Supporting Information for

Synthesis of Dendrimer-supported Ferrocenylmethyl Aziridino Alcohol Ligands and Their Application in Asymmetric Catalysis

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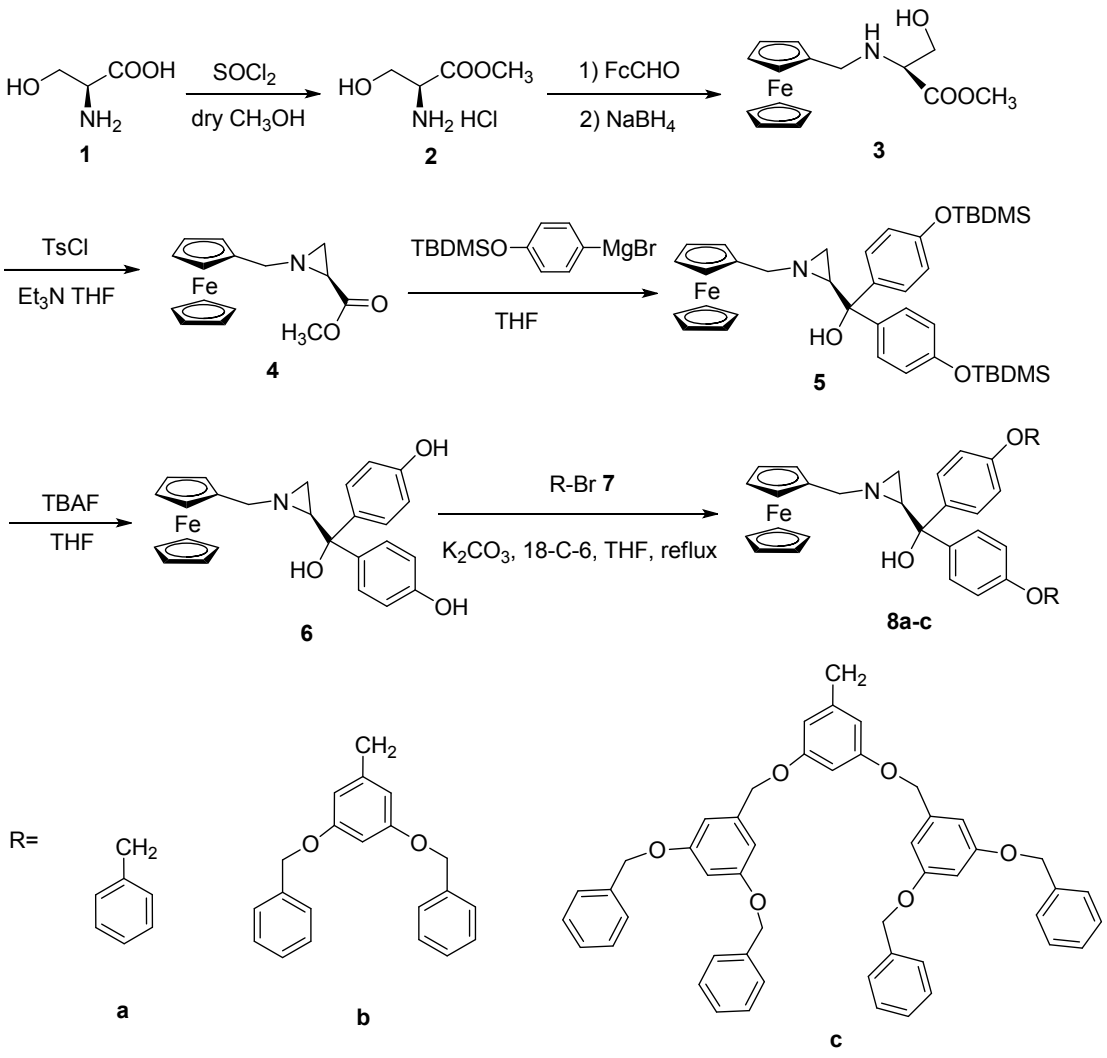
General methods

Oxygen- and moisture-sensitive reactions were carried out under a nitrogen atmosphere. Solvents were purified and dried by standard methods prior to use unless otherwise stated. All commercially available reagents were used without further purification unless otherwise noted. Column chromatography was performed on silica gel (100-200 mesh). Melting points were measured on a BEI JING TECH X-5 melting point apparatus and are uncorrected. Infrared spectra were recorded on a Nicolet-NEXUS 670 FT-IR spectrometer. ^{1}H NMR and ^{13}C NMR Spectra were performed on a Bruker DPX-400 (400 MHz) spectrometer in $CDCl_3$ with TMS as an internal standard; *J* values are given in hertz. Mass spectra were obtained using a Bruker esquire-3000 instrument with an electrospray ionization source (ESIMS). All of the ESIMS specters were performed using MeOH as the solvent. Optical rotations were measured on a Perkin-Elmer, model 341 Polarimeter at 20 °C in $CHCl_3$. The ee value was determined by HPLC using a chiral column with hexane-propan-2-ol (ratio as indicated) as the eluent. The chromatographic system was VARIAN PROSTAR, consisted of a UV-VIS detector (model 320) and two pumps (model 320). The column used was a Chiralcel OD-H (250×4.6 mm) or Chiralcel OB-H (250×4.6 mm) from Daicel Chemical Ind., Ltd. (Japan). The column was operated at ambient temperature.

General procedure for the synthesis of chiral ligands bearing dendrimers



Scheme 1. Synthesis of ferrocenyl β-amino alcohol ligand

Compounds **4** was prepared according to the literature procedures.[1]

General procedure for the synthesis of compound **5**

A Grignard reagent was prepared from 133 mg (5.5 mmol) magnesium and 1.55 g (4-bromophenoxy) (*tert*-butyl) dimethylsilane (5.4 mmol) in dry THF (15 mL). Adding a small crystal of iodine to initiate the reaction, and then the reaction mixture was heated to reflux for 2h. The solution was cooled to 0 °C, before adding 0.25 g (0.84 mmol) **4**. The reaction was quenched with saturated aqueous NH_4Cl at 0 °C after it carried out completely at room temperature. The phases were separated and the aqueous phase was extracted with Et_2O (3×10 mL). The combined organic phases were washed with brine (15mL), dried over Na_2SO_4 and after filtration, the solvent

was removed under reduced pressure. The resulting residue was purified by the preparative TLC with petroleum (60-90 °C) / EtOAc (V/V, 6:1) as developing solvent to give a yellow solid: mp 85-87 °C, yield 70%. $[\alpha]_D^{20}$ = -28 (*c* 0.5, in $CHCl_3$). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.24-7.13 (m, 4H, Ar-*H*), 6.78-6.70 (m, 4H, Ar-*H*), 4.12-4.03 (m, 9H, Fc*H*), 3.71 (s, 1H, -O*H*), 3.51 (d, *J* = 13.0 Hz, 1H, Fc*CH'H*N), 3.22 (d, *J* = 13.0 Hz, 1H, Fc*CH'H*N), 2.31 (dd, *J* = 6.3, 3.5 Hz, 1H,- N-*CH*), 1.90 (d, *J* = 3.5 Hz, 1H, -N-*CH'H*), 1.48 (d, *J* = 6.3 Hz, 1H, -N-*CH'H*), 0.99 (s, 9H, -C(*CH*$_3$)$_3$), 0.96 (s, 9H, -C(*CH*$_3$)$_3$), 0.20 (d, *J* = 0.7 Hz, 6H, -C*H*$_3$), 0.18 (d, *J* = 3.3 Hz, 6H, -C*H*$_3$).^{13}C NMR (100MHz, $CDCl_3$) δ 154.39 , 140.73 , 137.89 , 127.55 , 119.33 , 83.88 , 73.56 , 68.91 , 68.47 , 68.08 , 58.14 , 45.77 , 30.15 , 25.66. IR (KBr) 3429, 3084, 2939, 2858, 1607, 1507, 1465, 1404, 1357, 1258, 1171, 1091, 1006, 916, 833, 558, 479. HRMS(ESI): calcd for $C_{38}H_{53}FeNO_3Si_2$ $[M]^+$ 683.2913, found 683.2944 $[M+H]^+$ 684.2947, found 684.2990.

General procedure for the synthesis of compound **6**[2,3]

To a solution of 1mL TBAF (1 M in THF) in dry THF (5 mL) at room temperature was dropped 0.31g (0.45 mmol) **5** (in 10 mL dry THF) in half an hour. The resulting solution was stirred at room temperature. After half an hour, the solution was quenched with pure water. The phases were separated and the aqueous phase was extracted with EtOAc (3×10 mL). The combined organic phases were washed with brine (20 mL), dried over Na_2SO_4 and after filtration, the solvent was removed under reduced pressure. The resulting residue was purified by the preparative TLC with CH_2Cl_2:CH_3OH (V/V, 20:1) as developing solvent to give a yellow solid: mp 117-118.3 °C, yield 93%. $[\alpha]_D^{20}$ = -54 (*c* 0.724, in CH_3OH). ^{1}H NMR (400 MHz, DMSO) δ 7.12 (dd, *J* = 25.7, 8.6 Hz, 4H, Ar-*H*), 6.62 (dd, *J* = 8.6, 1.9 Hz, 4H, Ar-*H*), 5.76 (s, 2H, Ar-O*H*), 4.38 (s, 1H, -O*H*), 4.20-4.00 (m, 9H, Fc*H*), 3.56 (d, *J* = 13.0 Hz, 1H, Fc*CH'H*N), 3.00 (d, *J* = 13.0 Hz, 1H, Fc*CH'H*N), 2.36 (dd, *J* = 6.1, 3.3 Hz, 1H, - N-*CH*), 1.52 (d, *J* = 3.0 Hz, 1H, -N-*CH'H*), 1.33 (d, *J* = 6.2 Hz, 1H, -N-*CH'H*). ^{3}C NMR (100 MHz, DMSO) δ 155.88 , 138.26 , 137.56 , 127.93 , 127.48 , 114.36 , 84.92 , 74.17 , 69.05 , 68.51 , 67.69 , 58.51 , 55.13 , 46.38 , 29.45. IR (KBr) 3460, 2927, 1601, 1509, 1446, 1369, 1236, 1169, 1031, 829, 587, 488. HRMS (ESI): calcd for $C_{26}H_{25}FeNO_3$ $[M+H]^+$ 456.1217, found 456.1258 $[M+Na]^+$ 478.1082, found 478.1126.

General procedure for the synthesis of chiral ligands bearing dendrimers

Compound **8a** A mixture 0.1g (0.22 mmol) **6**, the corresponding benzyl bromide (53 μL), 0.12g (0.87 mmol) K_2CO_3 and 0.001g (0.004 mmol) 18-C-6 in THF was heated at reflux and stirred vigorously for one hour. After most of the organic solvent was removed under reduced pressure, CH_2Cl_2 (20 mL) and water (20 mL) was added to the mixture. The phases were separated and the aqueous phase was extracted with

CH_2Cl_2 (3×10 mL). The combined organic phases were washed with brine (20 mL), dried over Na_2SO_4 and after filtration, the solvent was removed under reduced pressure. The resulting residue was purified by the preparative TLC with petroleum (60-90 °C)/EtOAc (V/V, 4:1) as developing solvent to give a yellow glass: mp 39-41 °C; Yield 64%. $[\alpha]_D^{20}$ = -14 (*c* 1.05, in $CHCl_3$). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.46-7.30 (m, 10H, Ar-*H*), 7.30-7.22 (m, 4H, Ar-*H*), 6.89 (td, *J* = 9.4, 2.5 Hz, 4H, Ar-*H*), 5.04 (d, *J* = 8.2 Hz, 4H, Ar-O-C*H*$_2$), 4.17-3.96 (m, 9H, Fc*H*), 3.71 (d, *J* = 3.6 Hz, 1H, -O*H*), 3.49 (d, *J* = 12.9 Hz, 1H, Fc*CH'H*N), 3.25 (dd, *J* = 12.9, 1.9 Hz, 1H, Fc*CH'H*N), 2.34 (dd, *J* = 5.9, 3.1 Hz, 1H, -N-*CH*), 1.90 (d, *J* = 2.8 Hz, 1H, -N-*CH'H*), 1.48 (d, *J* = 6.3 Hz, 1H, -N-*CH'H*). ^{13}C NMR (100 MHz, $CDCl_3$) δ 157.71, 157.56, 140.43, 137.69, 137.08, 137.03, 128.56, 128.54, 127.93, 127.59, 127.47, 114.21, 114.17, 83.82, 73.48, 69.93, 69.00, 68.83, 68.46, 68.15, 68.08, 58.20, 45.63, 30.10. IR (KBr) 3429, 3035, 2921, 1607, 1505, 1456, 1381, 1317, 1236, 1170, 1105, 1024, 820, 737, 694, 635, 486.HRMS(ESI): calcd for $C_{40}H_{37}FeNO_3$ $[M]^+$ 635.2123 found 635.2088 $[M+H]^+$ 636.2156 , found 636.2204

Compound **8b** A mixture 0.1g (0.22 mmol) **4**, the corresponding 0.17 g (0.44 mmol) 7**b**, 0.3g (2.17 mmol) K_2CO_3 and 0.003g (0.011 mmol) 18-C-6 in THF was heated at reflux and stirred vigorously for two hours. The following procedure is the same as **8a**. The resulting residue was purified by the preparative TLC with petroleum (60-90 °C) / CH_2Cl_2 / EtOAc (V/V/V, 6:4:1) as developing solvent to give a yellow glass: mp 43-45 °C; Yield 76%. $[\alpha]_D^{20}$ = -15 (*c* 0.412, in $CHCl_3$). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49-7.20 (m, 24H, Ar-*H*), 6.87 (dd, *J* = 10.6, 8.9 Hz, 4H, Ar-*H*), 6.69 (dd, *J* = 10.4, 2.2 Hz, 4H, Ar-*H*), 6.58 (dt, *J* = 7.7, 2.2 Hz, 2H, Ar-*H*), 5.01 (dd, *J* = 24.6, 7.3 Hz, 12H, Ar-O-C*H*$_2$), 4.16-3.97 (m, 9H, Fc*H*), 3.71 (s, 1H, -O*H*), 3.49, 3.27 (d, *J* = 12.9 Hz, 2H, FcC*HH'*N), 2.34 (dd, *J* = 6.2, 3.4 Hz, 1H, - N-*CH*), 1.91 (d, *J* = 3.3 Hz, 1H, -N-*CH'H*), 1.49 (d, *J* = 6.3 Hz, 1H, -N-*CH'H*). ^{13}C NMR (100MHz, $CDCl_3$) δ 160.14 , 157.56 , 139.57 , 137.77 , 136.75 , 128.60 , 128.03 , 127.58 , 114.26 , 106.34 , 101.45 , 83.86 , 73.47 , 70.12 , 69.89 , 68.93 , 68.48 , 68.13 , 58.24 , 45.62 , 30.15 , 29.70. IR (KBr) 3420, 3033, 2921, 2860, 1598, 1504, 1452, 1376, 1299, 1234, 1154, 1019, 824, 738, 691, 581, 485. HRMS (ESI): calcd for $C_{68}H_{61}FeNO_7$ $[M]^+$ 1059.3797 found 1059.3811; $[M+H]^+$ 1060.3831, found 1060.3877; $[M+K]^+$ 1098.3434, found 1098.3487.

Compound **8c** A mixture 0.1g (0.22 mmol) **6**, the corresponding 0.355 g (0.44 mmol) **7c**, 0.414 g (3 mmol) K_2CO_3 and 0.024g (0.09 mmol) 18-C-6 in THF was heated at reflux and stirred vigorously for four hours. The following procedure is the same as **8c**. The resulting residue was purified by the preparative TLC with petroleum (60-90 °C) / CH_2Cl_2 / EtOAc (V/V/V, 6:4:1) as developing solvent to give a yellow glass: mp 49-51 °C yield 67 %. $[\alpha]_D^{20}$ = -5.9 (*c* 0.994, in $CHCl_3$). ^{1}H NMR (400 MHz,

$CDCl_3$) δ 7.48-7.27 (m, 40H, Ar-*H*), 7.22 (t, *J* = 4.4 Hz, 4H, Ar-*H*), 6.86 (t, *J* = 9.2 Hz, 4H, Ar-*H*), 6.72-6.58 (m, 12H, Ar-*H*), 6.58-6.46 (m, 6H, Ar-*H*), 5.05-4.85 (m, 28H, Ar-O-CH_2), 4.17-3.94 (m, 9H, Fc*H*), 3.68 (s, 1H, -O*H*), 3.46 (d, *J* = 13.0 Hz, 1H, FcC*HH'*N), 3.23 (d, *J* = 12.9 Hz, 1H, FcC*HH'*N), 2.30 (dd, *J* = 6.0, 3.4 Hz, 1H, - N-*CH*), 1.88 (d, *J* = 3.1 Hz, 1H, -N-*CH'H*), 1.45 (d, *J* = 6.3 Hz, 1H, -N-*CH'H*).^{13}C NMR (100 MHz, $CDCl_3$) δ 160.17, 160.08, 160.05, 157.68, 157.53, 140.54, 139.61, 139.56, 139.23, 137.83, 136.78, 128.57, 127.99, 127.63, 127.54, 114.28, 106.43, 106.41, 101.62, 101.54, 101.48, 83.89, 73.49, 70.11, 70.00, 69.92, 69.01, 68.83, 68.48, 68.16, 68.07, 58.22, 45.65, 30.17. IR (KBr) 3433, 3021, 2869, 1598, 1504, 1452, 1375, 1301, 1235, 1154, 1047, 830, 740, 693, 489.HRMS (ESI): calcd for $C_{124}H_{109}FeNO_{15}$; $[M]^+$ 1907.7147, found 1907.6949; $[M+H]^+$ 1908.7180, found 1908.7228.

Complete optimization data

Table S1. Yield of **8b** in different solvents [a], [b], [c]

Entry	Solvent	Reaction time (h)	Yield (%)[e]
1	THF	2	76
2	dry THF	2	73
3	MeCN	2	78
4	acetone	24[d]	54
5	dioxane	2	42
6	dioxane	24[d]	34
7	toluene	2	53
8	DMF	2	53

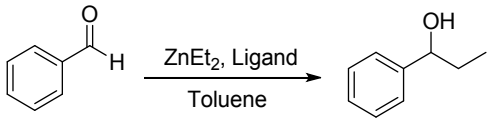
[a] All the solvents were used as received without further purification except entry 2 .
[b] All the reactions were carried out at reflux except entry 6 (75 ℃).
[c] The volume of all the solvents was 15 mL.
[d] The reactant did not disappeared by TLC until after 24h.
[e] Isolated yield

Table S2. Yields of different chiral ligands in THF and MeCN

Entry	Solvent [a]	Product	Yield (%) [b]
1	THF	**8a**	64
2	MeCN	**8a**	60
3	THF	**8b**	76
4	MeCN	**8b**	78
5	THF	**8c**	67
6	MeCN	**8c**	59

[a] All the solvents were used as received without further purification.
[b] Isolated yield.

Table S3. Optimizing the conditions for asymmetric addition of Et_2Zn to benzaldehyde [a]



Entry	Ligand	Mol (%)	Temperature (°C)	Yield (%)[b]	Ee (%)[c]	Confign.[d]
1	**8b**	1	0, 10 h then 20, 38h	95	41	*S*
2	**8b**	2	0, 10 h then 20, 38 h	97	80	*S*
3	**8b**	3	0, 10 h then 20, 38h	96	81	*S*
4	**8b**	5	0, 10 h then 20, 38h	97	89	*S*
5	**8b**	7	0, 10 h then 20, 38h	94	82	*S*
6	**8b**	10	0, 10 h then 20, 38h	96	89	*S*
7	**8b**	5	-20, 48 h	79	88	*S*
8	**8b**	5	0, 48 h	56	81	*S*
9	**8b**	5	20, 48 h	93	92	*S*
10	**8b**	5	40, 48 h	90	81	*S*
11	**6**	5	20, 48 h	49	21	*S*
12	**8a**	5	20, 48 h	95	92	*S*
13	**8c**	5	20, 48 h	56	63	*S*

[a] The reaction was carried out using 0.5 mmol of benzaldehyde in 2 mL of toluene; PhCHO/Et_2Zn =1:4; Et_2Zn (1 M solution in hexane)

[b] Isolated yield

[c] Determined by HPLC analysis using DAICEL CHIRALCEL OD-H.

[d] Absolute configuration was assigned by comparing the retention time on HPLC with the literature value.[4,5]

References

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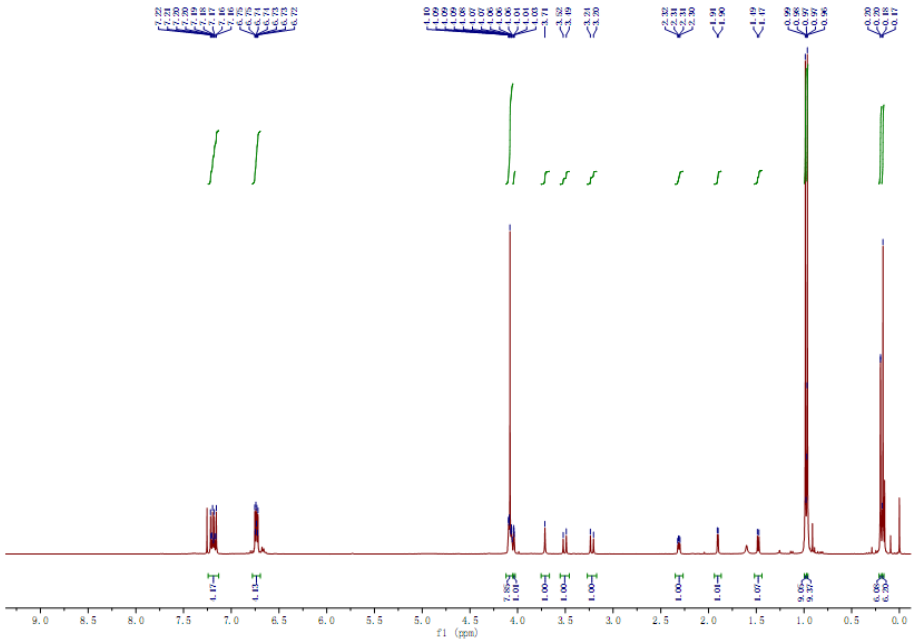
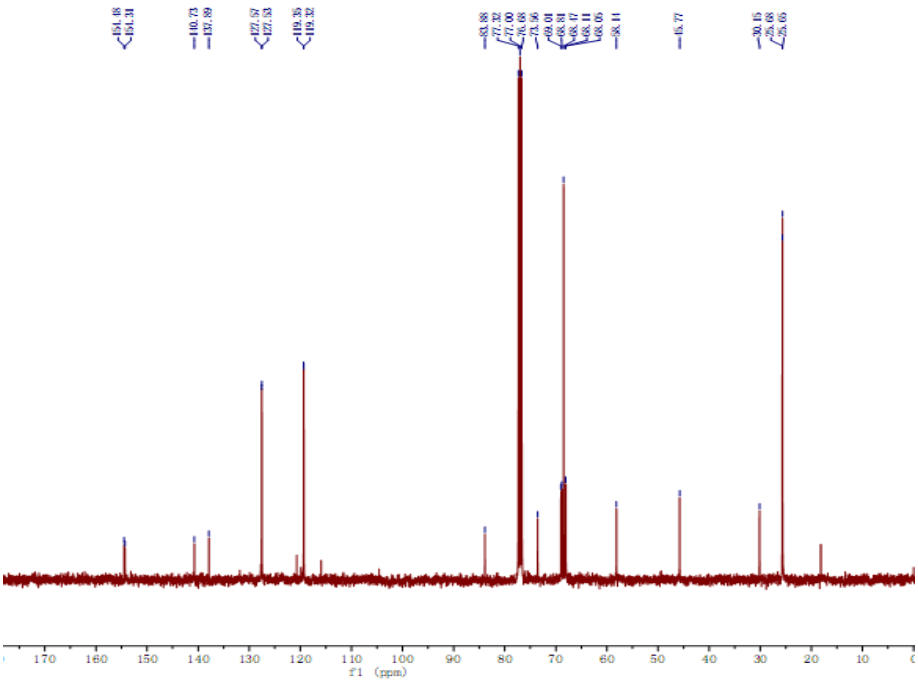
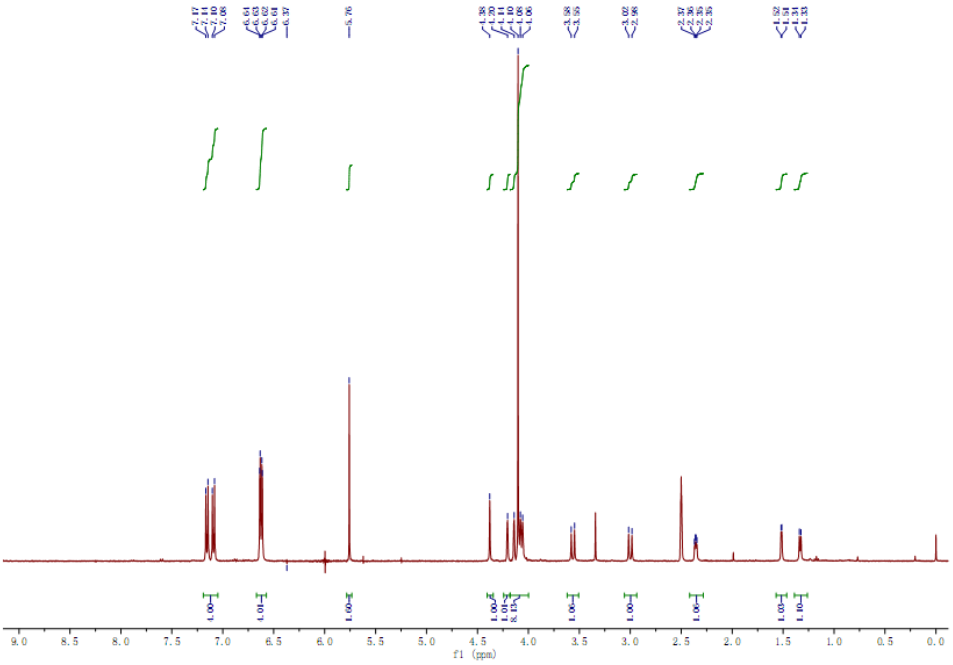
Copies of NMR Spectra and HPLC Chromatographs

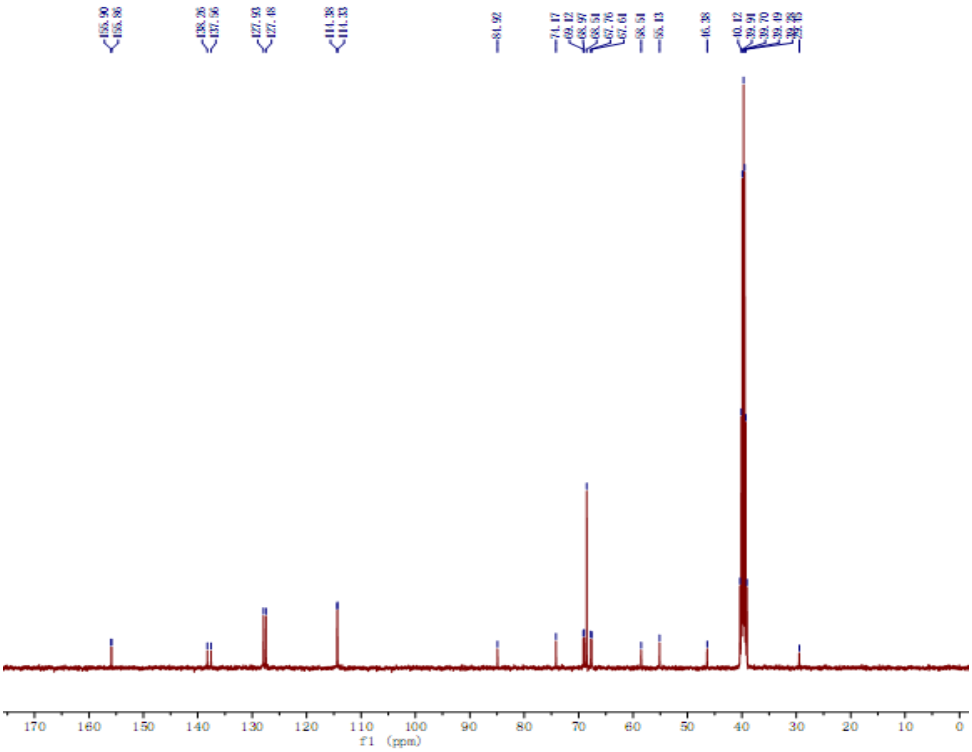
NMR Spectra of compound **5**



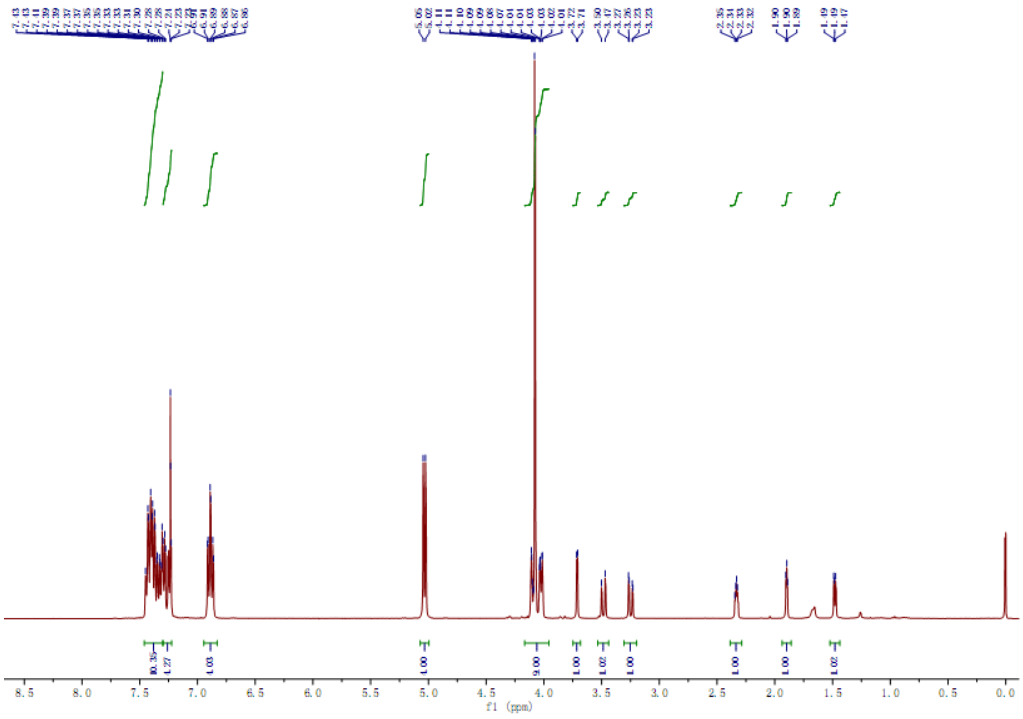


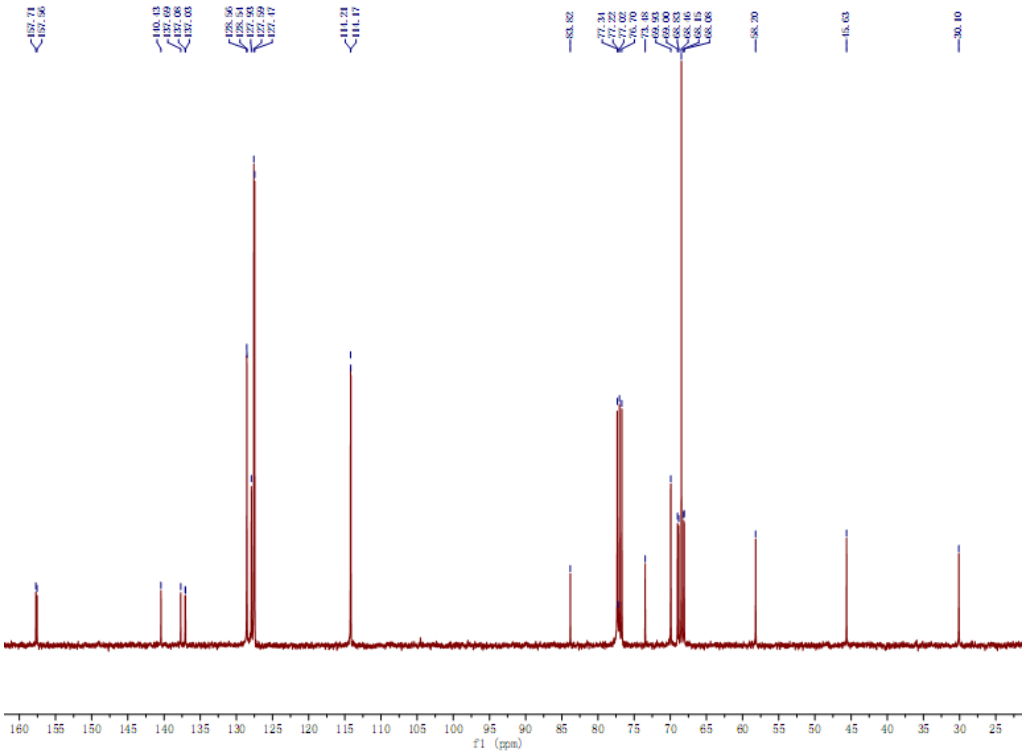
NMR Spectra of compound **6**



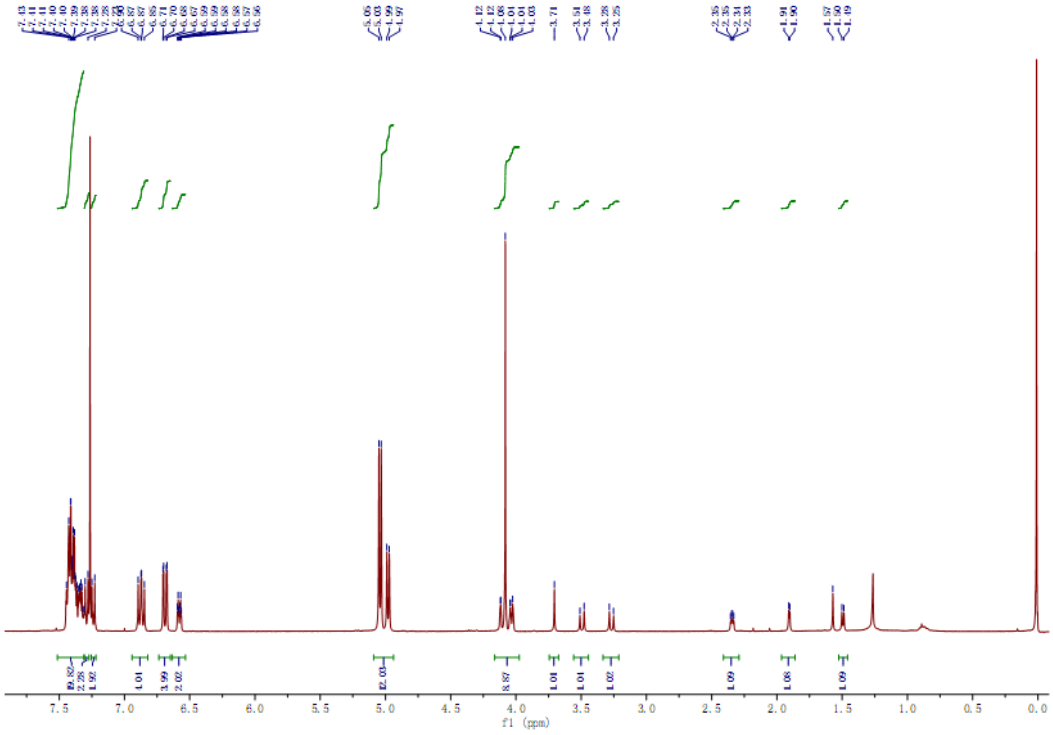


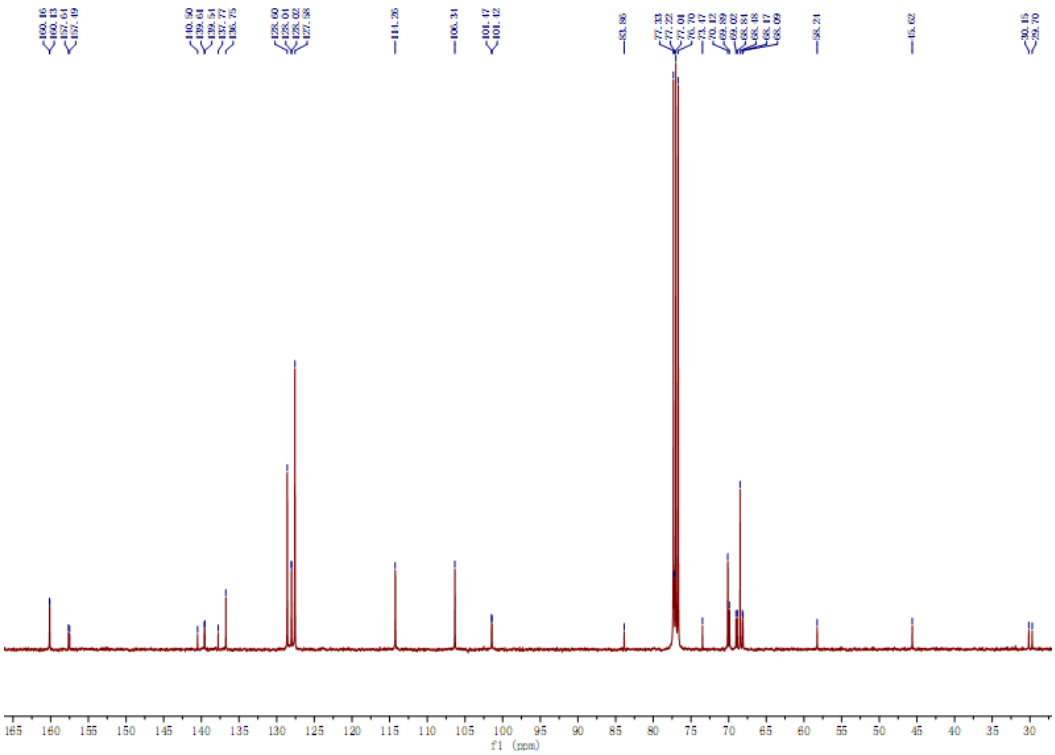
NMR Spectra of compound **8a**



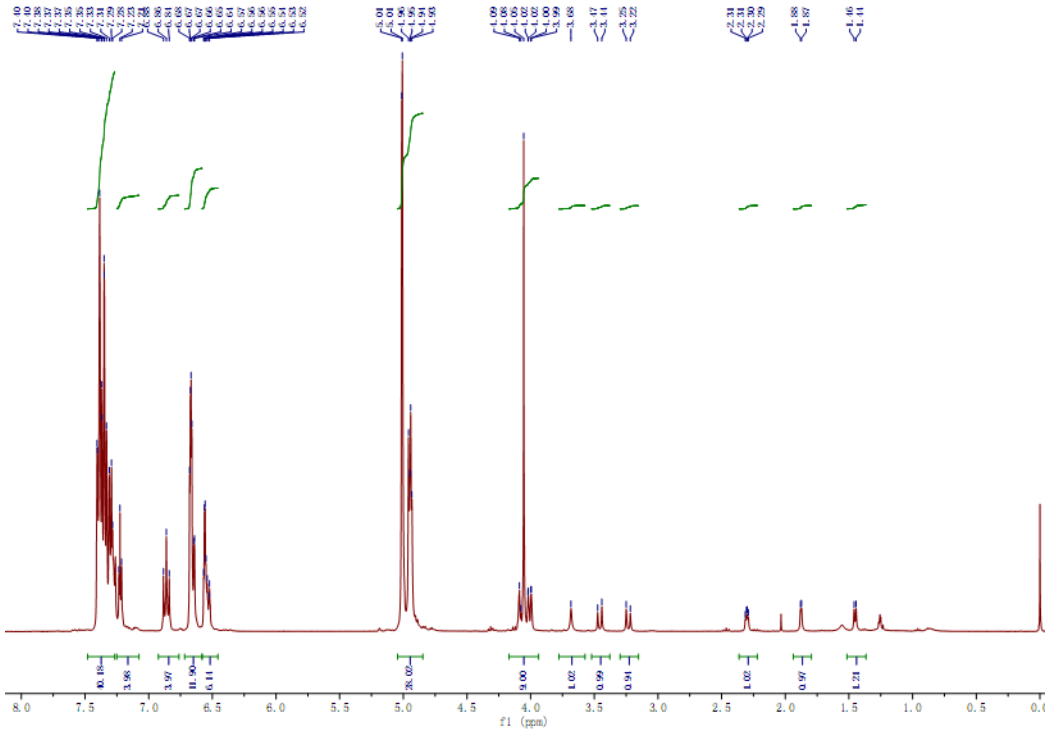


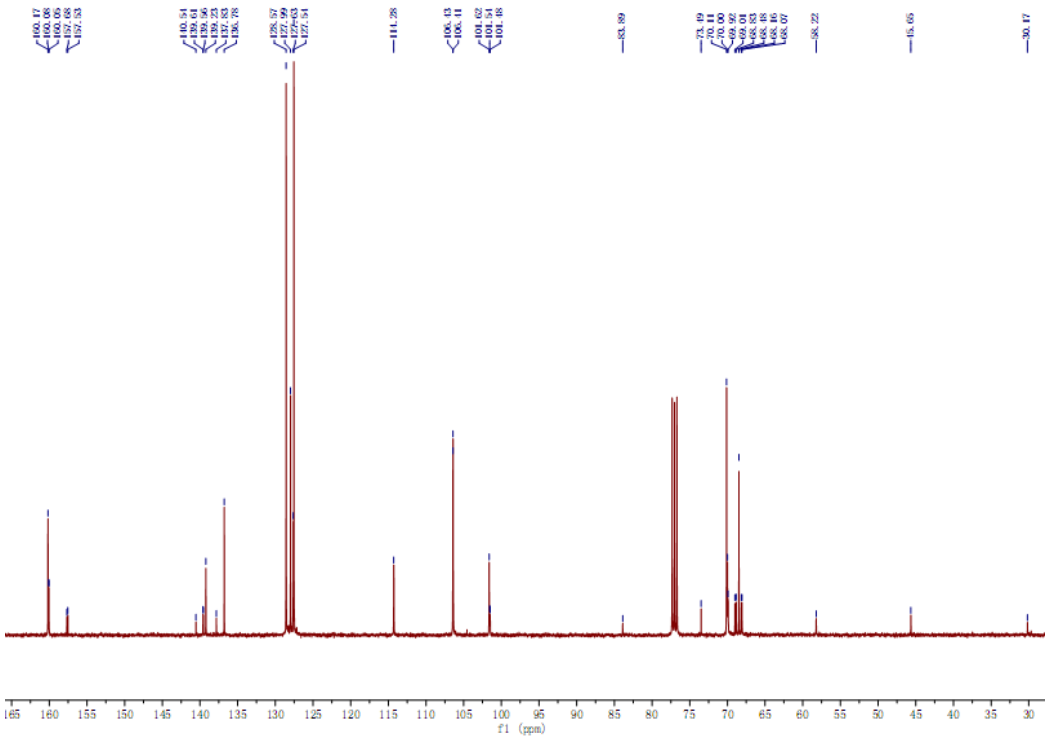
NMR Spectra of compound **8b**





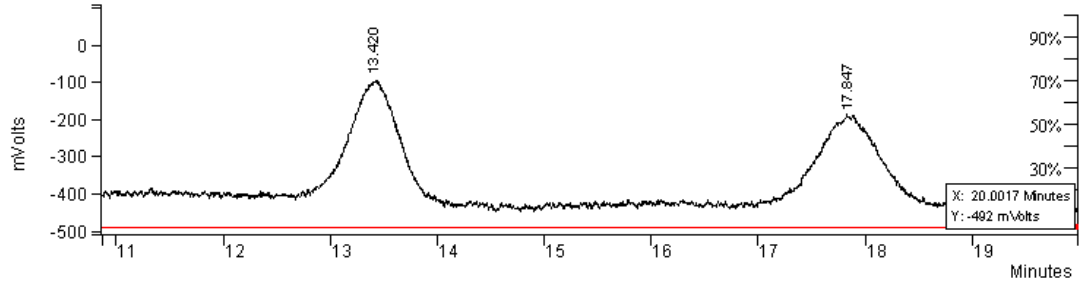
NMR Spectra of compound **8c**





HPLC Chromatographs of (S)-1-phenylpropan-1-ol in the presence of chiral ligands 8a and 8b

Racemic sample



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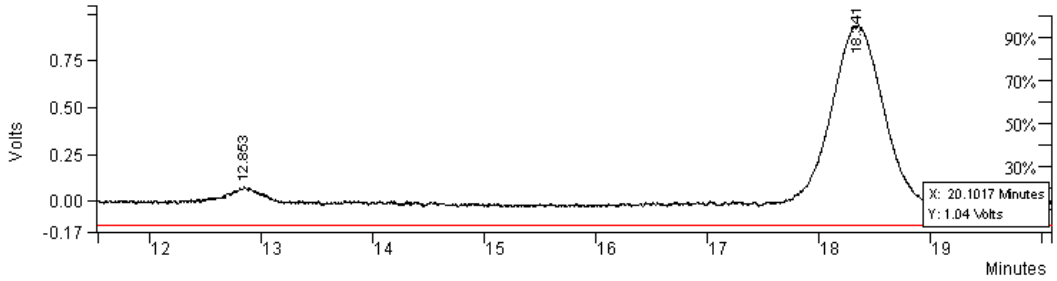
in the presence of chiral ligand 8a



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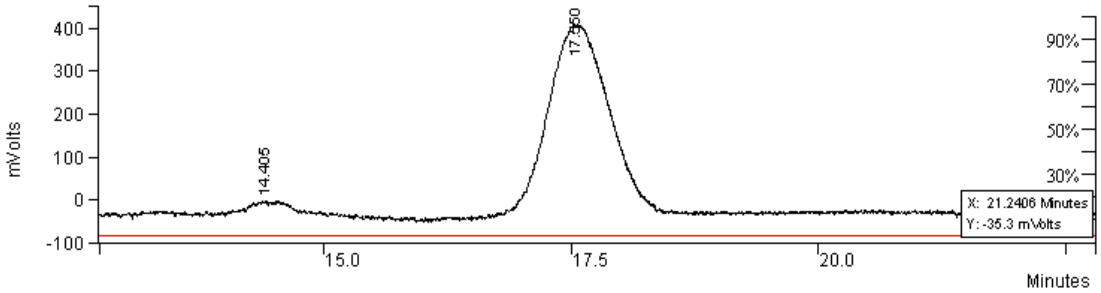
in the presence of chiral ligand 8b



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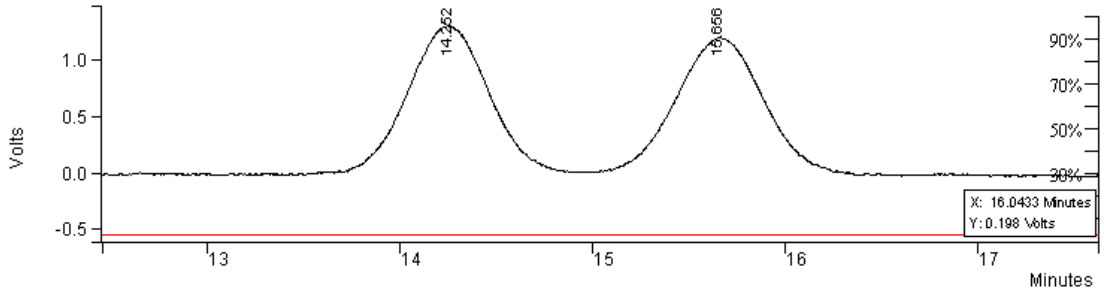
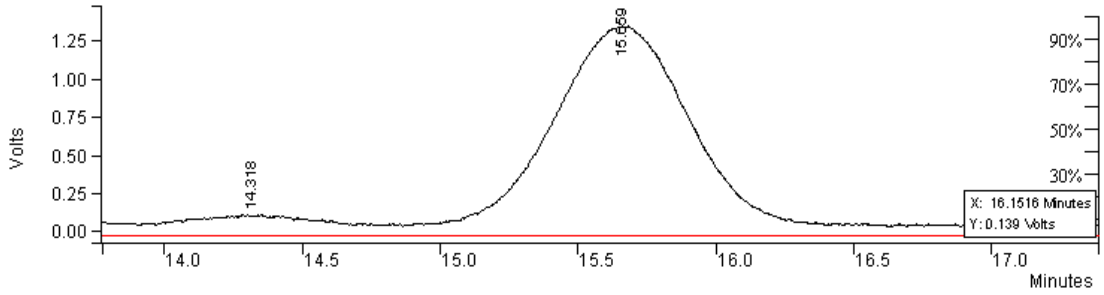
HPLC Chromatographs of (S)-1- ferrocenylpropan-1-ol

Racemic sample



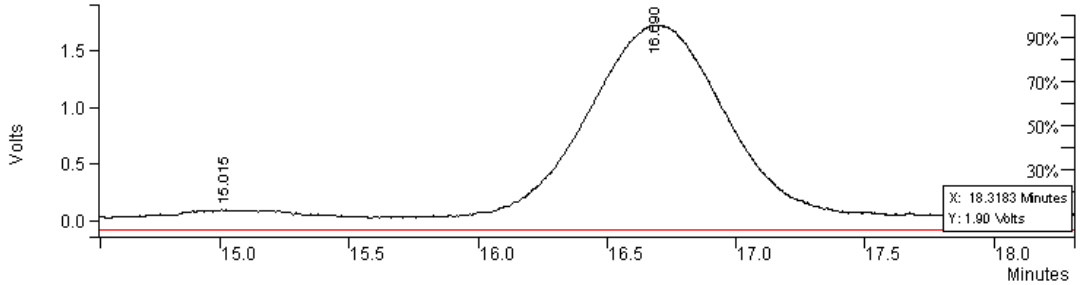
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		49.9479	14.252	0.000	36874616	0.00	BB	26.5	U	0
2		50.0521	15.656	0.000	36951568	0.00	BB	28.9		0
	Totals	**100.0000**		**0.000**	**73826184**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		3.4909	14.318	0.000	1565283	0.00	BV	24.9	U	0
2		96.5091	15.659	0.000	43273780	0.00	VB	30.8	U	0
	Totals	**100.0000**		**0.000**	**44839064**					

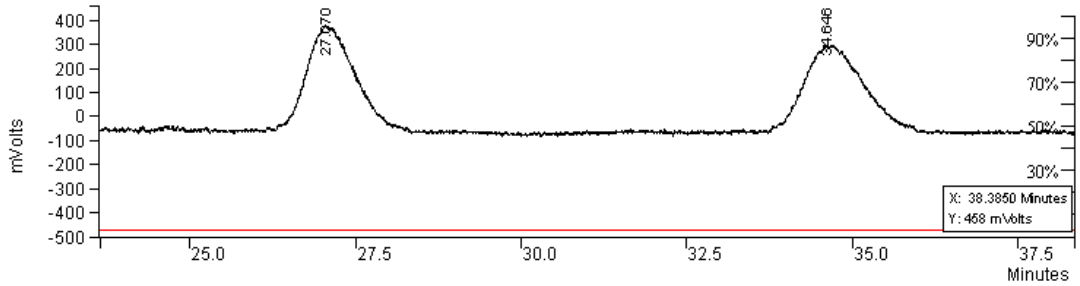
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		3.0207	15.015	0.000	1883224	0.00	BB	24.4	U	0
2		96.9793	16.690	0.000	60460380	0.00	BB	33.7		0
	Totals	**100.0000**		**0.000**	**62343604**					

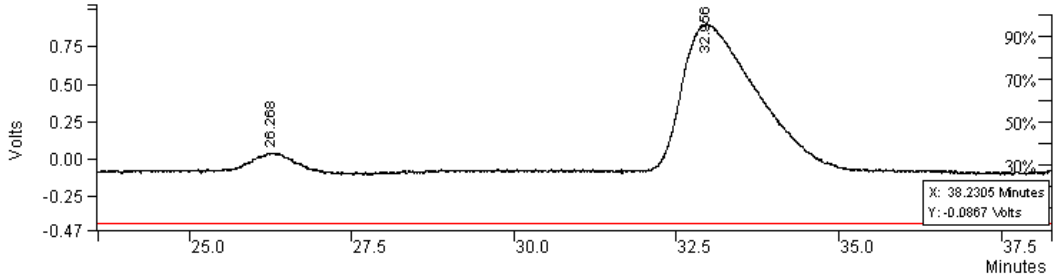
HPLC Chromatographs of (S)-1-(benzo[d][1,3]dioxol-5-yl)propan-1-ol

Racemic sample



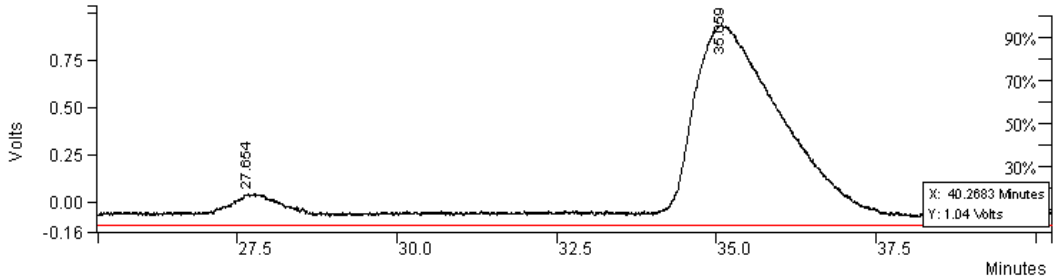
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		49.9316	27.070	0.000	22456758	0.00	BB	47.5	U	0
2		50.0684	34.646	0.000	22518308	0.00	BB	60.2		0
	Totals	**100.0000**		**0.000**	**44975064**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		4.9978	26.268	0.000	4195386	0.00	BB	0.0	U	0
2		95.0022	32.956	0.000	79749856	0.00	BB	74.4	U	0
	Totals	**100.0000**		**0.000**	**83945240**					

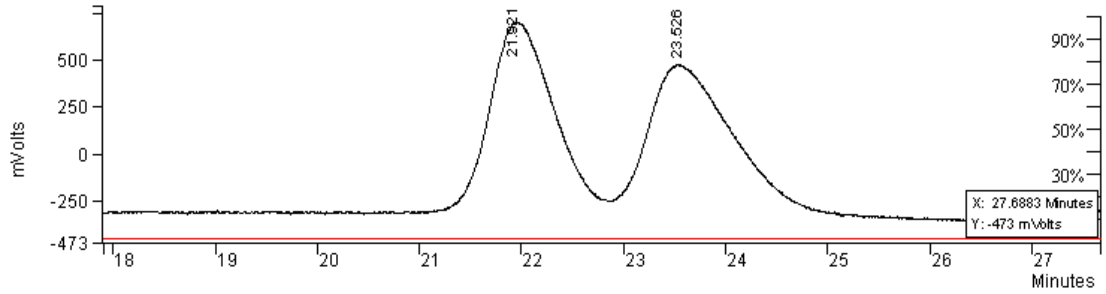
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		4.5015	27.654	0.000	4414863	0.00	BB	0.0		0
2		95.4985	35.059	0.000	93660600	0.00	BB	85.9	U	0
	Totals	**100.0000**		**0.000**	**98075464**					

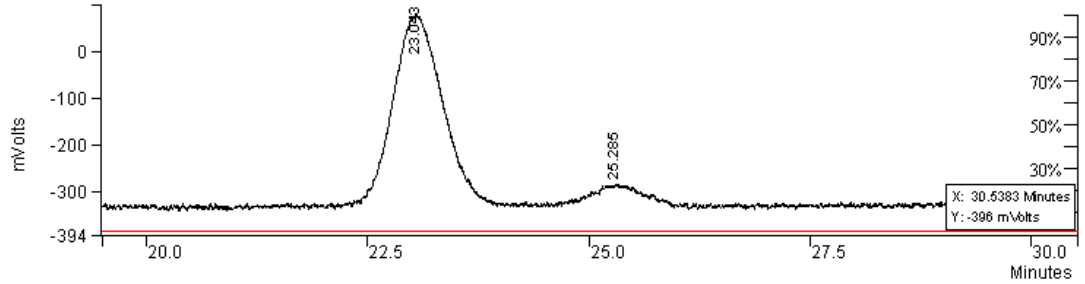
HPLC Chromatographs of (S)-1-(2-methoxyphenyl)propan-1-ol

Racemic sample



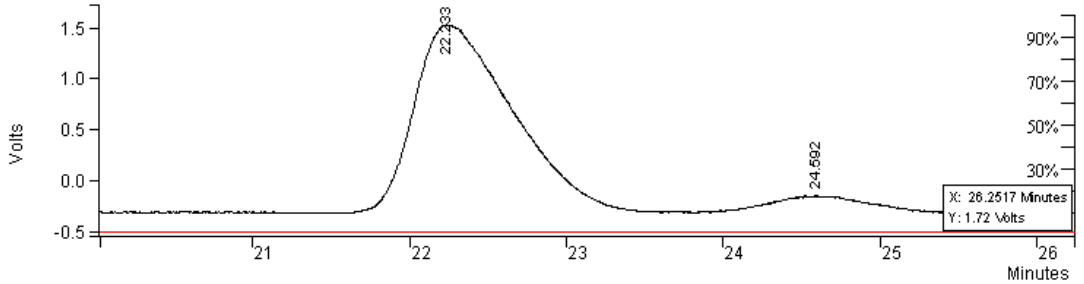
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		50.0006	21.921	0.000	40498956	0.00	BB	37.8	U	0
2		49.9994	23.526	0.000	40497908	0.00	BB	48.4	U	0
	Totals	**100.0000**		**0.000**	**80996864**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		92.8970	23.043	0.000	16283159	0.00	BB	35.4	U	0
2		7.1030	25.285	0.000	1245025	0.00	BB	33.8	U	0
	Totals	**100.0000**		**0.000**	**17528184**					

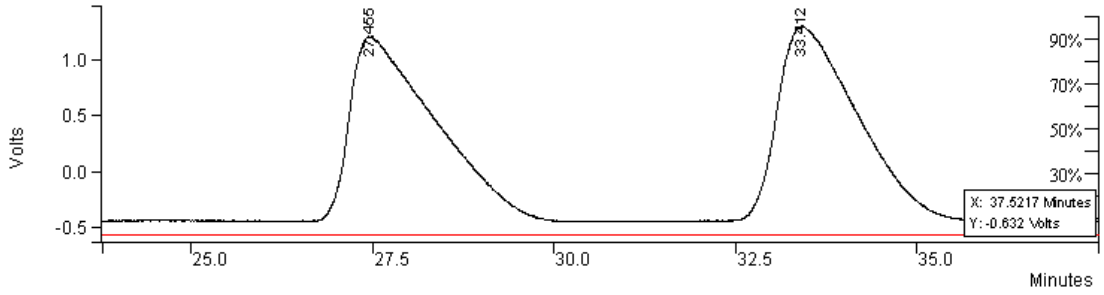
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		94.1157	22.233	0.000	80539024	0.00	BB	40.8	U	0
2		5.8843	24.592	0.000	5035494	0.00	BB	37.8	U	0
	Totals	**100.0000**		**0.000**	**85574520**					

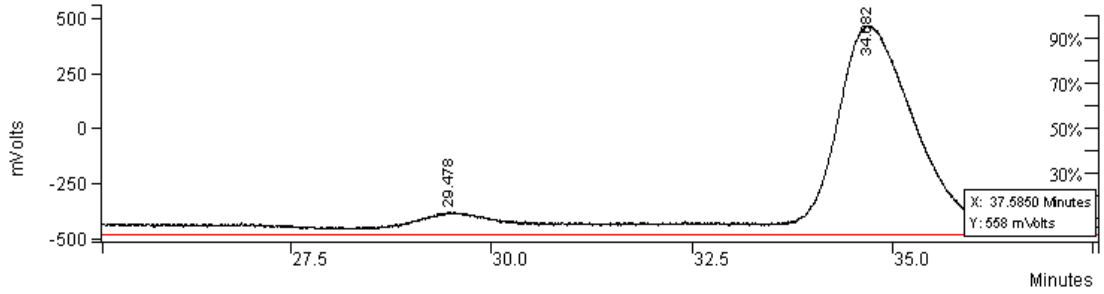
HPLC Chromatographs of (S)-1-(3-methoxyphenyl)propan-1-ol

Racemic sample



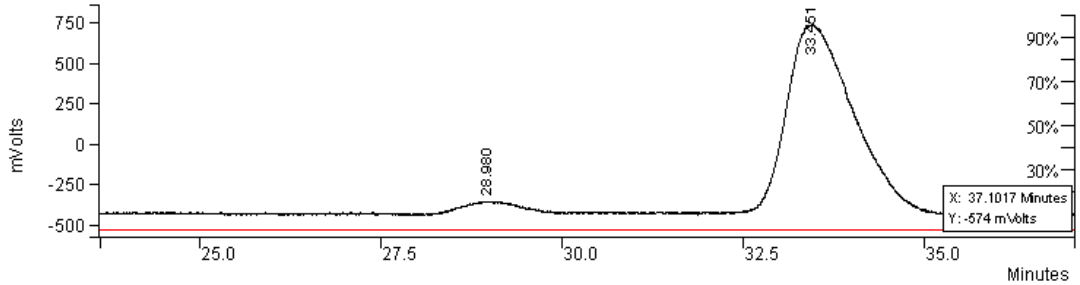
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		50.2104	27.455	0.000	135443072	0.00	BB	78.0	U	0
2		49.7896	33.412	0.000	134308208	0.00	BB	72.5	U	0
	Totals	**100.0000**		**0.000**	**269751296**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		3.4633	29.478	0.000	1950845	0.00	BB	0.0		0
2		96.5367	34.682	0.000	54378884	0.00	BB	58.4		0
	Totals	**100.0000**		**0.000**	**56329728**					

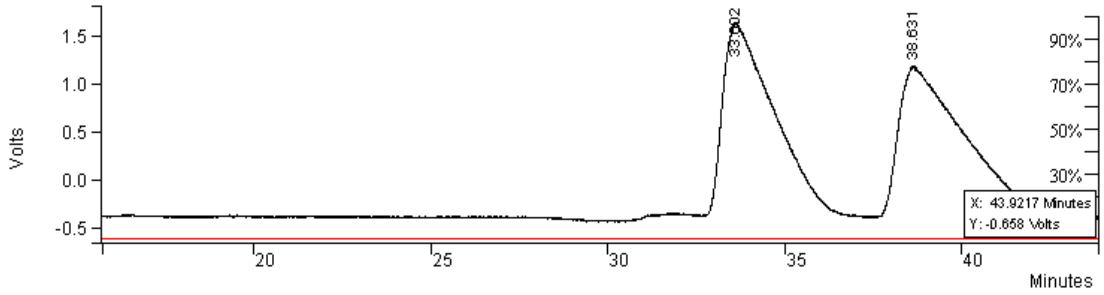
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		4.0526	28.980	0.000	3185414	0.00	BB	56.0	U	0
2		95.9474	33.451	0.000	75416720	0.00	BB	59.3	U	0
	Totals	**100.0000**		**0.000**	**78602136**					

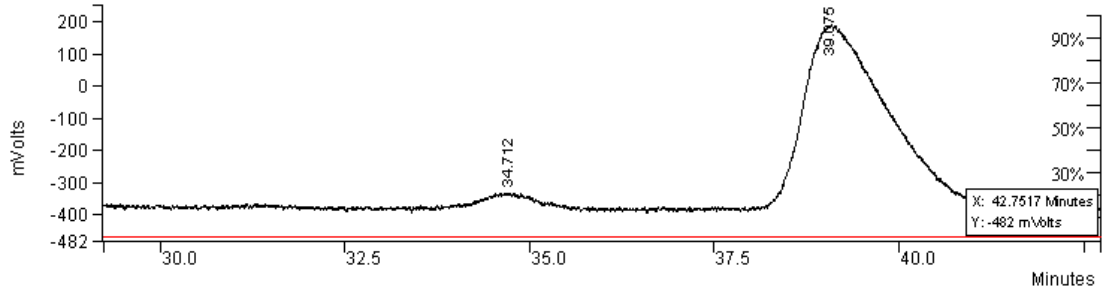
HPLC Chromatographs of (S)-1-(4-methoxyphenyl)propan-1-ol

Racemic sample



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		49.9485	33.602	0.000	204603872	0.00	BB	95.4	U	0
2		50.0515	38.631	0.000	205025552	0.00	BB	125.4	U	0
	Totals	**100.0000**		**0.000**	**409629440**					

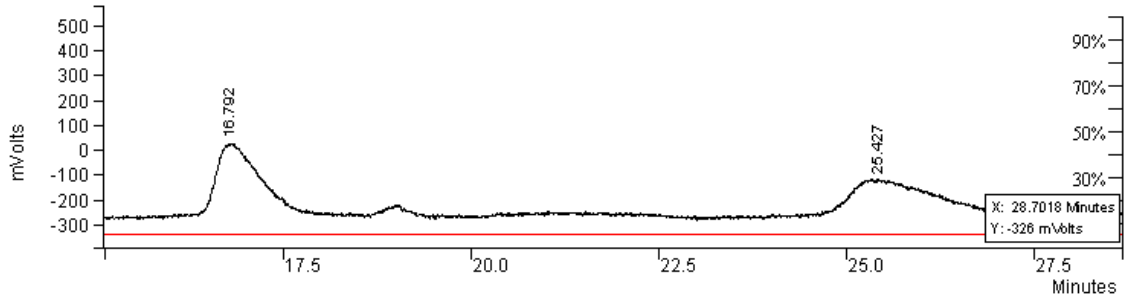
in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		3.9851	34.712	0.000	1908758	0.00	BB	43.1		0
2		96.0149	39.075	0.000	45988968	0.00	BB	73.9	U	0
	Totals	**100.0000**		**0.000**	**47897728**					

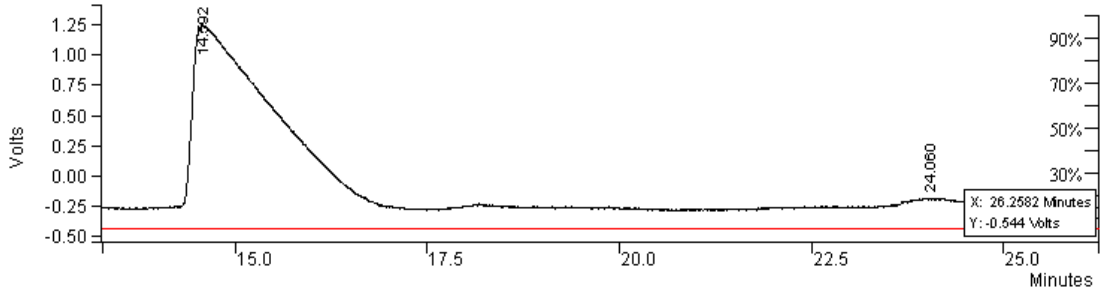
HPLC Chromatographs of (S)-1-(4-methoxyphenyl)propan-1-ol

Racemic sample



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		50.0613	16.792	0.000	11538877	0.00	BB	37.4	U	0
2		49.9387	25.427	0.000	11510610	0.00	BB	0.0	U	0
	Totals	**100.0000**		**0.000**	**23049488**					

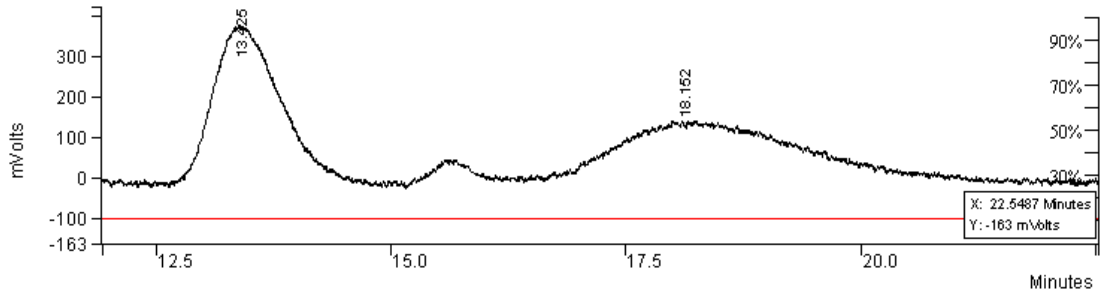
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		96.5928	14.592	0.000	109008264	0.00	BB	68.7	U	0
2		3.4072	24.060	0.000	3845190	0.00	BB	55.1	U	0
	Totals	**100.0000**		**0.000**	**112853456**					

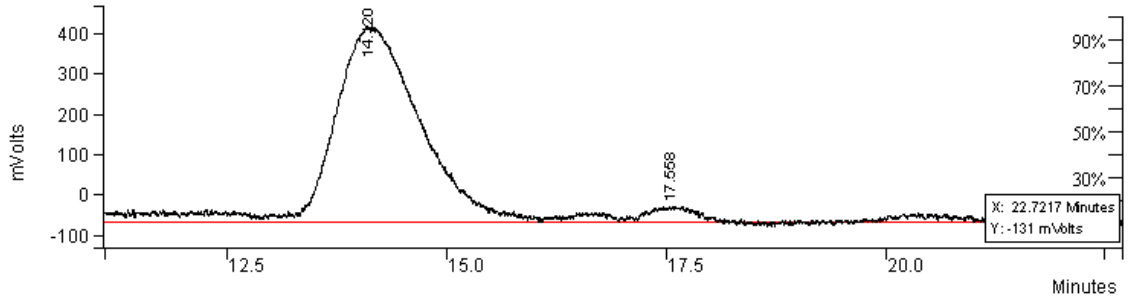
HPLC Chromatographs of (S)-1-(p-tolyl)propan-1-ol

Racemic sample



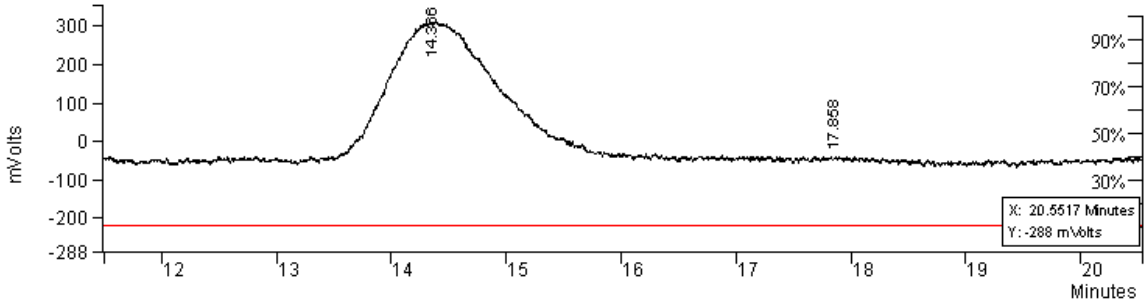
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		49.9603	13.425	0.000	19205120	0.00	BB	47.3	U	0
2		50.0397	18.152	0.000	19235646	0.00	BB	121.5	U	0
	Totals	**100.0000**		**0.000**	**38440768**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		96.7237	14.120	0.000	30637468	0.00	BB	58.8	U	0
2		3.2763	17.558	0.000	1037764	0.00	BB	34.2	U	0
	Totals	**100.0000**		**0.000**	**31675232**					

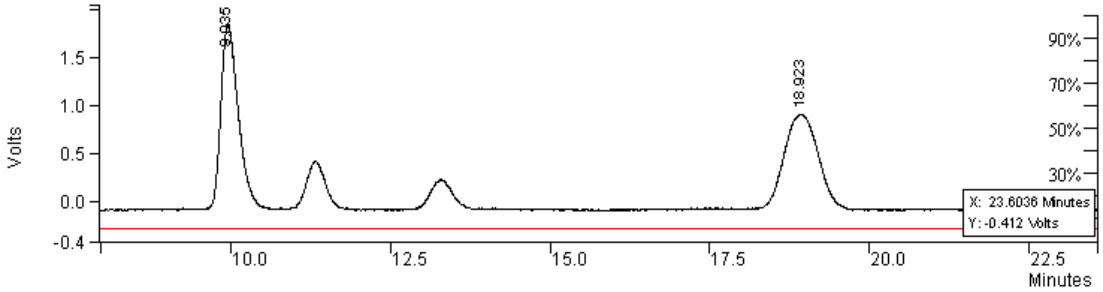
in the presence of chiral ligand **8b**



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		98.8274	14.366	0.000	23702536	0.00	BB	61.4	U	0
2		1.1726	17.858	0.000	281244	0.00	BB	1.5		0
	Totals	**100.0000**		**0.000**	**23983780**					

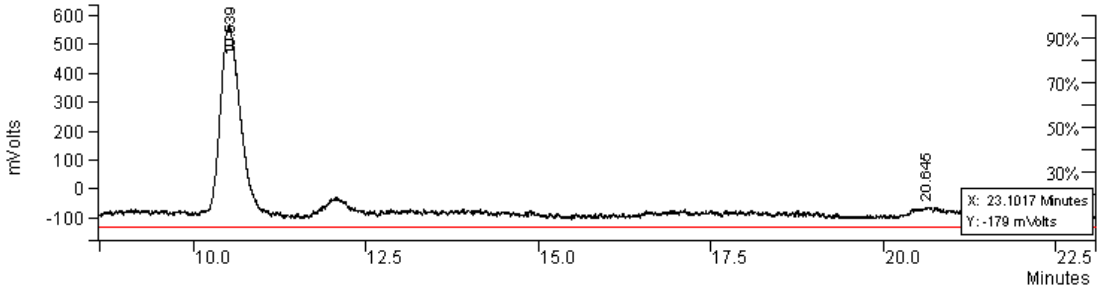
HPLC Chromatographs of (S)-1-(naphthalen-1-yl)propan-1-ol

Racemic sample



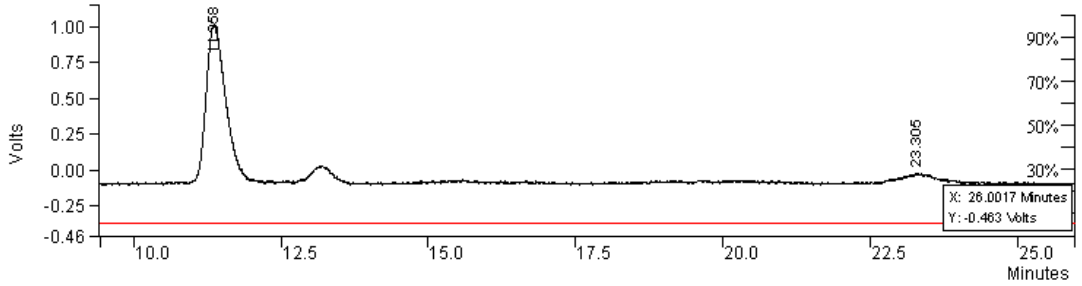
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		49.9807	9.935	0.000	35660680	0.00	BB	17.4		0
2		50.0193	18.923	0.000	35688288	0.00	BB	35.1		0
	Totals	**100.0000**		**0.000**	**71348968**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		95.2058	10.539	0.000	13057130	0.00	BB	19.4		0
2		4.7942	20.645	0.000	657512	0.00	BB	0.0	U	0
	Totals	**100.0000**		**0.000**	**13714642**					

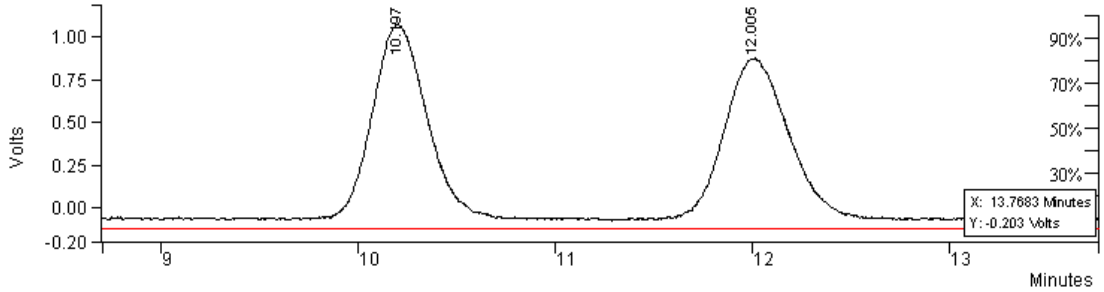
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		90.7600	11.358	0.000	25884498	0.00	BB	21.4		0
2		9.2400	23.305	0.000	2635209	0.00	BB	35.3		0
	Totals	**100.0000**		**0.000**	**28519708**					

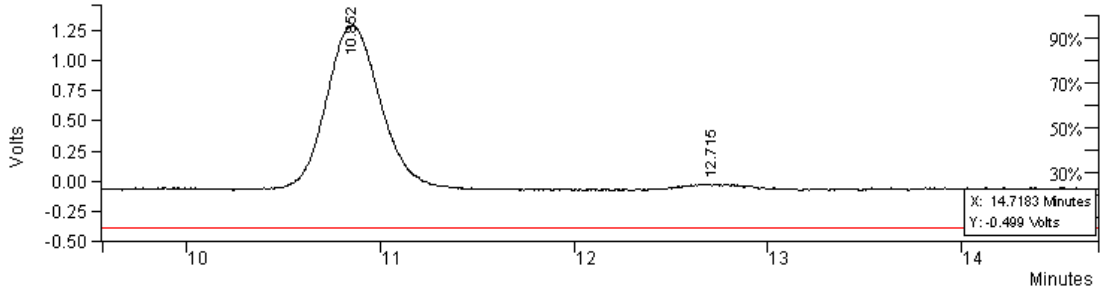
HPLC Chromatographs of (S)-1-(naphthalen-2-yl)propan-1-ol

Racemic sample



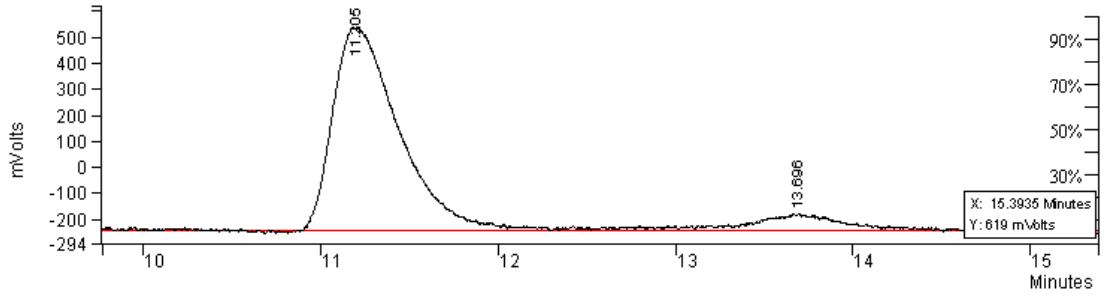
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		50.0671	10.197	0.000	21480452	0.00	BB	17.4	U	0
2		49.9329	12.005	0.000	21422908	0.00	BB	20.7	U	0
	Totals	**100.0000**		**0.000**	**42903360**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		97.3806	10.852	0.000	26511472	0.00	BB	17.9	U	0
2		2.6194	12.715	0.000	713133	0.00	BB	21.9	U	0
	Totals	**100.0000**		**0.000**	**27224604**					

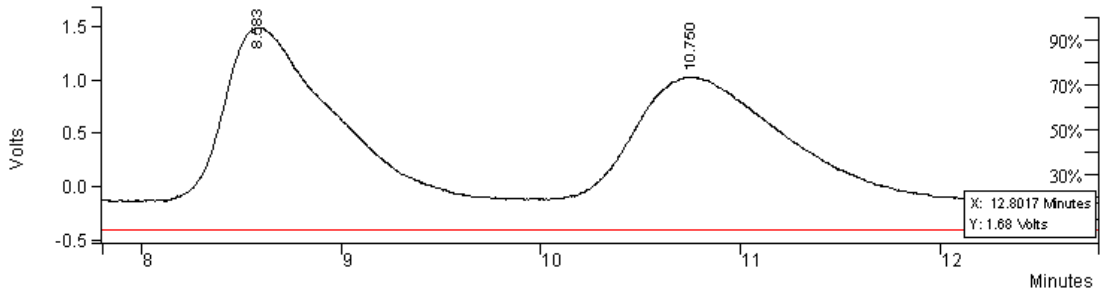
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		95.0283	11.205	0.000	20508348	0.00	BB	23.4	U	0
2		4.9717	13.696	0.000	1072959	0.00	BB	24.6	U	0
	Totals	**100.0000**		**0.000**	**21581308**					

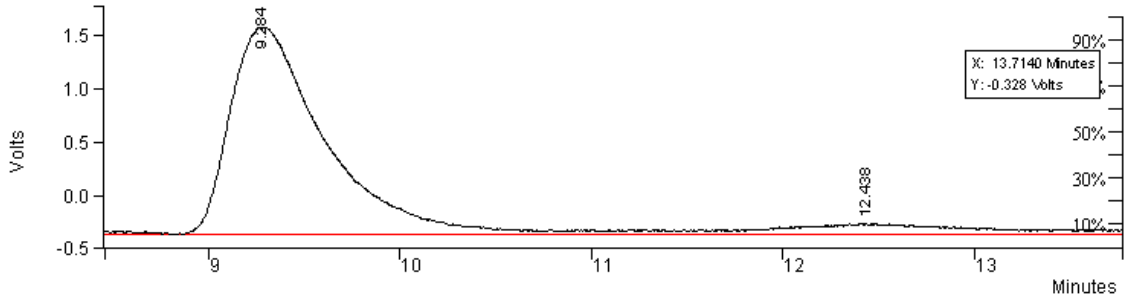
HPLC Chromatographs of (S)-1-(2-chlorophenyl)propan-1-ol

Racemic sample



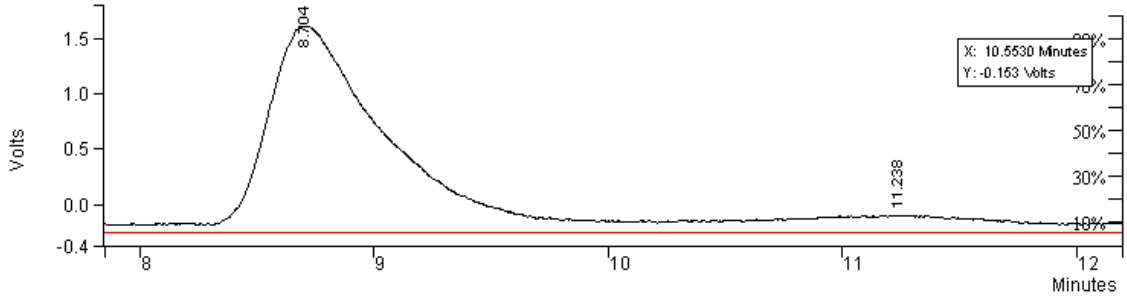
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		50.0781	8.583	0.000	59706496	0.00	BB	34.2		0
2		49.9219	10.750	0.000	59520376	0.00	BB	46.8	U	0
	Totals	**100.0000**		**0.000**	**119226872**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		96.1914	9.284	0.000	64190492	0.00	BB	29.1		0
2		3.8086	12.438	0.000	2541571	0.00	BB	43.0		0
	Totals	**100.0000**		**0.000**	**66732064**					

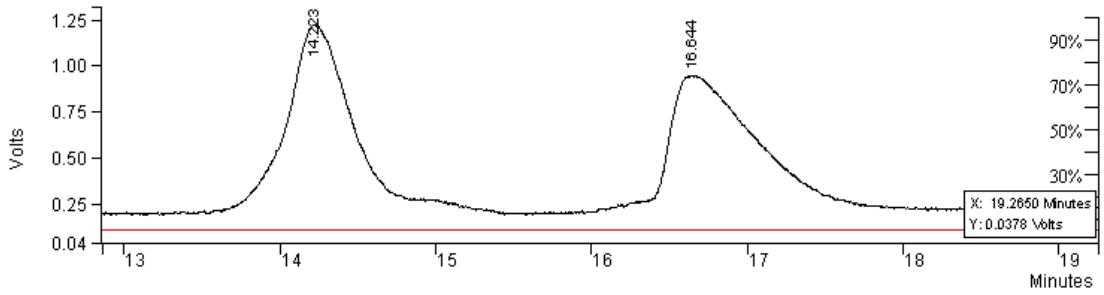
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		96.6055	8.704	0.000	57980340	0.00	BB	28.3	U	0
2		3.3945	11.238	0.000	2037323	0.00	BB	27.3	U	0
	Totals	**100.0000**		**0.000**	**60017664**					

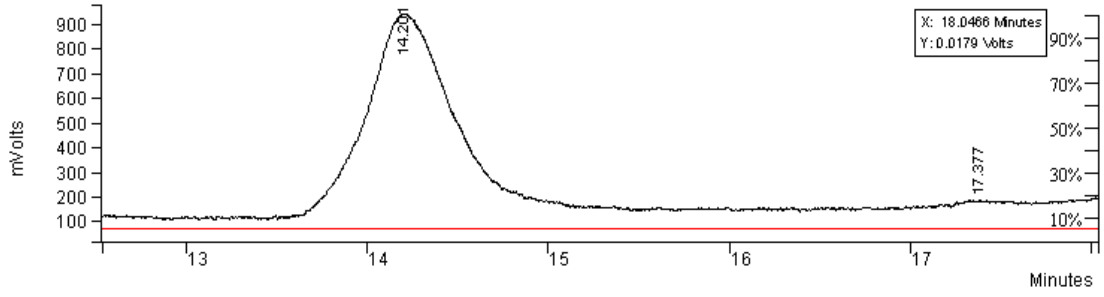
HPLC Chromatographs of (S)-1-(4-chlorophenyl)propan-1-ol

Racemic sample



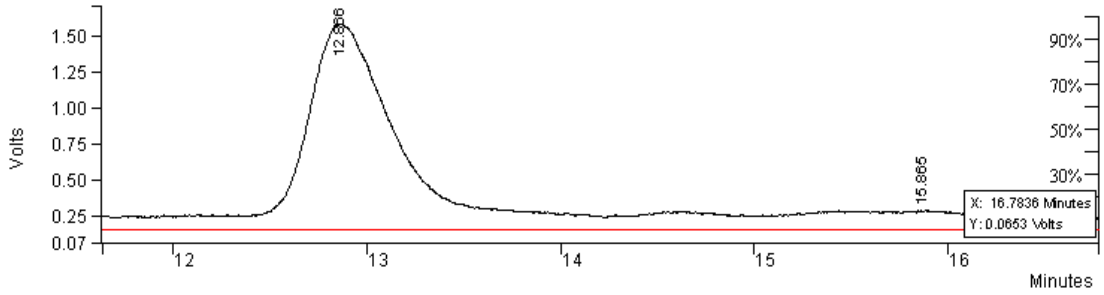
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		50.0965	14.223	0.000	26966754	0.00	BB	23.7	U	0
2		49.9035	16.644	0.000	26862828	0.00	BB	34.2	U	0
	Totals	**100.0000**		**0.000**	**53829584**					

in the presence of chiral ligand 8a



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		98.8285	14.201	0.000	26178432	0.00	BB	28.8		0
2		1.1715	17.377	0.000	310316	0.00	BB	0.0		0
	Totals	**100.0000**		**0.000**	**26488748**					

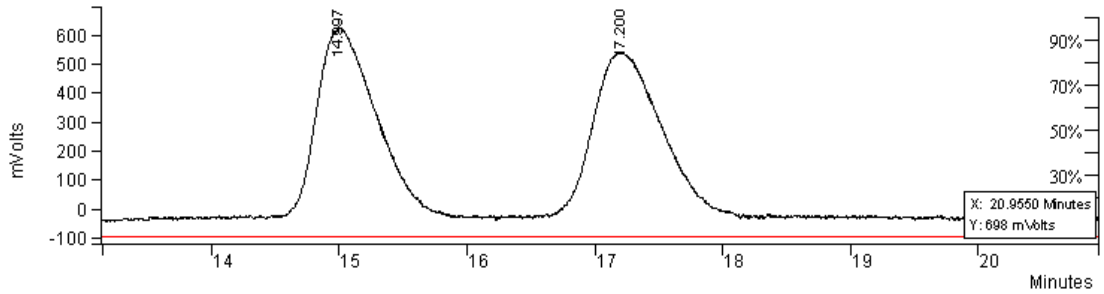
in the presence of chiral ligand 8b



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		95.8674	12.866	0.000	38099576	0.00	BB	25.1		0
2		4.1326	15.865	0.000	1642390	0.00	BB	44.9		0
	Totals	**100.0000**		**0.000**	**39741968**					

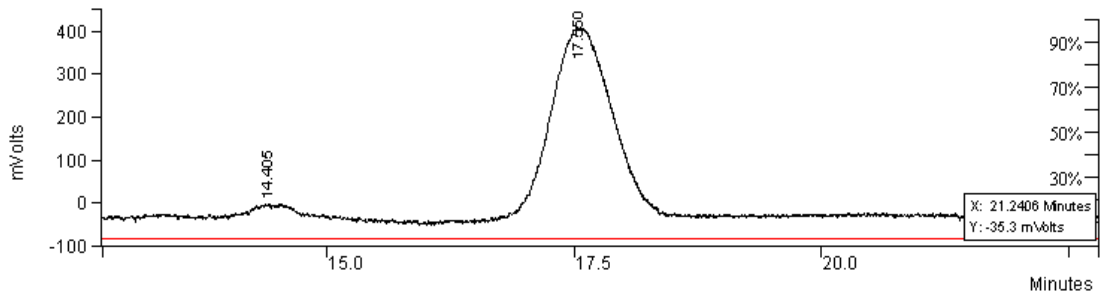
HPLC Chromatographs of (S)-1-phenylpropan-1-ol in the presence of chiral ligand 8b

Racemic sample



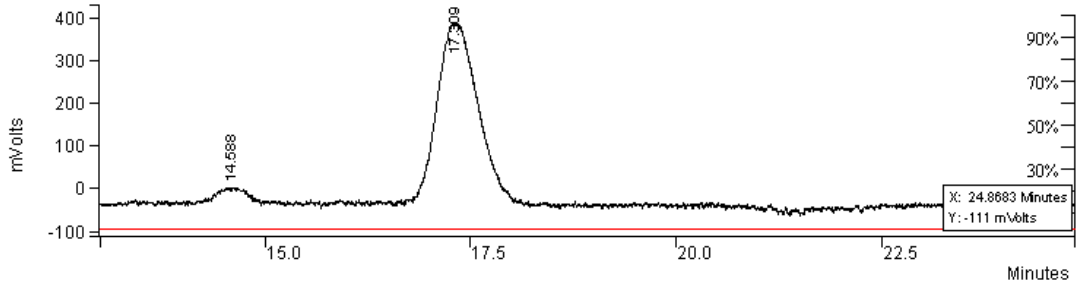
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		50.0699	14.997	0.000	20915008	0.00	BB	30.2	U	0
2		49.9301	17.200	0.000	20856652	0.00	BB	35.0		0
	Totals	**100.0000**		**0.000**	**41771660**					

run 1



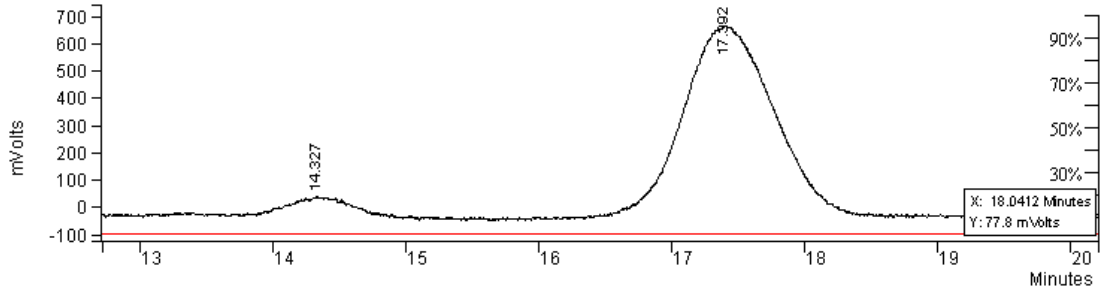
Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		4.2428	14.405	0.000	827253	0.00	BB	23.7	U	0
2		95.7572	17.550	0.000	18670526	0.00	BB	40.4	U	0
	Totals	**100.0000**		**0.000**	**19497780**					

run 2



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		5.0587	14.588	0.000	801981	0.00	BB	23.7		0
2		94.9413	17.309	0.000	15051488	0.00	BB	32.2	U	0
	Totals	**100.0000**		**0.000**	**15853469**					

run 3



Peak No	Peak Name	Result ()	Ret. Time (min)	Time Offset (min)	Area (counts)	Rel Ret Time	Sep. Code	Width 1/2 (sec)	Status Codes	Group
1		5.4881	14.327	0.000	1954819	0.00	BB	26.7	U	0
2		94.5119	17.392	0.000	33664476	0.00	BB	44.4	U	0
	Totals	**100.0000**		**0.000**	**35619296**					