

Supplementary Information
for
**Isoselective Ring-Opening Polymerization of *rac*-Lactide Catalyzed by Simple
Potassium Amidates Complexes Containing Polycyclic Aryl Group**

Table of contents

Figure S1. ^1H NMR and ^{13}C NMR spectra of **K1** (recorded in d_6 -DMSO).

Figure S2. ^1H NMR and ^{13}C NMR spectra of **K2** (recorded in d_6 -DMSO).

Figure S3. ^1H NMR and ^{13}C NMR spectra of **K3** (recorded in d_6 -DMSO).

Figure S4. ^1H NMR and ^{13}C NMR spectra of **K4** (recorded in d_6 -DMSO).

Figure S5. ^1H NMR and ^{13}C NMR spectra of **K5** (recorded in d_6 -DMSO).

Figure S6. ^1H NMR and ^{13}C NMR spectra of **K6** (recorded in d_6 -DMSO).

Figure S7. ^1H NMR and ^{13}C NMR spectra of **K7** (recorded in d_6 -DMSO).

Figure S8. ^1H NMR and ^{13}C NMR spectra of **K8** (recorded in d_6 -DMSO).

Figure S9. ^1H NMR and ^{13}C NMR spectra of **K9** (recorded in d_6 -DMSO).

Figure S10. ^1H NMR and ^{13}C NMR spectra of **K10** (recorded in d_6 -DMSO).

Figure S11. MALDI-TOF spectrum of PLA obtained by **K2** and 1 equiv. of BnOH.

Figure S12. ^1H NMR spectra of obtained PLA by **K2** and 1 equiv. of BnOH.

Figure S13. MALDI-TOF spectrum of PLLA obtained by **K2** and 2 equiv. of BnOH.

Figure S14. ^1H NMR spectra of obtained PLA by **K2** and 2 equiv. of BnOH.

Figure S15. MALDI-TOF spectrum of PLLA obtained by **K2** and 5 equiv. of BnOH.

Figure S16. ^1H NMR spectra of obtained PLA by **K2** and 5 equiv. of BnOH.

Figure S17. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K1**.

Figure S18. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K2**.

Figure S19. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K3**.

Figure S20. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K4**.

Figure S21. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K5**.

Figure S22. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K6**.

Figure S23. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K7**.

Figure S24. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K8**.

Figure S25. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K9**.

Figure S26. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K10**.

Figure S27. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K11**.

Figure S28. Homonuclear-decoupled ^1H NMR spectrum of *rac*-LA generated by **K2** within 10 min.

Figure S29. Comparing the T_m by using different catalysts (run 2, 3, 8, 10, Table 4; PLA was the polymer which catalytic with L-LA by **K2**, run 5, Table 2)

Figure S30. GPC curves of the PLLA produced using **K2** (runs 9, Table 2)

Table S1. Crystallographic data and refinement details for **K2** and **K10**

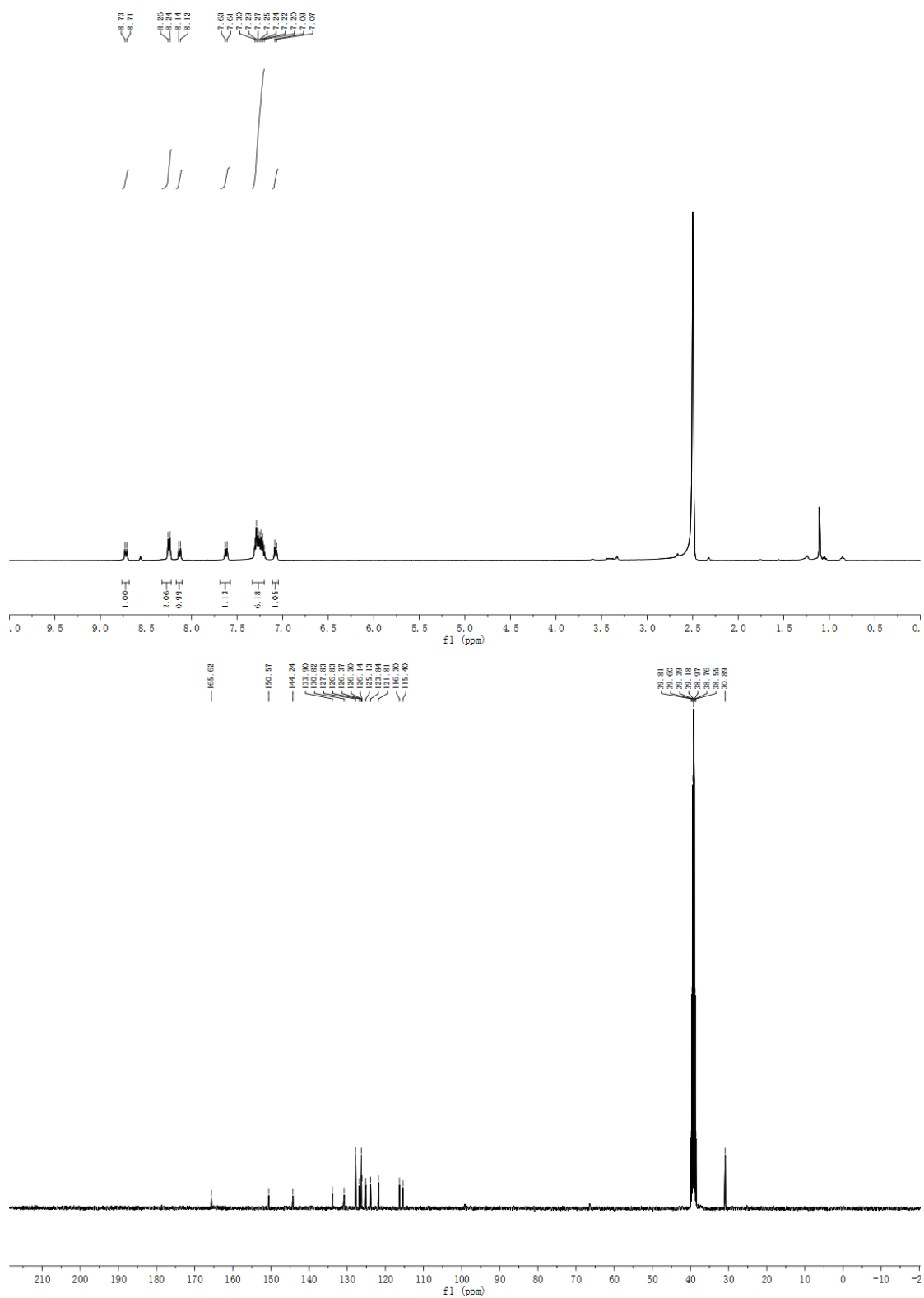


Figure S1 ^1H NMR and ^{13}C NMR spectra of **K1** (recorded in d_6 -DMSO).

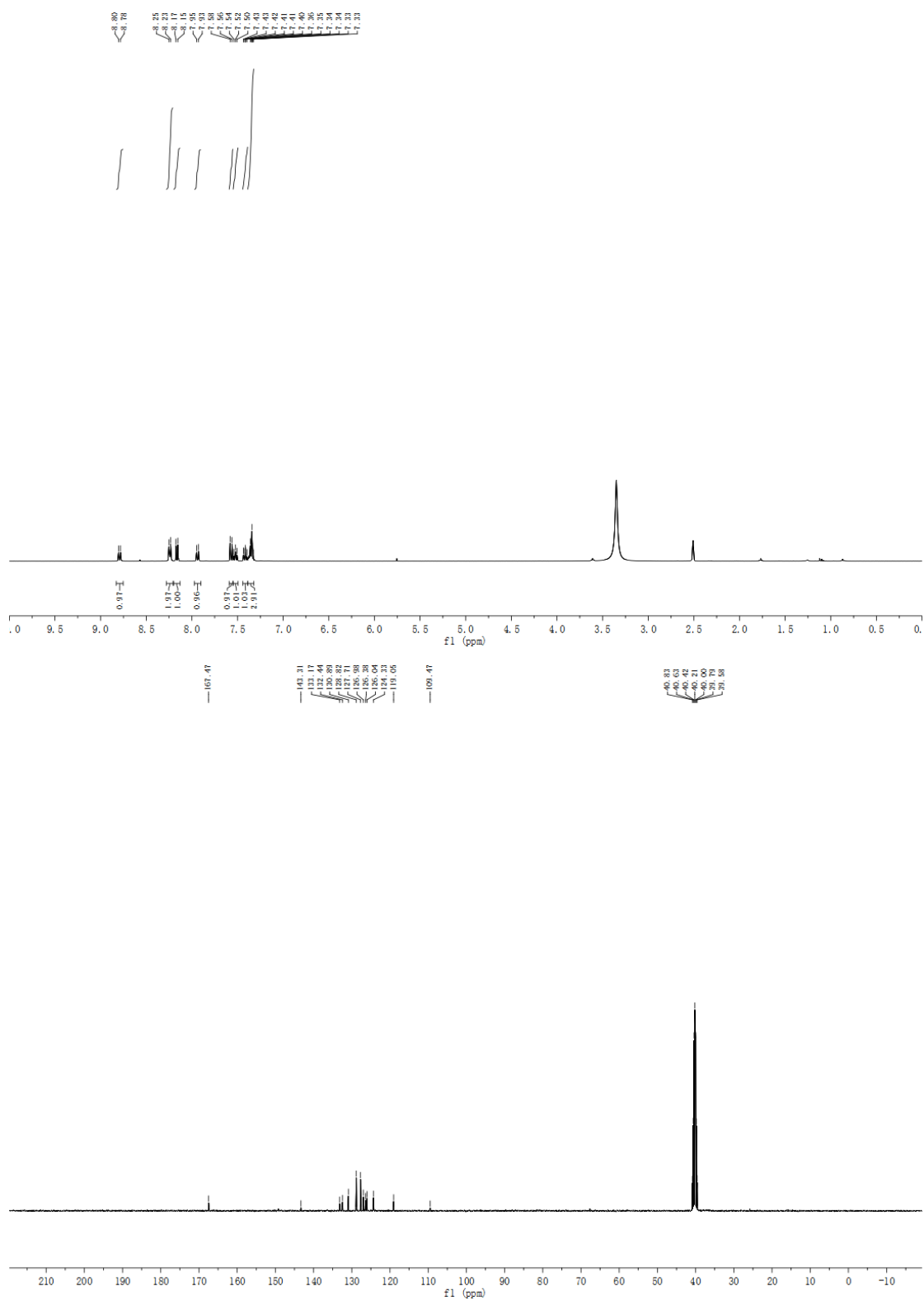


Figure S2 ¹H NMR and ¹³C NMR spectra of **K2** (recorded in *d*₆-DMSO)

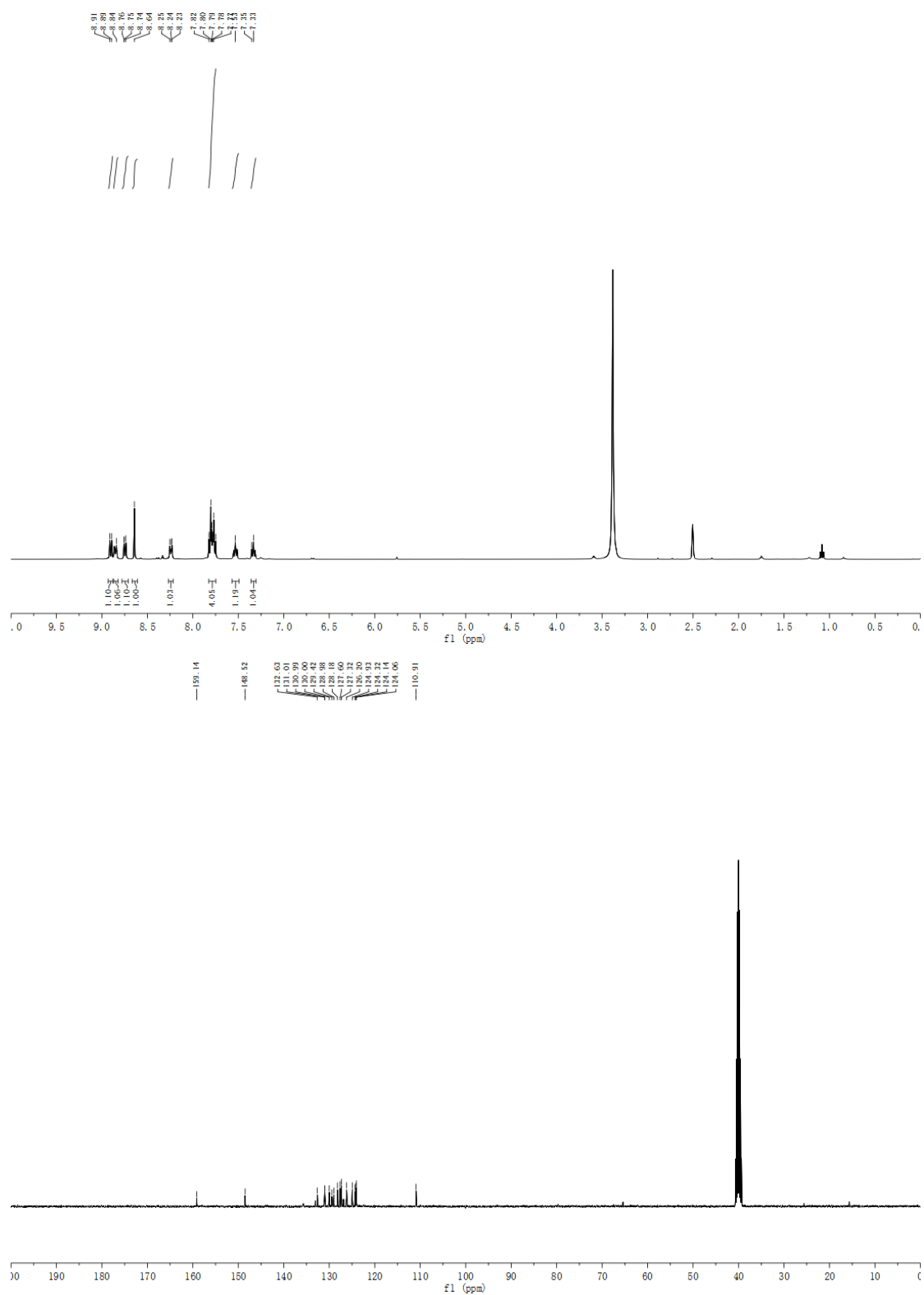


Figure S3 ^1H NMR and ^{13}C NMR spectra of **K3** (recorded in d_6 -DMSO)

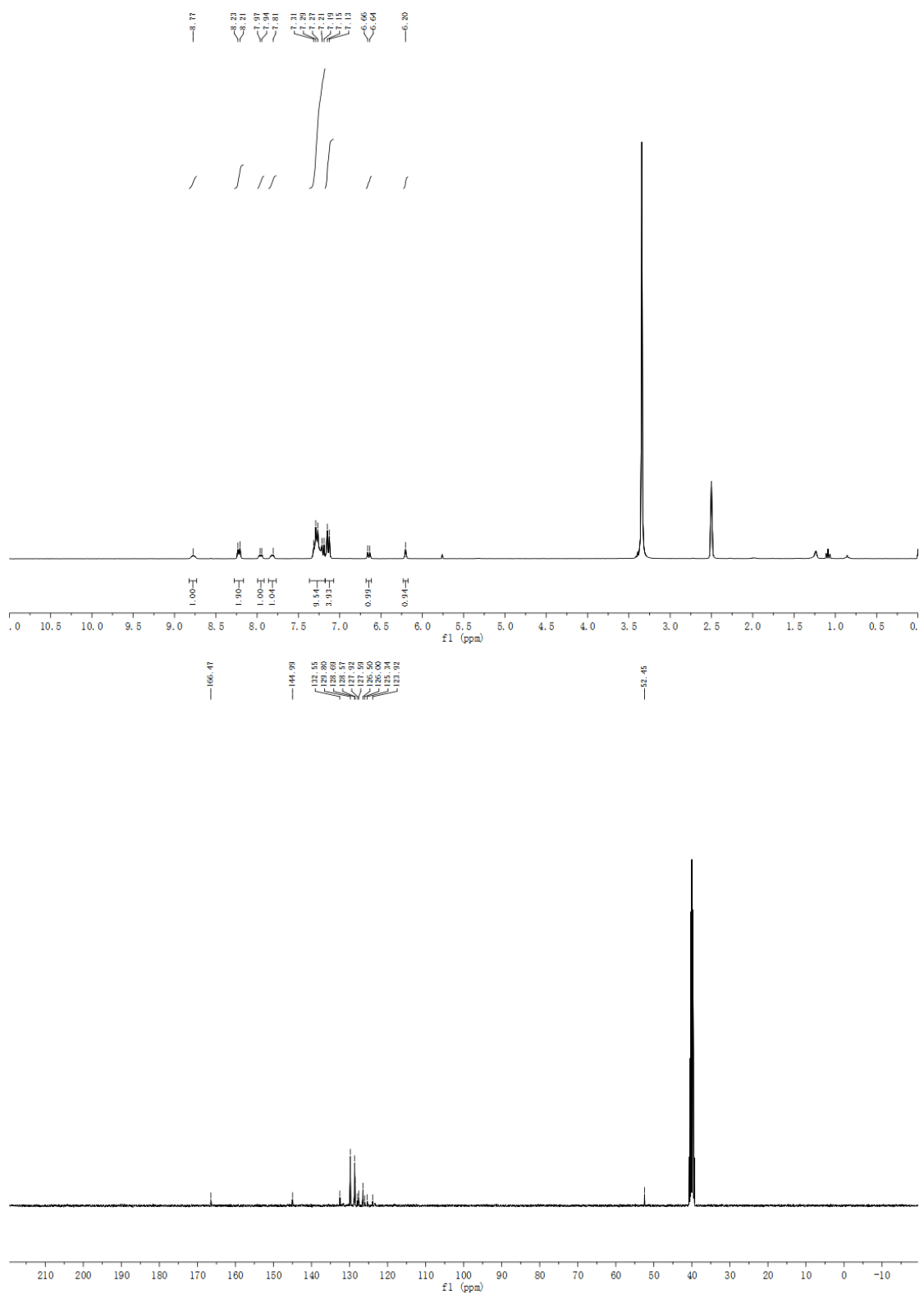


Figure S4 ¹H NMR and ¹³C NMR spectra of **K4** (recorded in *d*₆-DMSO)

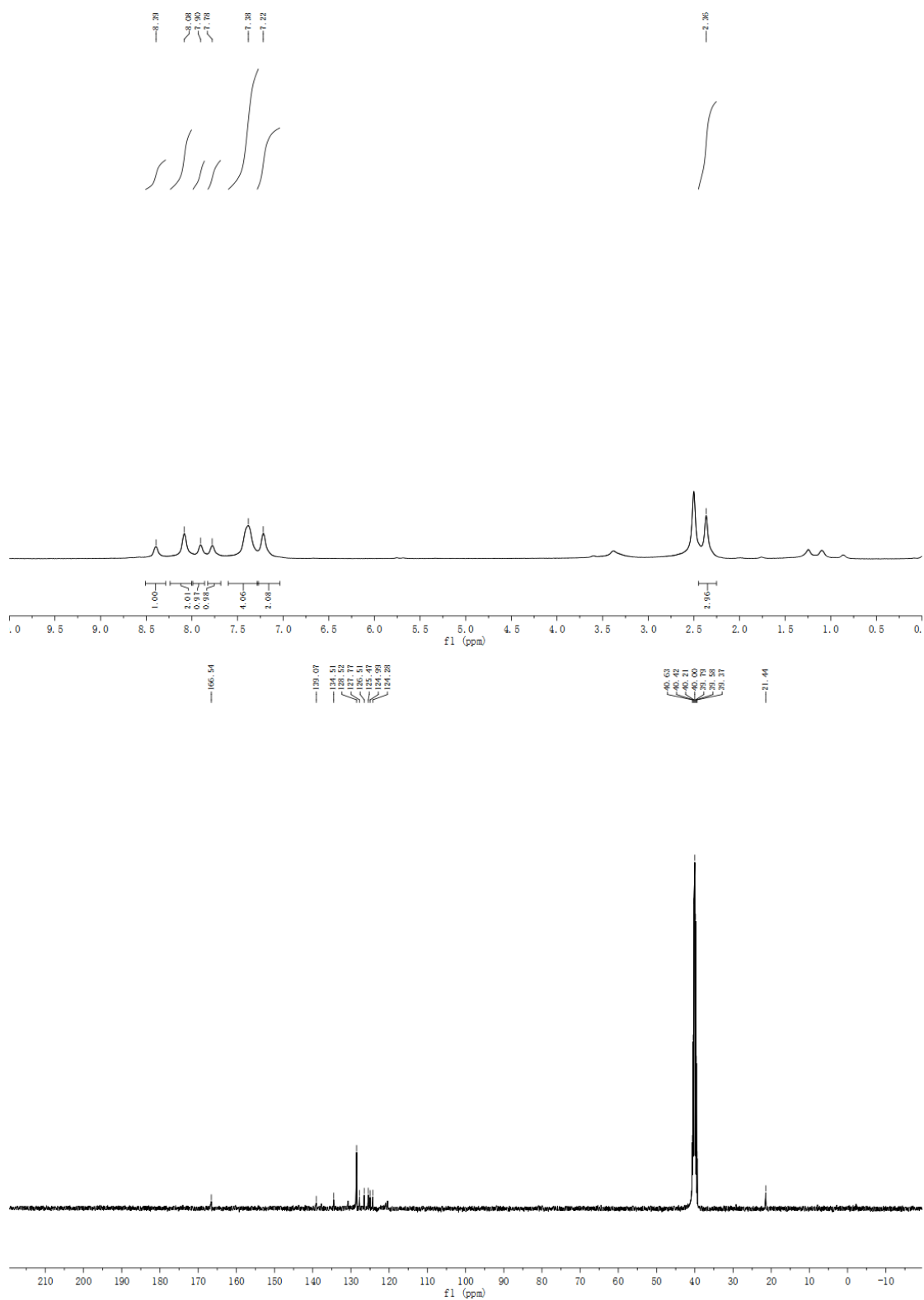


Figure S5 ^1H NMR and ^{13}C NMR spectra of **K5** (recorded in d_6 -DMSO)

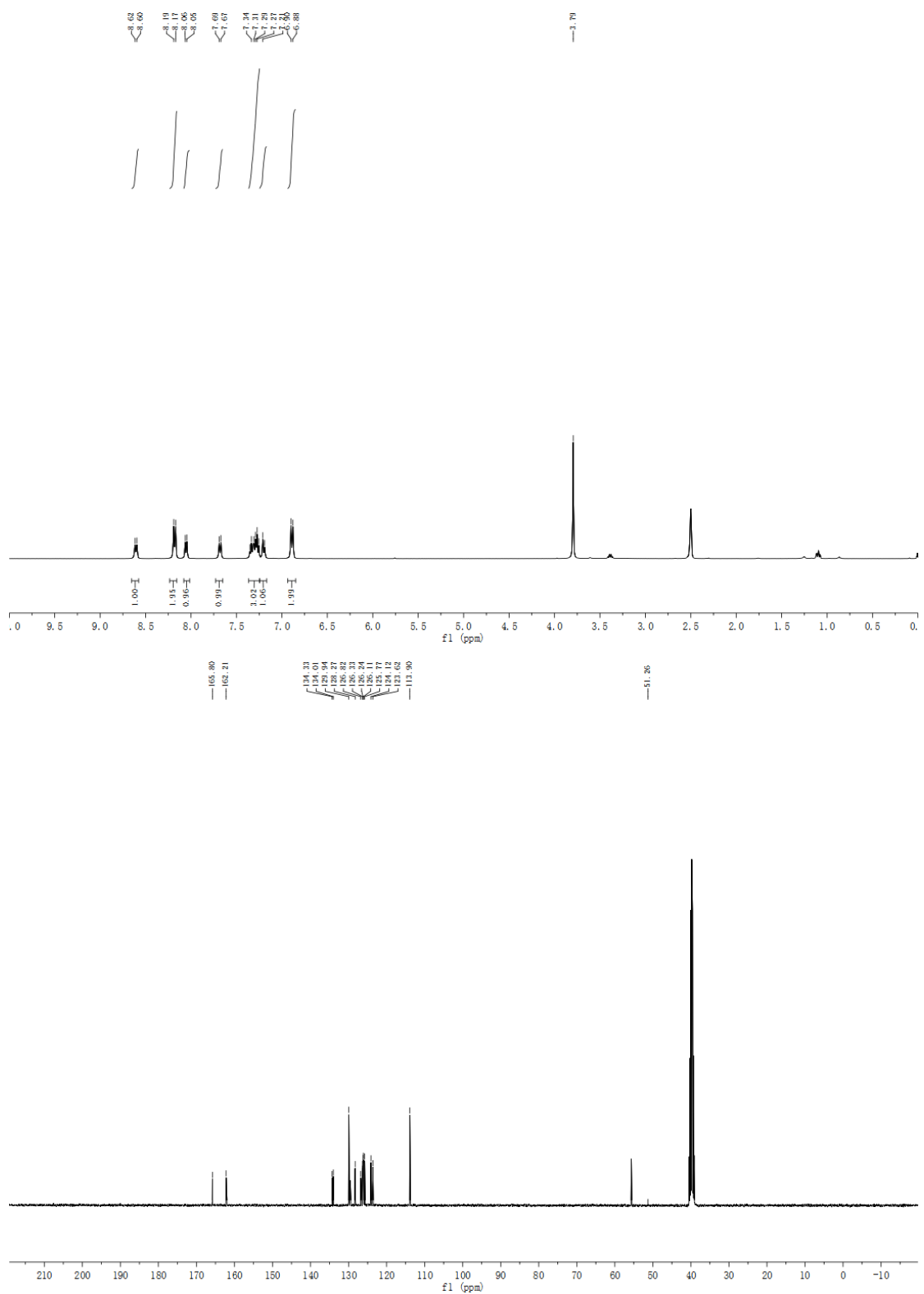


Figure S6 ^1H NMR and ^{13}C NMR spectra of **K6** (recorded in d_6 -DMSO)

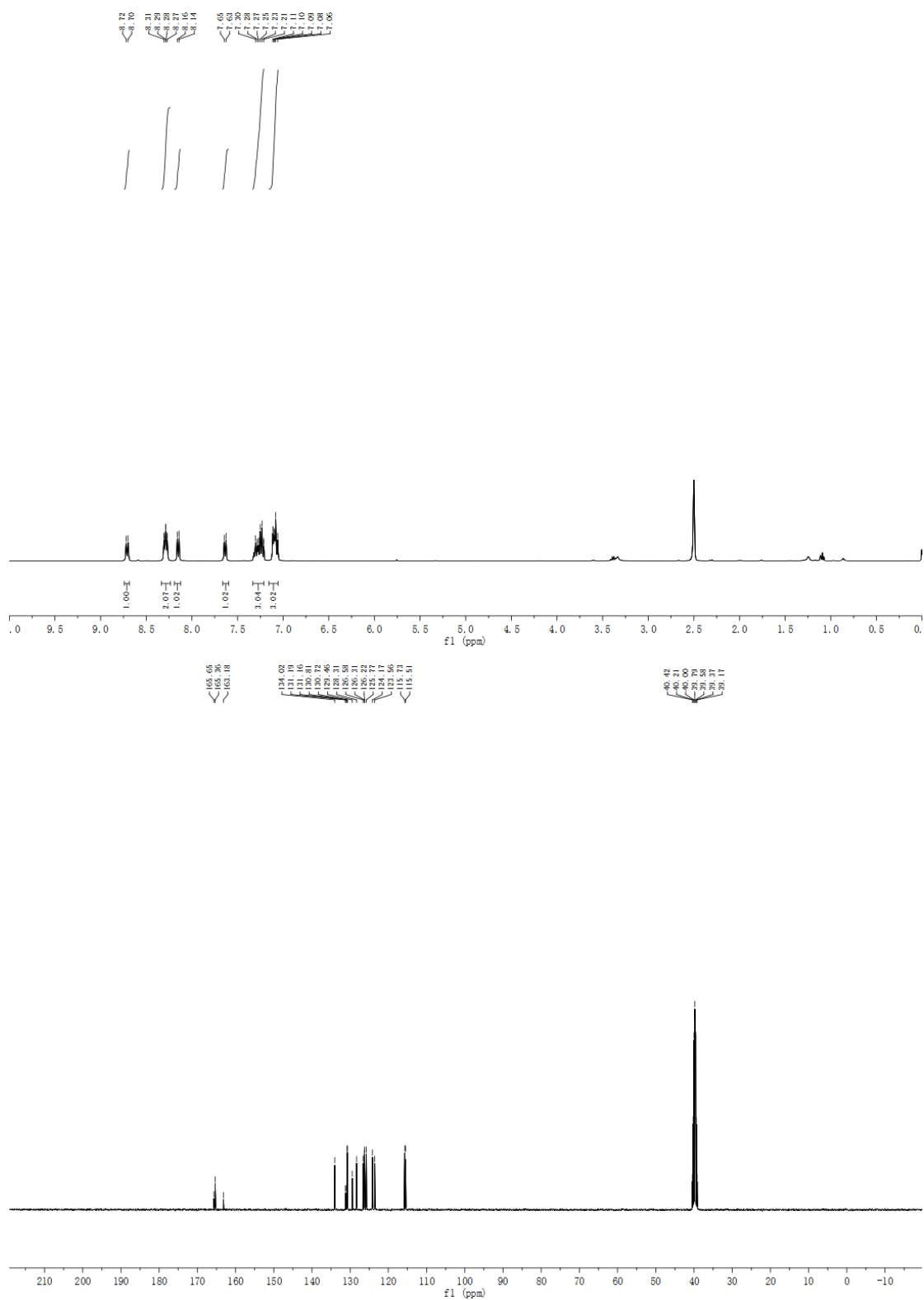


Figure S7 ¹H NMR and ¹³C NMR spectra of **K7** (recorded in *d*₆-DMSO).

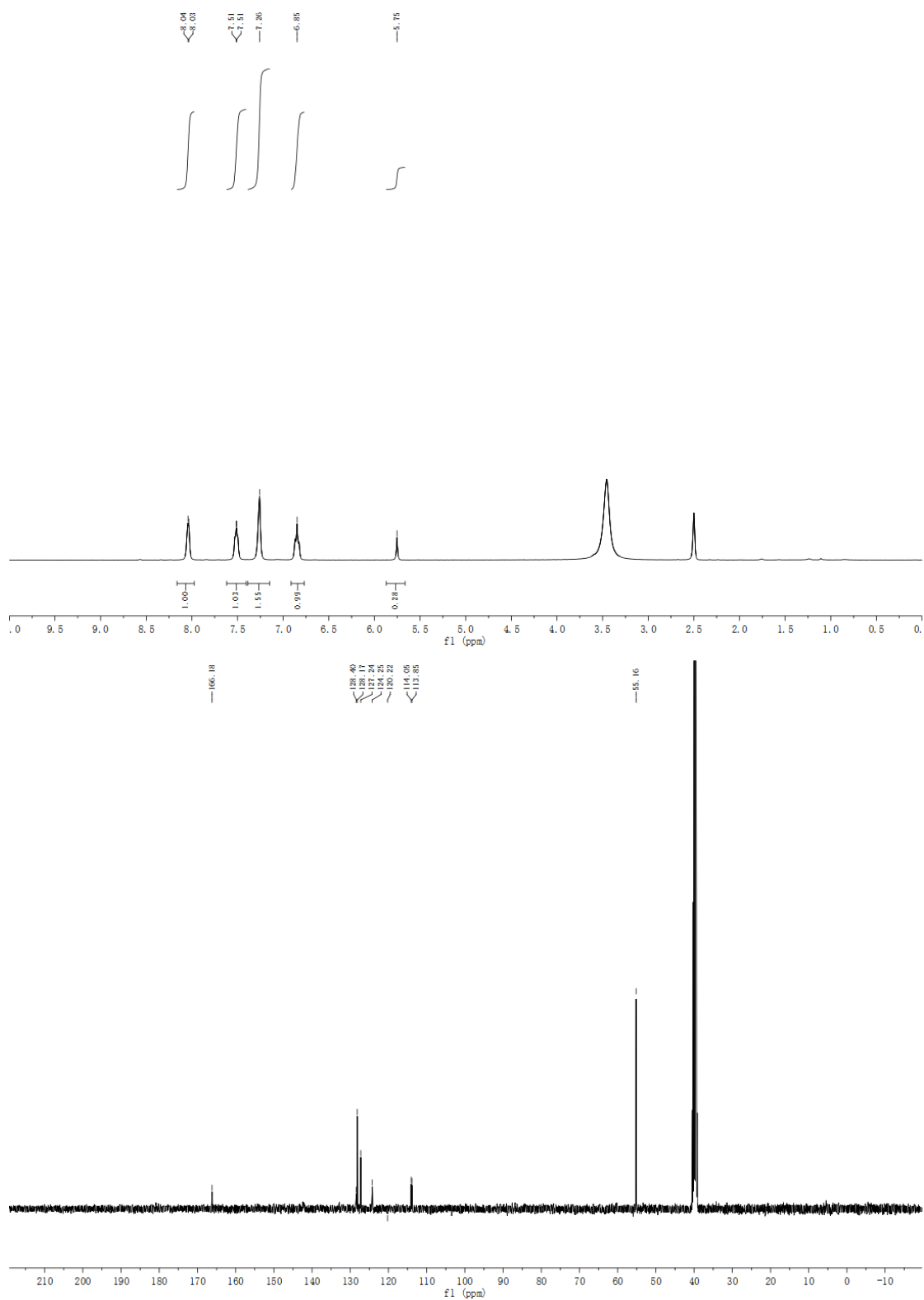


Figure S8 ^1H NMR and ^{13}C NMR spectra of **K8** (recorded in d_6 -DMSO).

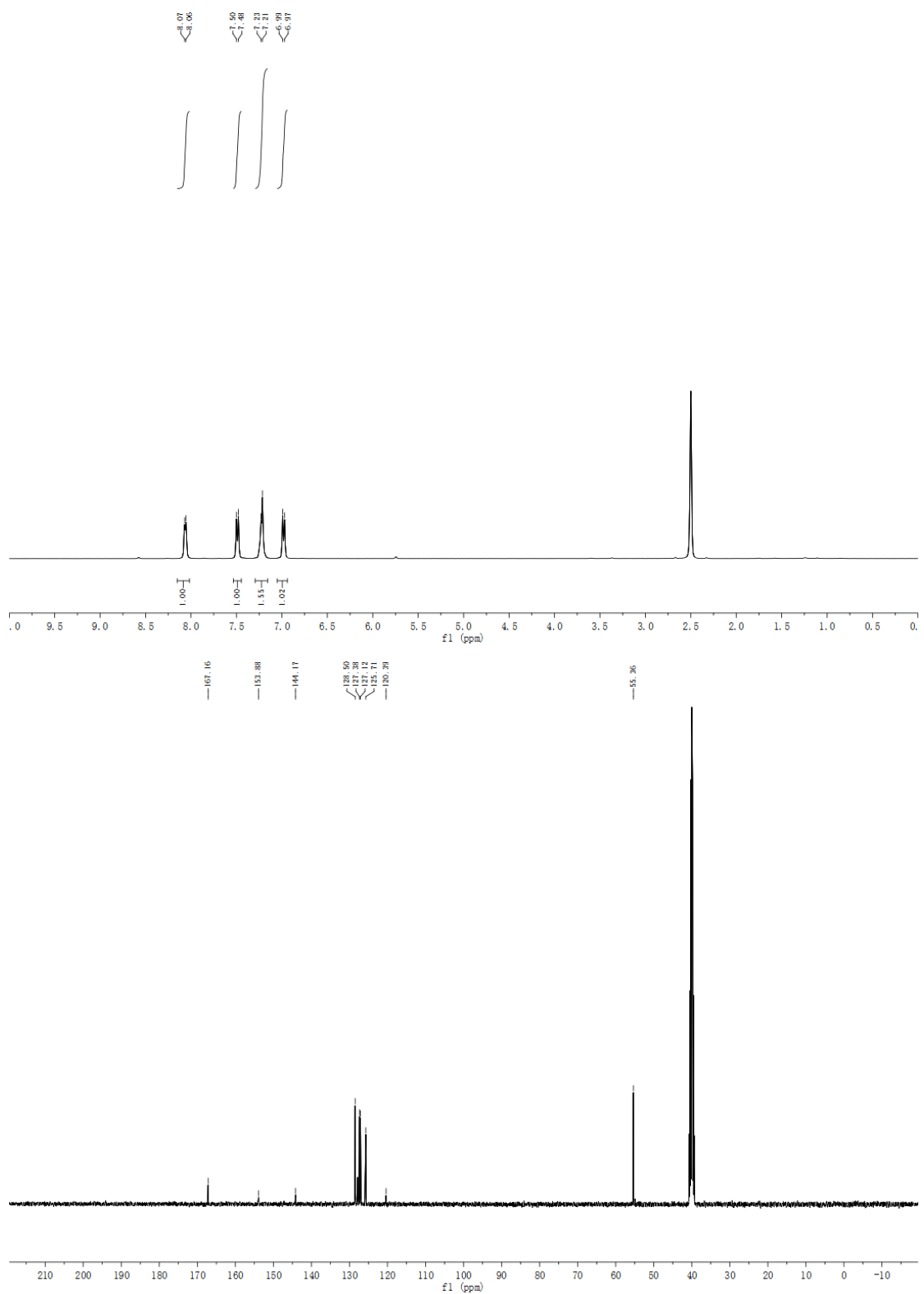
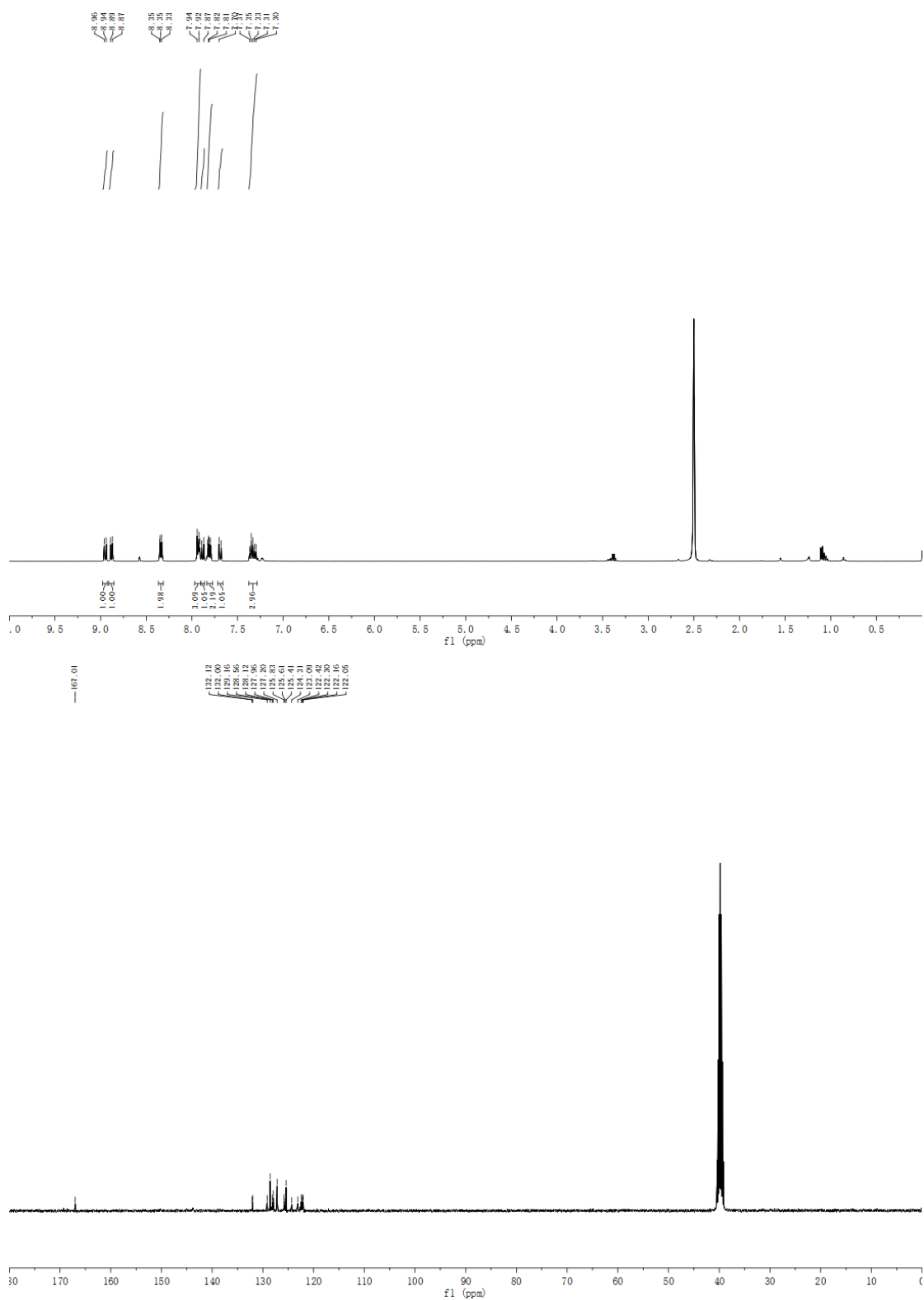


Figure S9 ^1H NMR and ^{13}C NMR spectra of **K9** (recorded in d_6 -DMSO).



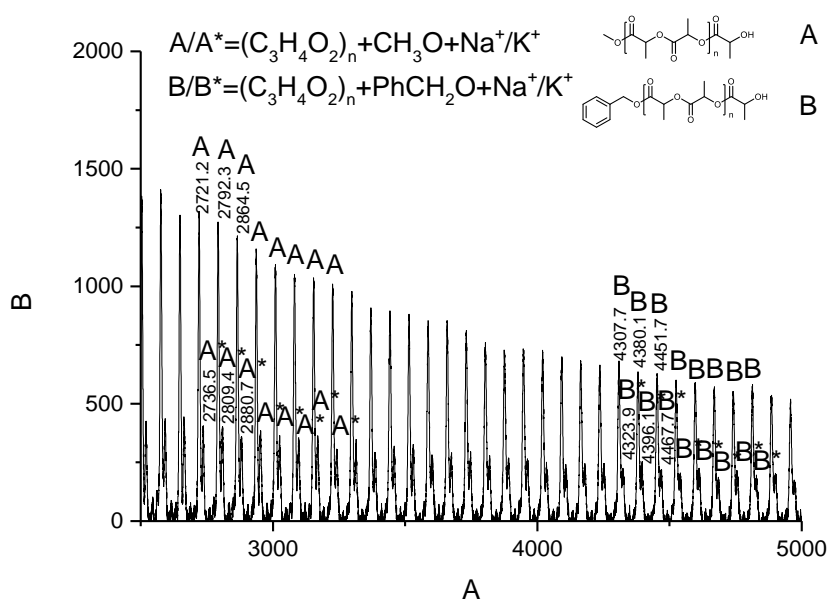


Figure S11. MOLDI-TOF spectrum of PLA obtained by **K2** and 1 equiv. of BnOH

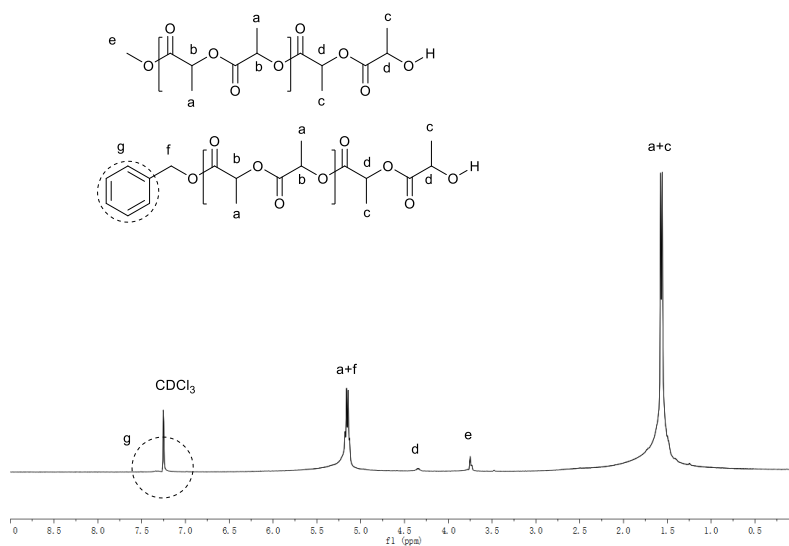


Figure S12 1H NMR spectra of obtained PLA by **K2** and 1 equiv. of BnOH

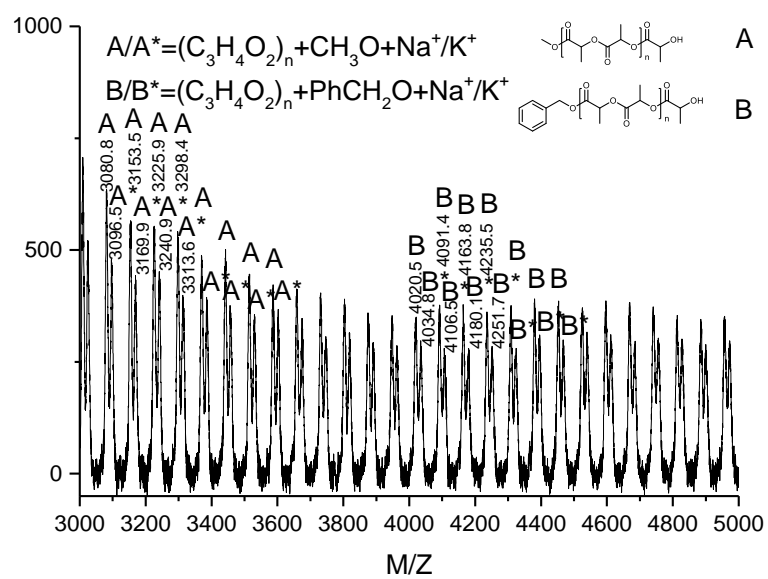


Figure S13 MALDI-TOF spectrum of PLLA obtained by **K2** and 2 equiv. of BnOH

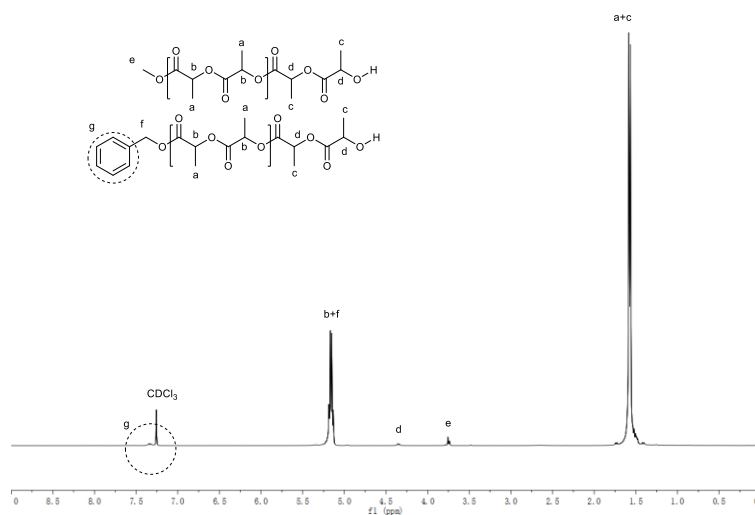


Figure S14 ¹H NMR spectra of obtained PLA by **K2** and 2 equiv. of BnOH

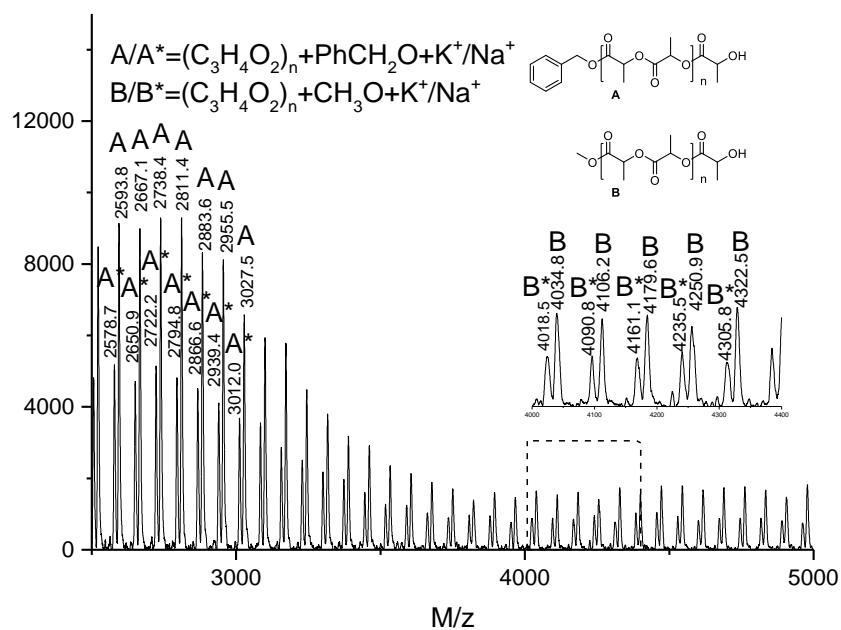


Figure S15 MALDI-TOF spectrum of PLLA obtained by **K2** and 5 equiv. of BnOH

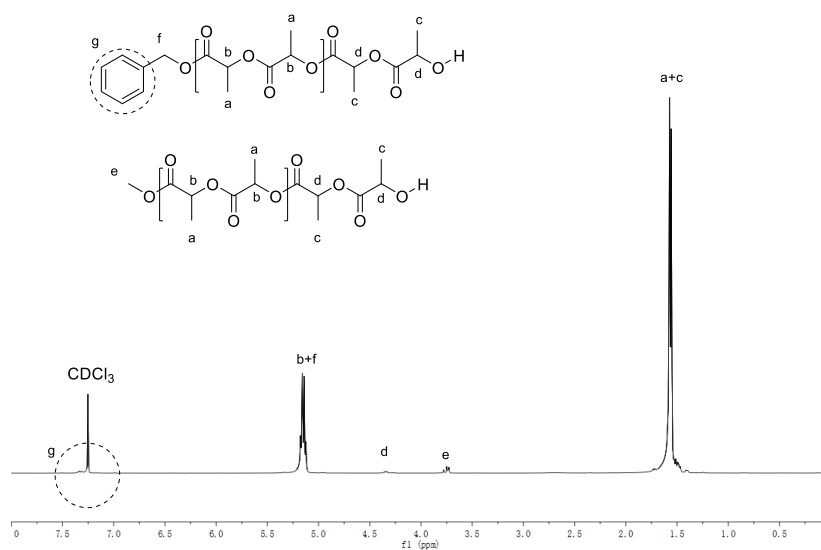


Figure S16. MOLDI-TOF spectrum of PLLA prepared by **K2** and 5equiv BnOH

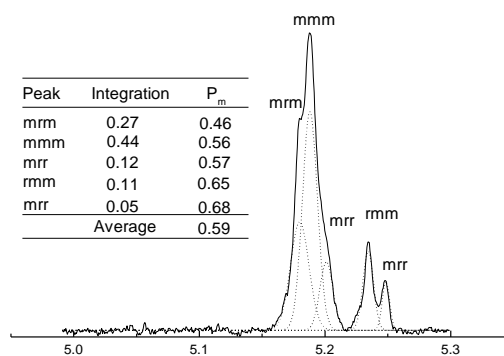


Figure S17 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K1** in 60 min

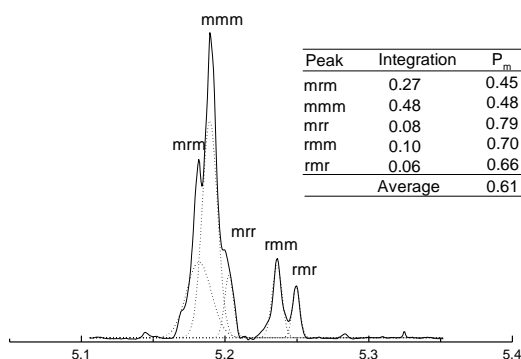


Figure S18 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K2** in 60 min

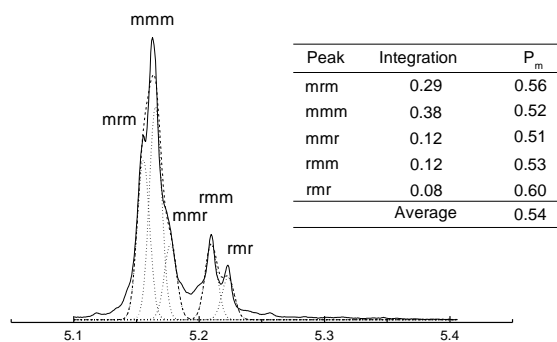


Figure S19 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K3** in 60 min

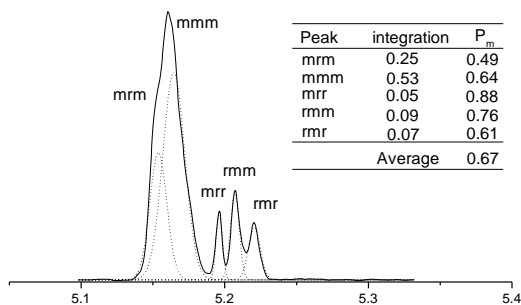


Figure S20 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K4** in 60 min

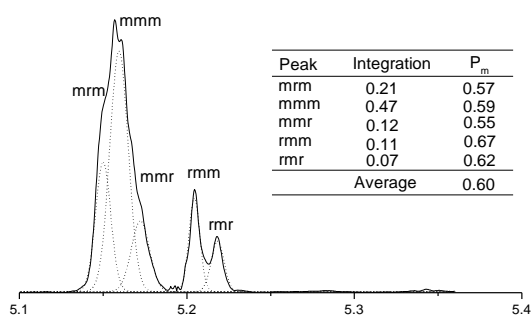


Figure S21 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K5** in 60 min

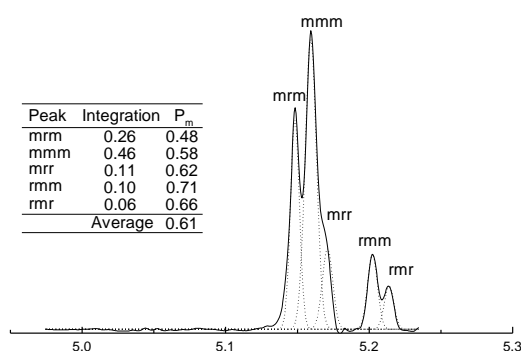


Figure S22 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K6** in 60 min

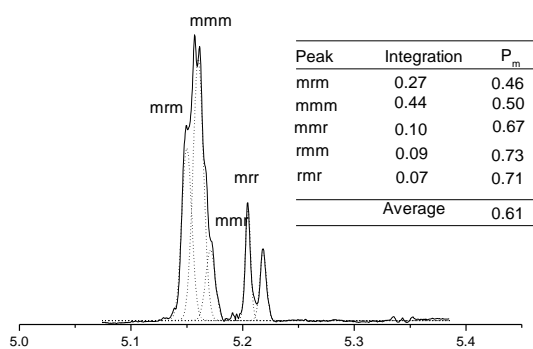


Figure S23 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K7** in 60 min

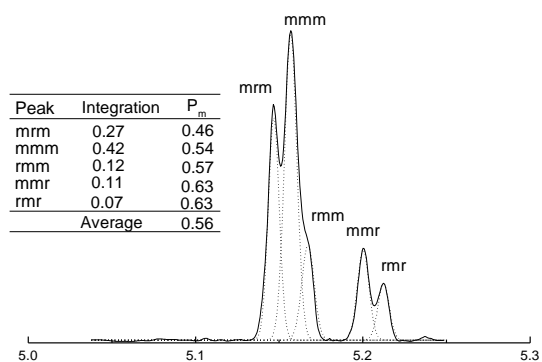


Figure S24 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K8** in 60 min

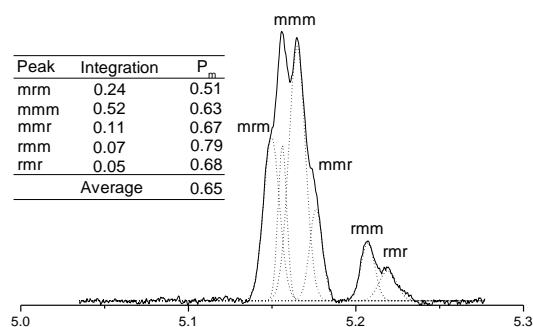


Figure S25 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K9** in 60 min

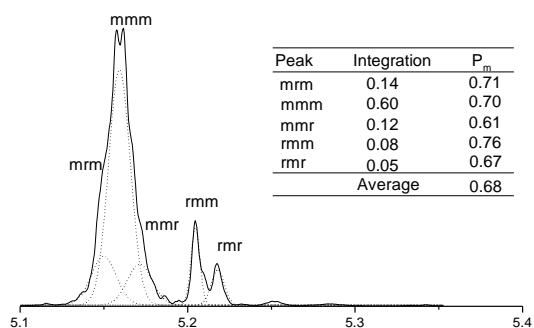


Figure S26 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K10** in 60 min

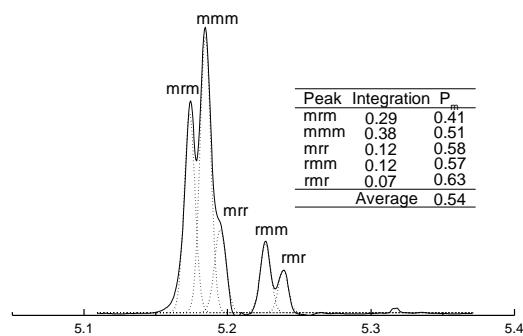


Figure S27 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K11** in 60 min

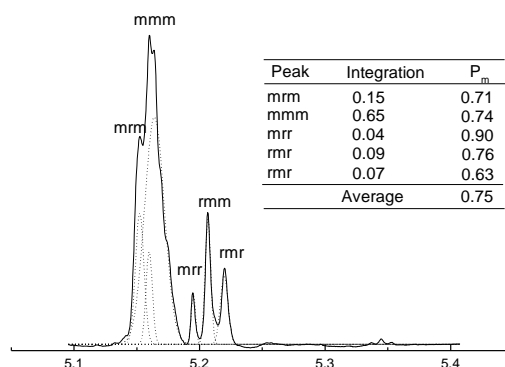


Figure S28 Homonuclear-decoupled ^1H NMR spectroscopy of *rac*-LA obtained by **K2** within 10 min

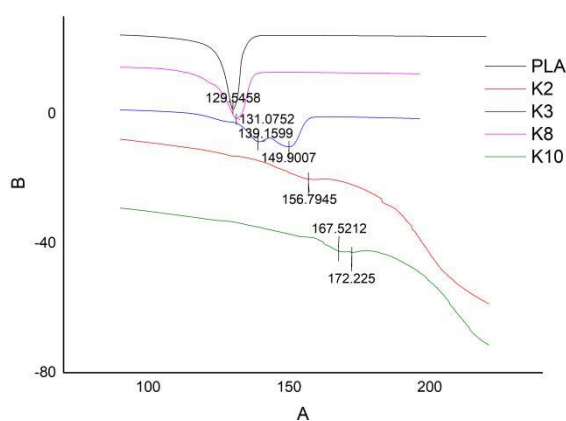


Figure S29. Comparing the T_m by using different catalysts (run 2, 3, 8, 10, Table 4; PLA was the polymer which catalytic with L-LA by K2, run 5, Table 2)

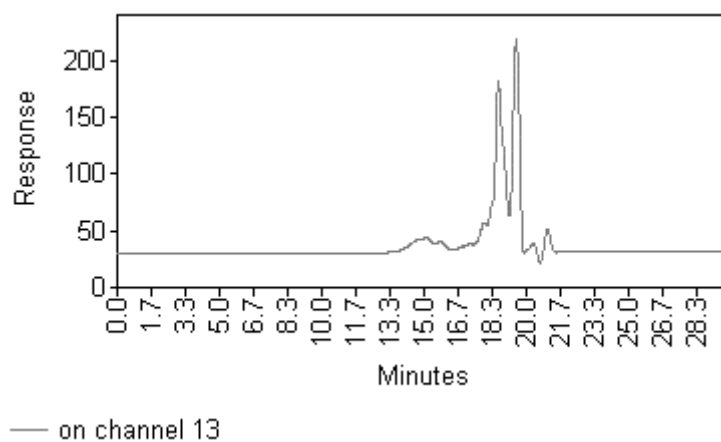


Figure S30. GPC curves of the PLLA produced using **K2** (runs 9, Table 2)

Table S1. Crystallographic data and refinement details for **K2** and **K10**

Identification code	K2	K10
Empirical formula	BrC ₁₇ KNO	C ₄₆ H ₂₈ K ₂ N ₂ O ₂
Formula weight	353.19	718.90
Temperature/K	170.00(10)	169.99(14)
Crystal system	orthorhombic	monoclinic
Space group	Pbca	P2 ₁ /c
a/Å	11.80430(10)	28.2391(6)
b/Å	11.04670(10)	11.9423(3)
c/Å	22.6296(2)	10.6840(3)
$\alpha/^\circ$	90	90
$\beta/^\circ$	90	98.068(2)
$\gamma/^\circ$	90	90
Volume/Å ³	2950.87(4)	3567.41(16)
Z	8	4
$\rho_{\text{calc}}/\text{cm}^3$	1.590	1.339
μ/mm^{-1}	6.291	2.681
F(000)	1368.0	1488.0
Crystal size/mm ³	0.25 × 0.15 × 0.05	0.1 × 0.08 × 0.005
Radiation	CuK α ($\lambda = 1.54184$)	CuK α ($\lambda = 1.54184$)
2 Θ range for data collection/ $^\circ$	7.814 to 150.308	6.322 to 151.232
Index ranges	-11 ≤ h ≤ 14, -13 ≤ k ≤ 13, -28 ≤ l ≤ 26	-26 ≤ h ≤ 34, -14 ≤ k ≤ 14, -13 ≤ l ≤ 13
Reflections collected	10706 2943	24756 6838
Independent reflections	[R _{int} = 0.0338, R _{sigma} = 0.0285]	[R _{int} = 0.0511, R _{sigma} = 0.0463]
Data/restraints/parameters	2943/0/190	6838/0/469
Goodness-of-fit on F ²	1.080	1.293
Final R indexes [I ≥ 2 σ (I)]	R ₁ = 0.0440, wR ₂ = 0.1348	R ₁ = 0.1087, wR ₂ = 0.3039
Final R indexes [all data]	R ₁ = 0.0466, wR ₂ = 0.1371	R ₁ = 0.1281, wR ₂ = 0.3224
Largest diff. peak/hole / e Å ⁻³	0.85/-0.66	1.72/-0.61