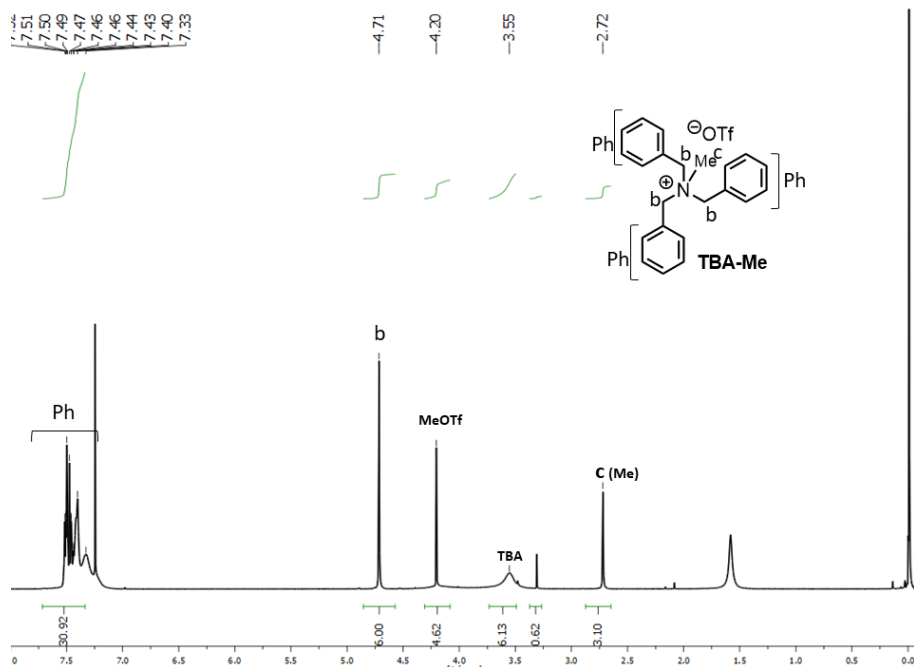


Fig-S16 ¹³C NMR of *N,N,N*-tribenzyl-*N*-methyl ammonium triflate

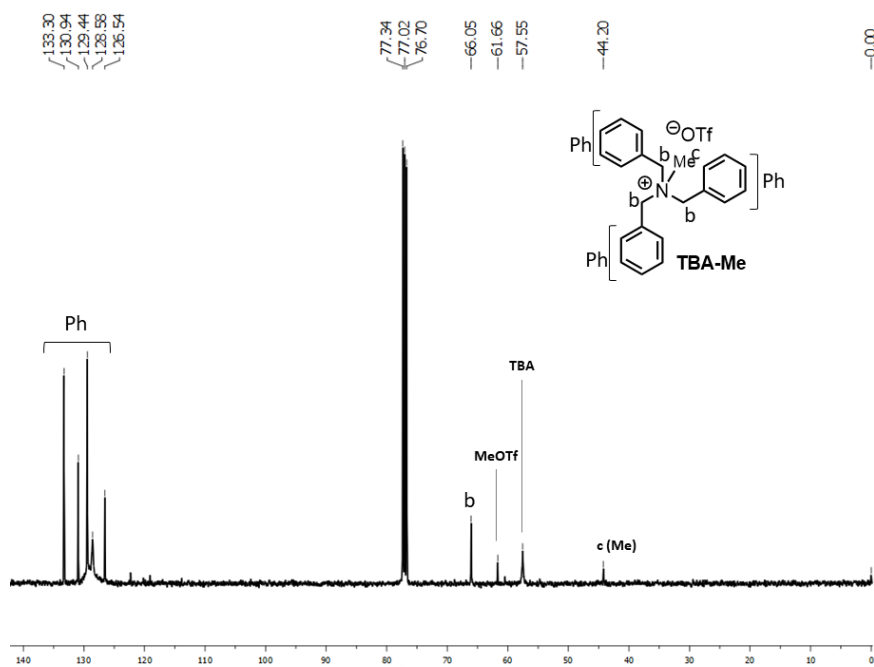


Fig-S17 ^1H NMR of *N,N,N*-triethyl-*N*-methyl ammonium triflate

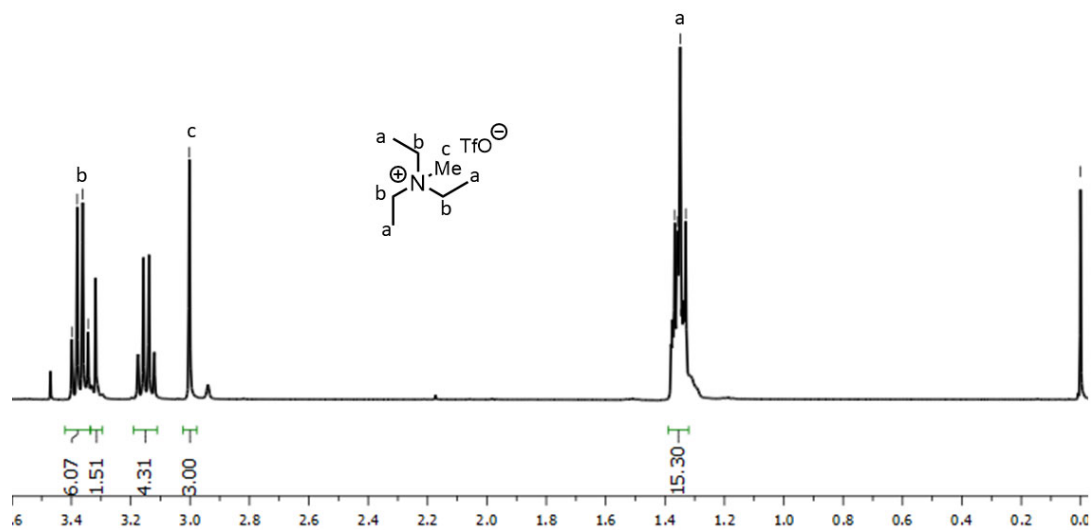


Fig-S18 ^{13}C NMR of *N,N,N*-triethyl-*N*-methyl ammonium triflate

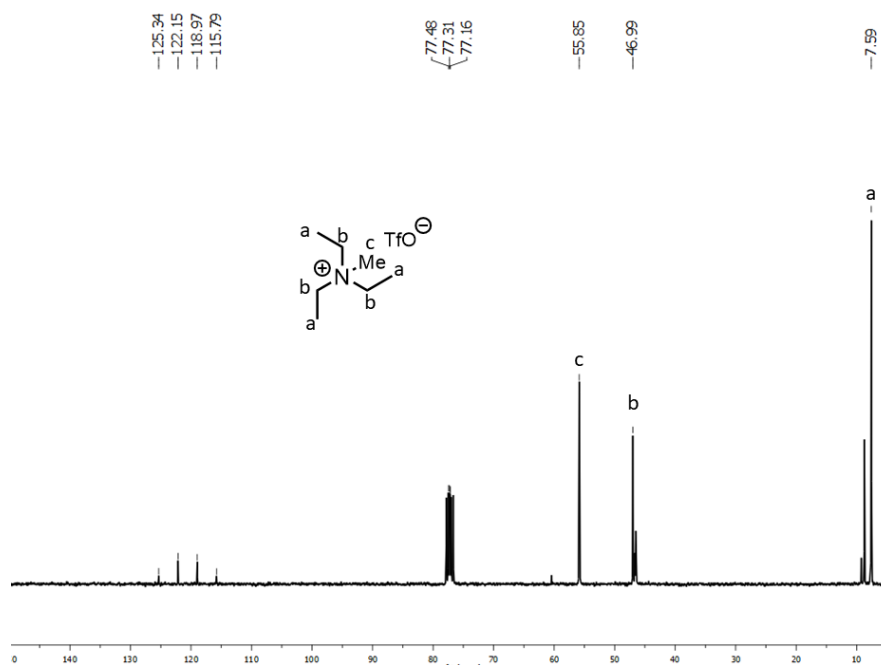


Fig-S19. Positive FAB Mass Spectra of 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (**1**) ($[M+H]^+ = 330$)

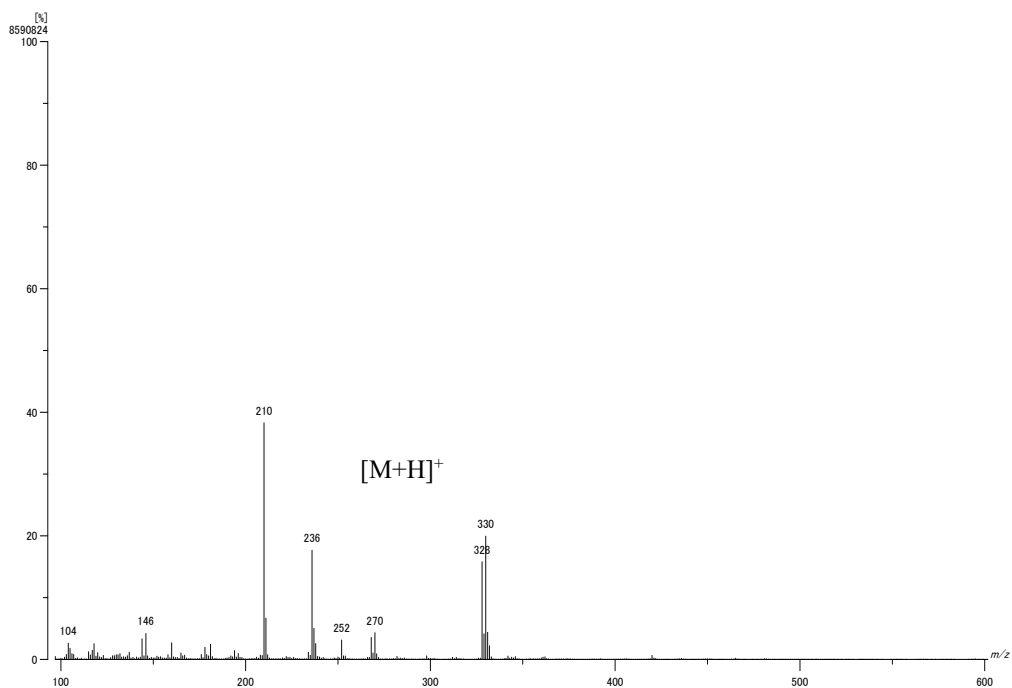


Fig-S20. Positive FAB Mass Spectra of 5-((diethylamino)methyl)-1,3-oxathiolane-2-thione (**4**) ($[M+H]^+ = 206$)

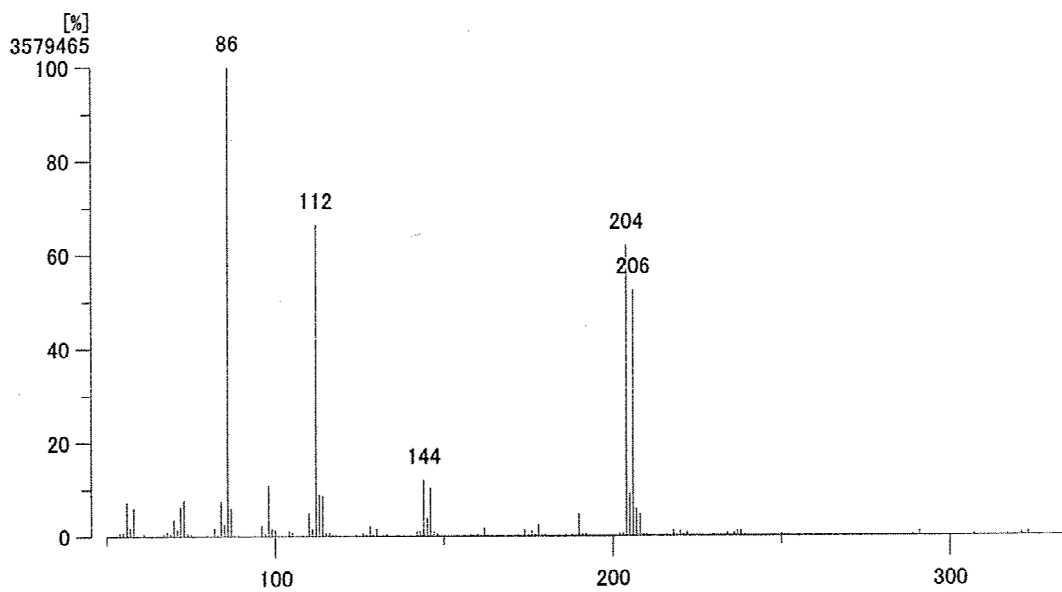


Fig-S21. IR Spectra of 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (1)

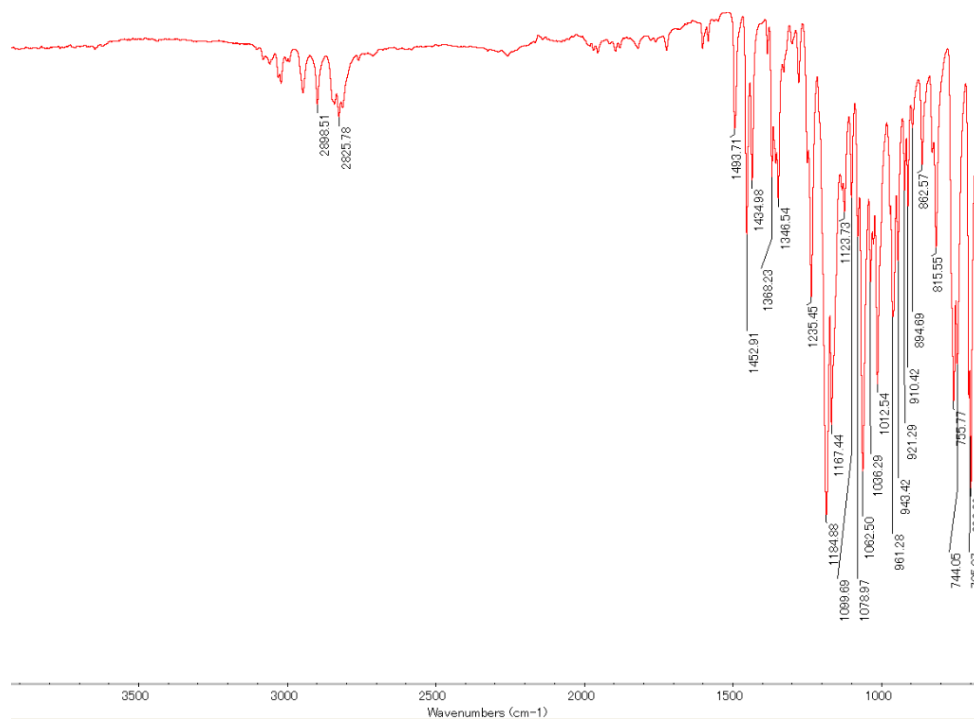


Fig-S22. IR Spectra of Poly-1

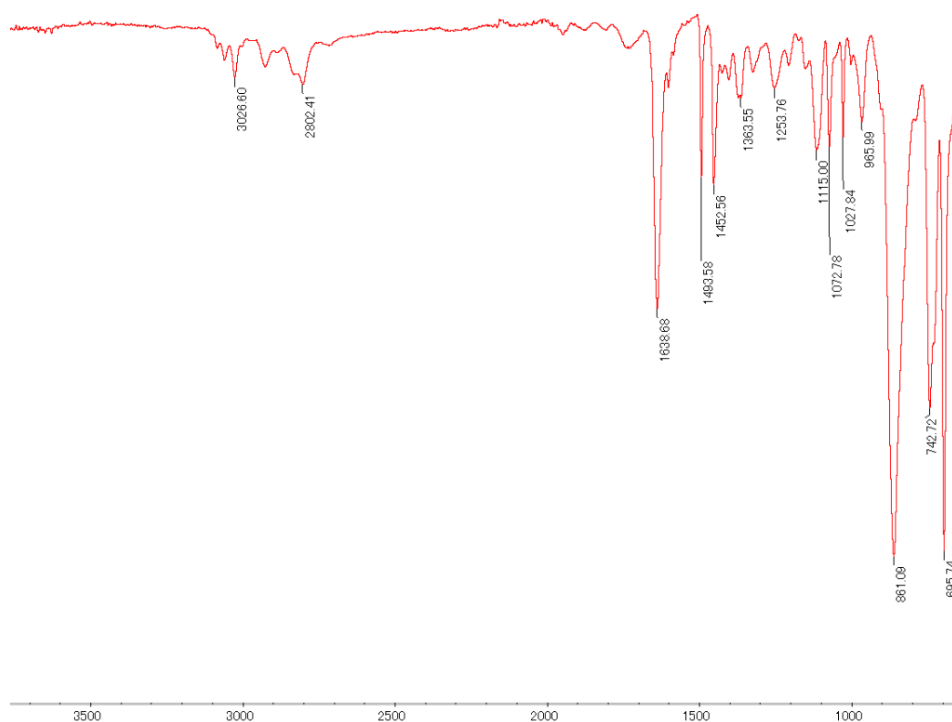


Fig-S23. IR Spectra of 5-((diethylamino)methyl)-1,3-oxathiolane-2-thione (4)

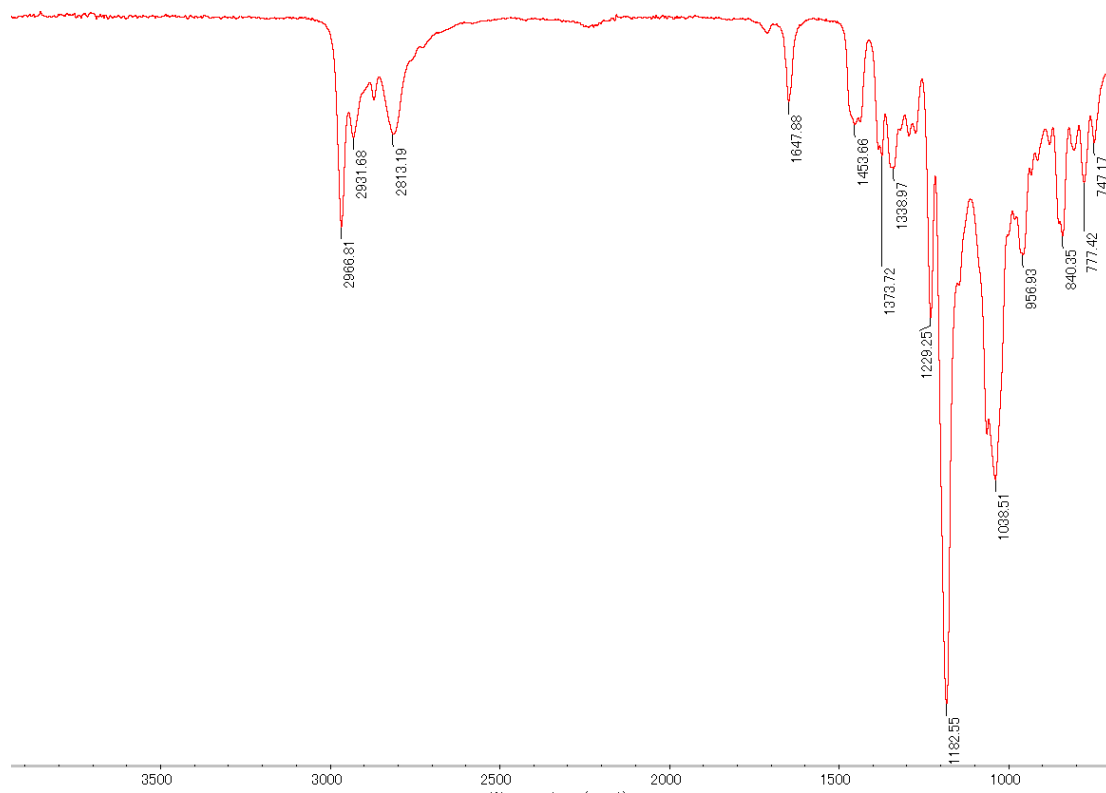


Fig-S24. Thermogravimetric analysis of **Poly-1**

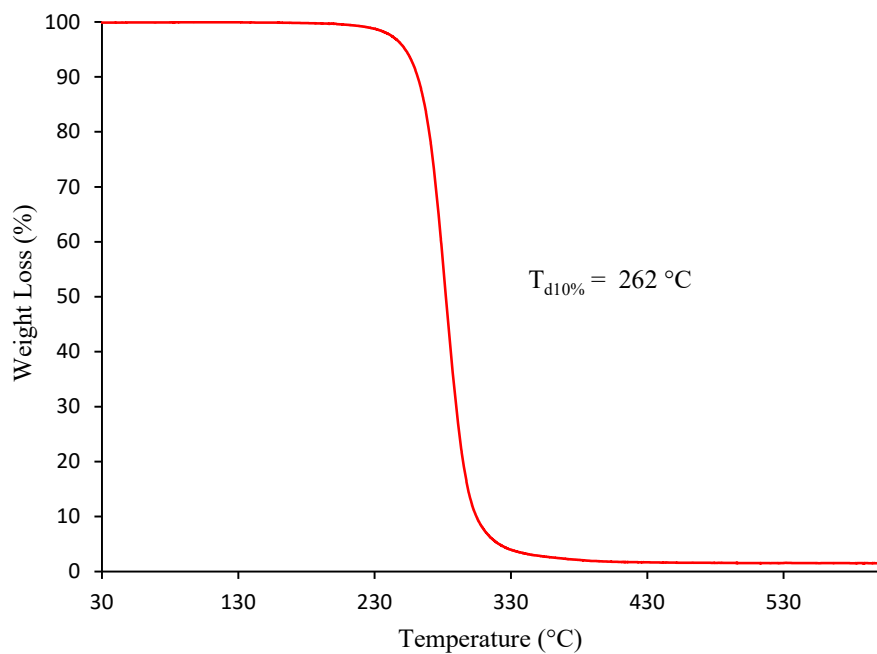


Fig-S25. Differential scanning calorimetry of **Poly-1**

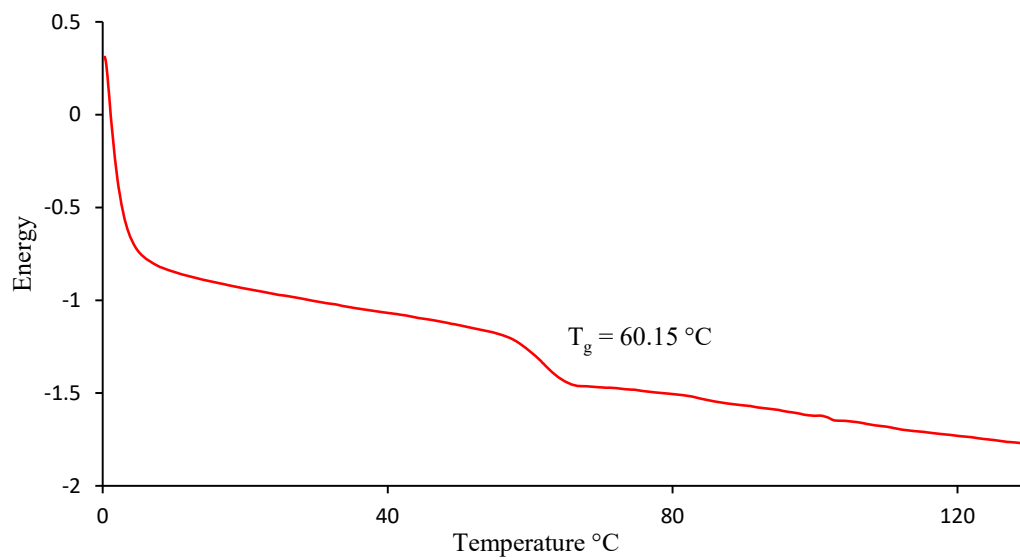
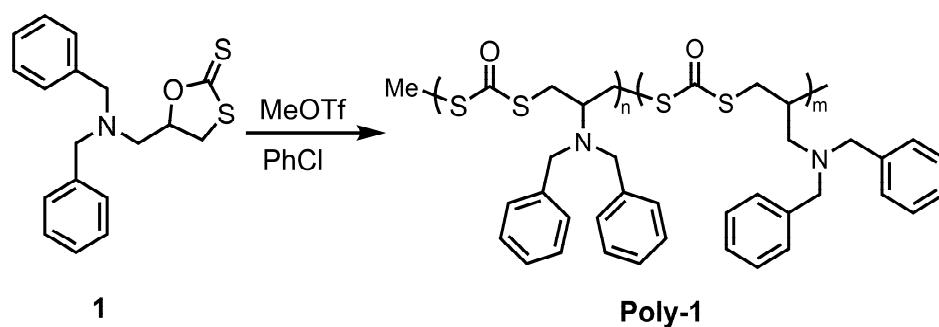


Table 1. Crystal data and structure refinement for 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (1)

Identification code	5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (1)
Empirical formula	C ₁₈ H ₁₉ N ₁ O ₁ S ₂
Formula weight	329.46
Temperature/K	90
Crystal system	orthorhombic
Space group	P2 ₁ 2 ₁ 2 ₁
a/Å	8.4425(4)
b/Å	10.2492(3)
c/Å	19.6013(8)
α/°	90
β/°	90
γ/°	90
Volume/Å ³	1696.08(12)
Z	4
ρ _{calc} /mm ³	1.290
μ/mm ⁻¹	2.841
F(000)	696.0
Crystal size/mm ³	0.055 × 0.047 × 0.029
2θ range for data collection	9.024 to 152.446°
Index ranges	-9 ≤ h ≤ 10, -12 ≤ k ≤ 8, -20 ≤ l ≤ 24
Reflections collected	9646
Independent reflections	3384[R(int) = 0.0222]
Data/restraints/parameters	3384/0/199
Goodness-of-fit on F ²	1.072
Final R indexes [I ≥ 2σ(I)]	R ₁ = 0.0243, wR ₂ = 0.0624
Final R indexes [all data]	R ₁ = 0.0257, wR ₂ = 0.0630
Largest diff. peak/hole / e Å ⁻³	0.18/-0.18
Flack parameter	0.056(6)



Time-Conversion study of Cationic Polymerization of 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (1) to Poly-1 at room temperature

To a solution of **1** (0.329 g, 1.0 mmol) in chlorobenzene (1.0 mL) was added MeOTf (5 mol%, 5 μ L; $[\mathbf{M}]_0/[\mathbf{I}]_0 = 20$) and stirred at ambient temperature. To measure the conversion at 30 min, 1h, 2h, 3h, 4h and 6h an aliquot was taken quenched with TEA, then ^1H NMR and GPC of the sample was measured to determine the conversion and molar mass (M_n) respectively.

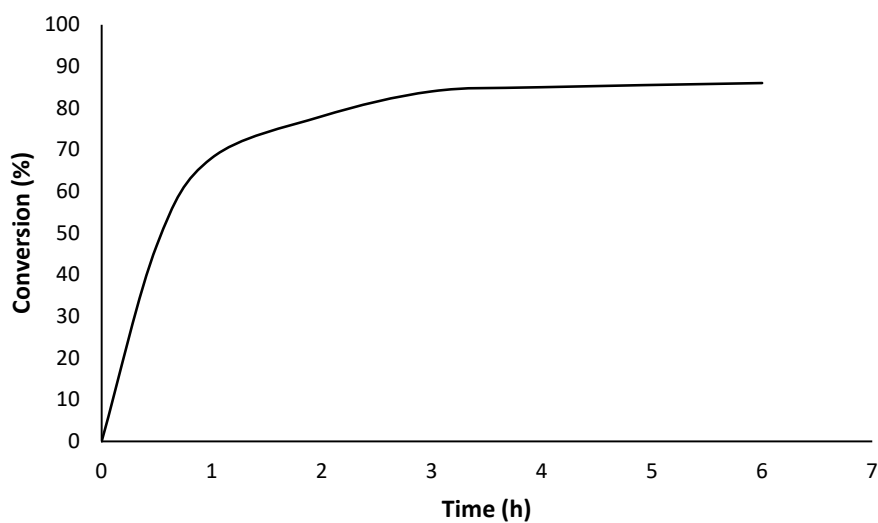


Figure S26: Time-conversion plot for the polymerization of 5-((dibenzylamino)methyl)-1,3-oxathiolane-2-thione (**1**) with MeOTf in chlorobenzene (1.0 M) at 30 °C, ($[\mathbf{1}]_0/[\text{MeOTf}]_0 = 20.0$)

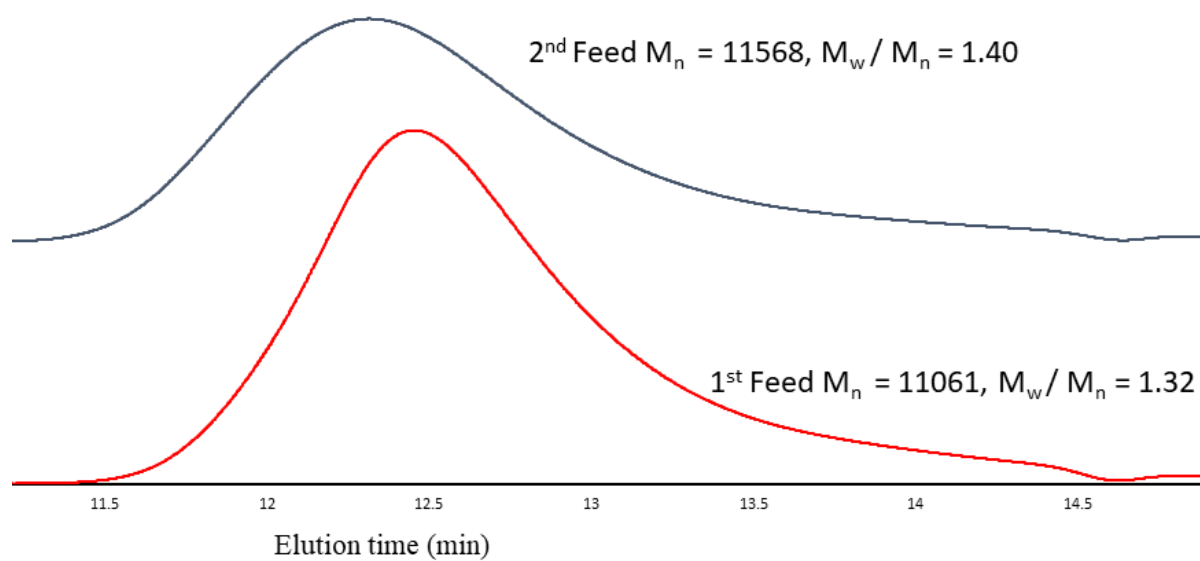


Figure S27. SEC profiles before and after the post-polymerization experiment of **1** to Poly-**1**: first-stage polymerization, $M_n = 11061$, $M_w/M_n = 1.32$; Poly-**1**: post polymer obtained in the second stage polymerization, $M_n = 11568$, $M_w/M_n = 1.40$

*****End*****