Synthesis, Characterization, and Catalytic Activity of Sodium Ketminiate Complexes toward the Ring-Opening Polymerization of *L*-Lactide

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Electronic Supplementary Information Available: X-ray crystallography data and ^{1}H and ^{13}C NMR spectrum of Na complexes

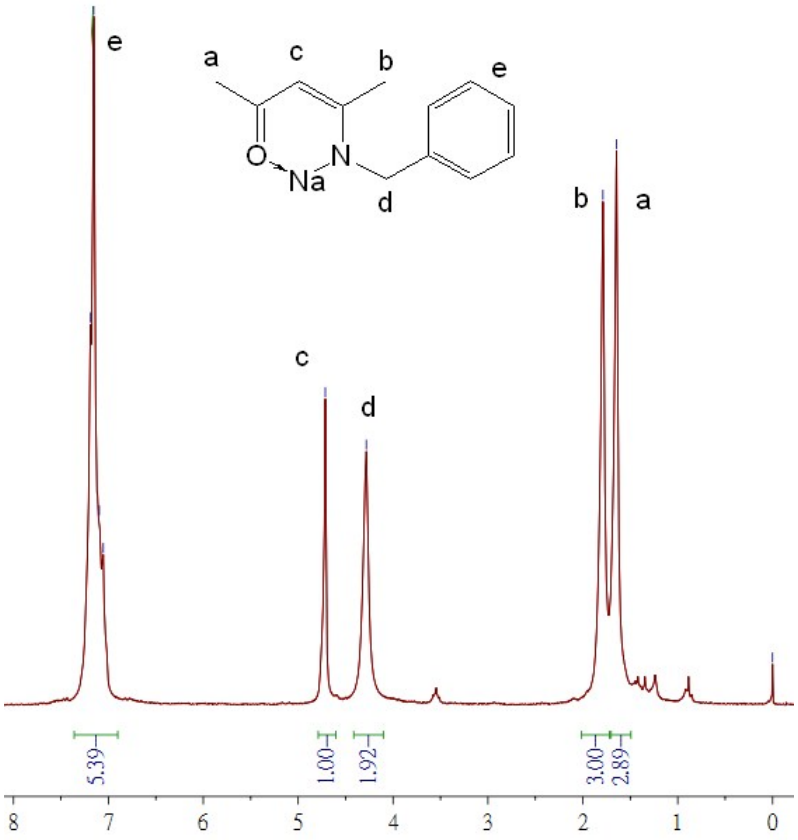
Table S1. Summary of X-ray Crystallography Data of $\mathbf{L^{Py}}$**-Na**

Emp. Formula	C11 H13 N2 Na O
Form. Weight	212.22
Crystal system	Monoclinic
Space group	C 1 2/c 1
a (Å)	37.8452(19)
b (Å)	15.6845(5)
c (Å)	17.0802(10)
$\alpha(^o)$	90^o
$\beta(^o)$	$116.801(7)^o$
$\gamma(^o)$	90^o
Volume ($Å^3$)	9049.4(8)
Z	32
Density	1.246 Mg/m^3
F(000)	3584
Crystal size(mm^3)	0.3 x 0.3 x 0.2
θ range	2.78 to 26.00°
Index ranges	-43<=h<=46
	-19<=k<=19
	-20<=l<=21
Ref. collected	28279
Ind. Reflections	8697 [R(int) = 0.0384]
Complete to θ	97.7 %
Max. and min transmission	1.000000 and 0.97136
Data / Restraints/ parameters	8697 / 0 / 541
GOF	1.038
Final R indices	R1 = 0.0639
[I >2 sigma (I)]	wR2 = 0.1781
R indices	R1 = 0.0954
(all data)	wR2 = 0.2021
Largest diff. Peak and hole	0.562 and -0.447 $e.Å^{-3}$
Temperature	110(2) K
Wavelength	0.71073 Å
Abs. correction	SADABS
Refine. Method	Full-matrix least-squares on F^2

[a]$R1=||(|F_o|-|F_c|)/|F_o||$.

[b]R2=$\{[w(F_o^2-F_c^2)^2]/[w](F_o^2)^2\}^{1/2}$,w=0.10.

[c]GoF=$[w(F_o^2-F_c^2)^2]/(N_{rflns}-N_{params})]^{1/2}$.



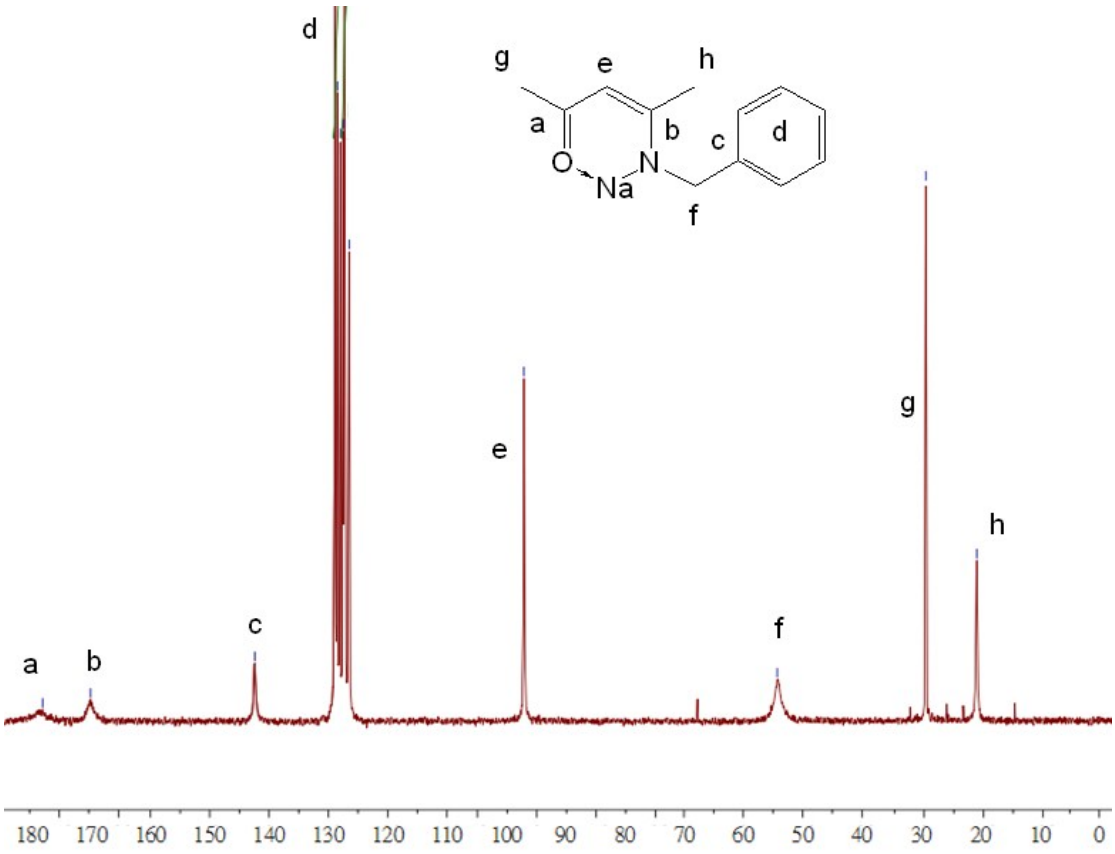
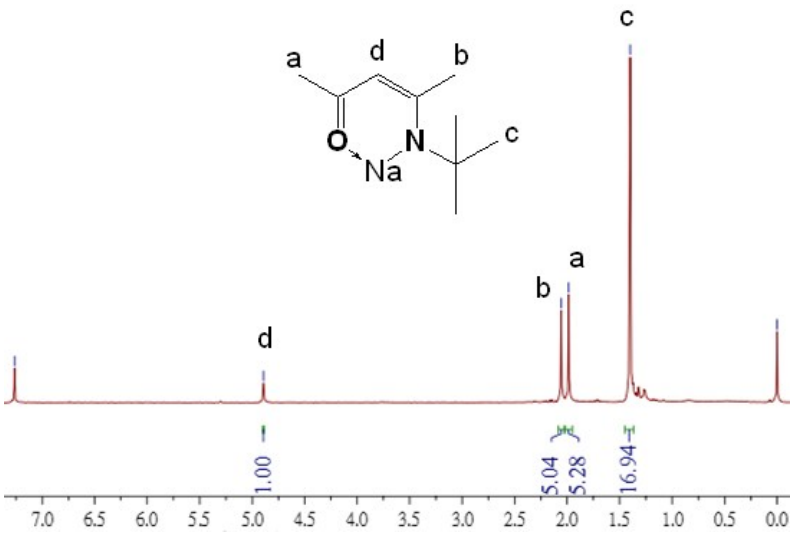


Figure S1. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{Bn}}$**-Na**



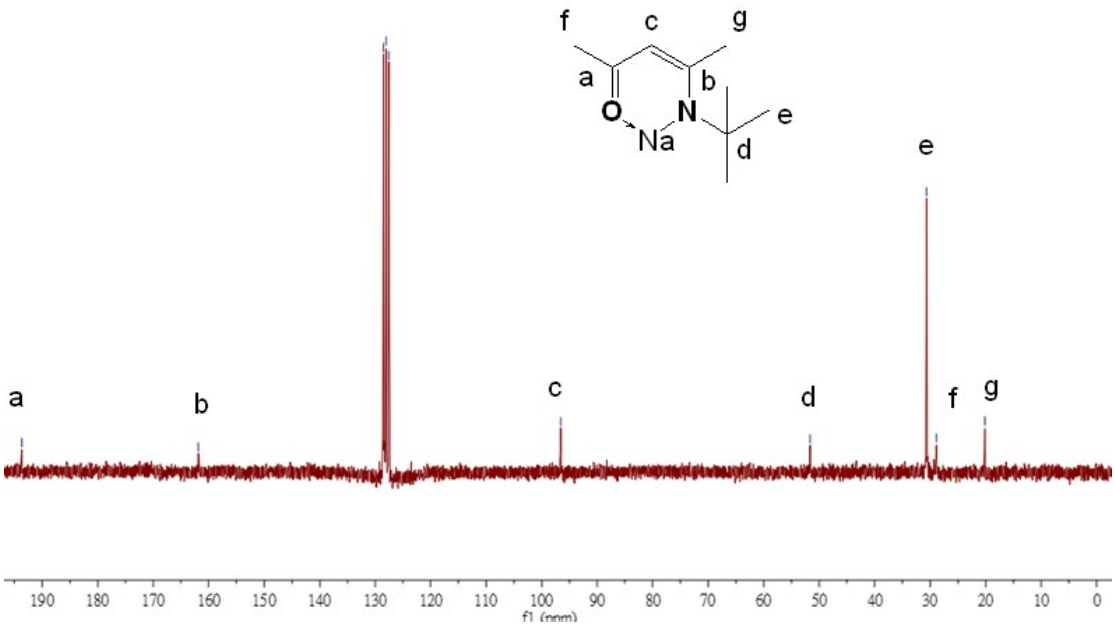


Figure S2. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{Bu}}$**-Na**

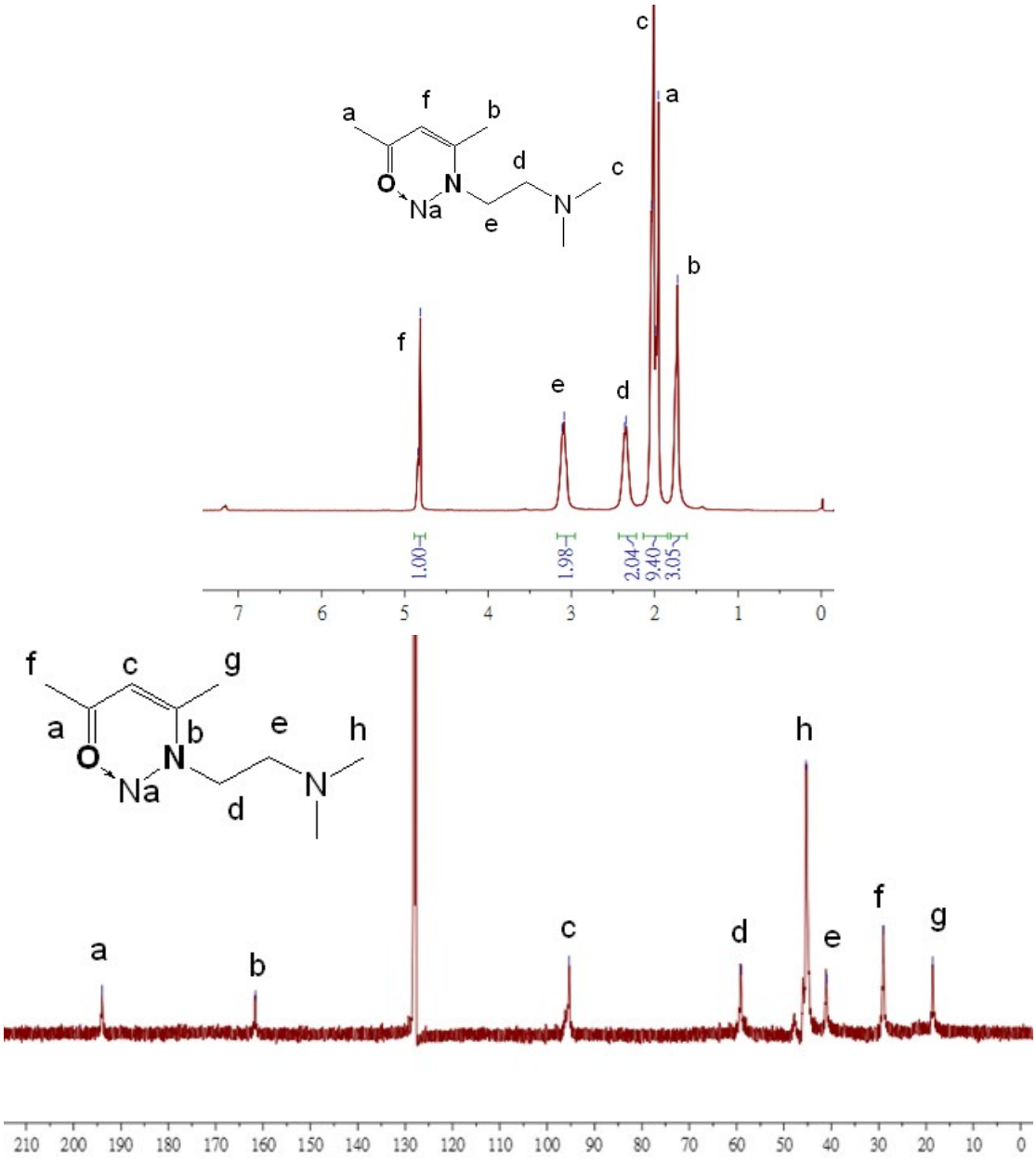


Figure S3. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{C2N}}$**-Na**

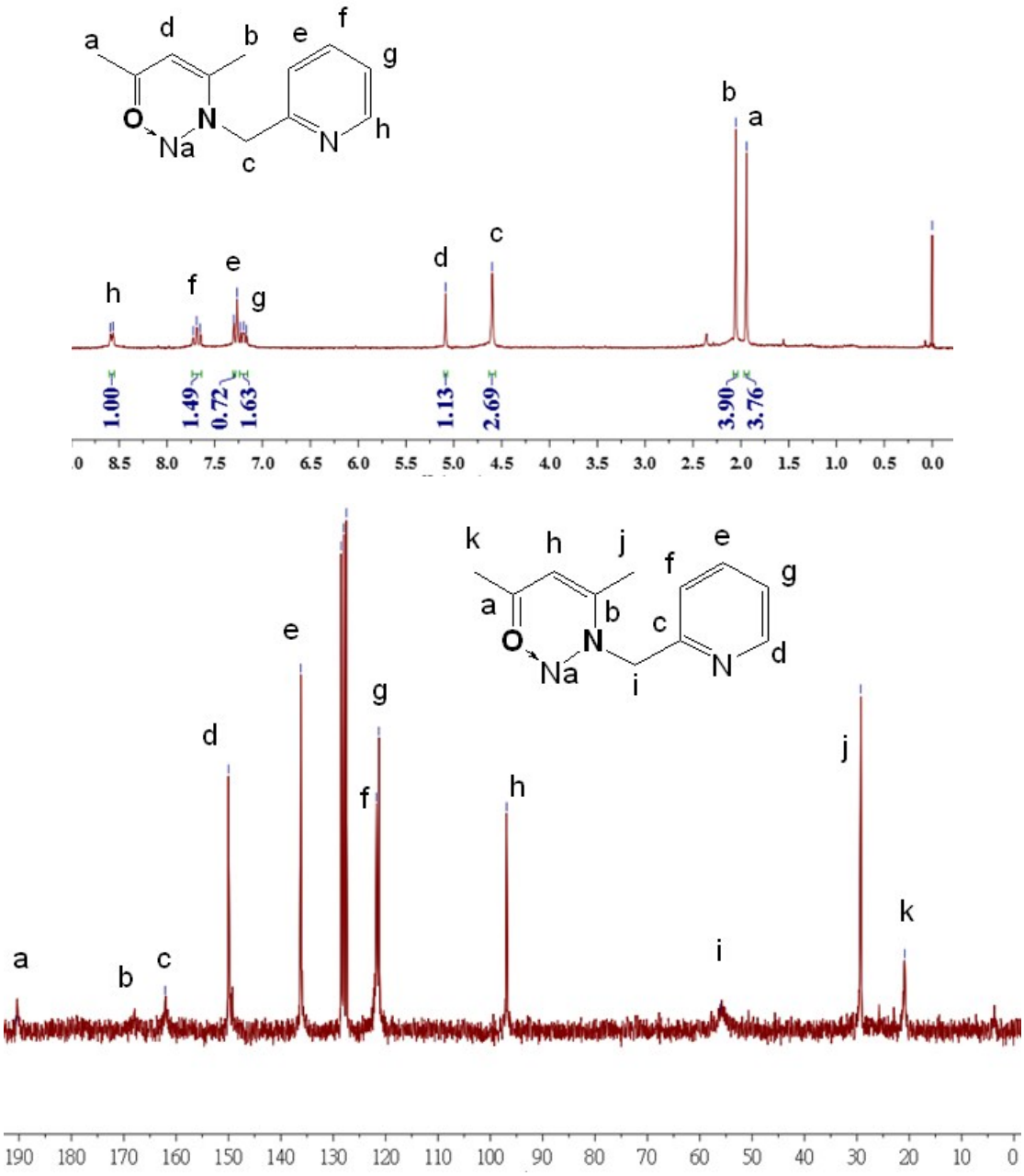


Figure S4. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{Py}}$**-Na**

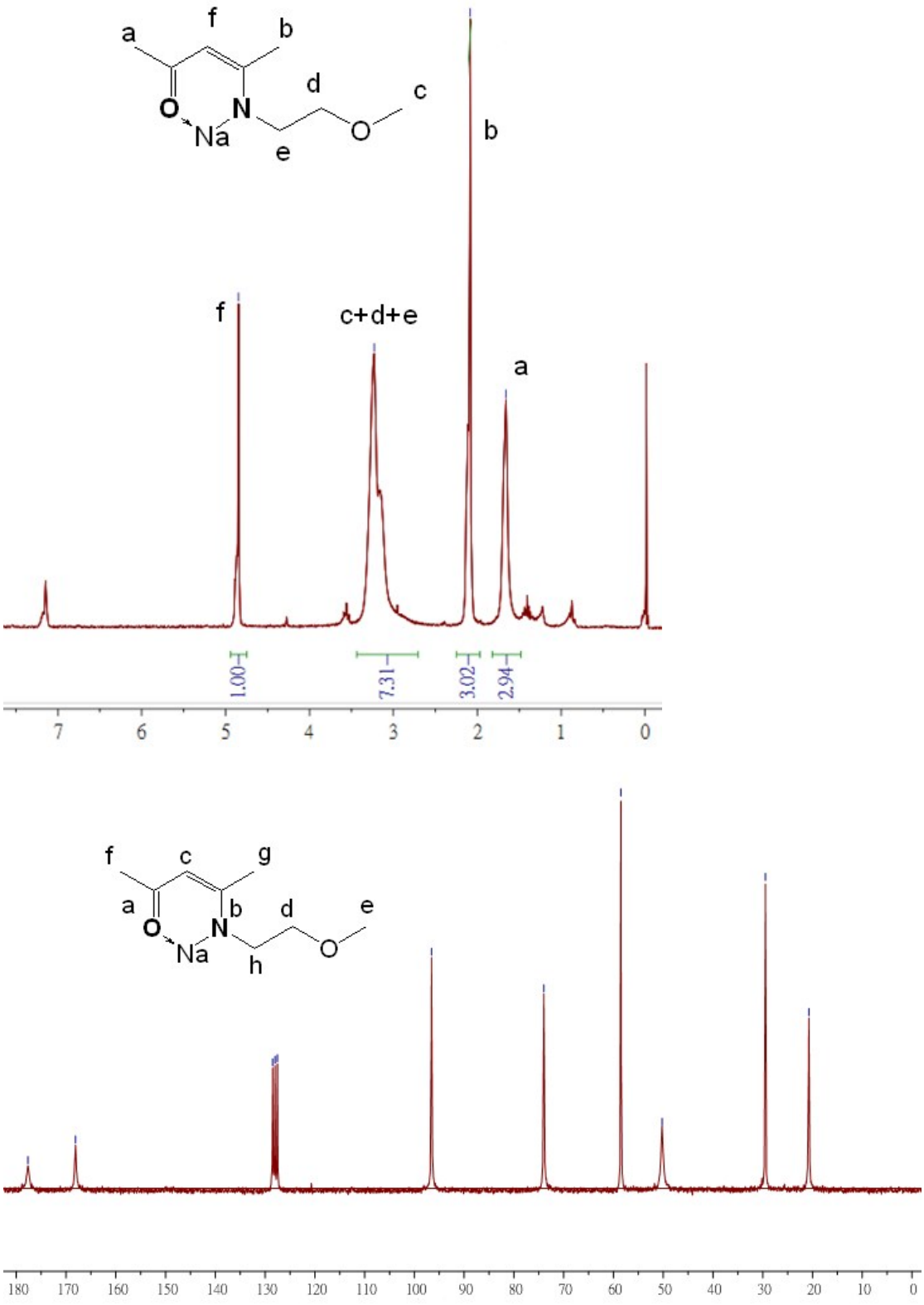


Figure S5. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{C2O}\text{-}Na}$

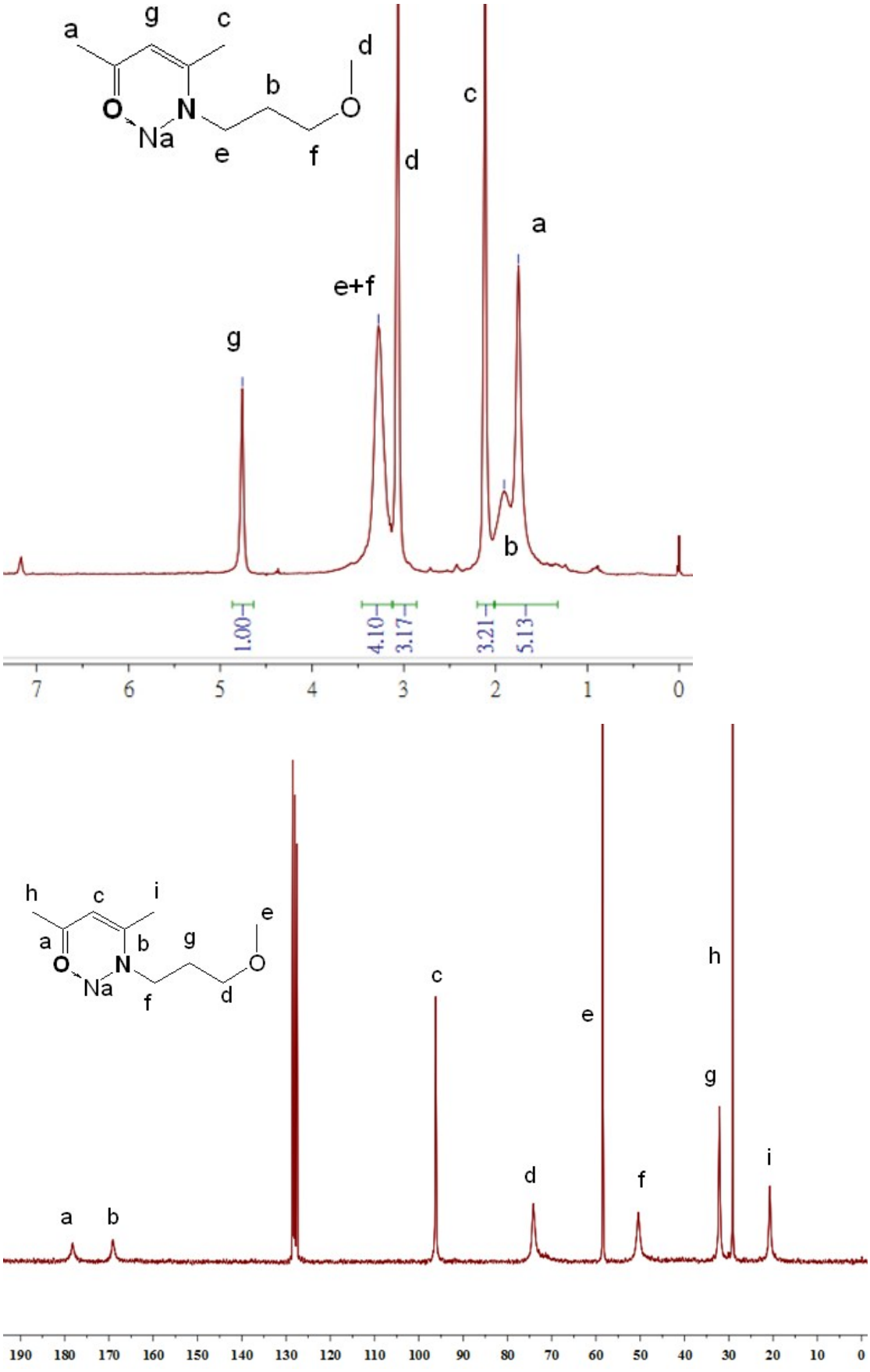


Figure S6. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{C3O}\text{-}Na}$

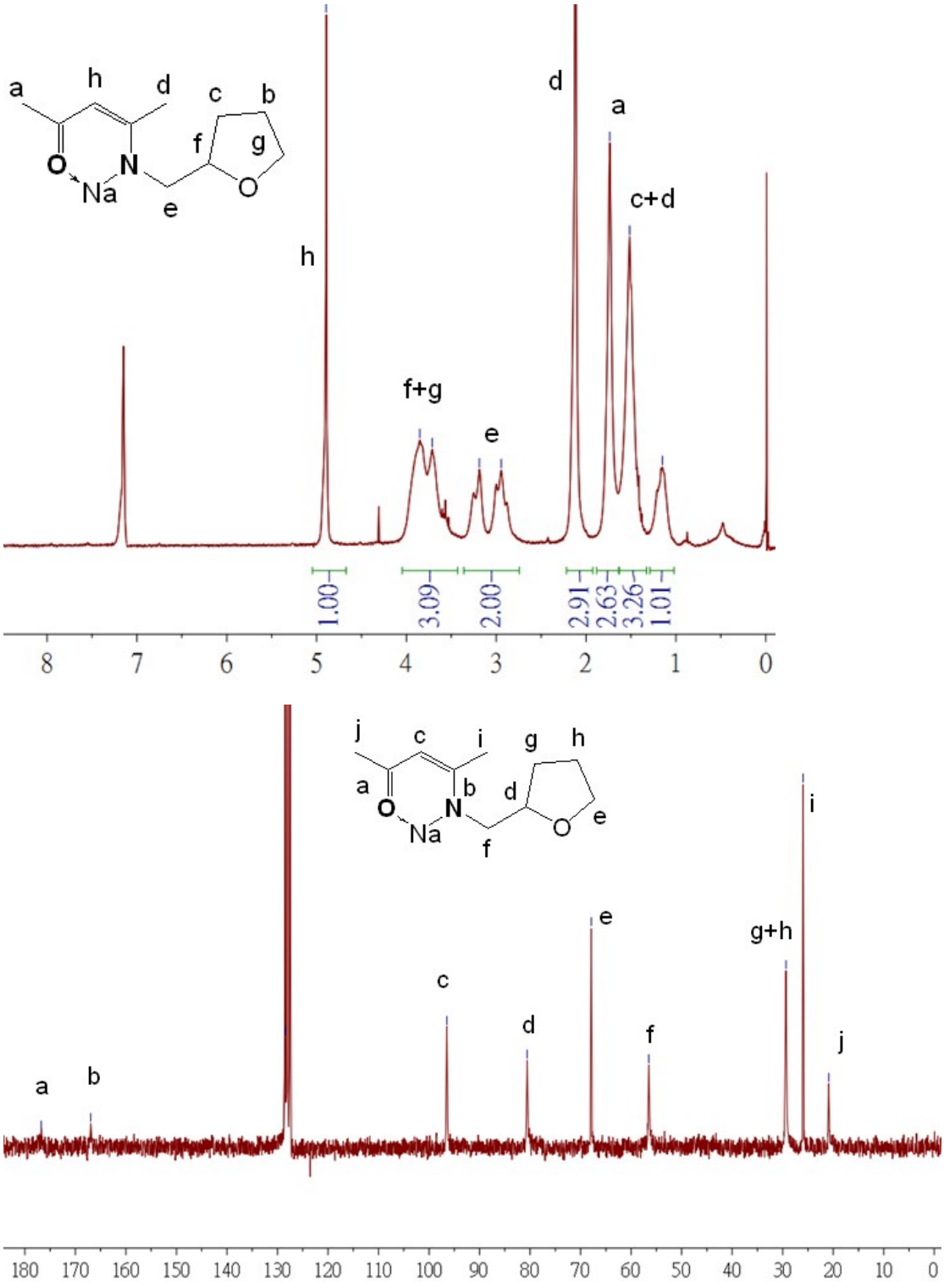


Figure S7. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{THF}}$**-Na**

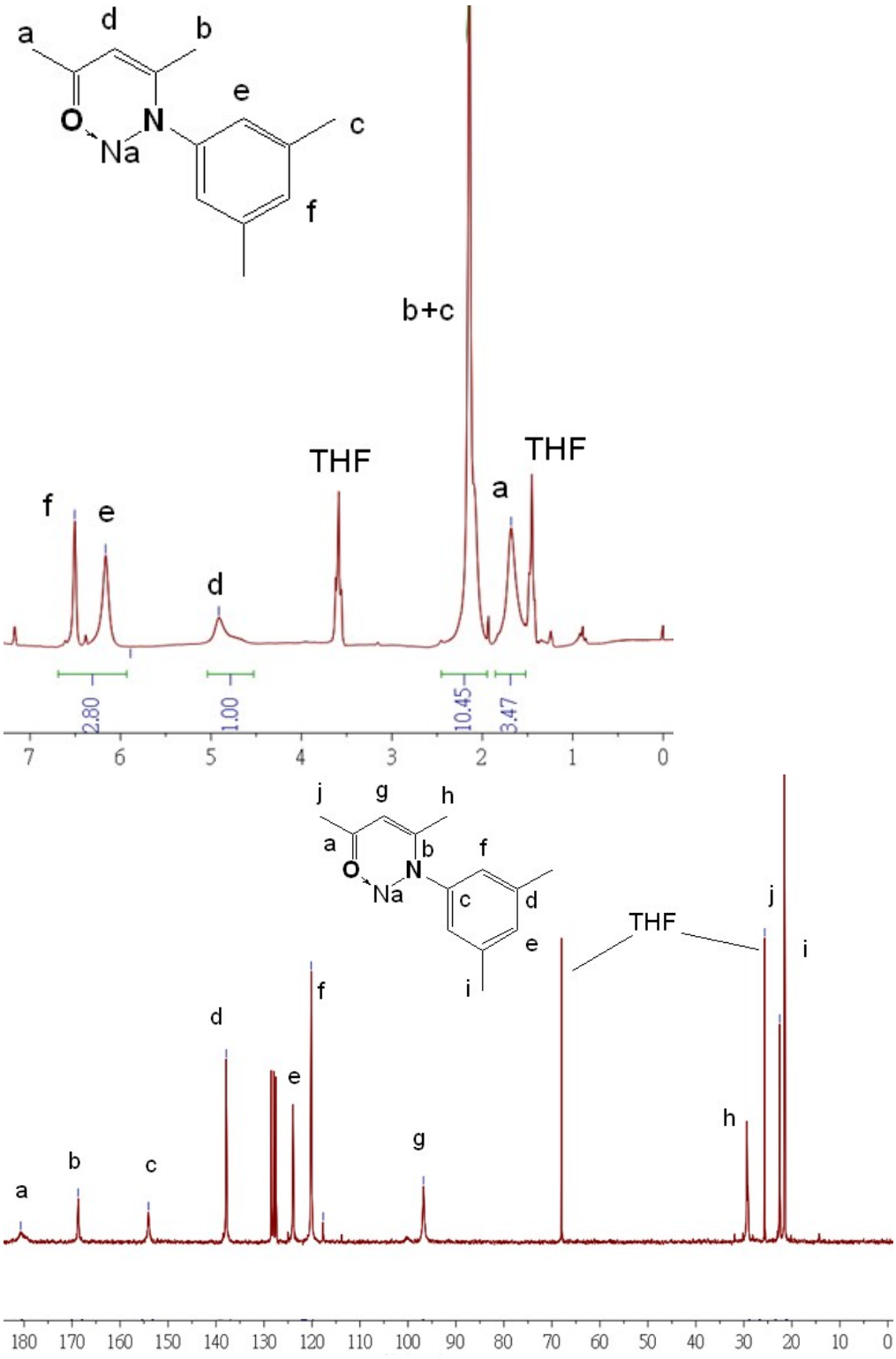


Figure S8. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{PhC2}}$**-Na**

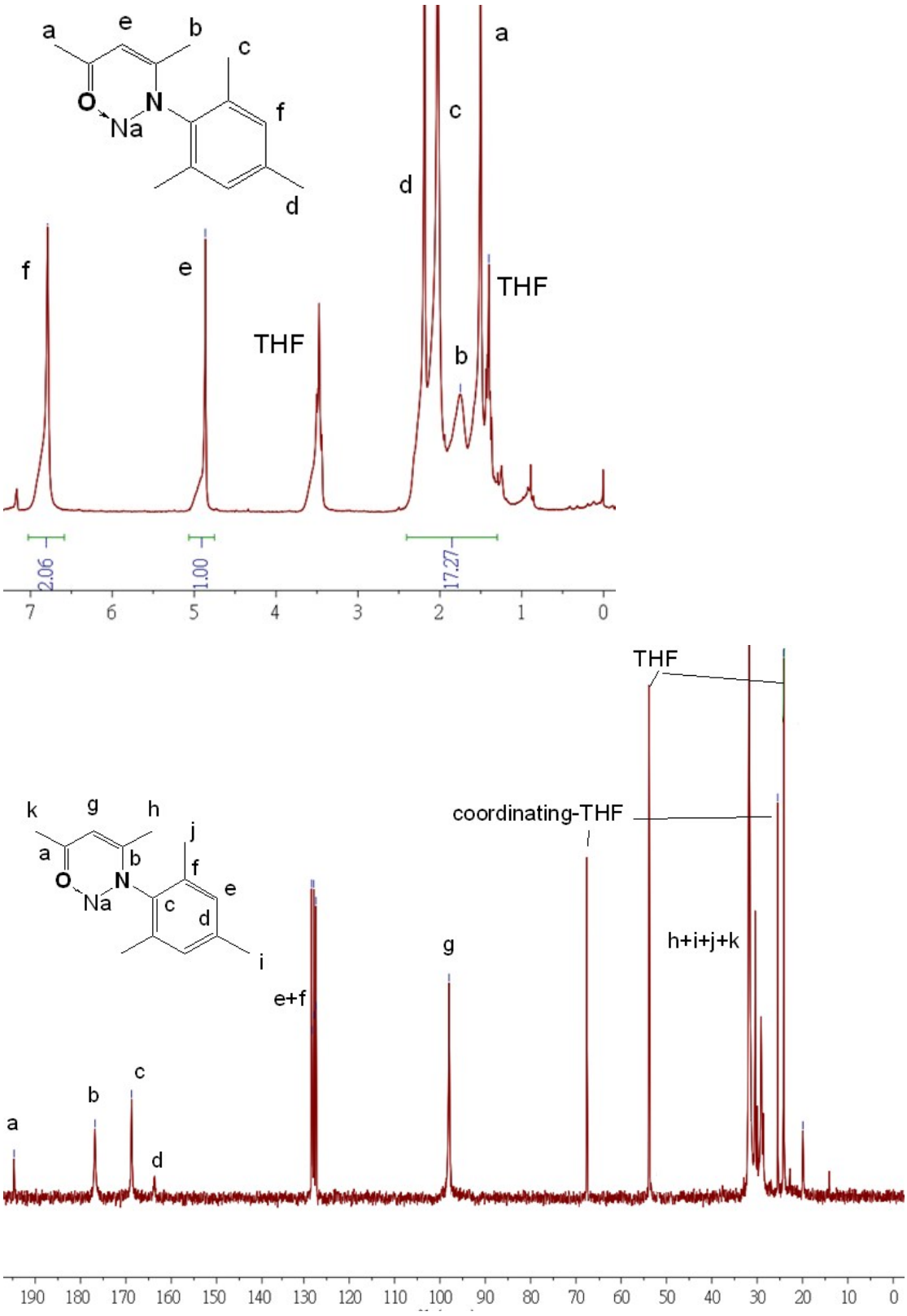


Figure S9. ^{1}H and ^{13}C NMR spectrum of $\mathbf{L^{PhC3}}$**-Na**

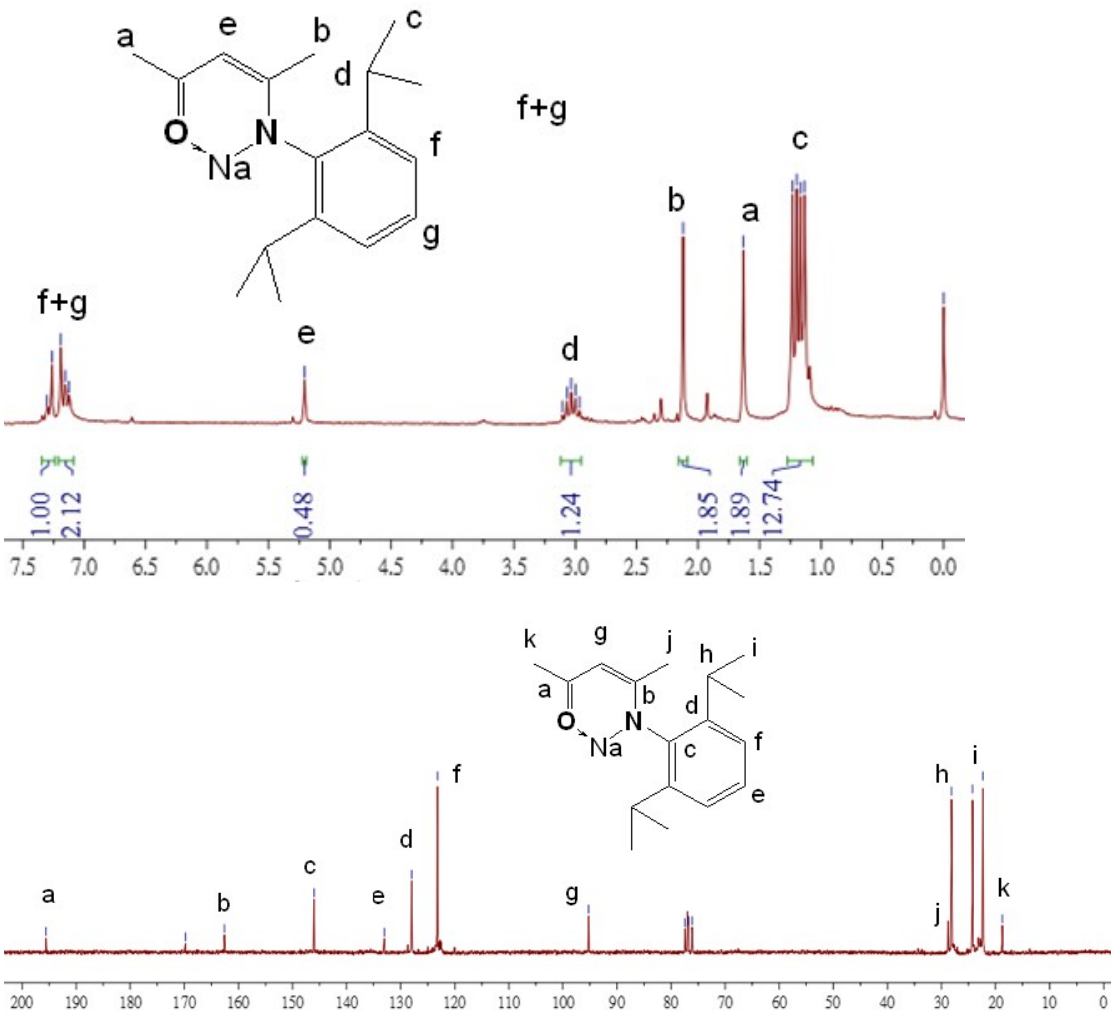
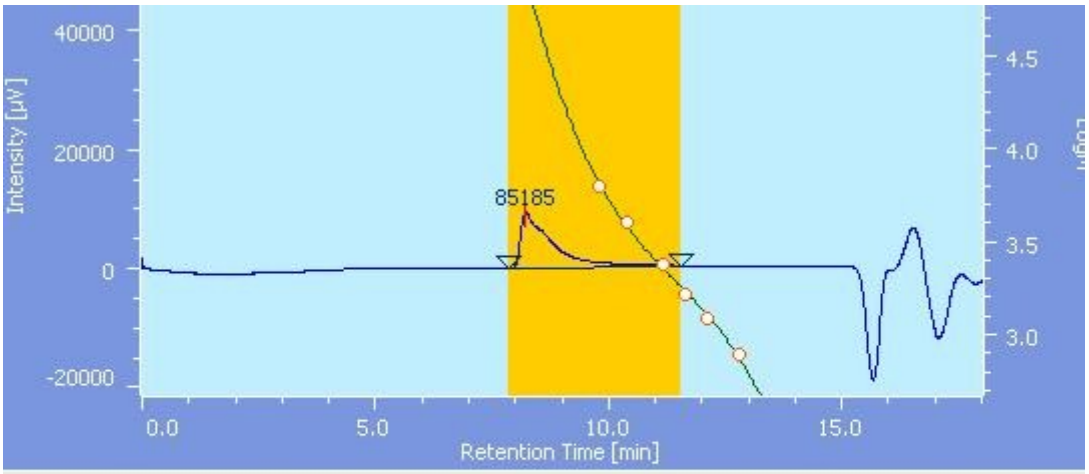


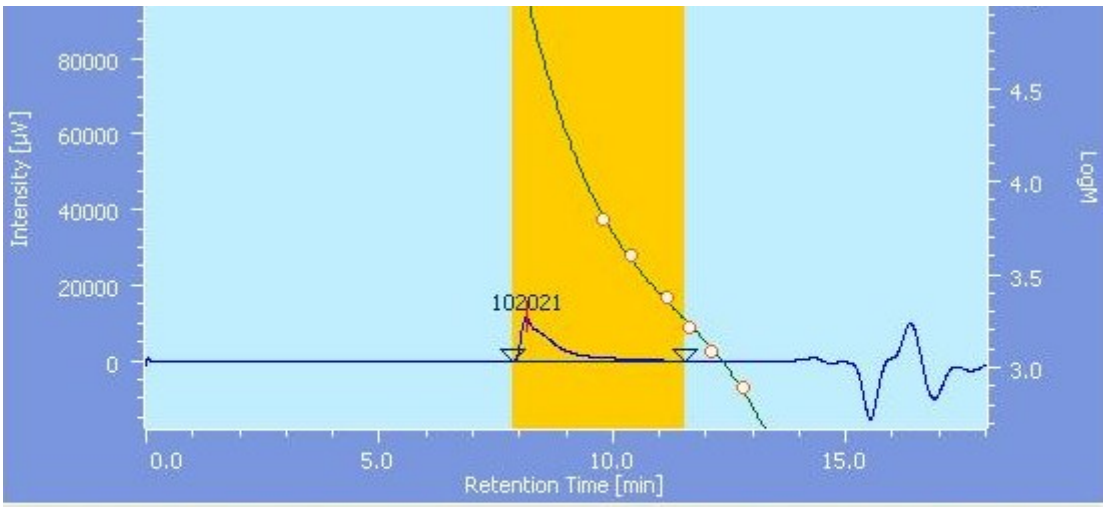
Figure S10. ^{1}H and ^{13}C NMR spectrum of **L^{PhiPr}-Na**



MW Calculation Results: (S06) [KetBnNa] [LA] [BnOH]=[0.5] [100] [1

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.8600 - 11.5300	1	7.8600 - 11.5300	8.2000	85185	18217	46771	70867	46771	2.5675

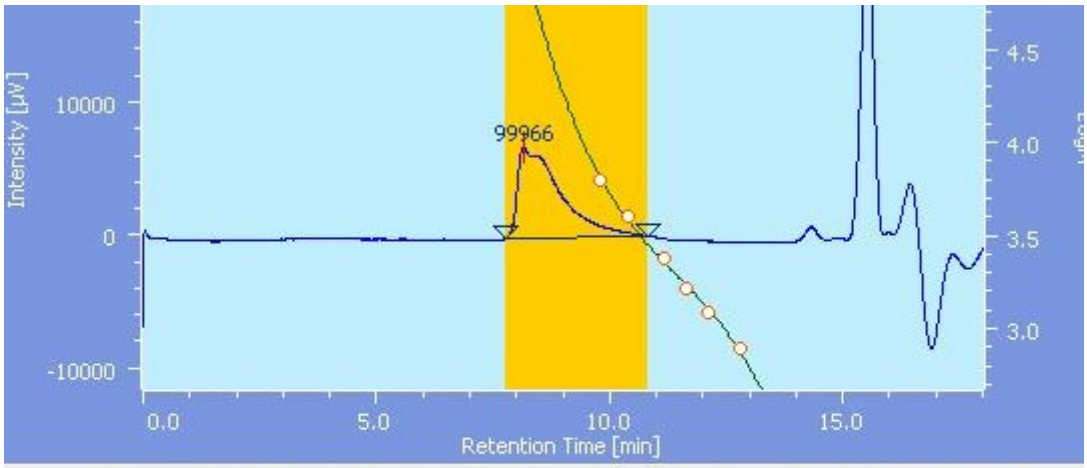
Figure S11. GPC result of PLA of entry 1



MW Calculation Results: (S14) [KettBuNa] [LA] [BnOH]=[0.5] [100] [1

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.8600 - 11.5300	1	7.8600 - 11.5300	8.1250	102021	19207	54915	85478	54915	2.8592

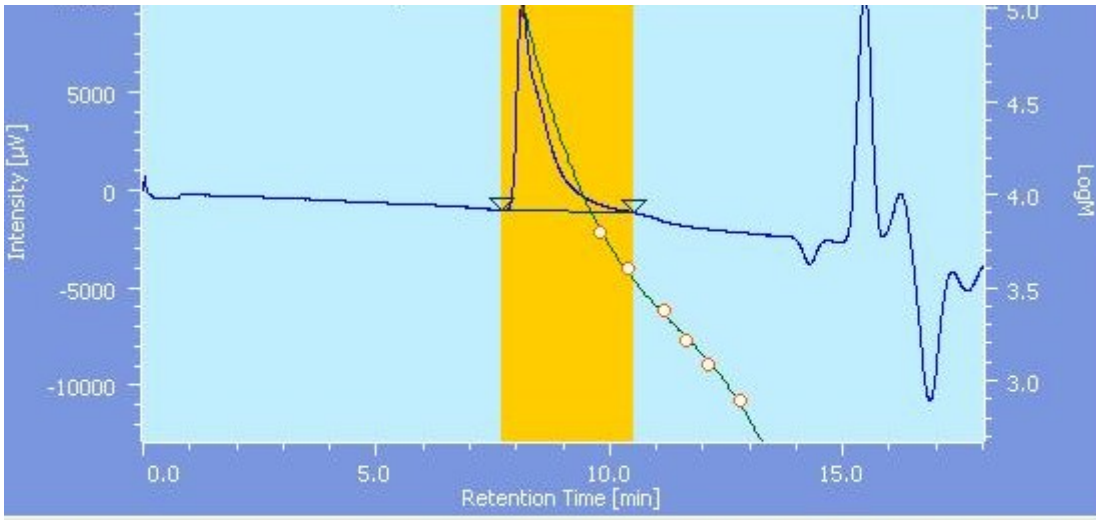
Figure S12. GPC result of PLA of entry 2



MW Calculation Results: (S11) [KetC2NMe2Na] [LA] [BnOH]=[0.5] [1(

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.7400 - 10.8200	1	7.7400 - 10.8200	8.1333	99966	22605	52226	86354	52226	2.3104

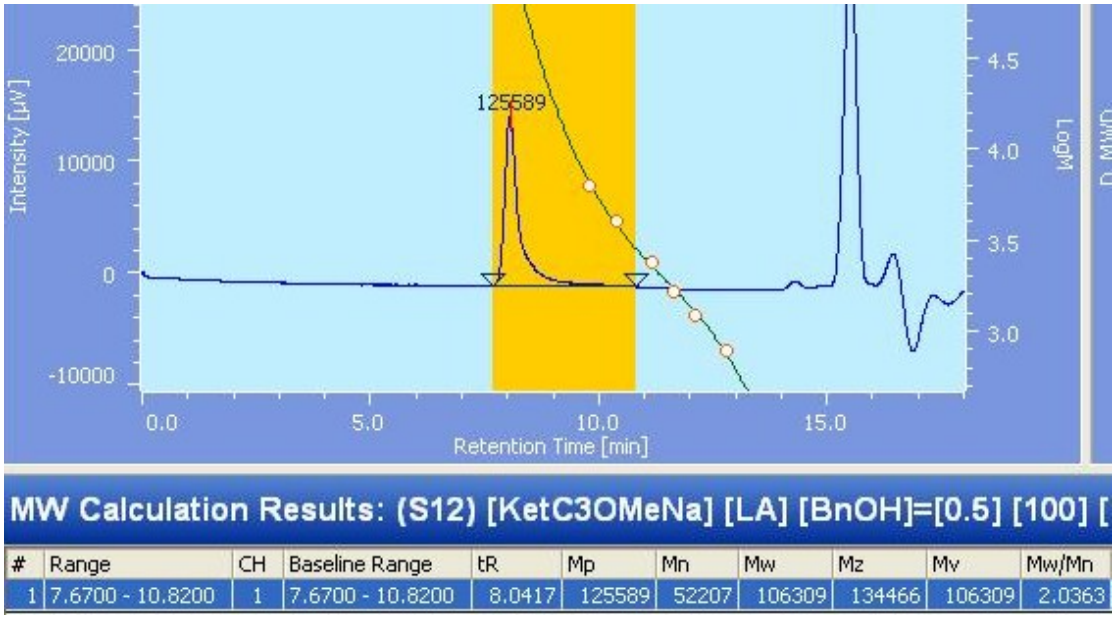
Figure S13. GPC result of PLA of entry 3



MW Calculation Results: (S19) [KetC2OMeNa] [LA] [BnOH]=[0.5] [100

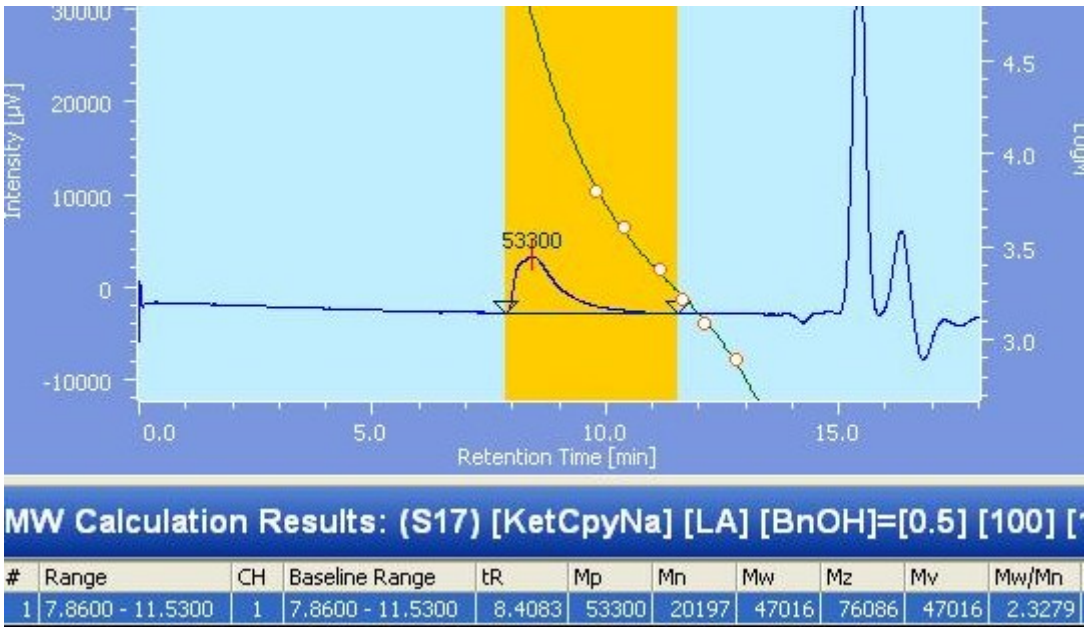
#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.6900 - 10.4800	1	7.6900 - 10.4800	8.1083	106284	34694	67828	96084	67828	1.9550

Figure S14. GPC result of PLA of entry 4



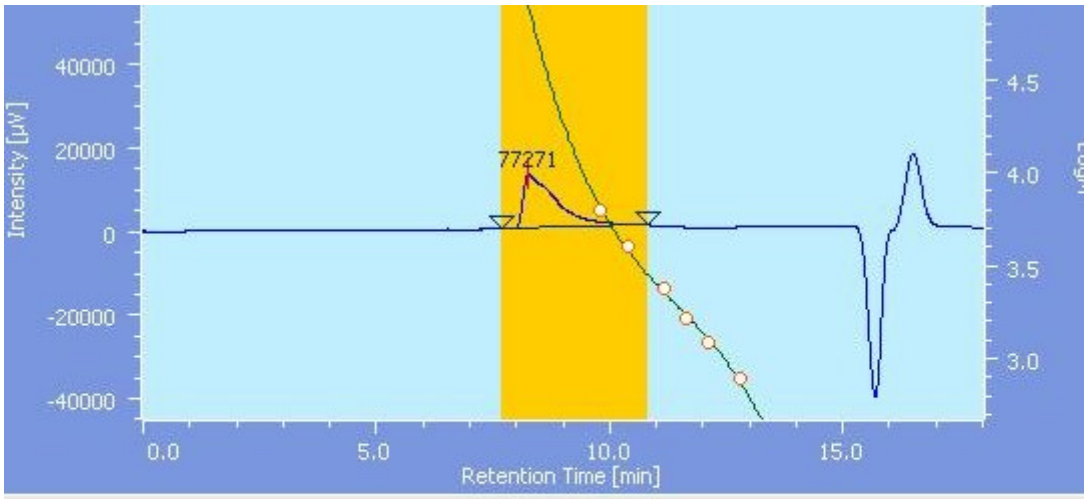
#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.6700 - 10.8200	1	7.6700 - 10.8200	8.0417	125589	52207	106309	134466	106309	2.0363

Figure S15. GPC result of PLA of entry 5



#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.8600 - 11.5300	1	7.8600 - 11.5300	8.4083	53300	20197	47016	76086	47016	2.3279

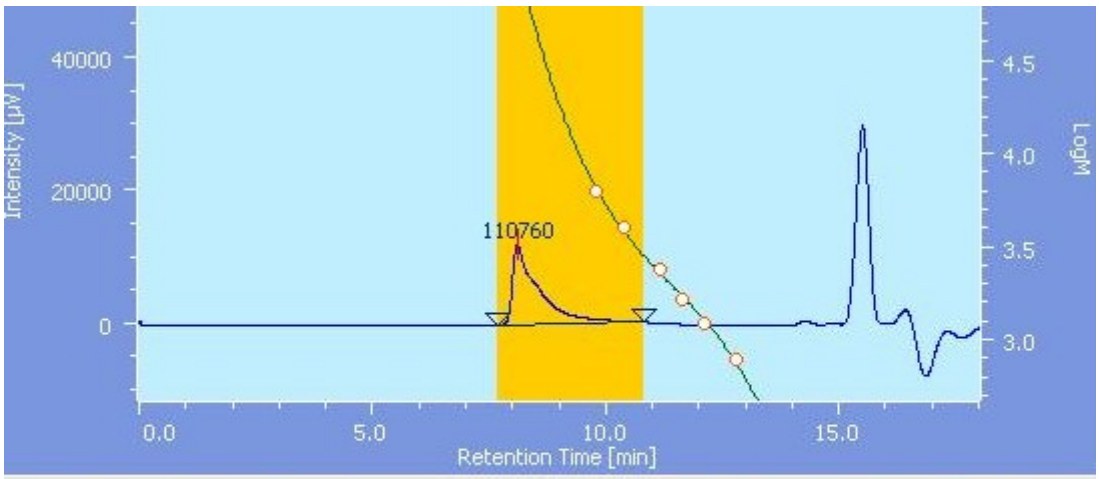
Figure S16. GPC result of PLA of entry 6



MW Calculation Results: (S03) [KetTHFNa] [LA] [BnOH]=[0.5] [100] [

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.6700 - 10.8200	1	7.6700 - 10.8200	8.2417	77271	22929	44275	64095	44275	1.9310

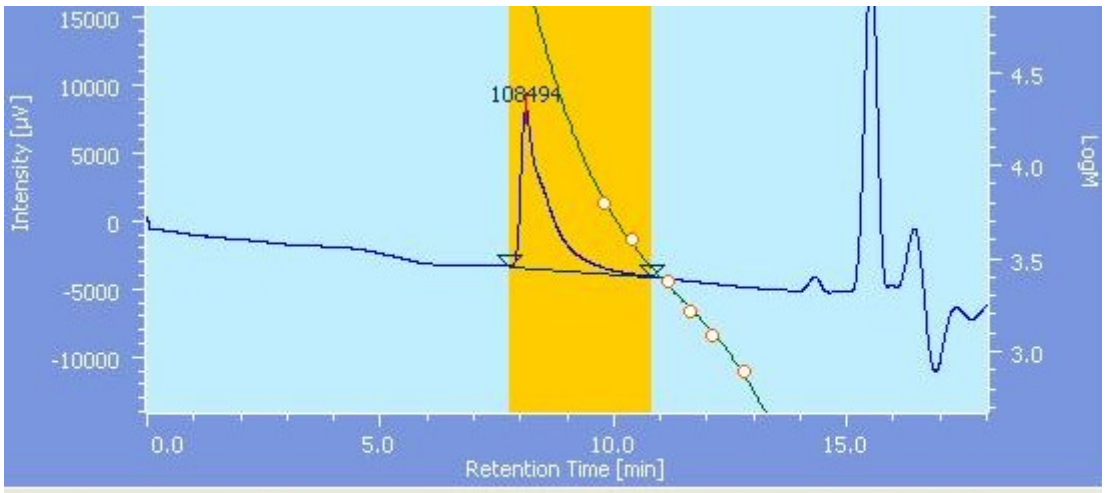
Figure S17. GPC result of PLA of entry 7



MW Calculation Results: (S13) [KetPhMe2Na] [LA] [BnOH]=[0.5] [100]

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.6700 - 10.8200	1	7.6700 - 10.8200	8.0917	110760	30114	67417	97952	67417	2.2388

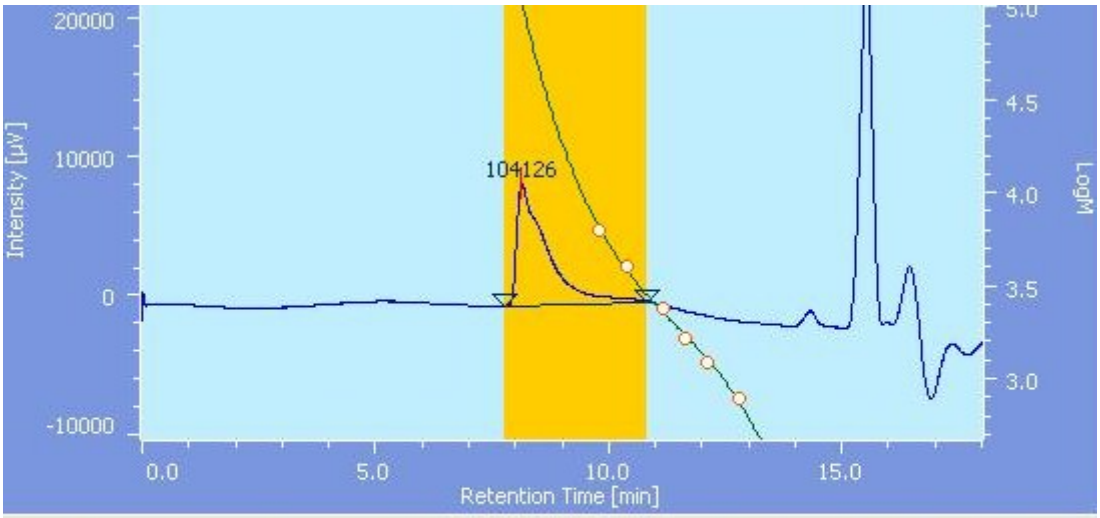
Figure S18. GPC result of PLA of entry 8



MW Calculation Results: (S10) [KetPhMe3Na] [LA] [BnOH]=[0.5] [100]

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.7400 - 10.8200	1	7.7400 - 10.8200	8.1000	108494	34697	68622	96734	68622	1.9778

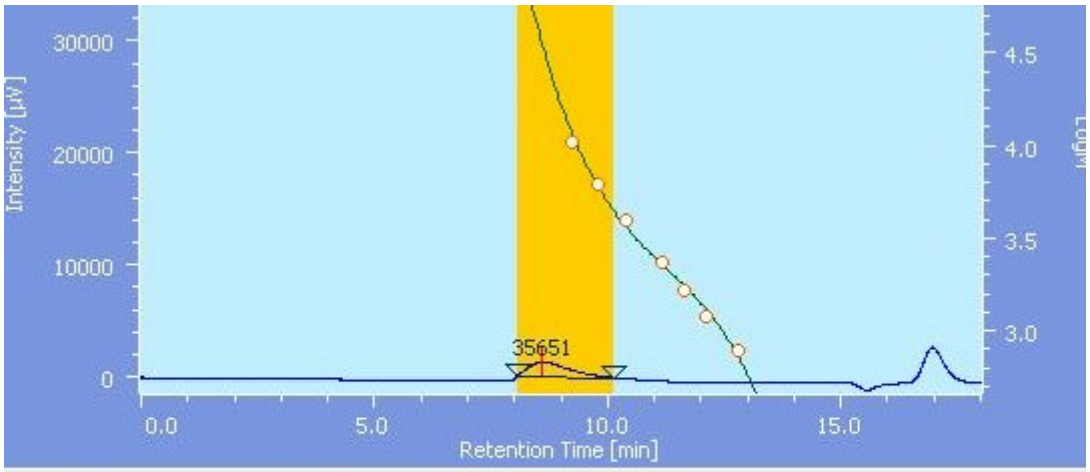
Figure S19. GPC result of PLA of entry 9



MW Calculation Results: (S09) [KetdiisopyNa] [LA] [BnOH]=[0.5] [100

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.7400 - 10.8200	1	7.7400 - 10.8200	8.1167	104126	27407	60106	87804	60106	2.1931

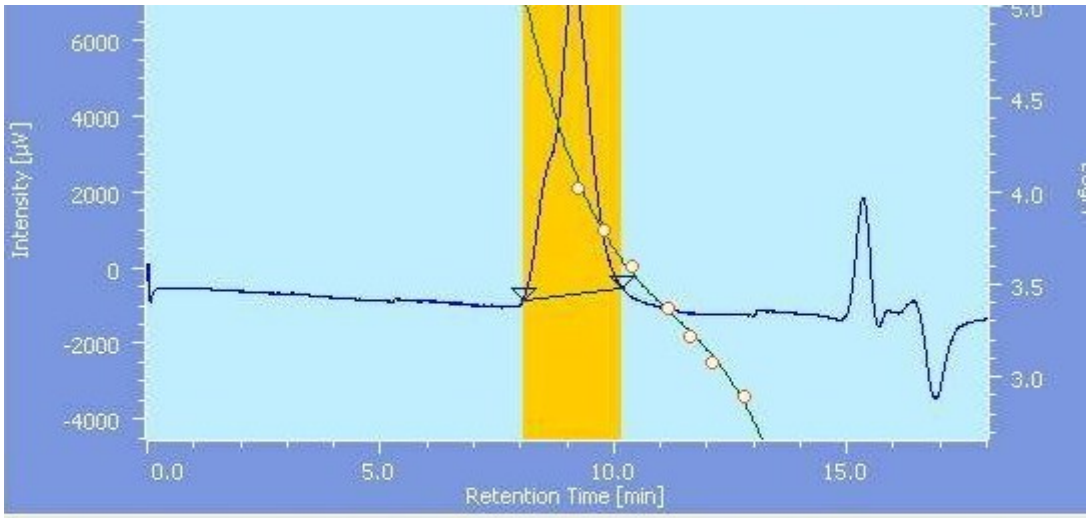
Figure S20. GPC result of PLA of entry 10



MW Calculation Results: S006

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	8.0400 - 10.1100	1	8.0400 - 10.1100	8.5667	35651	18994	31338	47273	31338	1.6499

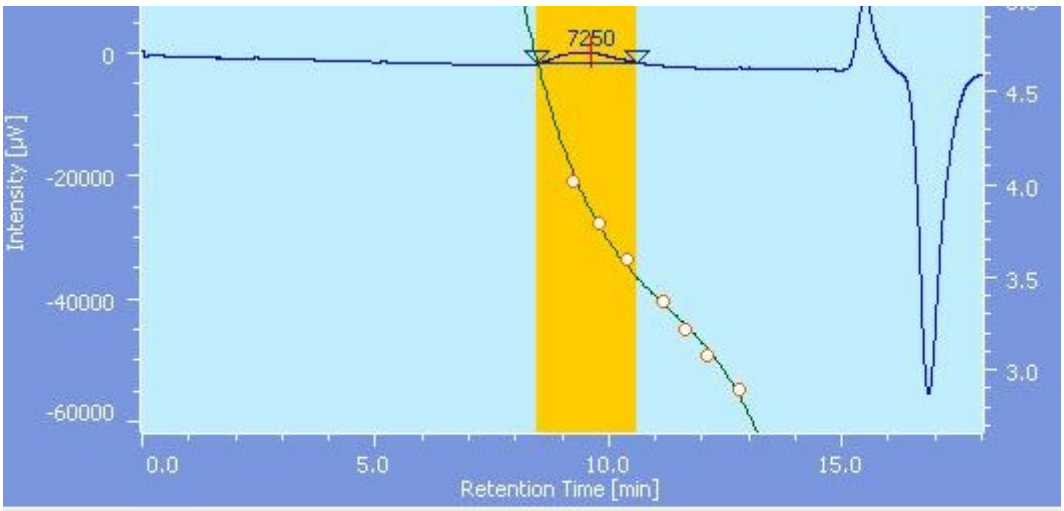
Figure S21. GPC result of PLA of entry 11



MW Calculation Results: [Y01][LA][tBuNa][BnOH]=[50][1][1][0oC]

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	8.0400 - 10.1600	1	8.0400 - 10.1600	9.1333	13142	13176	19179	30732	19179	1.4557

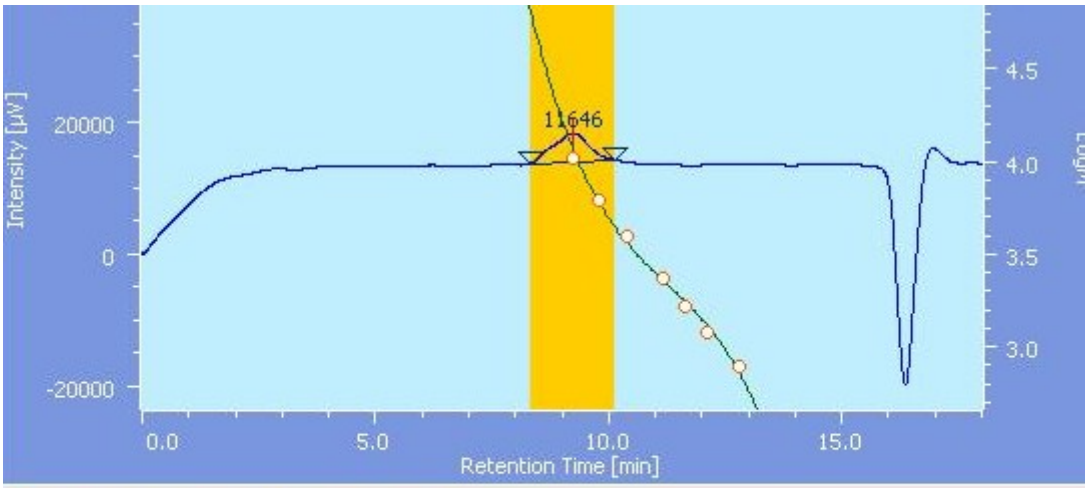
Figure S22. GPC result of PLA of entry 12



MW Calculation Results: s020

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	8.4500 - 10.6000	1	8.4500 - 10.6000	9.5917	7250	7869	10676	14917	10676	1.3567

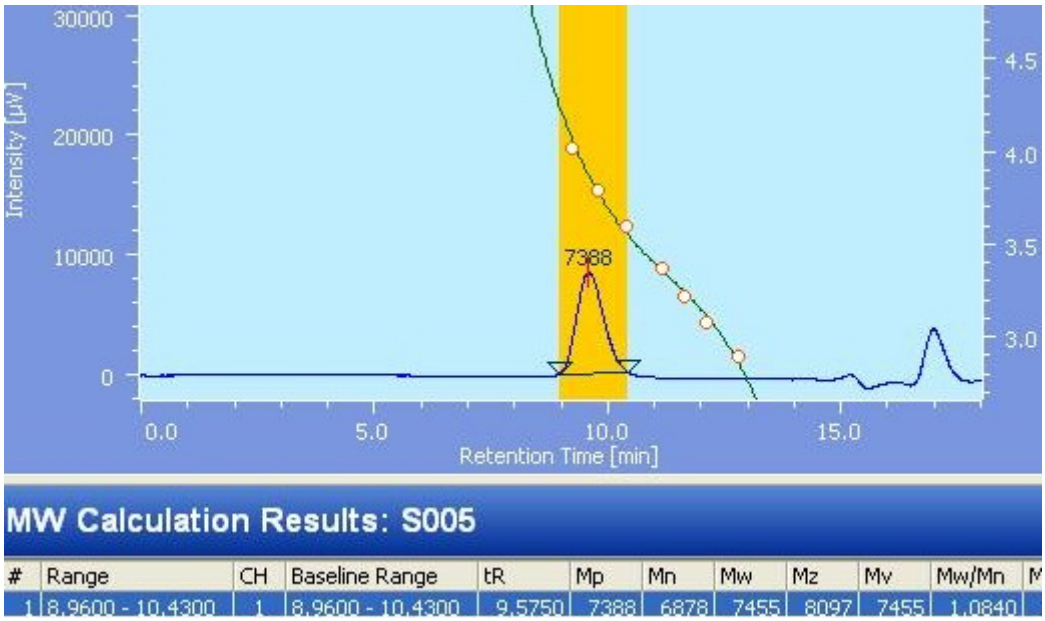
Figure S23. GPC result of PLA of entry 14



MW Calculation Results: s013

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	8.3000 - 10.1100	1	8.3000 - 10.1100	9.2167	11646	11863	15395	20682	15395	1.2977

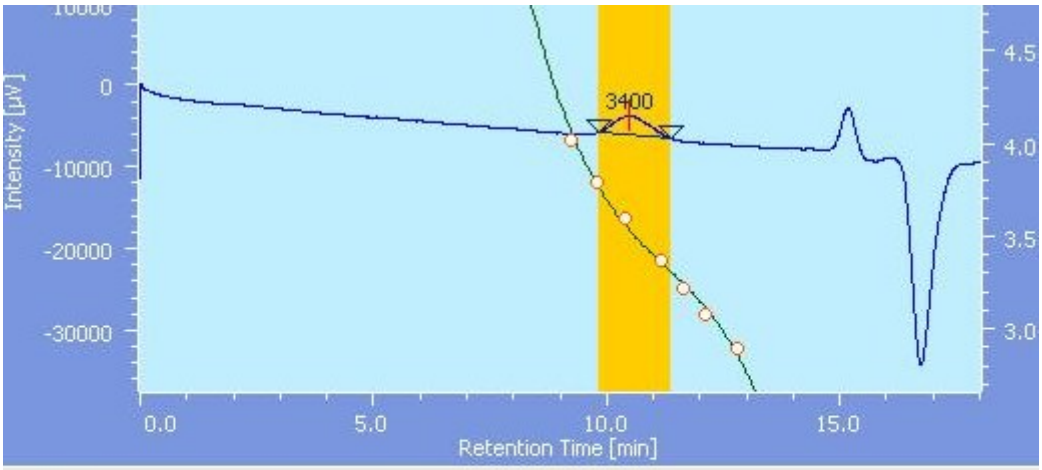
Figure S24. GPC result of PLA of entry 15



MW Calculation Results: S005

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn	M
1	8.9600 - 10.4300	1	8.9600 - 10.4300	9.5750	7388	6878	7455	8097	7455	1.0840	

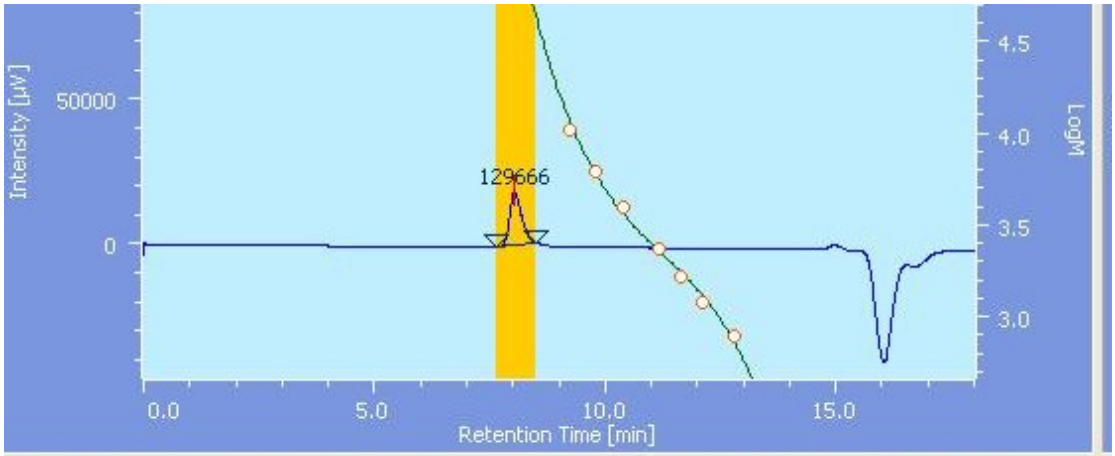
Figure S25. GPC result of PLA of entry 16



MW Calculation Results: S017

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	9.8200 - 11.3600	1	9.8200 - 11.3600	10.4583	3400	3205	3342	3487	3342	1.0427

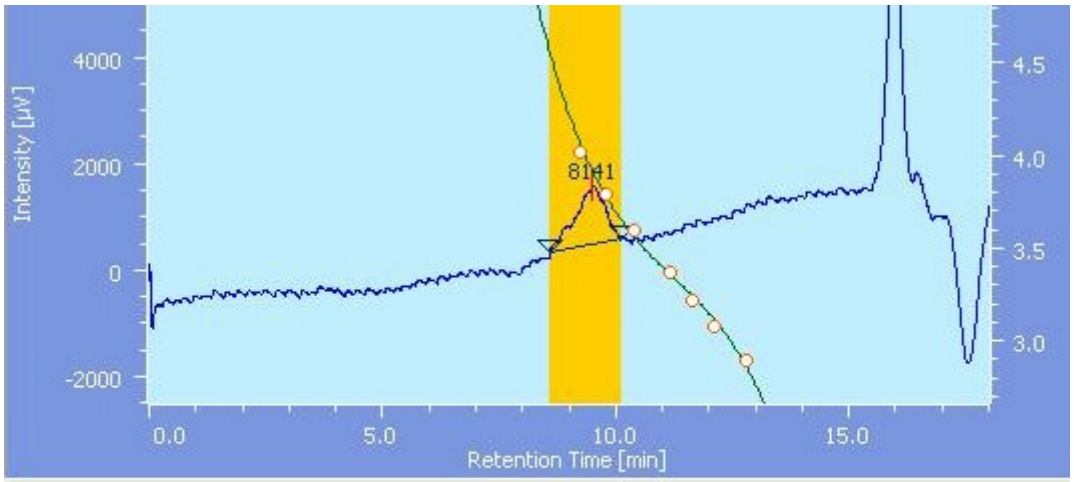
Figure S26. GPC result of PLA of entry 17



MW Calculation Results: [Y1126][ketiminePhipr2][cat][BnOH]=[200][0.7

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.6400 - 8.4700	1	7.6400 - 8.4700	8.0250	129666	112633	127492	143102	127492	1.1319

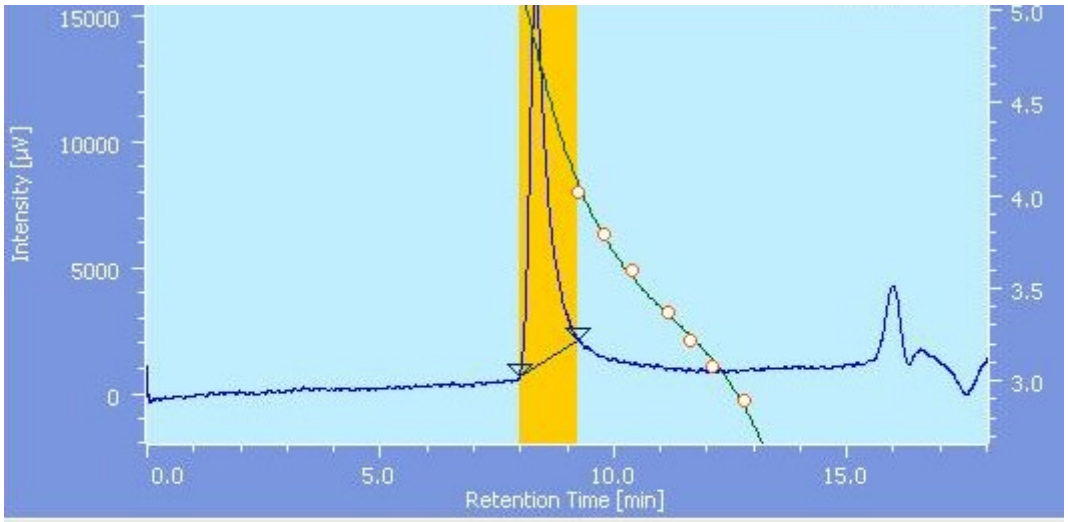
Figure S27. GPC result of PLA of entry 20



MW Calculation Results: [Y01][LA][tBuNa][BnOH][=[50][1][1]

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	8.5700 - 10.1100	1	8.5700 - 10.1100	9.4917	8141	9004	10765	13414	10765	1.1956

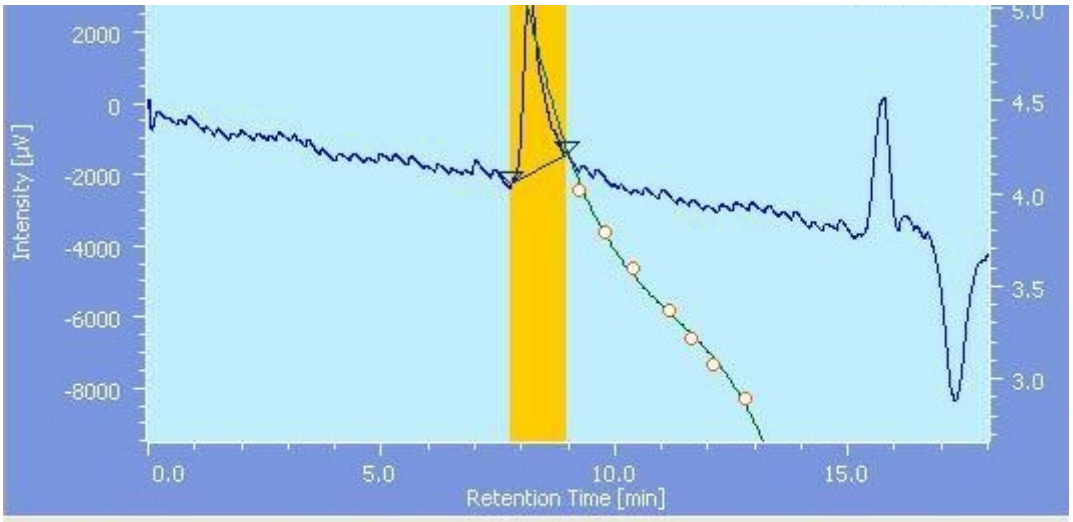
Figure S28. GPC result of PLA of entry 21



MW Calculation Results: [Y02][LA][tBuNa][BnOH][=[100][1][1]

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.9600 - 9.2300	1	7.9600 - 9.2300	8.3083	63069	43697	54665	65124	54665	1.2510

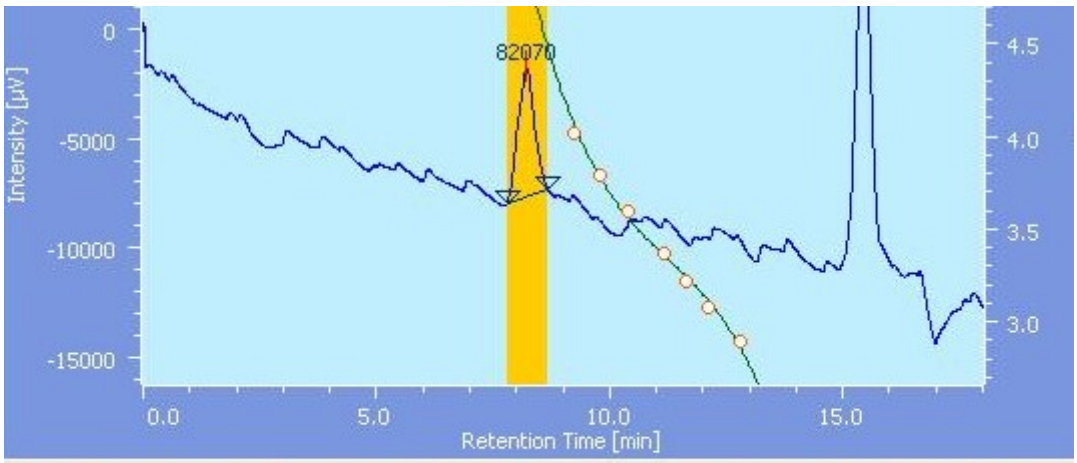
Figure S29. GPC result of PLA of entry 22



MW Calculation Results: [Y01][LA][tBuNa][BnOH][=[100][1][1]

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.7700 - 8.9400	1	7.7700 - 8.9400	8.1583	91180	63197	79753	96865	79753	1.2620

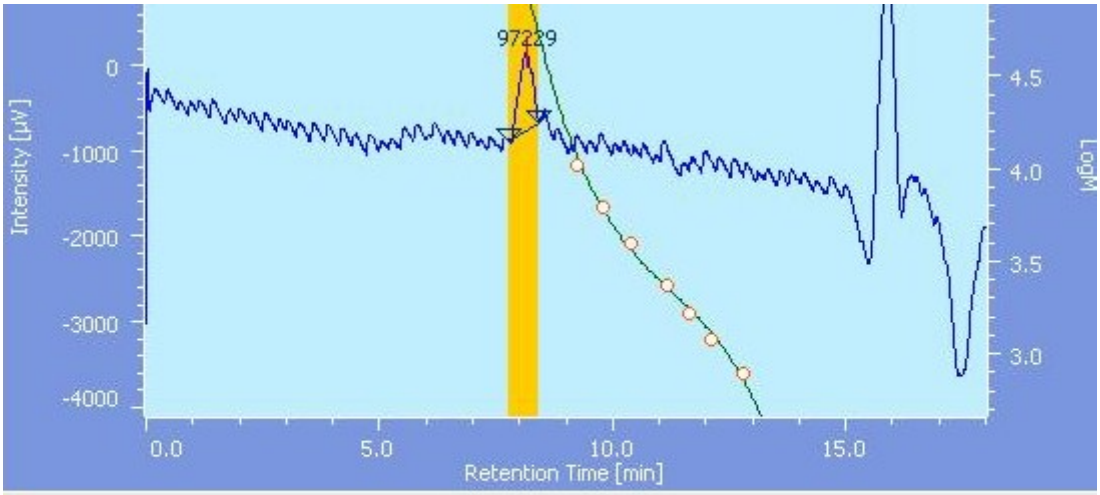
Figure S30. GPC result of PLA of entry 23



MW Calculation Results: [Y01][LA][tBuNa][BnOH]=[200][1][1][0oC]

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.7900 - 8.6500	1	7.7900 - 8.6500	8.2000	82070	77606	91899	108864	91899	1.1842

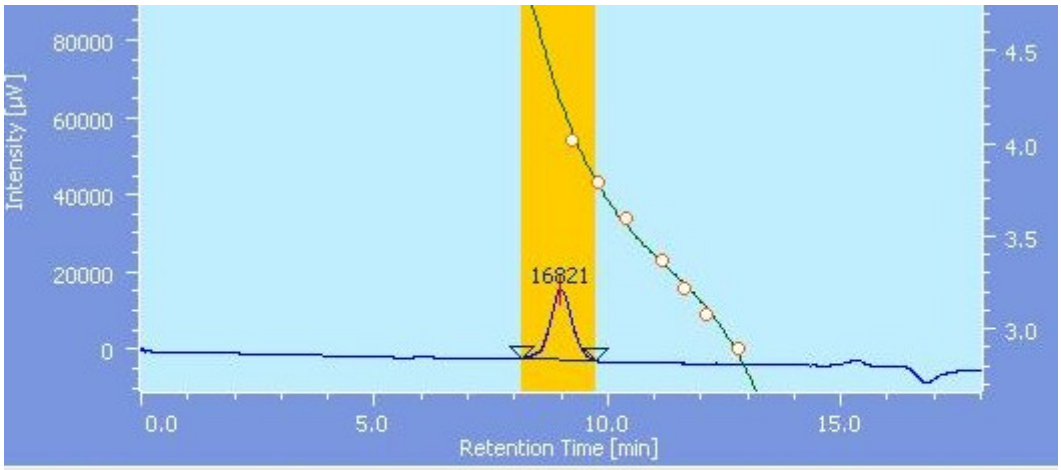
Figure S31. GPC result of PLA of entry 24



MW Calculation Results: [Y01][LA][tBuNa][BnOH][=[400][1][1]

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	7.7700 - 8.4000	1	7.7700 - 8.4000	8.1333	97229	96836	106878	117798	106878	1.1037

Figure S32. GPC result of PLA of entry 25



MW Calculation Results: [Y02][LA][ketiminetbutylNNa][BnOH]=[200

#	Range	CH	Baseline Range	tR	Mp	Mn	Mw	Mz	Mv	Mw/Mn
1	8.1300 - 9.7200	1	8.1300 - 9.7200	8.9750	16821	15832	18604	23017	18604	1.1751

Figure S33. GPC result of PLA of entry 26