Supplementary Information

Oxazoline derivatives tagged with tosylated amino acids as recyclable organocatalysts for enantioselective allylation of aldehydes

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Content

General

Different aldehydes and reagents were used as received. All the solvents used in the present study were dried by known purification technique.[1] NMR spectra were obtained with a Bruker F113V spectrometer (500 MHz / 200 MHz) and are referenced internally with TMS. Splitting patterns were reported as s, singlet; d, doublet; dd, doublet of doublet; t, triplet; q, quartet; m, multiplet; br, broad. Enantiomeric excess (ee) were determined by HPLC using Daicel Chiralpak OD-H, AS-H, IA, IB and IC chiral columns with 2-propanol/hexane as eluent. FTIR spectra were carried out using KBr. Optical rotations were determined by

automatic polarimeter. For the product purification flash chromatography was performed using silica gel 100-200 mesh.

Characterization data for the homoallyl alcohols

(*S*)-1-phenylbut-3-en-1-ol (compound 2a):[2,3] The product was isolated as a colorless oil (yield 55.2 mg, 75%) after purification by silica gel chromatography (Hexane/EtOAc = 95:5). Reaction time = 18 h. ^{1}H NMR ($CDCl_3$, 200 MHz,): δ = 2.40-2.46 (m, 2H), 2.68 (br, 1H), 4.58 (t, J = 6.5 Hz, 1H), 5.03-5.12 (m, 2H), 5.63-7.83 (m, 1H), 7.27 (m, 5H); ^{13}C NMR ($CDCl_3$, 50 MHz): δ = 43.8, 73.3, 118.5, 125.8, 127.6, 128.4, 134.4, 143.8. HPLC (Daicel Chiralcel OD-H, hexanes/2-propanol = 95:5, flow rate = 0.4 mL/min, λ = 220 nm) t_{major}(*S*) = 20.8 min, t_{minor}(*R*) = 19.4 min.

(*S*)-1-(4-methoxyphenyl)but-3-en-1-ol (compound 2b):[2,3] The product was isolated as a yellowish oil (yield 62.5 mg, 70%) after purification by silica gel chromatography (Hexane/EtOAc = 92:8). Reaction time = 24 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2 (br, 1H), 2.49 (t, J = 6.5 Hz, 2H), 3.81 (s, 3H), 4.68 (t, J = 6.5 Hz, 1H), 5.12-5.18 (m, 2H), 5.76-5.84 (m, 1H), 6.87-6.89 (m, 2H), 7.26-7.29 (m, 2H); ^{13}C NMR ($CDCl_3$, 50 MHz): δ = 43.7, 55.2, 73.3, 113.7, 118.2, 127, 134.6, 136.3, 159. Optical Rotation: $[\alpha]^{27}_{D}$ = -65 (*c* 1.0, $CHCl_3$).[2] HPLC (Daicel Chiralcel OD-H, hexanes/2-propanol = 95:5, flow rate = 0.8 mL/min, λ = 230 nm) t_{major}(*S*) = 13.8 min, t_{minor}(*R*) = 12.2 min.

(4-benzyloxyphenyl)but-3-en-1-ol (compound 2c):[2] The product was isolated as a colorless oil (yield 86.3 mg, 65%) after purification by silica gel chromatography (Hexane/EtOAc = 90:10). Reaction time = 24 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 1.99 (br, 1H), 2.49 (t, J = 6.5 Hz, 2H), 4.68 (t, J = 6 Hz, 1H), 5.06-5.17 (m, 4H), 5.76-5.84 (m, 1H), 6.95 (d, J = 8.5 Hz, 2H), 7.26-7.44 (m, 7H); ^{13}C NMR ($CDCl_3$, 125 MHz): δ = 43.7, 70, 72.9, 114.7, 118.3, 127.1, 127.4, 127.9, 128.5, 134.6, 136, 136.3, 158.2. Optical Rotation: $[\alpha]^{27}_{D}$ = -55 (*c* 1.0, $CHCl_3$).[2] HPLC (Daicel Chiralpak IC column, hexanes/2-propanol = 97:3, flow rate = 0.8 mL/min, λ = 254 nm) t(major) = 29.9 min, t(minor) = 27.3 min.

(*S*)-1-(4-*tert*-Butylphenyl)-3-buten-1-ol (compound 2d):[2,6] The product was isolated as a colorless oil (yield 71 mg, 70%) after purification by silica gel chromatography (Hexane/EtOAc = 95:5). Reaction time = 24 h. ^{1}H NMR ($CDCl_3$, 200 MHz): δ = 1.28 (s, 9H),

2.44-2.48 (m, 3H), 2.63-2.64 (m, 1H), 5.06-5.13 (m, 2H), 5.72-5.82 (m, 1H), 7.23-7.33 (m, 4H). ^{13}C NMR ($CDCl_3$, 50 MHz): δ = 31, 34.3, 43.3, 72.8, 117.6, 125, 125.3, 134.6, 140.7, 150.2 Optical Rotation: $[\alpha]^{27}_D$ = -39 (c 1, Et_2O).[2] HPLC (Daicel Chiralpak IA, hexanes/2-propanol = 96:4, flow rate = 0.5 mL/min, λ = 254 nm) t_{major}(*S*) = 15.4 min, t_{minor}(*R*) = 13 min.

(*S*)-1-(*p*-tolyl)but-3-en-1-ol (compound 2e):[2,3] The product was isolated as a colorless oil (yield 52.5 mg, 65%) after purification by silica gel chromatography (Hexane/EtOAc = 96:4). Reaction time = 24 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.07 (br, 1H), 2.34 (s, 3H), 2.49-2.51 (m, 2H), 4.68 (t, *J* = 6.5 Hz, 1H), 5.11-5.17 (m, 2H), 5.76-5.84 (m, 1H), 7.15-7.25 (m, 4H); ^{13}C NMR ($CDCl_3$, 125 MHz): δ = 21.1, 43.7, 73.2, 118.2, 125.7, 129.1, 134.6, 140.9. Optical Rotation: $[\alpha]^{27}_D$ = -50 (*c* 1, $CHCl_3$).[2] HPLC (Daicel Chiralcel OD-H, hexanes/2-propanol = 99:1, flow rate = 0.5 mL/min, λ = 220 nm) t_{major}(*S*) = 34.1 min, t_{minor}(*R*) = 31.8 min.

(*S*)-1-(4-nitrophenyl)but-3-en-1-ol (compound 2f):[2,4] The product was isolated as a yellow oil (yield 67.5 mg, 70%) after purification by silica gel chromatography (Hexane/EtOAc = 90:10). Reaction time = 20 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.17 (br, 1H), 2.43-2.49 (m, 1H), 2.54-2.59 (m, 1H), 4.86-4.89 (m, 1H), 5.18-5.22 (m, 2H), 5.75-5.83 (m, 1H), 7.53 (d, *J* = 8.5 Hz, 2H), 8.21 (d, *J* = 8.5 Hz, 2H); ^{13}C NMR ($CDCl_3$, 50 MHz): δ = 43.9, 72.1, 119.7, 123.6, 126.6, 133.2, 151.1. Optical Rotation: $[\alpha]^{27}_D$ = -60 (*c* 1.0, $CHCl_3$).[2,4] HPLC (Daicel Chiralpak IA, hexanes/2-propanol = 99:1, flow rate = 1 mL/min, λ = 220 nm) t_{major}(*S*) = 67.8 min, t_{minor}(*R*) = 62.7 min.

(*S*)-1-(4-fluorophenyl)but-3-en-1-ol (compound 2g):[2] The product was isolated as a colorless oil (yield 64 mg, 78%) after purification by silica gel chromatography (Hexane/EtOAc = 92:8). Reaction time = 22 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.03-2.04 (br, 1H), 2.44-2.54 (m, 2H), 4.71-4.74 (m, 1H), 5.14-5.18 (m, 2H), 5.75-5.83 (m, 1H), 7.01 (t, *J* = 8.5 Hz, 2H), 7.31-7.34 (m, 2H); ^{13}C NMR ($CDCl_3$, 125 MHz): δ = 43.9, 72.6, 115.1, 115.3, 118.7, 127.4, 134.2. Optical Rotation: $[\alpha]^{27}_D$ = -49.1 (*c* 1.0, $CHCl_3$).[2] HPLC (Daicel Chiralpak AS-H, hexanes/2-propanol = 99:1, flow rate = 0.8 mL/min, λ = 220 nm) t_{major}(*S*) = 21.2 min, t_{minor}(*R*) = 19.7 min.

(*S*)-1-[(4-Trifluoromethyl)-phenyl]-but-3-en-1-ol (compound 2h):[5] The product was isolated as a colorless oil (yield 81 mg, 75%) after purification by silica gel chromatography (Hexane/EtOAc = 90:10). Reaction time = 20 h. ^{1}H NMR ($CDCl_3$, 200 MHz): δ = 2.16 (s, 1H), 2.38-2.59 (m, 2H), 4.78 (t, *J* = 6.6 Hz, 1H), 5.15-5.22 (m, 2H), 5.69-5.90 (m, 1H), 7.46-

7.63 (m, 4H); ^{13}C NMR ($CDCl_3$, 50 MHz): δ = 43.8, 72.5, 119.2, 125.3, 125.4, 126, 133.6, 147.7. $[\alpha]^{27}_D$ = -30.1 (*c* 1.0, $CHCl_3$).[5] HPLC (Daicel Chiralpak IA, hexanes/2-propanol = 98:2, flow rate = 0.6 mL/min, λ = 220 nm) t_{major}(*S*) = 20.4 min, t_{minor}(*R*) = 19 min.

(S)-1-(3-methoxyphenyl)but-3-en-1-ol (compound 2i):[2,4] The product was isolated as a sight yellowish oil (yield 68.6 mg, 77%) after purification by silica gel chromatography (Hexane/EtOAc = 94:6). Reaction time = 20 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.02-2.03 (br, 1H), 2.44-2.55 (m, 2H), 3.80 (s, 3H), 4.7-4.72 (m, 1H), 5.12-5.18 (m, 2H), 5.76-5.84 (m, 1H), 6.79 (dd, *J* = 2.5, 5.5 Hz, 1H), 6.91-6.93 (m, 2H), 7.23-7.27 (m, 1H). ^{13}C NMR ($CDCl_3$, 125 MHz): δ = 43.8, 55.2, 73.2, 111.3, 113, 118.1, 118.4, 129.4, 134.4, 145.6, 159.7. Optical Rotation: $[\alpha]^{27}_D$ = -59 (*c* 0.9, C_6H_6).[2] HPLC (Daicel Chiralpak IA, hexanes/2-propanol = 99:1, flow rate = 0.8 mL/min, λ = 220 nm) t_{major}(*S*) = 21.4 min, t_{minor}(*R*) = 19.9 min.

(*S*)-1-(2-methoxyphenyl)but-3-en-1-ol (compound 2j):[2,3] The product was isolated as a colorless oil (yield 74.8 mg, 84%) after purification by silica gel chromatography (Hexane/EtOAc = 95:5). Reaction time = 20 h. ^{1}H NMR ($CDCl_3$, 500 MHz,): δ = 2.47–2.53 (m, 1H), 2.56-2.62 (m, 2H), 3.85 (s, 3H), 4.94-4.98 (m, 1H), 5.09-5.15 (m, 2H), 5.81-5.89 (m, 1H), 6.87 (d, *J* = 8 Hz, 1H), 6.95 (t, *J* = 7.5 Hz, 1H), 7.22-7.26 (m, 1H), 7.33-7.34 (m, 1H); ^{13}C NMR ($CDCl_3$, 125 MHz,): δ = 41.8, 55.2, 69.7, 110.4, 117.6, 120.6, 126.8, 128.3, 131.7, 135.2, 156.3. Optical Rotation: $[\alpha]^{27}_D$ = -60.5 (*c* 1.0, C_6H_6).[2] HPLC (Daicel Chiralcel OD-H, hexanes/2-propanol = 97:3, flow rate = 0.6 mL/min, λ = 230 nm) t_{major}(*S*) = 19.2 min, t_{minor}(*R*) = 21.2 min.

(*S*)-1-(2-fluorophenyl)but-3-en-1-ol (compound 2k):[2,5] The product was isolated as a colorless oil (yield 61 mg, 68%) after purification by silica gel chromatography (Hexane/EtOAc = 96:4). Reaction time = 22 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.16-2.17 (d, *J* = 4 Hz, 1H), 2.46-2.61 (m, 2H), 5.05-5.08 (m, 1H), 5.14-5.18 (m, 2H), 5.78-5.85 (m, 1H), 7.00-7.03 (m, 1H), 7.14 (d, *J* = 7.5 Hz, 1H), 7.23-7.27 (m, 1H), 7.46-7.49 (m, 1H). ^{13}C NMR ($CDCl_3$, 50 MHz): δ = 42.5, 67.2, 114.9, 115.4, 118.6, 124.1, 124.2, 127.2, 128.7, 128.9, 130.6, 134, 157.2. Optical Rotation: $[\alpha]^{27}_D$ = -38.2 (*c* 1.5, $CHCl_3$).[2,5] HPLC (Daicel Chiralpak AS-H, hexanes/2-propanol = 99.5:0.5, flow rate = 0.5 mL/min, λ = 254 nm) t_{major}(*S*) = 34.6 min, t_{minor}(*R*) = 32.7 min.

(*S*)-1-(naphthalen-2-yl)but-3-en-1-ol (compound 2l):[2,3] The product was isolated as a pale yellow oil (yield 83.7 mg, 85%) after purification by silica gel chromatography (Hexane/EtOAc = 90:10). Reaction time = 14 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.14-2.15

(d, *J* = 4 Hz, 1H), 2.55-2.66 (m, 2H), 4.9-4.93 (m, 1H), 5.15-5.21 (m, 2H), 5.79-5.88 (m, 1H), 7.45-7.49 (m, 3H), 7.81-7.85 (m, 4H). ^{13}C NMR ($CDCl_3$, 125 MHz): δ = 43.7, 73.4, 118.6, 123.9, 124.5, 125.8, 126.1, 127.7, 127.9, 128.2, 134.3, 141.2. Optical Rotation: $[\alpha]^{27}_D$ = -54 (*c* 1, $CHCl_3$).[2] HPLC (Daicel Chiralpak IA, hexanes/2-propanol = 90:10, flow rate = 0.5 mL/min, λ = 254 nm) t_{major}(*S*) = 18.7 min, t_{minor}(*R*) = 16.6 min.

(*S*)-1-(thiophen-2-yl)but-3-en-1-ol (compound 2m):[2,5] The product was isolated as a yellow oil (yield 62.7 mg, 82%) after purification by silica gel chromatography (Hexane/EtOAc = 94:6). Reaction time = 14 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.19 (d, *J* = 4Hz, 1H), 2.6-2.65 (m, 2H), 4.98-5.01 (m, 1H), 5.15-5.22 (m, 2H), 5.79-5.88 (m, 1H), 6.96-6.99 (m, 2H), 7.24-7.26 (m, 1H). ^{13}C NMR ($CDCl_3$, 125 MHz): δ = 43.6, 69.3, 118.8, 123.6, 124.5, 126.6, 133.8. HPLC (Daicel Chiralcel OD-H, hexanes/2-propanol = 97:3, flow rate = 0.6 mL/min, λ = 220 nm) t_{major}(*S*) = 17.3 min, t_{minor}(*R*) = 15.9 min.

(1*E*,3*R*)-1-phenyl-1,5-hexadiene-3-ol (compound 2n):[2,4] The product was isolated as a yellow oil (yield 66 mg, 77%) after purification by silica gel chromatography (Hexane/EtOAc = 90:10). Reaction time = 15 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.36-2.47 (m, 2H), 4.34-4.38 (m, 1H), 5.16-5.21 (m, 2H), 5.82-5.90 (m, 1H), 6.22-6.27 (m, 1H), 6.59 (d, *J* = 15.5 Hz, 1H), 7.23-7.26 (m, 1H), 7.3 (t, *J* = 8 Hz, 2H), 7.37 (d, *J* = 7 Hz, 1H). ^{13}C NMR ($CDCl_3$, 125 MHz): δ = 41.9, 71.7, 118.5, 126.4, 127.6, 128.5, 130.3, 131.5, 134, 136.6. Optical Rotation: $[\alpha]^{27}_D$ = +31 (*c* 1, $CHCl_3$).[2] HPLC (Daicel Chiralpak IA, hexanes/2-propanol = 95:5, flow rate = 0.7 mL/min, λ = 254 nm) t_{major}(*R*) = 14 min, t_{minor}(*S*) = 15.9 min.

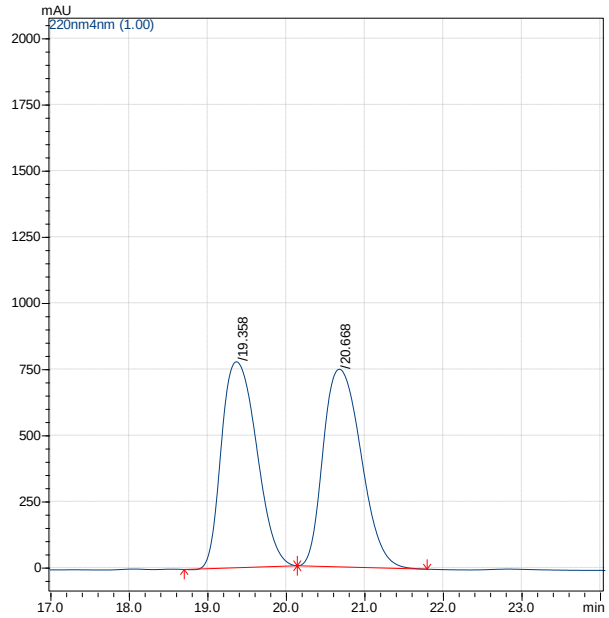
(1*E*,3*R*)-2-Methyl-1-phenyl-1,5-hexadiene-3-ol (compound 2o):[2,6] The product was isolated as a yellow oil (yield 84 mg, 87%) after purification by silica gel chromatography (Hexane/EtOAc = 90:10). Reaction time = 15 h. ^{1}H NMR ($CDCl_3$, 200 MHz): δ = 1.83-1.84 (m, 1H), 1.88 (s, 3H), 2.38-2.44 (m, 2H), 4.22 (m, 1H), 5.13-5.22 (m, 2H), 5.74-5.95 (m, 1H), 6.53 (s, 1H), 7.21-7.33 (m, 5H). ^{13}C NMR ($CDCl_3$, 50 MHz): δ = 13.7, 40.1, 76.5, 118, 125.7, 126.4, 128.1, 128.9, 134.5, 137.5, 139.5. Optical Rotation: $[\alpha]^{27}_D$ = +6.5 (c 0.9, $CHCl_3$).[2,6] HPLC (Daicel Chiralcel IC, hexanes/2-propanol = 96:4, flow rate = 0.8 mL/min, λ = 220 nm) t_{major}(*R*) = 9.55 min, t_{minor}(*S*) = 7.1 min.

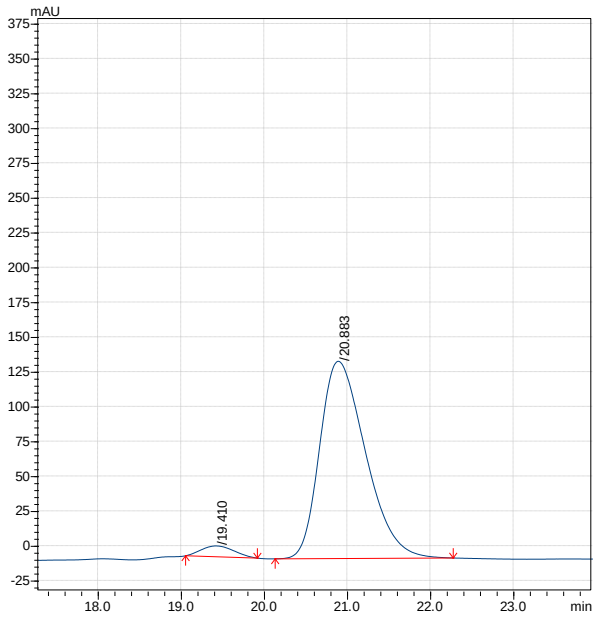
(*R*)-1-phenylpent-4-en-2-ol (compound 2p):[4] The product was isolated as a slight yellowish oil (42.5 mg, 52%) after purification by silica gel chromatography (Hexane/EtOAc = 92:8). Reaction time = 24 h. ^{1}H NMR ($CDCl_3$, 500 MHz): δ = 2.2-2.26 (m, 1H), 2.32-2.37 (m, 1H),

2.71 (dd, J = 8, 13.5 Hz, 1H), 2.80 (dd, J = 5, 13.5 Hz, 1H), 3.86-3.91 (m, 1H), 5.14-5.18 (m, 2H), 5.82-5.91 (m, 1H), 7.22-7.25 (m, 3H), 7.3 (t, J = 7.5 Hz); ^{13}C NMR ($CDCl_3$, 125 MHz): δ = 42.6, 44.7, 73.1, 119.6, 126.9, 127.9, 130, 130.8, 136.1. Optical Rotation: $[\alpha]^{27}_{D}$ = - 5.5 (*c* 0.8, $CHCl_3$).[6] HPLC (Daicel Chiralcel ODH, hexanes/2-propanol = 97:3, flow rate = 0.5 mL/min, λ = 220 nm) t_{major}(*S*) = 22.9 min, t_{minor}(*R*) = 18.5 min.

HPLC chromatogram of the products

(*S*)-1-phenylbut-3-en-1-ol (compound 2a)

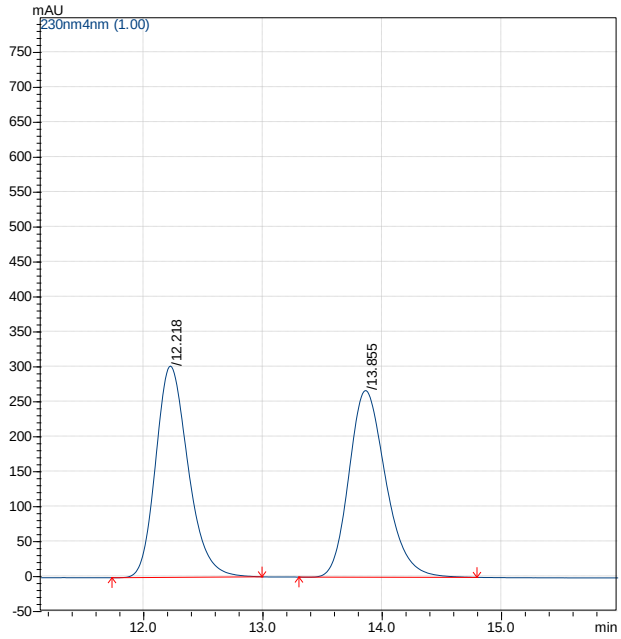


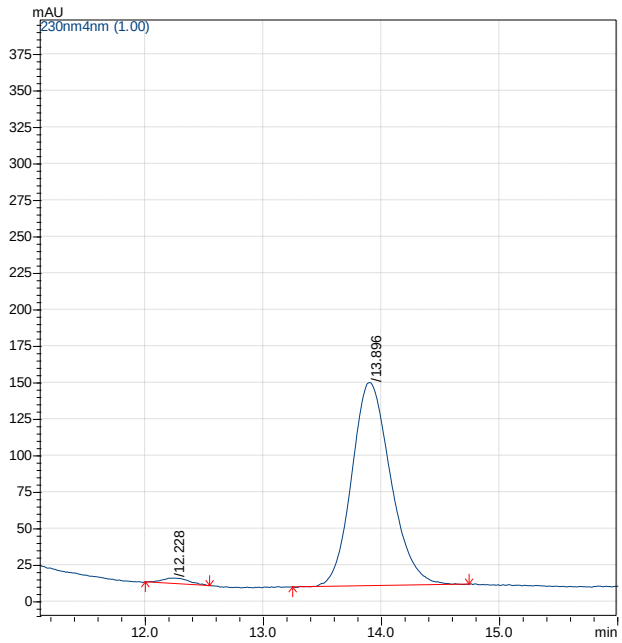


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.358	24273299	18.699	20.139	49.1845
2	20.668	25078259	20.139	21.792	50.8155

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.410	211395	19.051	19.915	3.7428
2	20.883	5436612	20.128	22.272	96.2572

(*S*)-1-(4-methoxyphenyl)but-3-en-1-ol (compound 2b)

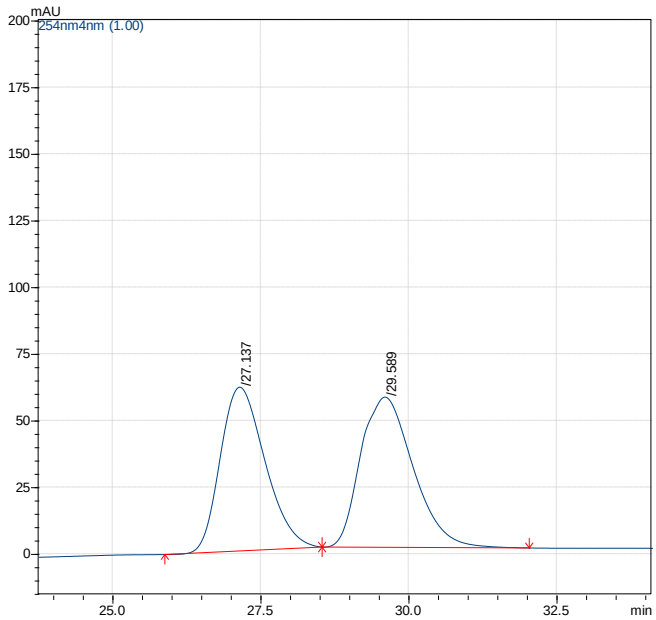


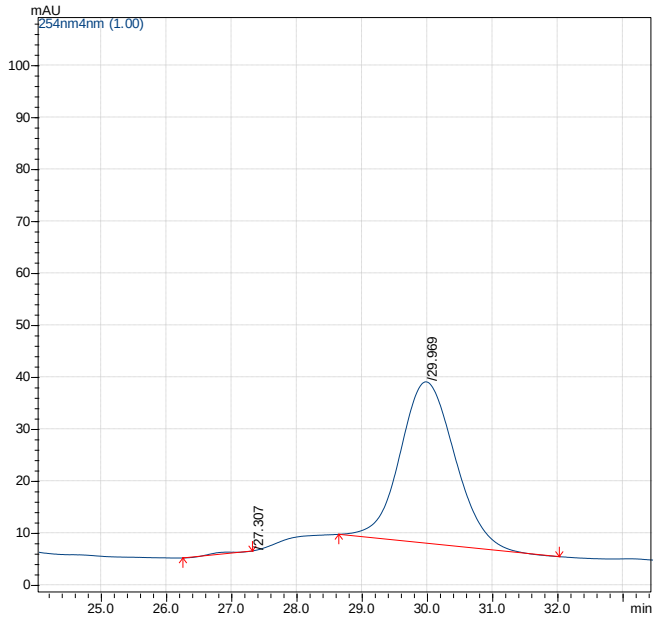


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	12.218	5725276	11.733	12.992	49.9539
2	13.855	5735843	13.301	14.795	50.0461

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	12.228	57188	12.000	12.544	1.7656
2	13.896	3181867	13.248	14.741	98.2344

(4-benzyloxyphenyl)but-3-en-1-ol (compound 2c)

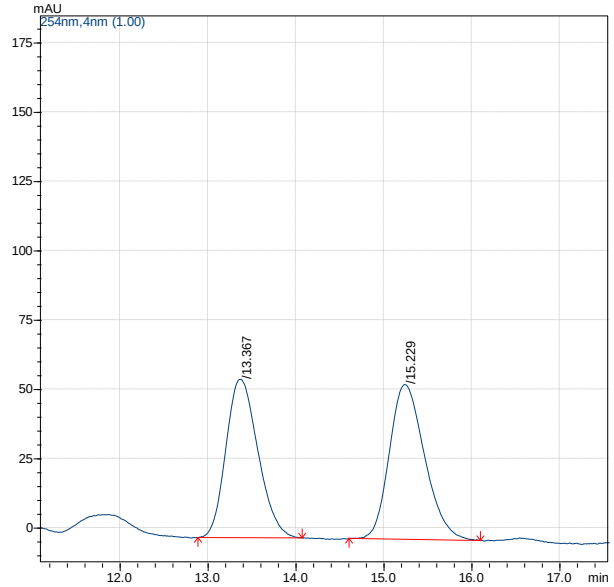


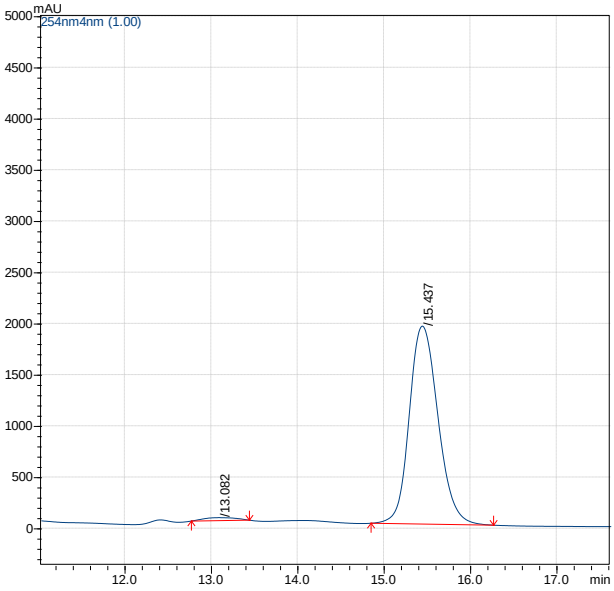


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	27.137	3220583	25.877	28.533	48.0708
2	29.589	3479089	28.533	32.032	51.9292

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	27.307	6450	26.251	27.317	0.3538
2	29.969	1816753	28.640	32.021	99.6462

(*S*)-1-(4-*tert*-Butylphenyl)-3-buten-1-ol (compound 2d)





Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
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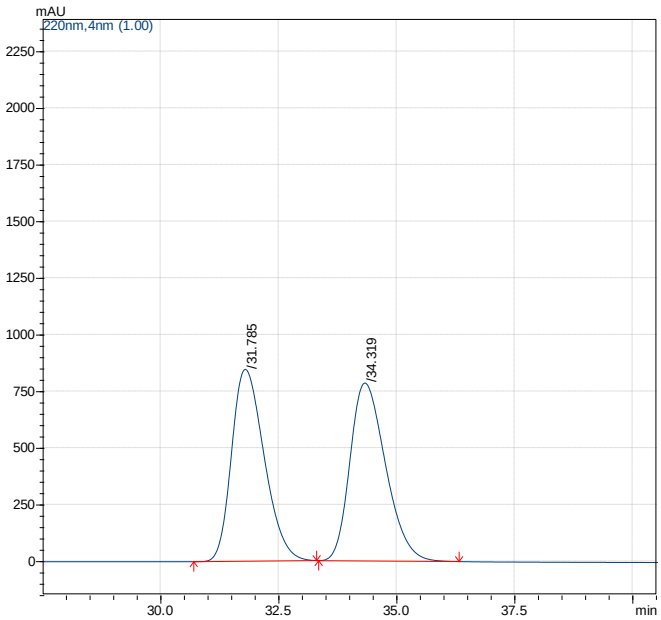
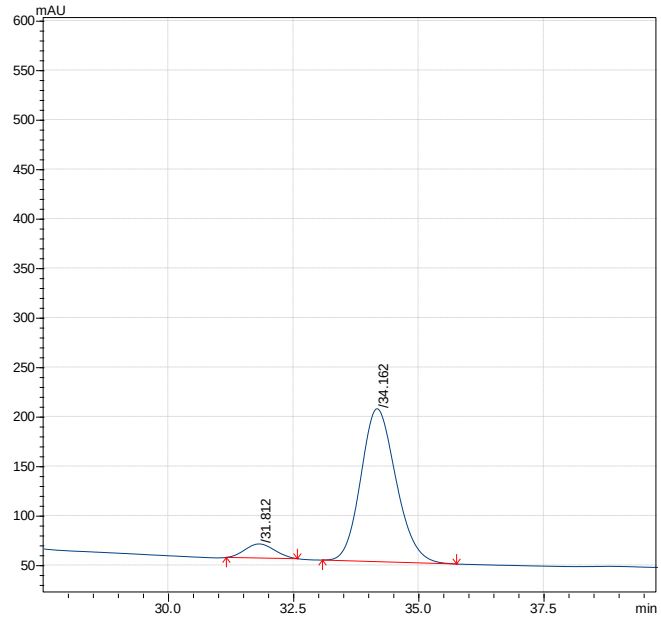
2	15.229	1557951	14.603	16.096	51.8045

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	13.082	773546	12.768	13.440	1.7000
2	15.437	44728219	14.848	16.267	98.3000

(*S*)-1-(*p*-tolyl)but-3-en-1-ol (compound 2e)





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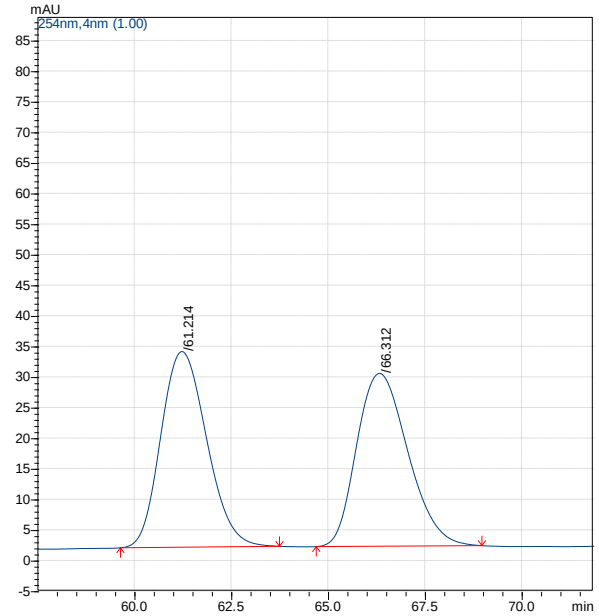
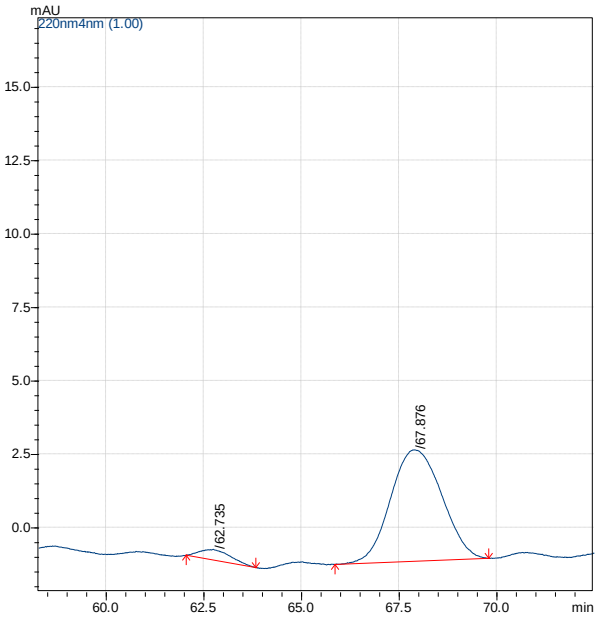
Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	31.812	580450	31.157	32.576	7.1428
2	34.162	7545917	33.077	35.755	92.8572

(*S*)-1-(4-nitrophenyl)but-3-en-1-ol (compound 2f)

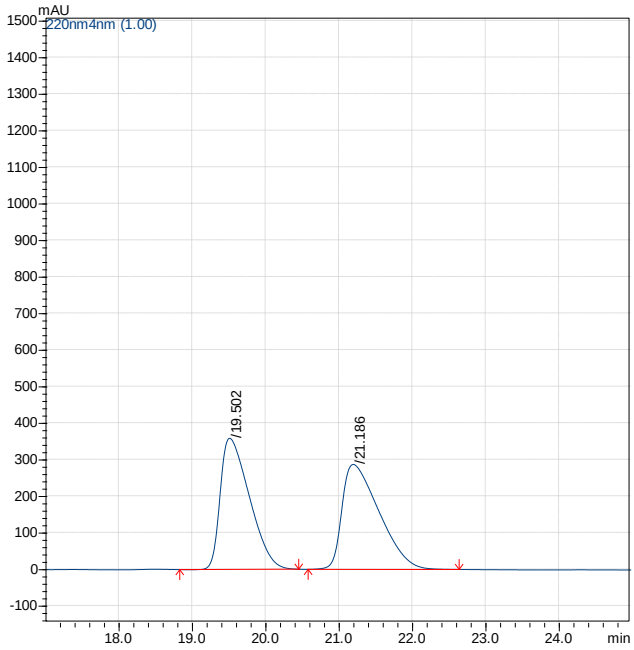


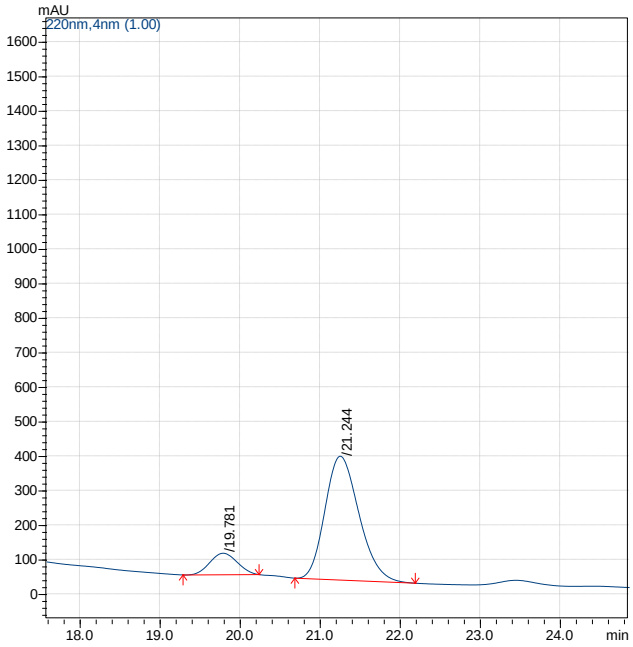


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	61.214	2628470	59.627	63.733	50.3217
2	66.312	2594866	64.683	68.960	49.6783

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	62.735	19632	62.048	63.829	5.3661
2	67.876	346227	65.856	69.792	94.6339

(*S*)-1-(4-fluorophenyl)but-3-en-1-ol (compound 2g)

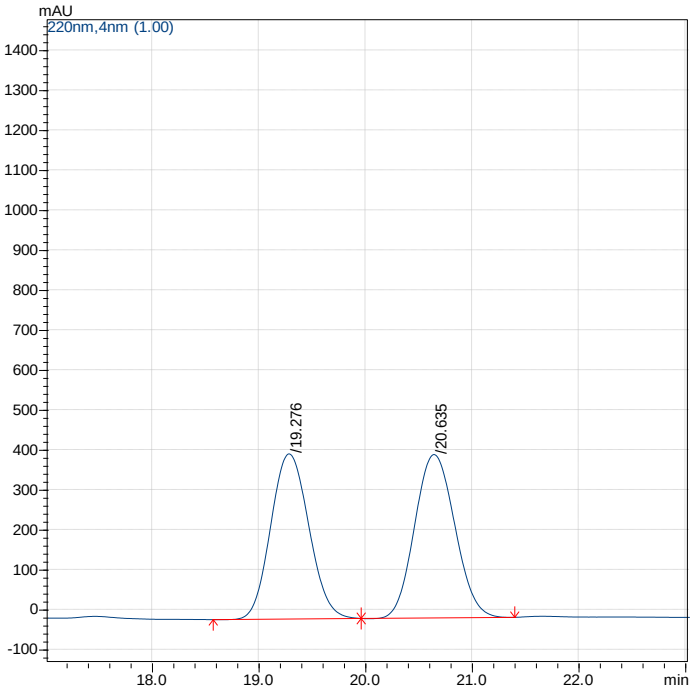


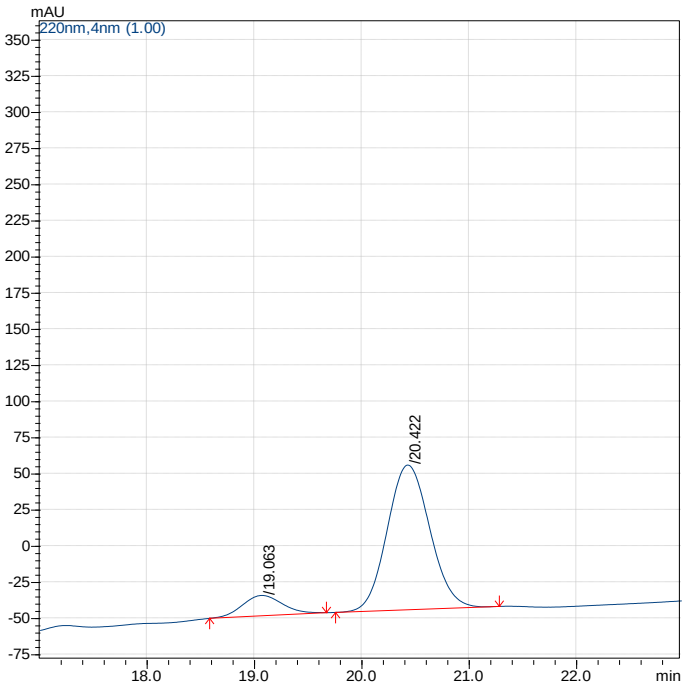


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.502	9901810	18.827	20.448	49.5459
2	21.186	10083326	20.576	22.635	50.4541

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.781	1488495	19.285	20.235	12.2895
2	21.244	10623475	20.683	22.187	87.7105

(*S*)-1-[(4-Trifluoromethyl)-phenyl]-but-3-en-1-ol (compound 2h)

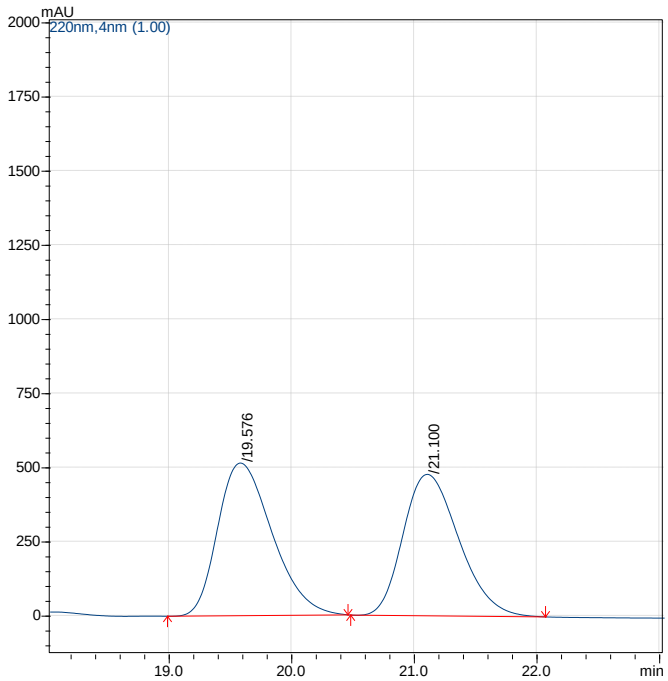


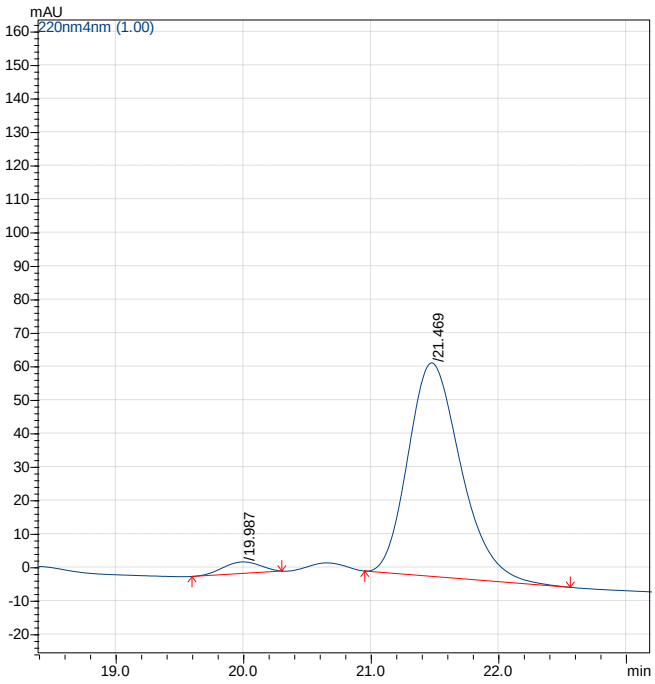


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.276	10280751	18.571	19.957	48.9770
2	20.635	10710229	19.957	21.397	51.0230

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.063	364839	18.581	19.669	11.6734
2	20.422	2760544	19.755	21.280	88.3266

(S)-1-(3-methoxyphenyl)but-3-en-1-ol (compound 2i)

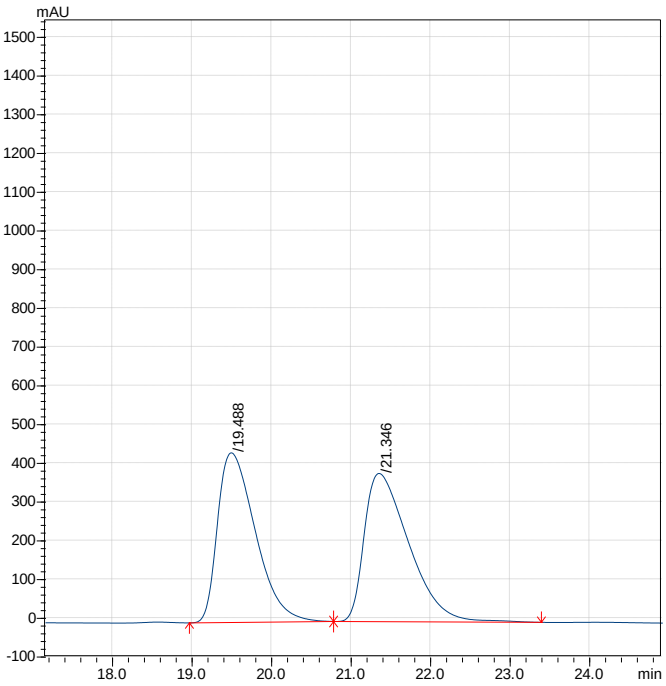


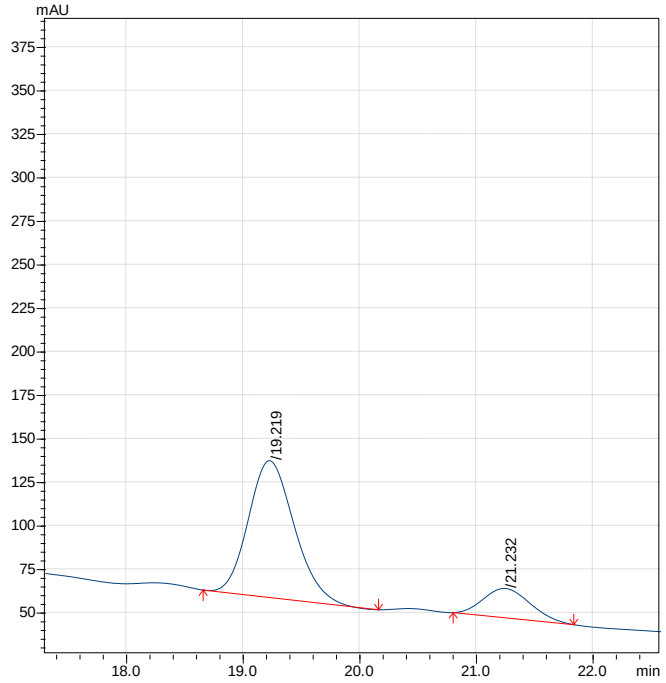


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.576	15886416	18.987	20.459	51.2741
2	21.100	15096894	20.480	22.069	48.7259

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.987	70409	19.595	20.299	3.6959
2	21.469	1834659	20.949	22.560	96.3041

(*S*)-1-(2-methoxyphenyl)but-3-en-1-ol (compound 2j)

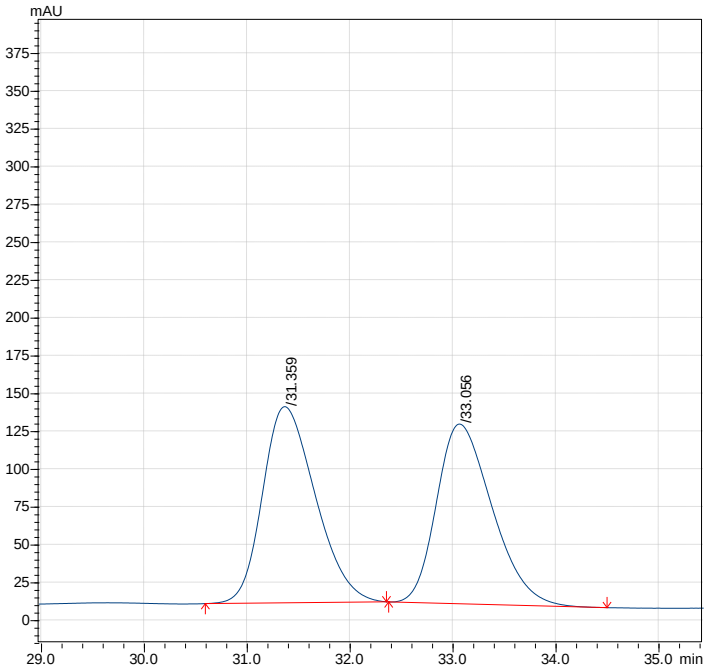


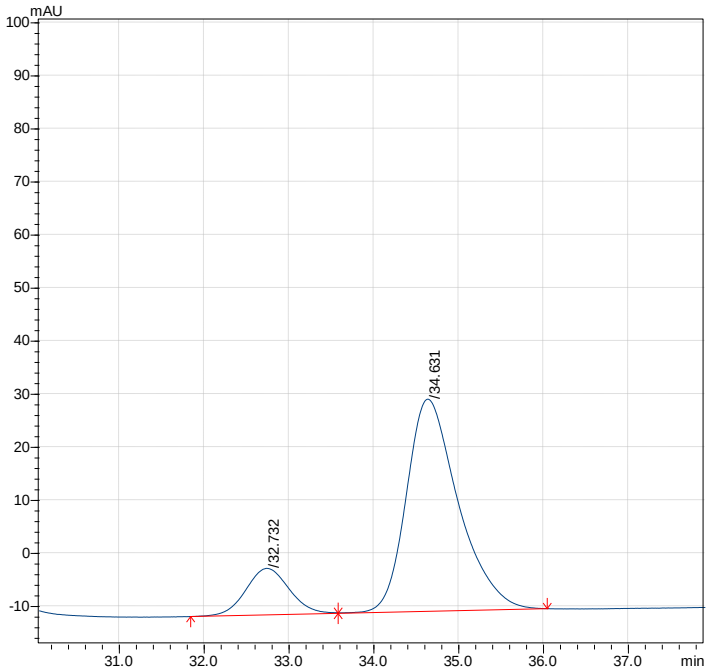


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.488	14503807	18.965	20.779	49.2965
2	21.346	14917740	20.779	23.392	50.7035

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	19.219	2147482	18.656	20.160	82.0953
2	21.232	468357	20.800	21.835	17.9047

(*S*)-1-(2-fluorophenyl)but-3-en-1-ol (compound 2k)

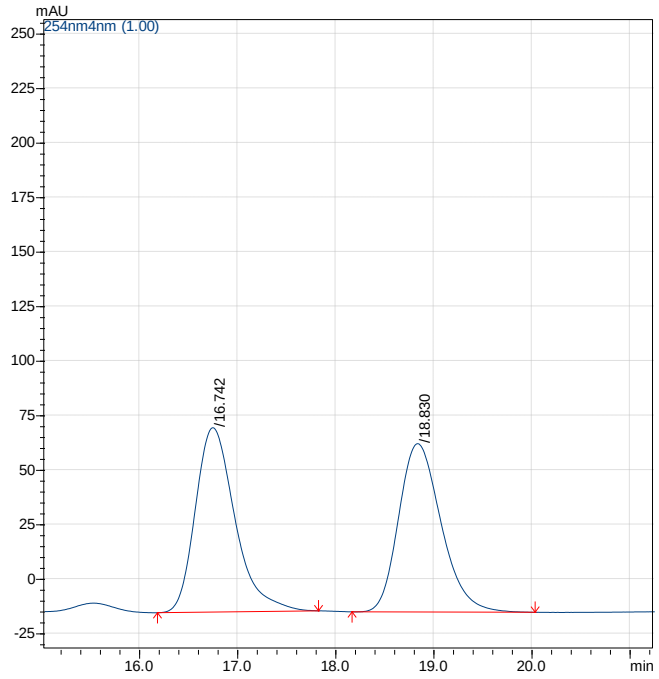


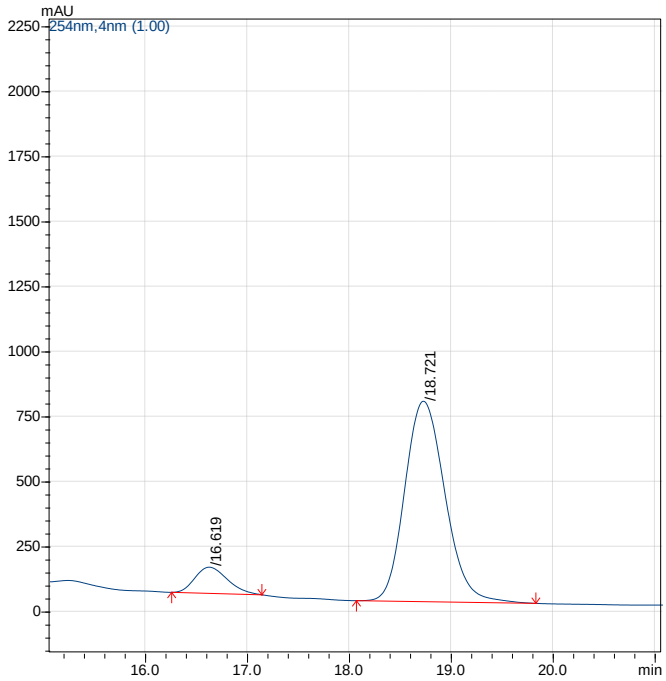


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	31.359	4627708	30.592	32.352	50.9127
2	33.056	4461793	32.373	34.496	49.0873

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	32.732	311842	31.840	33.579	15.5163
2	34.631	1697922	33.579	36.043	84.4837

(*S*)-1-(naphthalen-2-yl)but-3-en-1-ol (compound 2l)

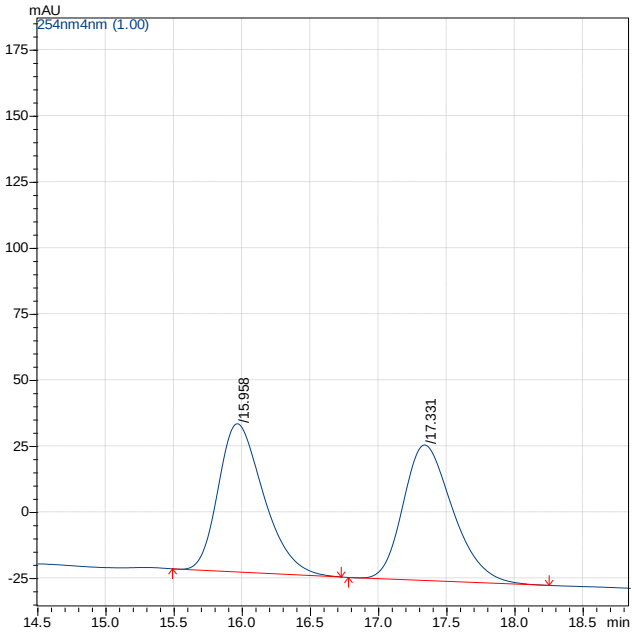


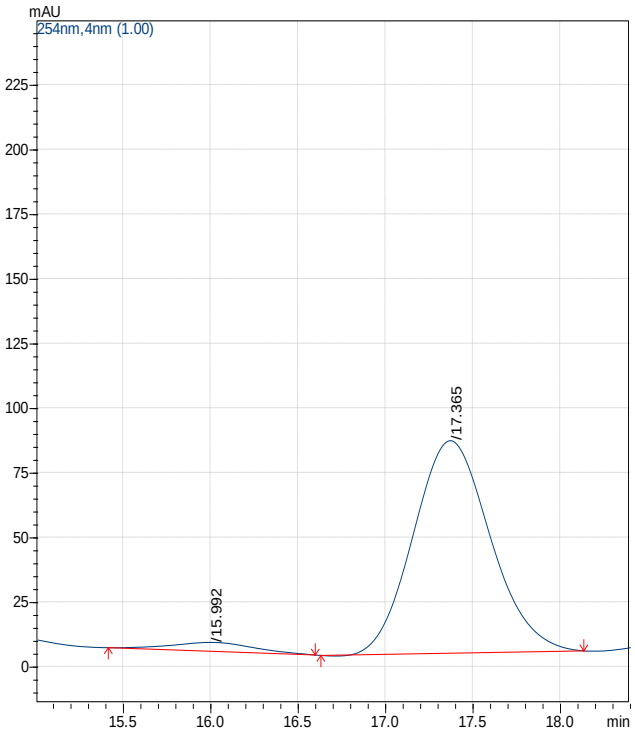


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	16.742	2373235	16.181	17.824	50.5556
2	18.830	2321075	18.165	20.032	49.4444

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	16.619	2233478	16.256	17.141	9.5442
2	18.721	21167824	18.069	19.829	90.4558

(*S*)-1-(thiophen-2-yl)but-3-en-1-ol (compound 2m)

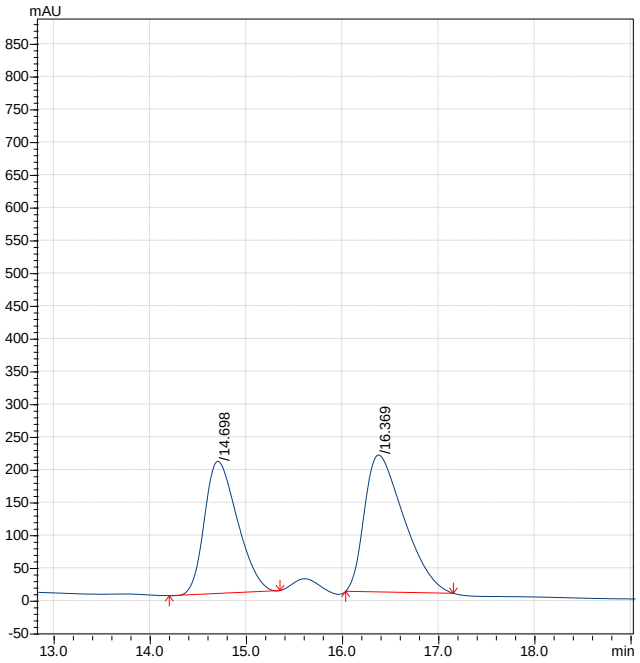


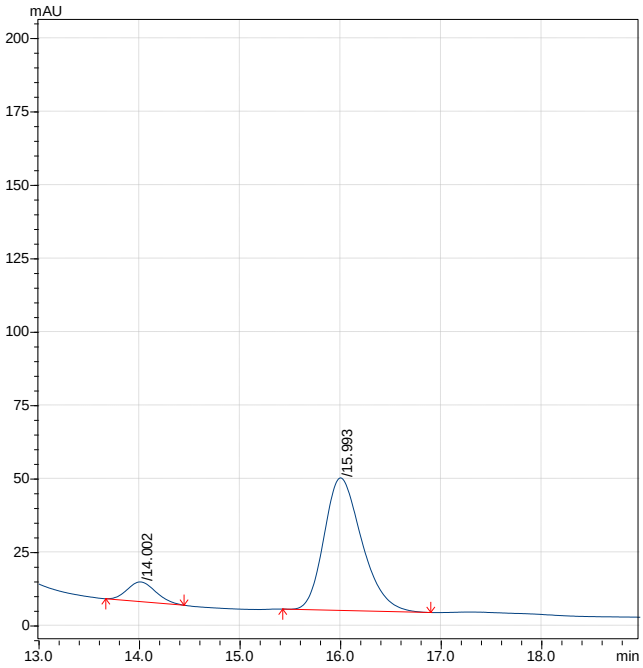


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	15.958	1295362	15.488	16.725	49.9969
2	17.331	1295520	16.779	18.251	50.0031

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	15.992	111982	15.413	16.597	4.2698
2	17.365	2510685	16.629	18.133	95.7302

(1*E*,3*R*)-1-Phenyl-1,5-hexadiene-3-ol (compound 2n)

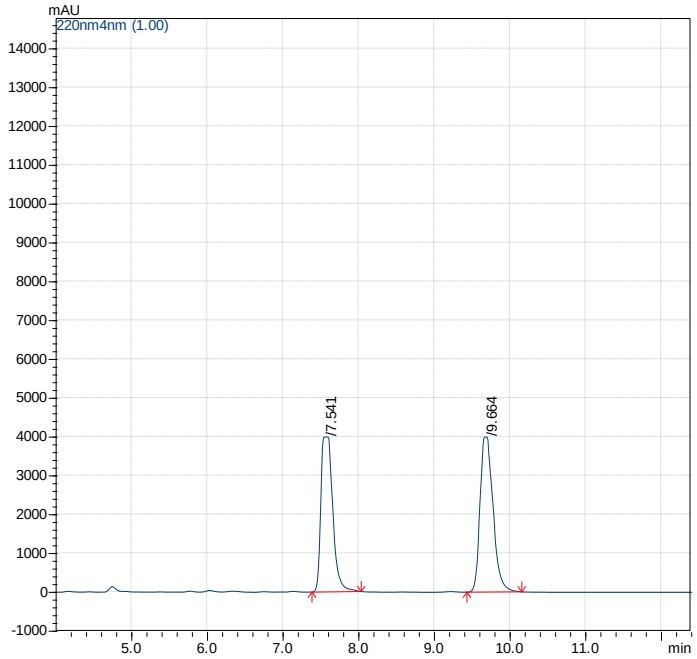


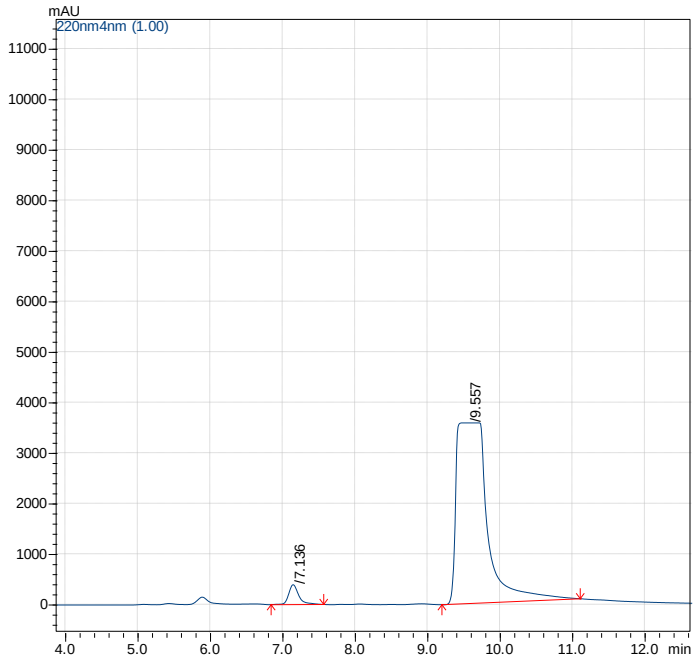


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	14.698	4791856	14.197	15.349	44.5052
2	16.369	5975092	16.032	17.152	55.4948

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	14.002	132115	13.664	14.443	10.0803
2	15.993	1178506	15.424	16.896	89.9197

(1*E*,3*R*)-2-Methyl-1-phenyl-1,5-hexadiene-3-ol (compound 2o)

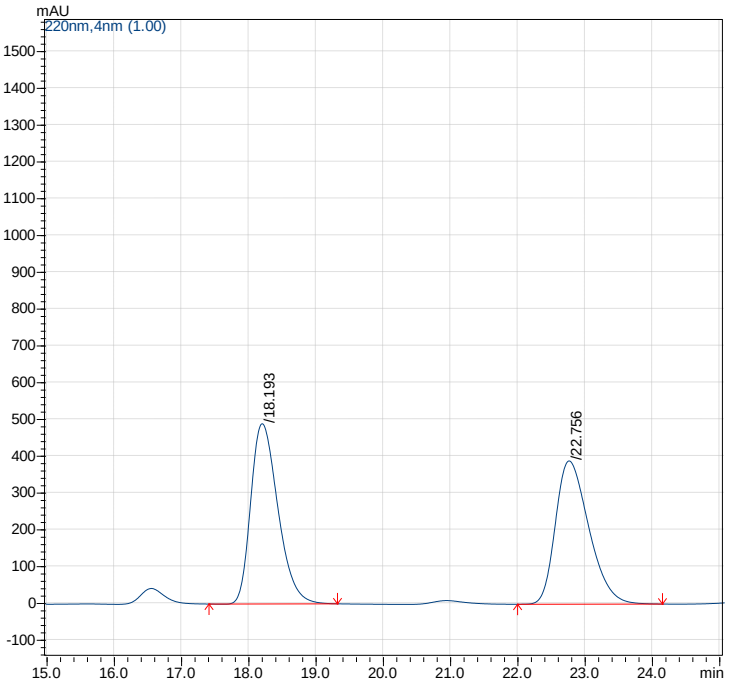


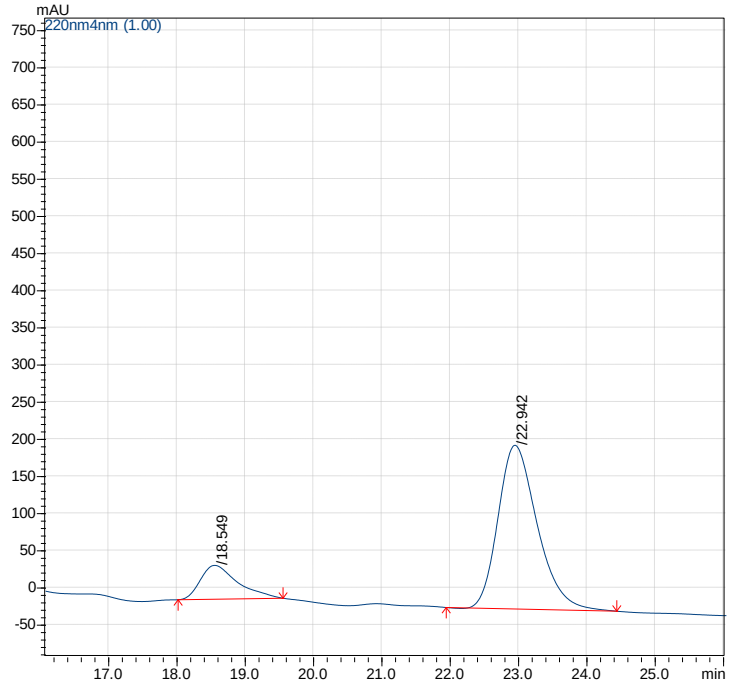


Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	7.541	43735650	7.381	8.032	47.7848
2	9.664	47790667	9.429	10.155	52.2152

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	7.136	3861045	6.837	7.563	3.4801
2	9.557	107083851	9.195	11.104	96.5199

(*R*)-1-Phenylpent-4-en-2-ol (compound 2p)



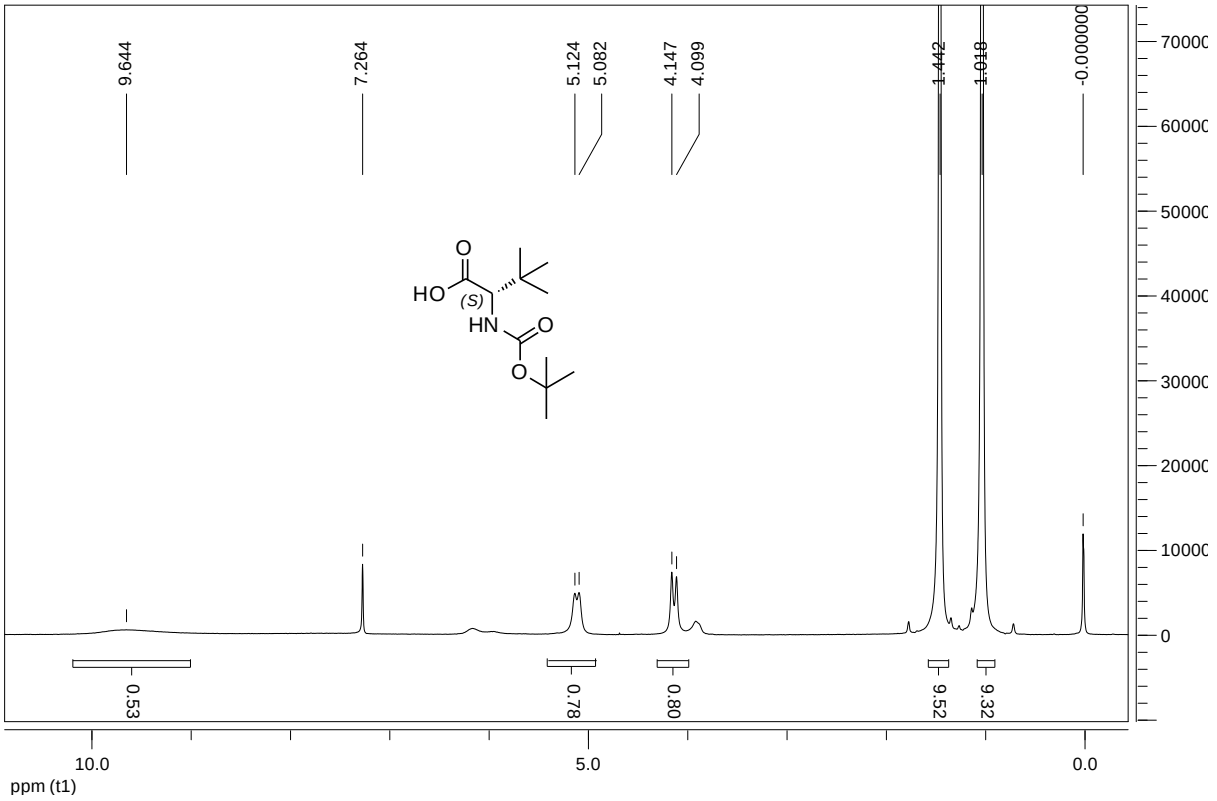


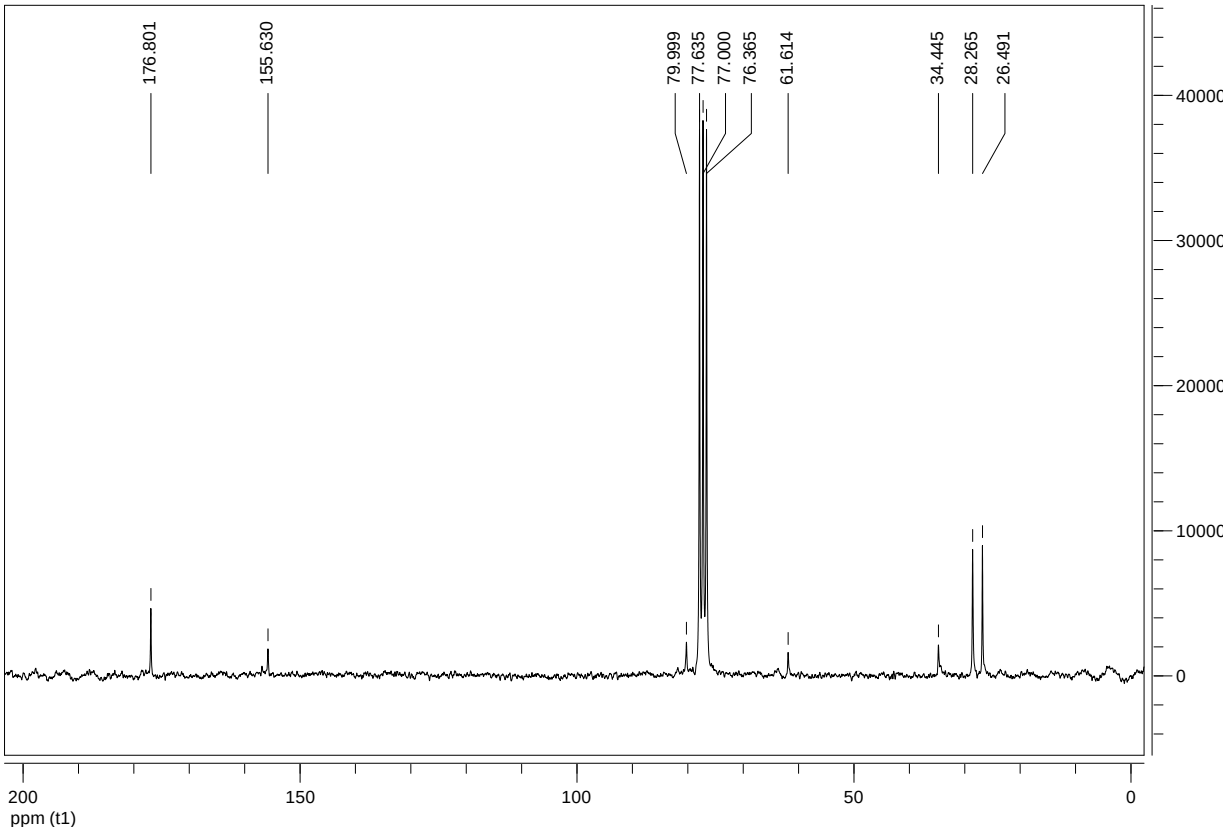
Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	18.193	13767610	17.408	19.317	50.6477
2	22.756	13415453	21.995	24.149	49.3523

Peak#	Ret. Time	Area	Peak Start	Peak End	Area%
1	18.549	1726488	18.016	19.552	16.4297
2	22.942	8781866	21.941	24.437	83.5703

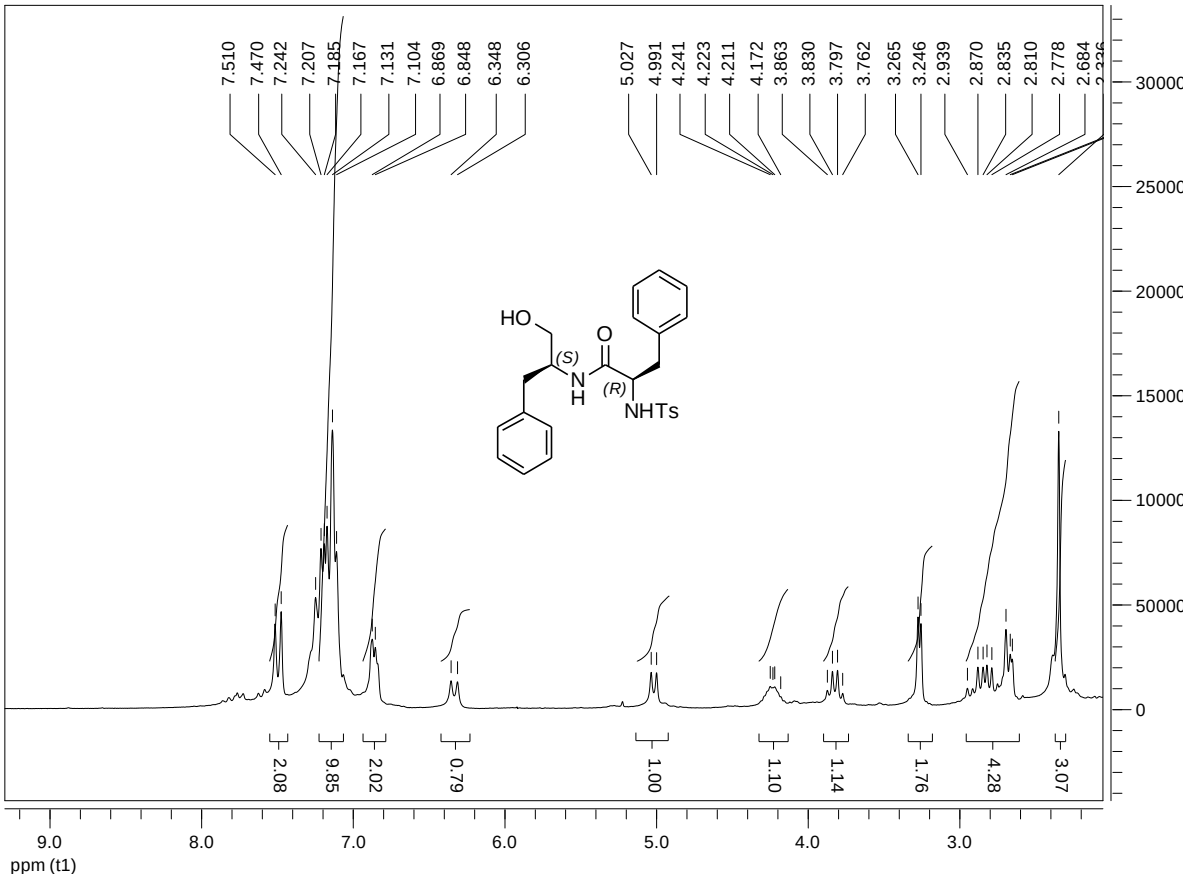
Copy of ^{1}H and ^{13}C spectra for the catalysts

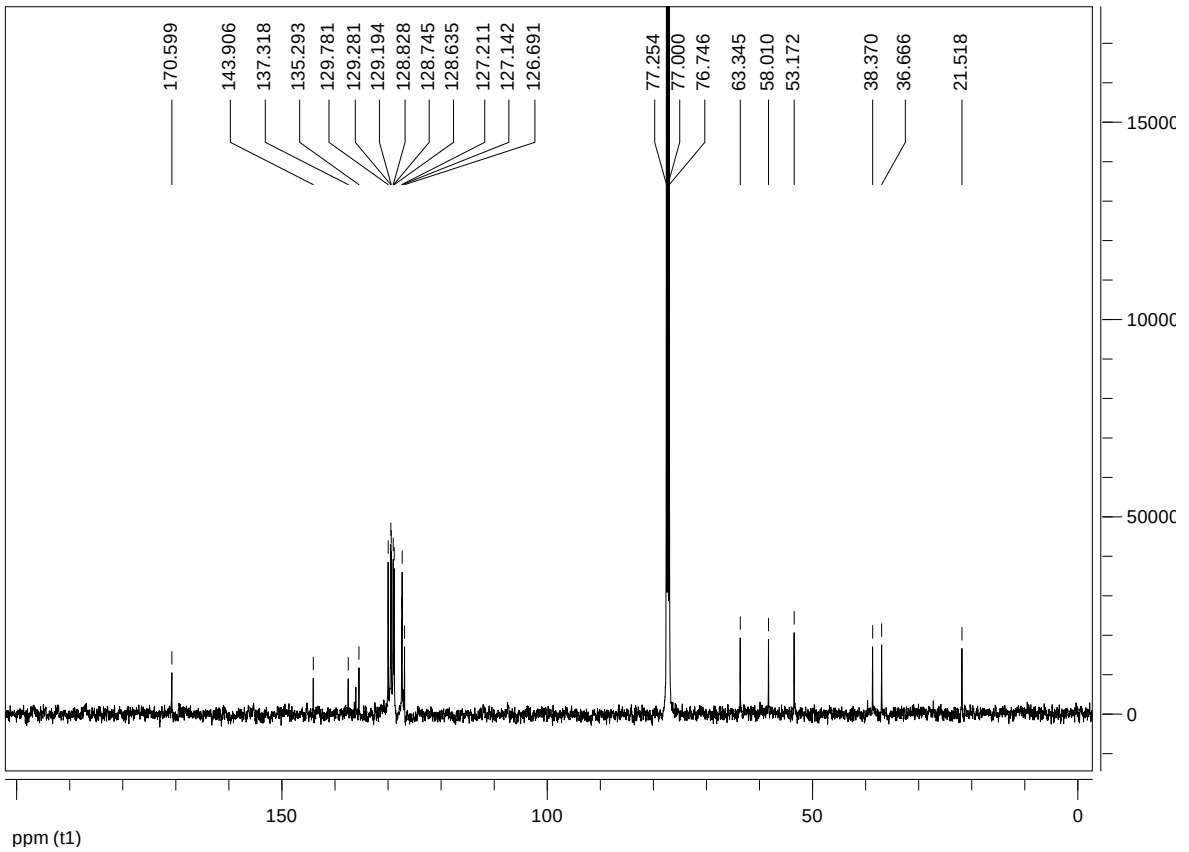
^{1}H and ^{13}C spectra of *N*-Boc-L-*tert*-leucine



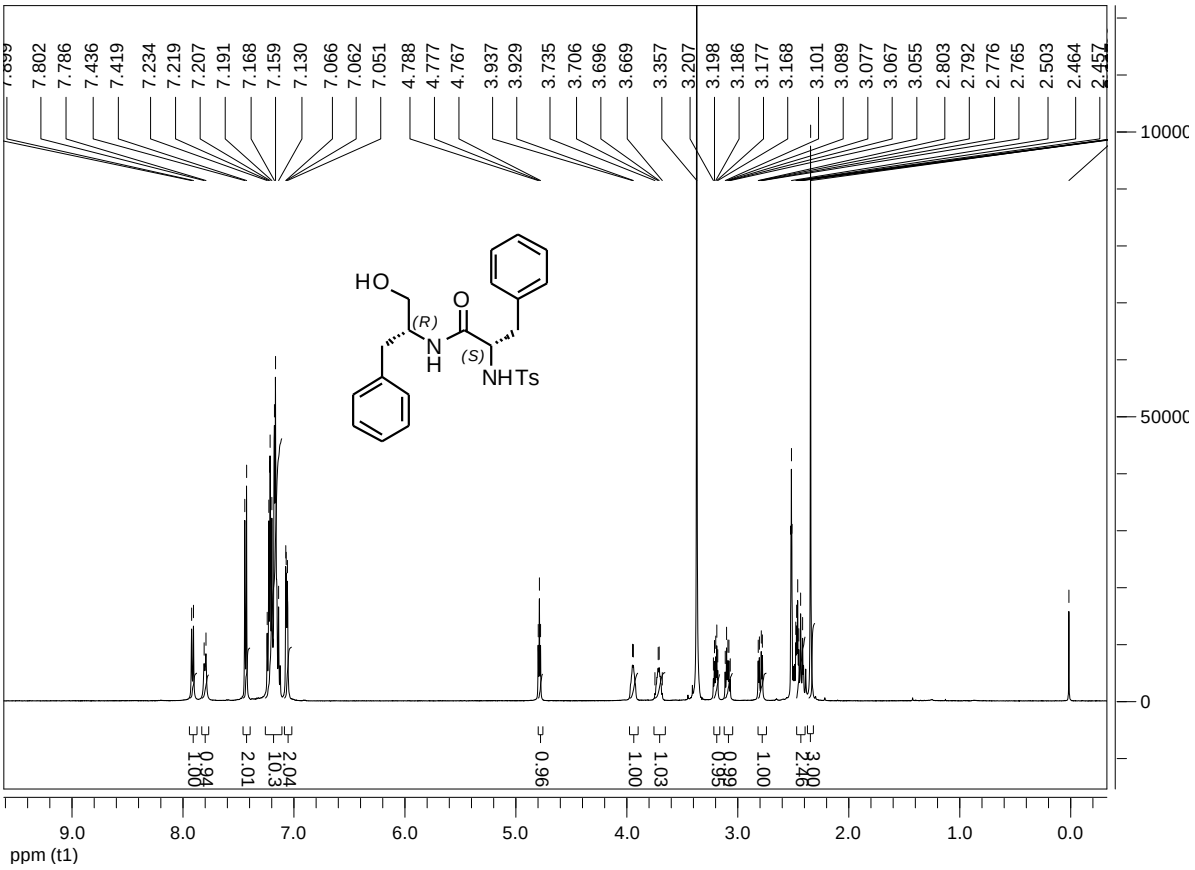


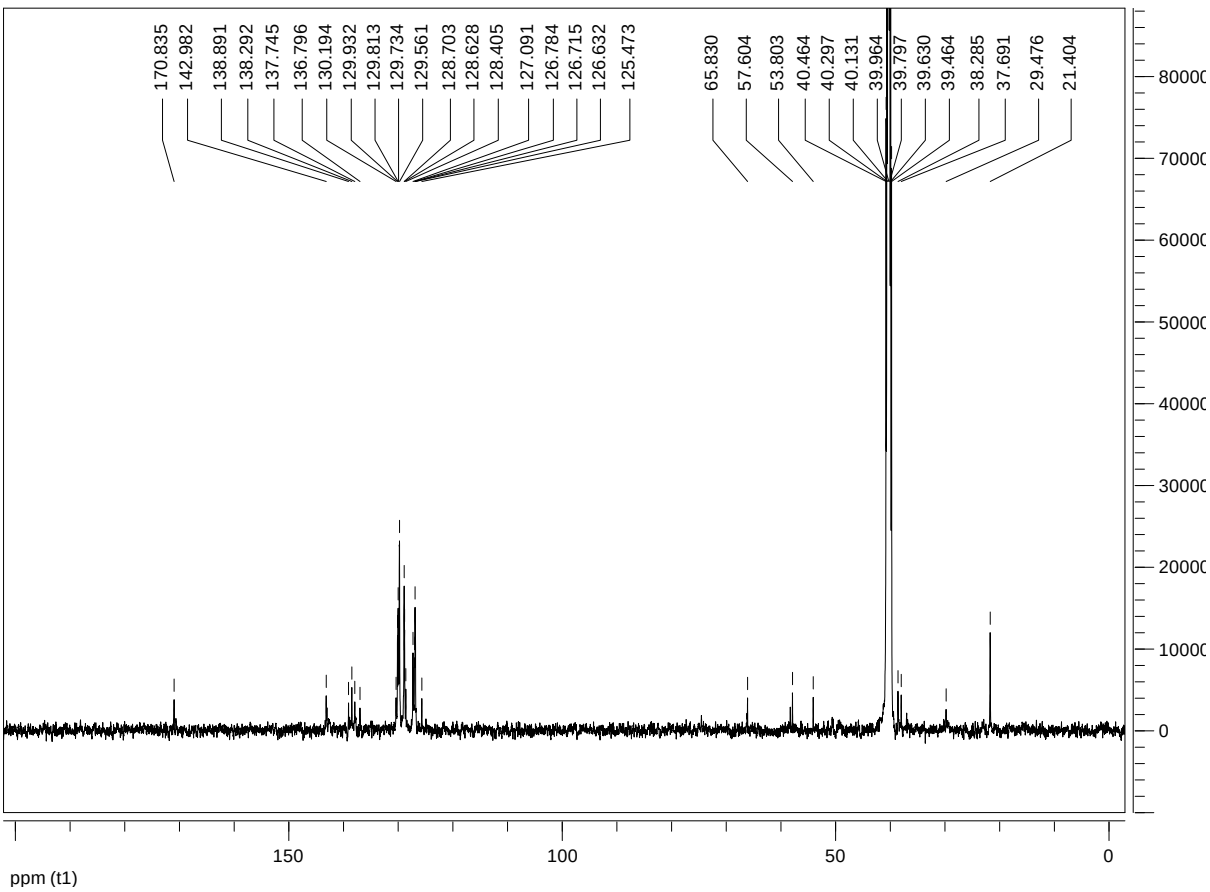
^{1}H and ^{13}C spectra for pre catalyst of (*R*,*S*)-1



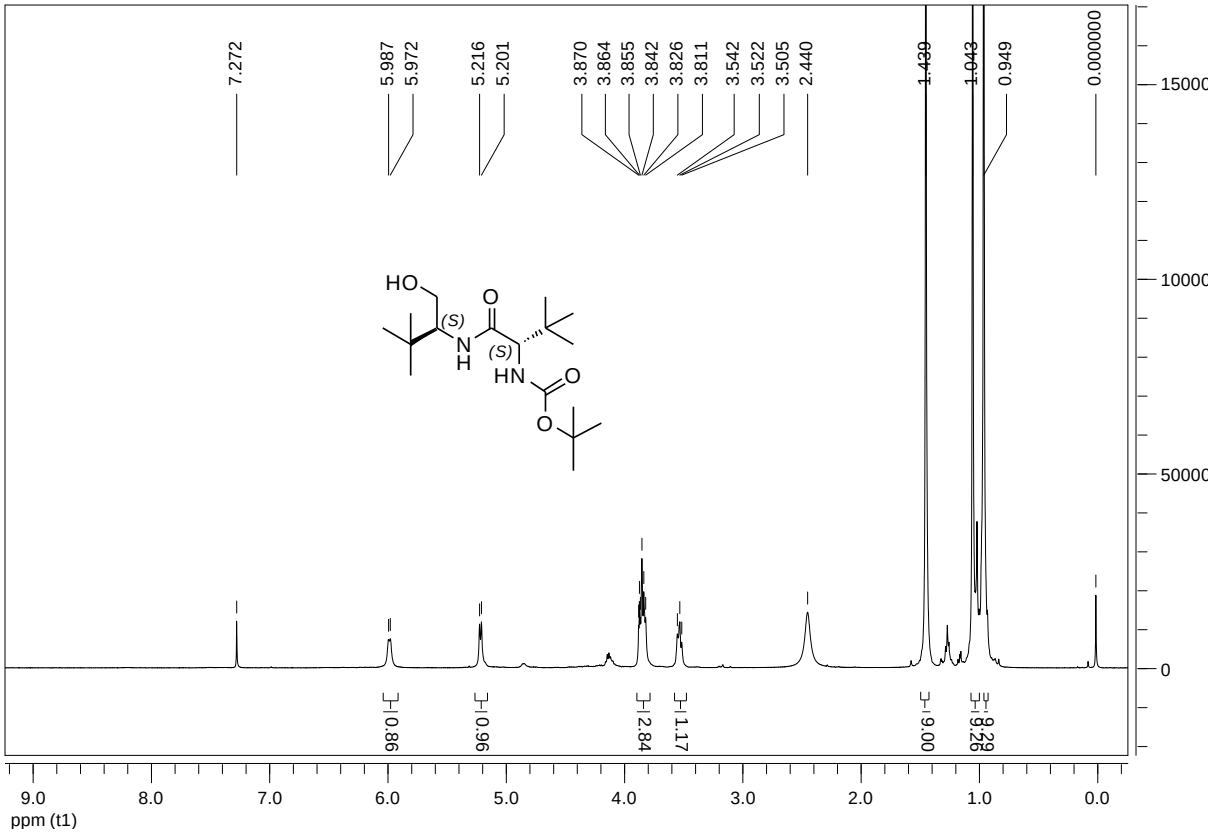


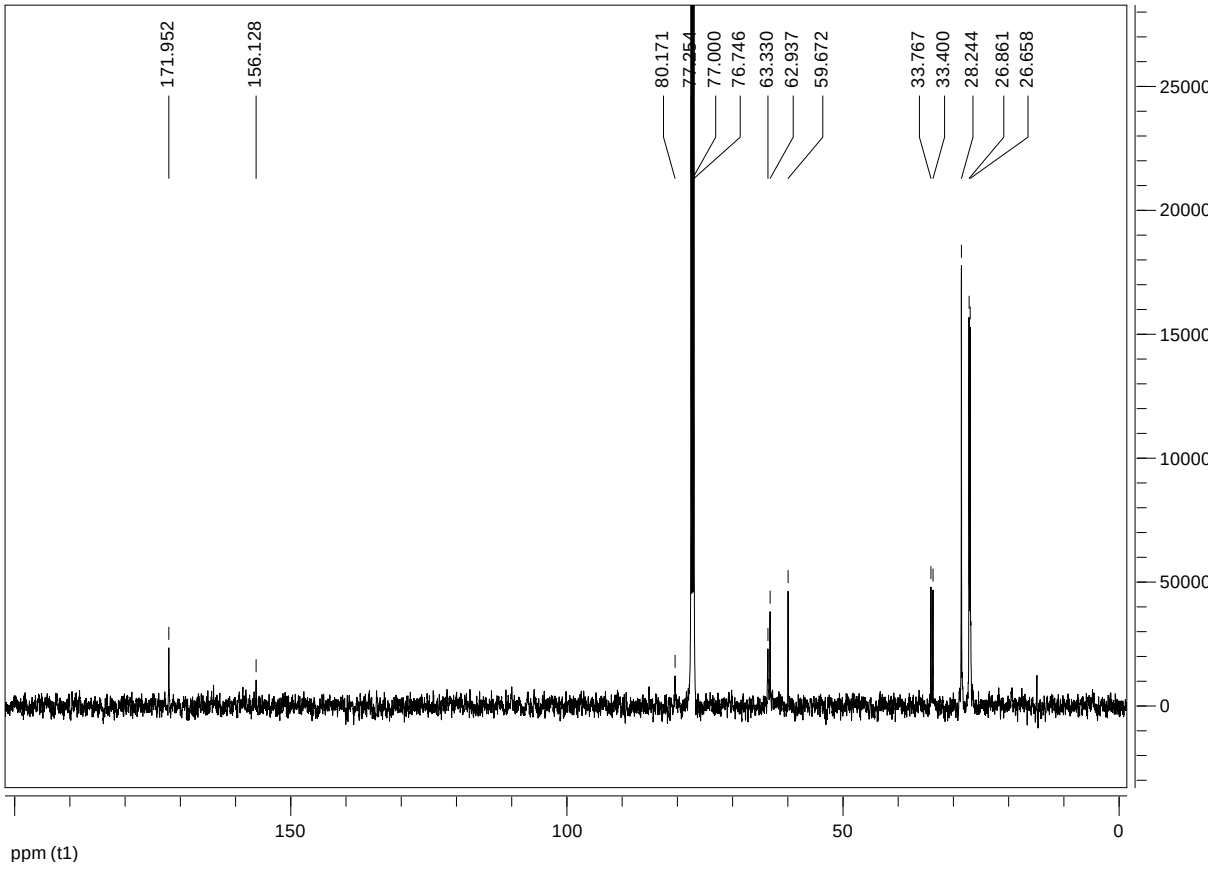
^{1}H and ^{13}C spectra for pre catalyst of (*S*,*R*)-1



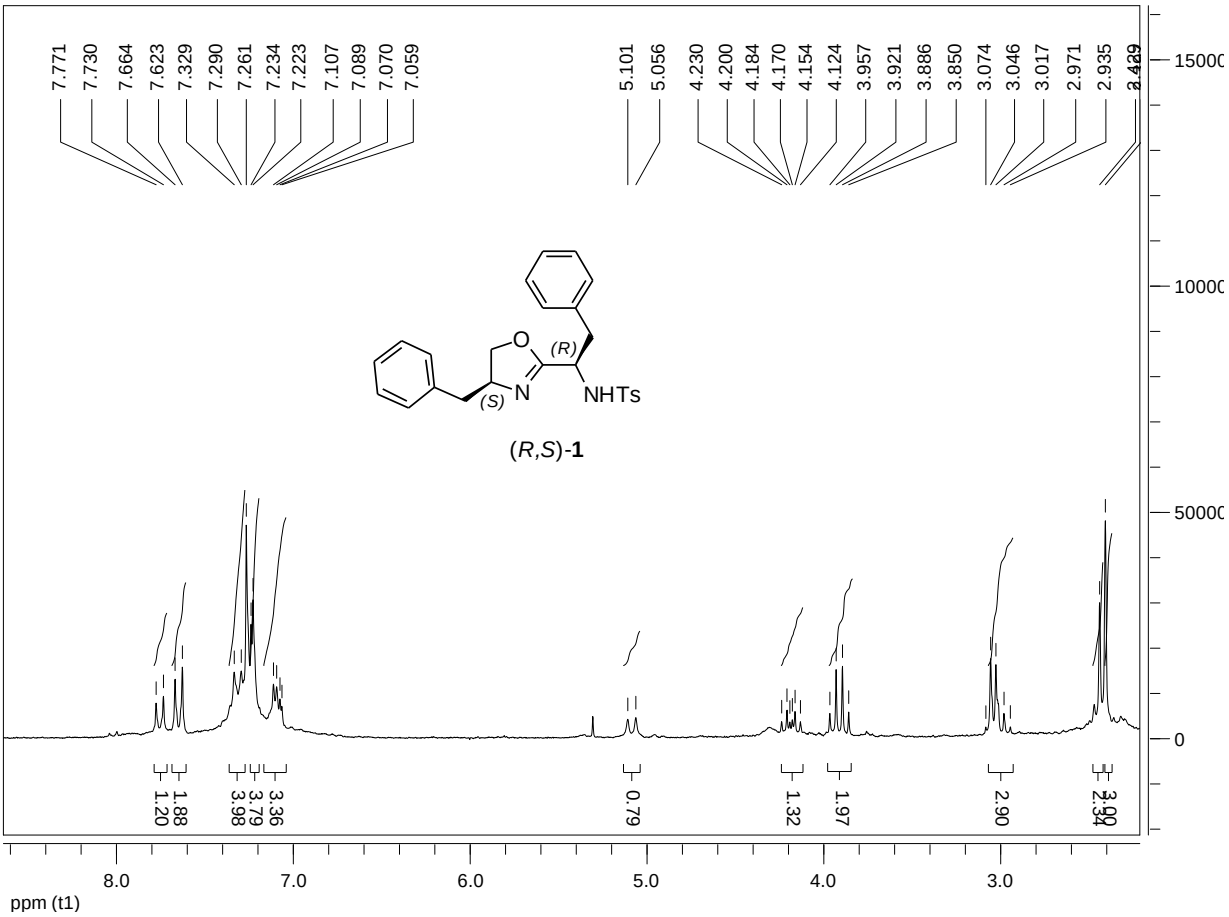


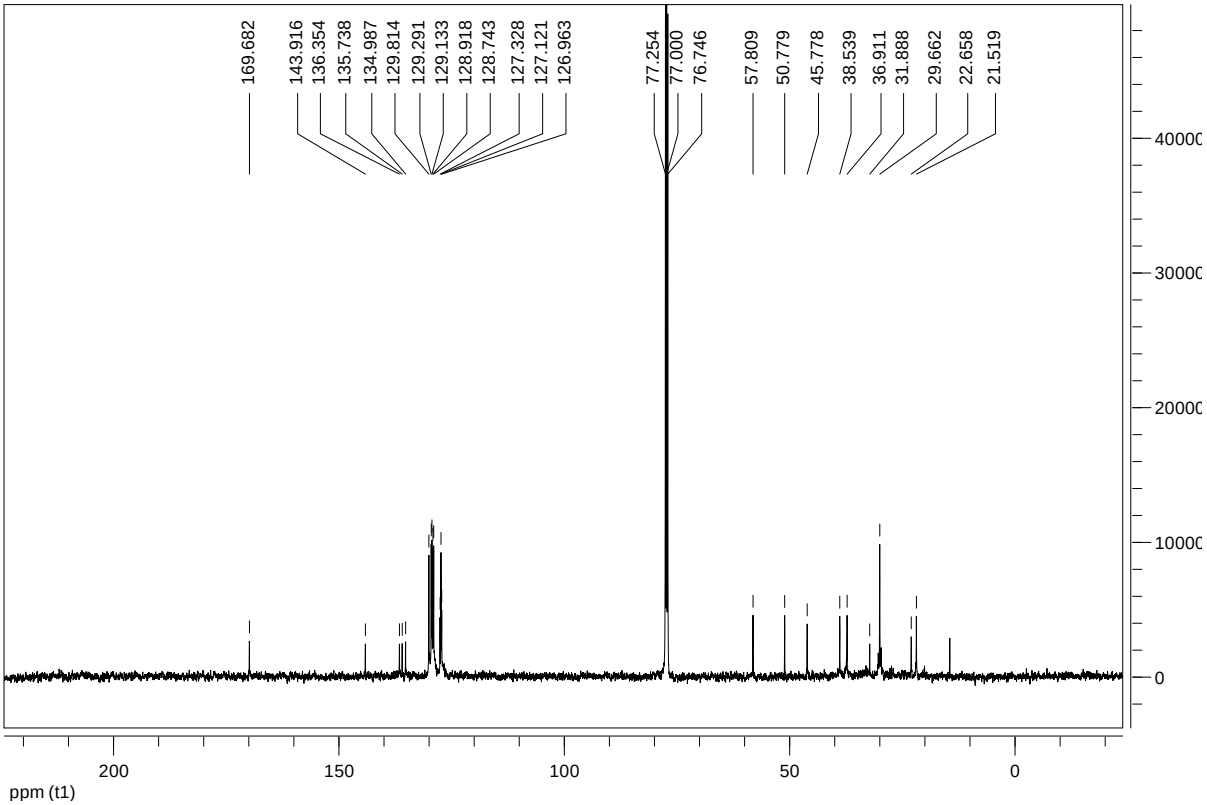
^{1}H and ^{13}C spectra for pre catalyst of (*S*,*S*)-6



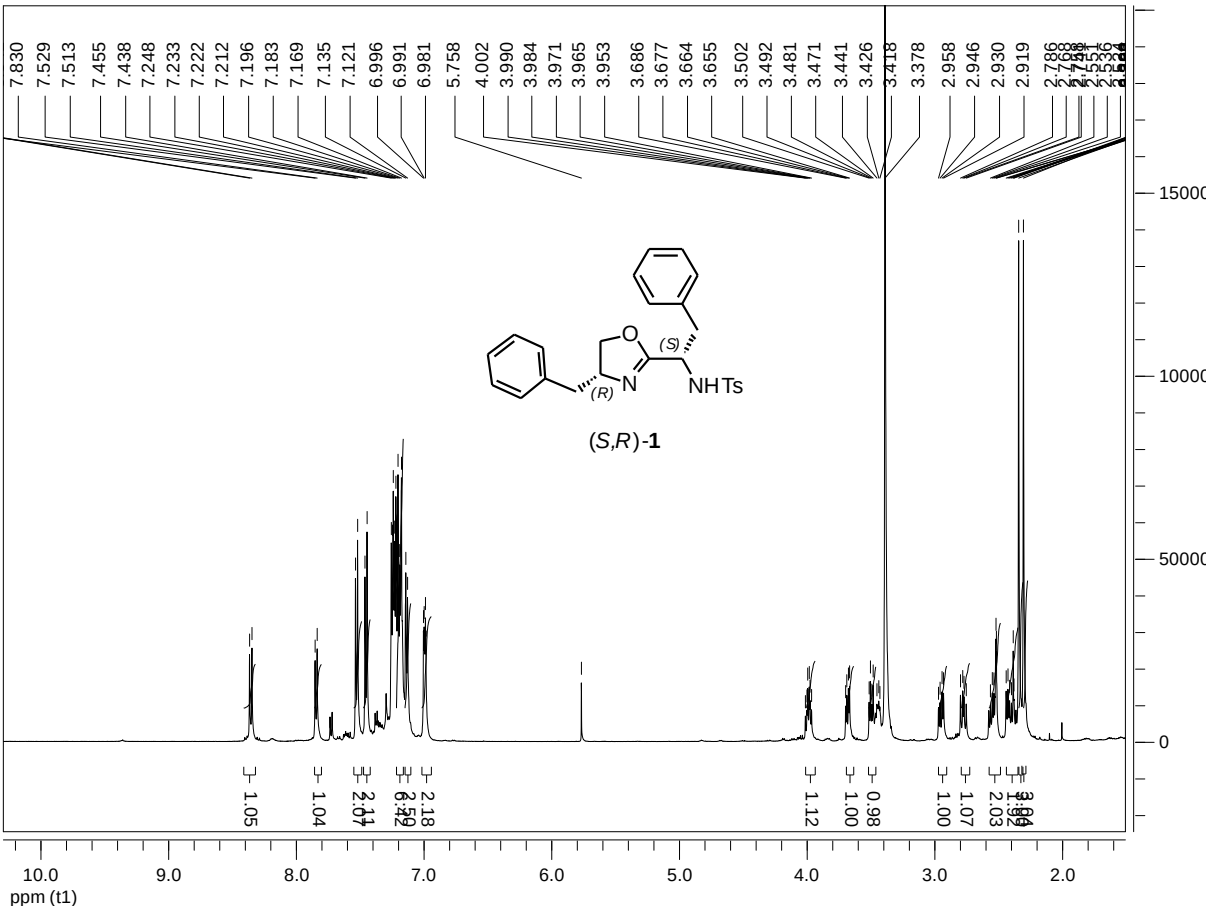


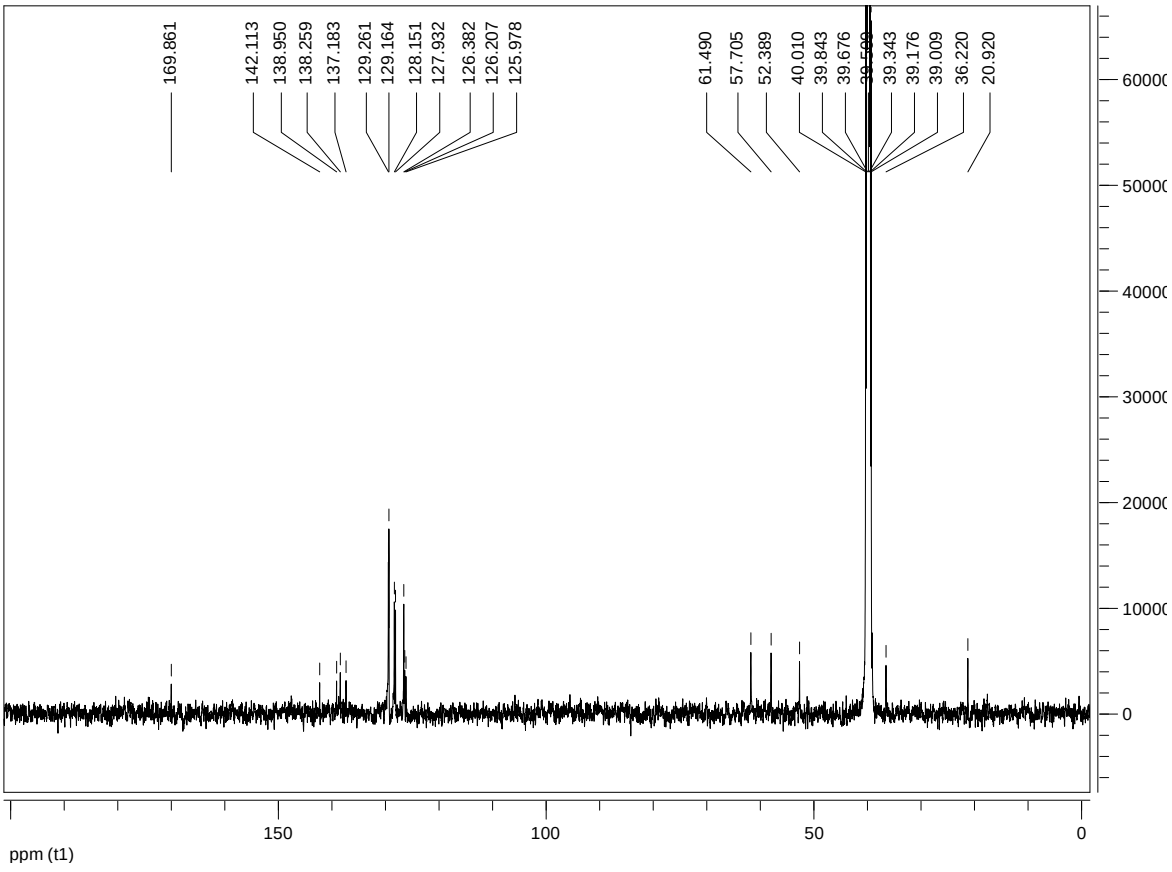
^{1}H and ^{13}C spectra of (*R*,*S*)-1



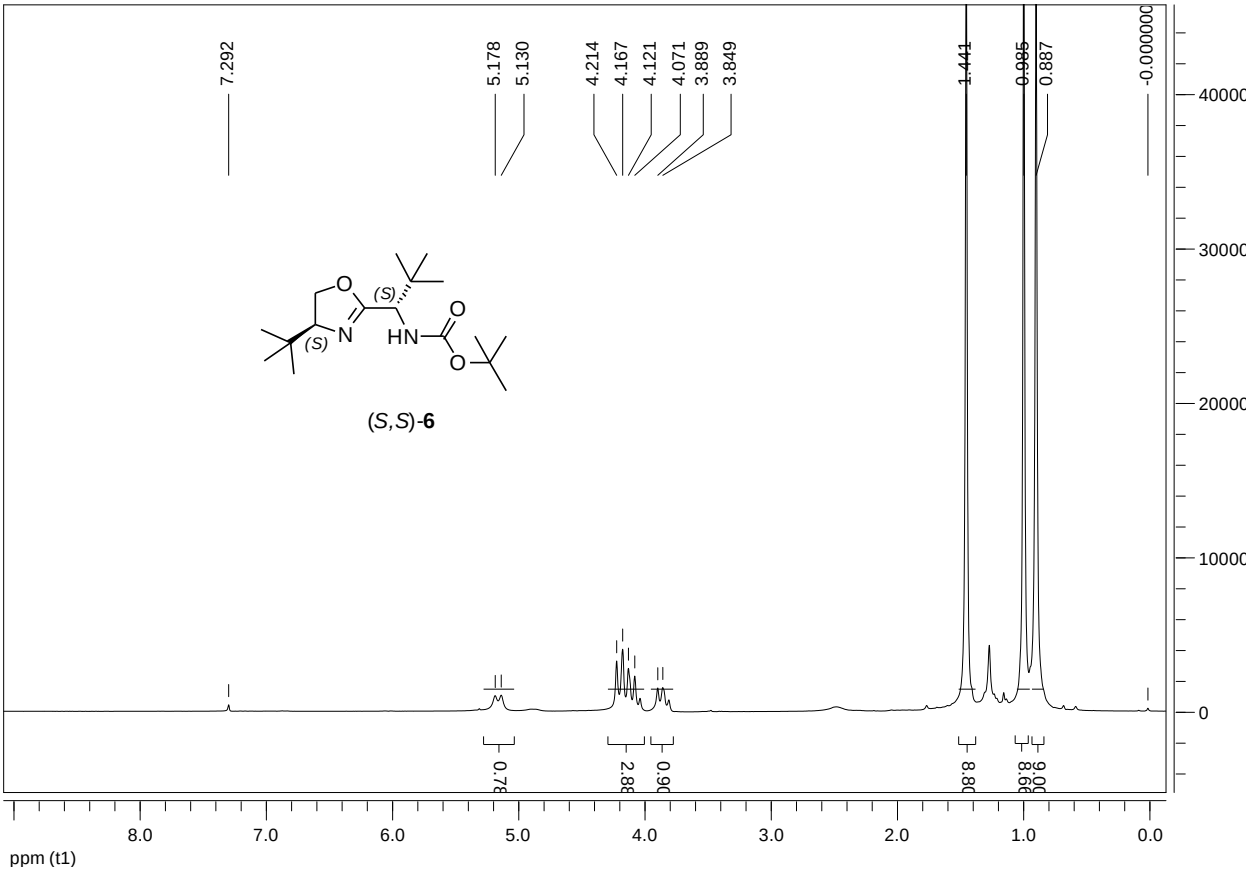


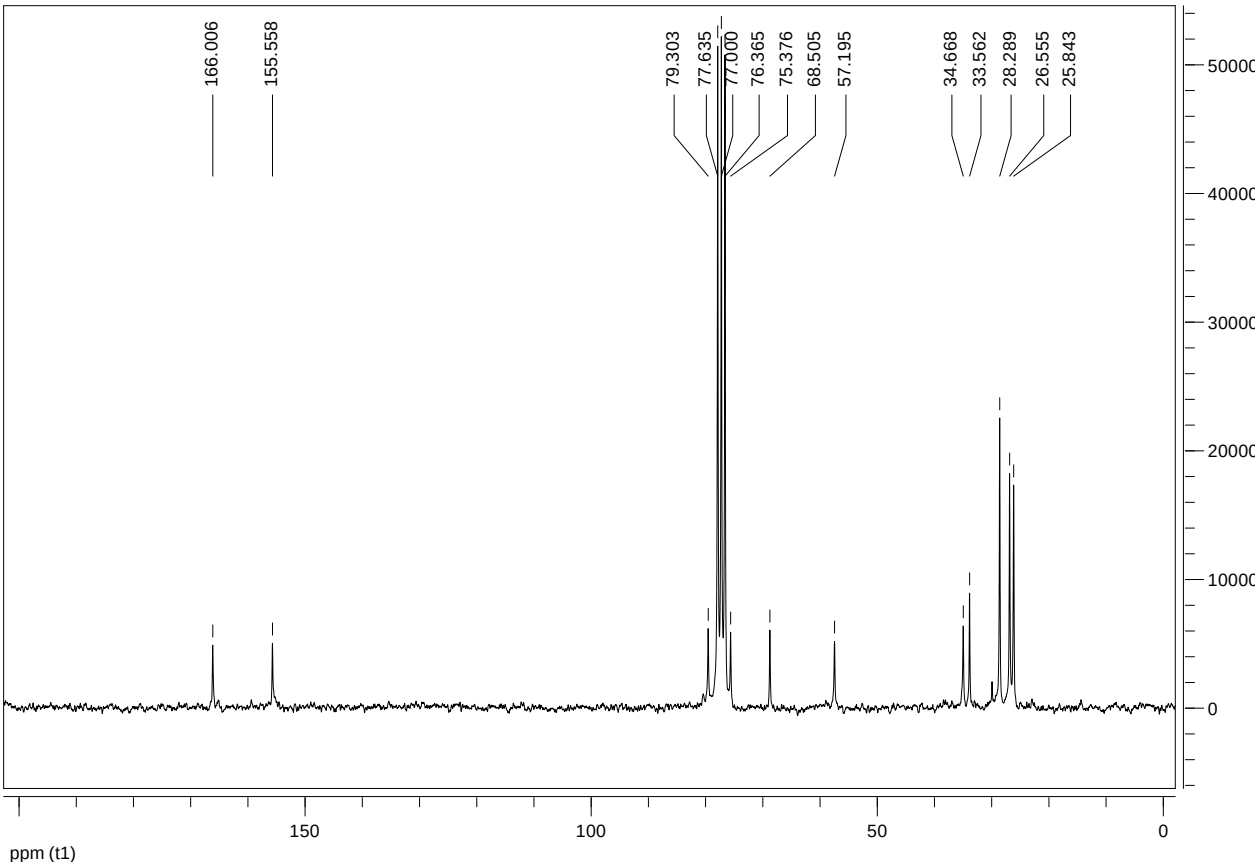
^{1}H and ^{13}C spectra of (*S*,*R*)-1



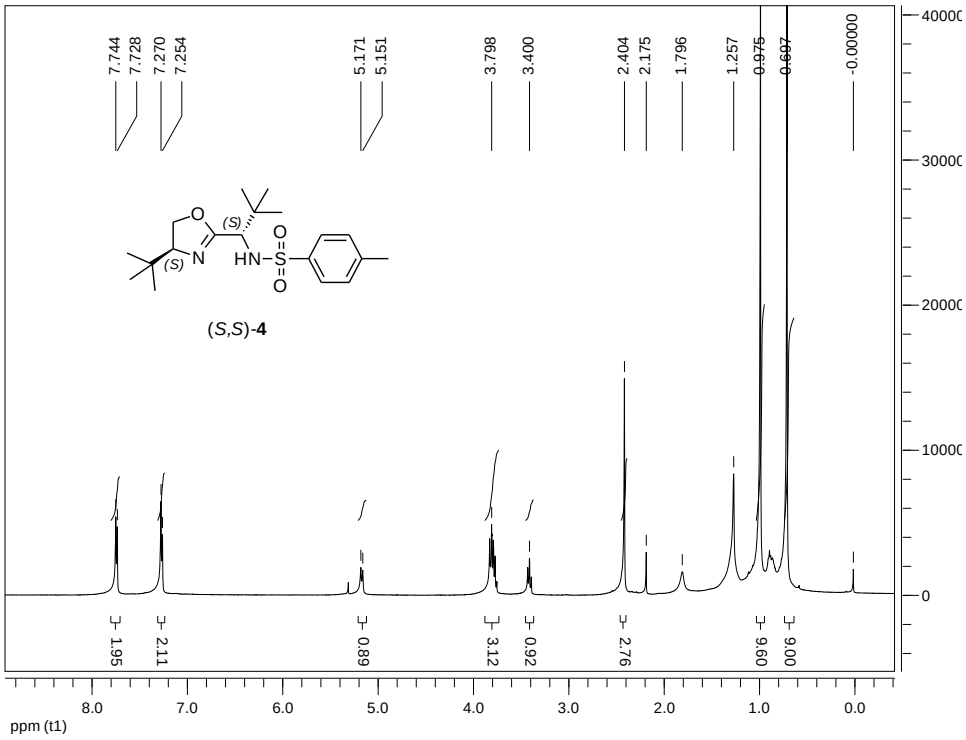


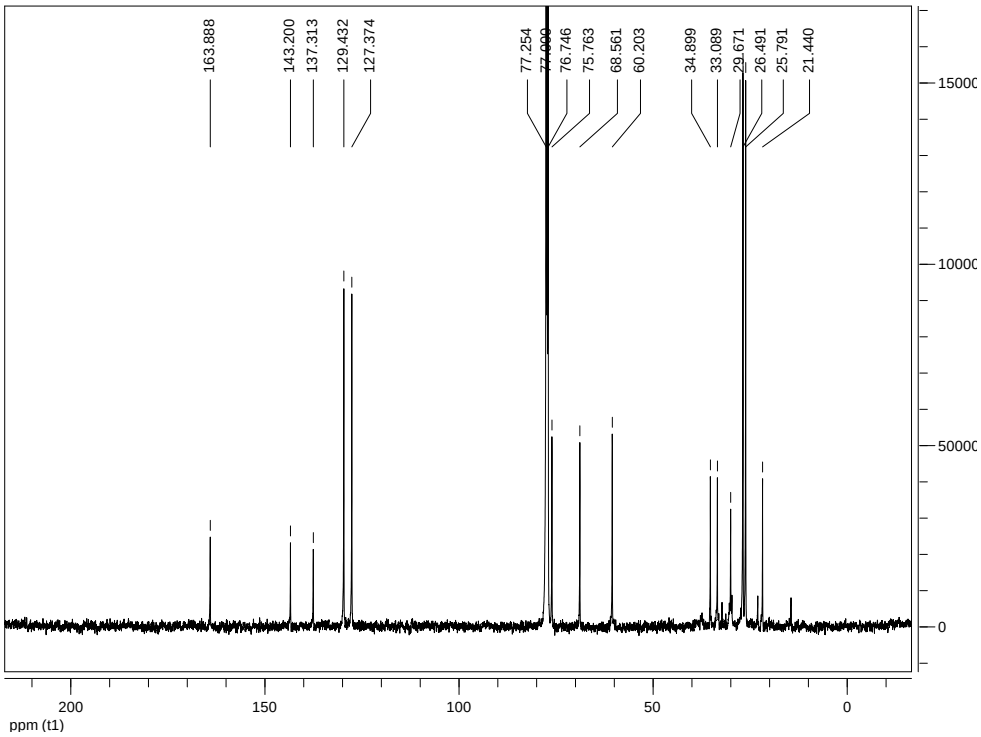
^{1}H and ^{13}C spectra of (*S*,*S*)-**6**



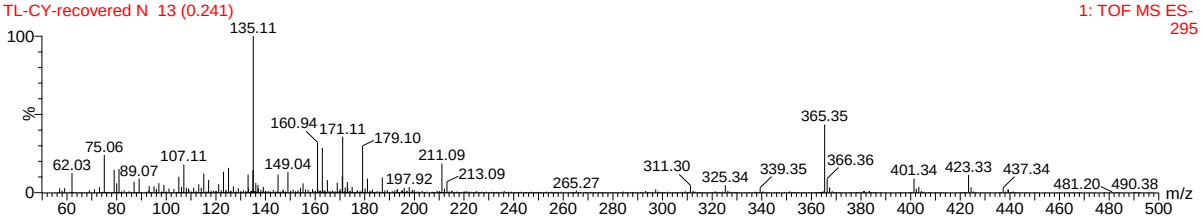


Copy of ^{1}H, ^{13}C and Mass spectra of the recovered catalyst



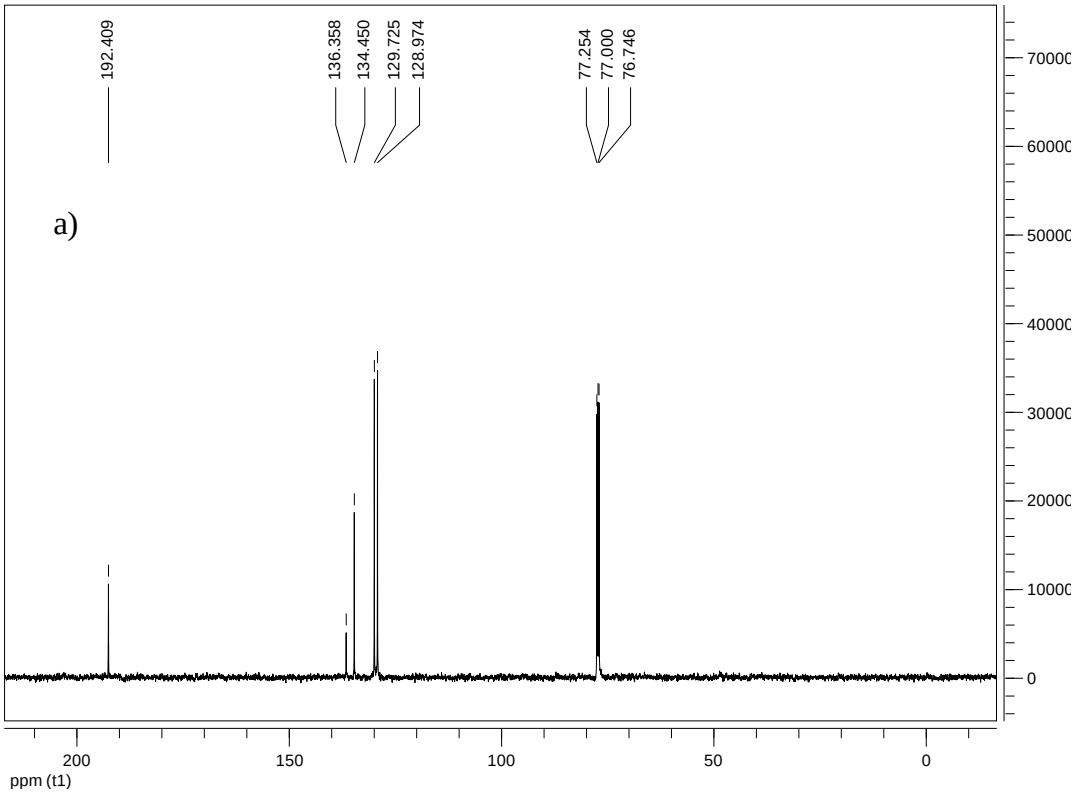


Mass spectra (exact mass: 366.20)

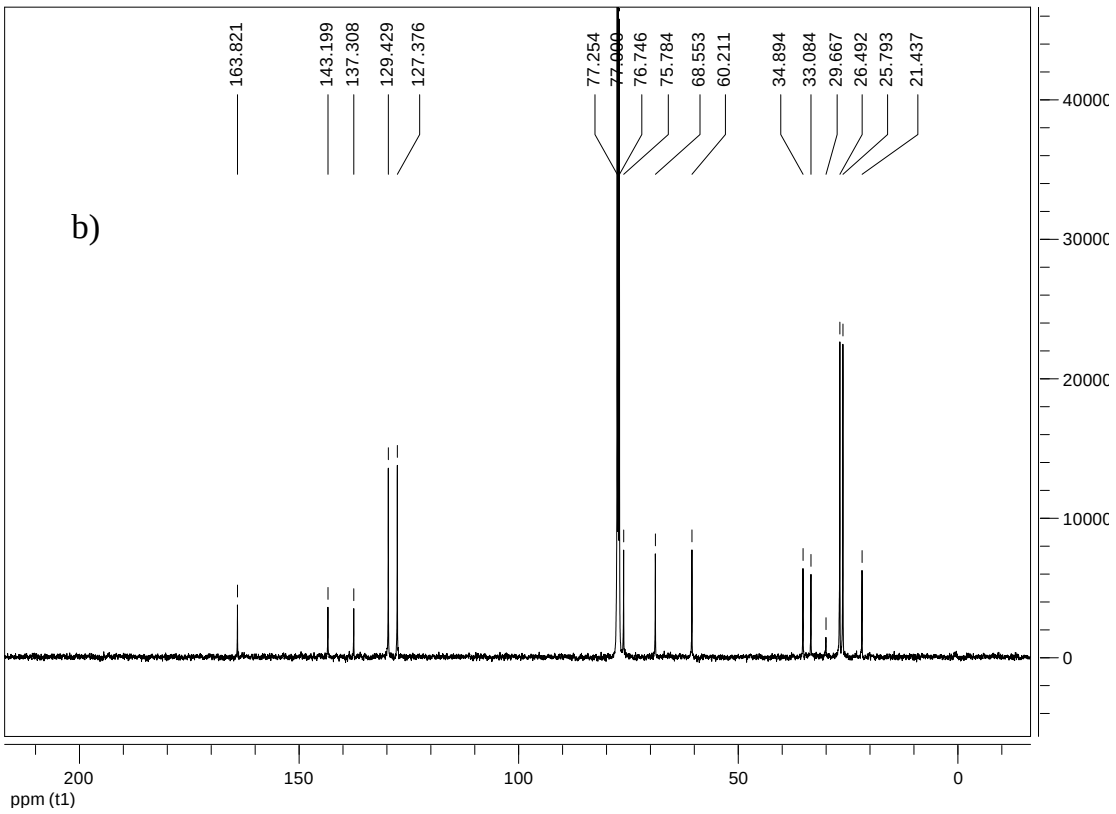


NMR experiments for mechanistic interpretation (Figure 1, main paper)

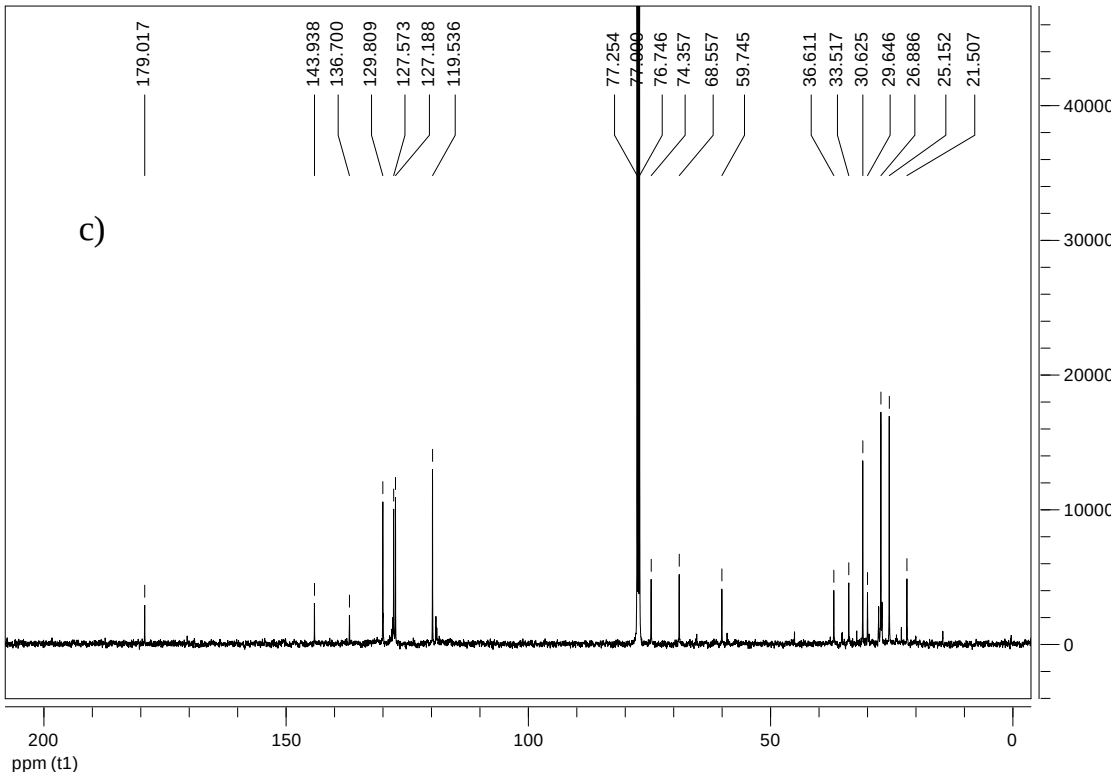
a) ^{13}C spectrum of benzaldehyde taken in $CDCl_3$



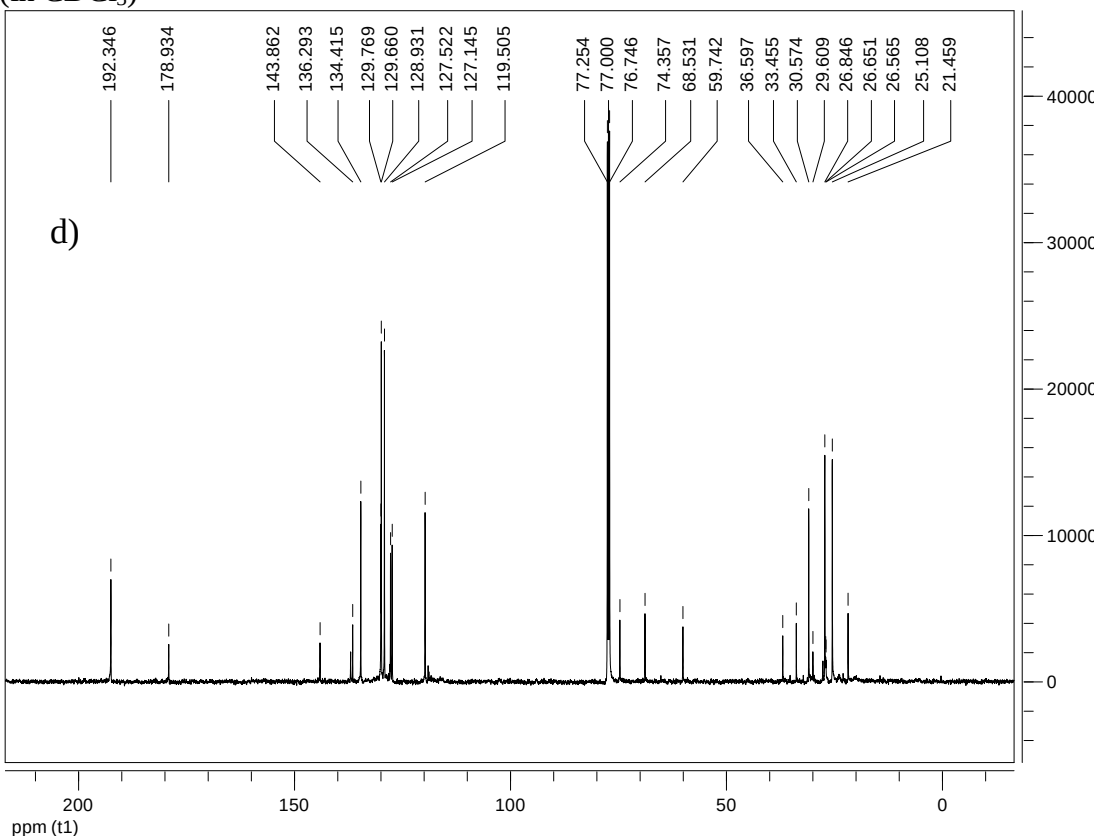
b) ^{13}C spectrum of catalyst (*S*,*S*)-**4** taken in $CDCl_3$



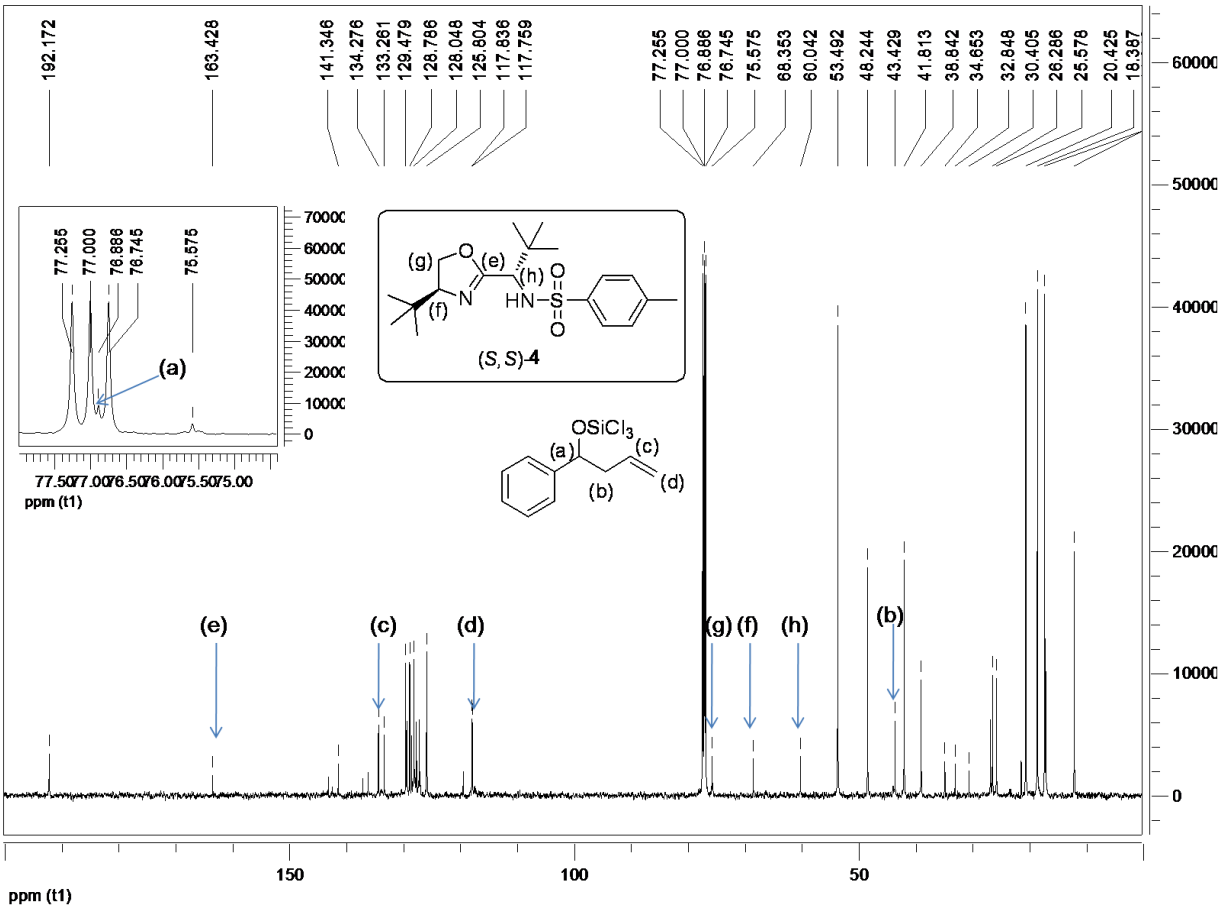
c) ^{13}C spectrum of catalyst (*S*,*S*)-**4** after interaction with allyltrichlorosilane (in $CDCl_3$)



d) ^{13}C spectrum of catalyst (*S*,*S*)-**4** after interaction with allyltrichlorosilane and benzaldehyde (in $CDCl_3$)

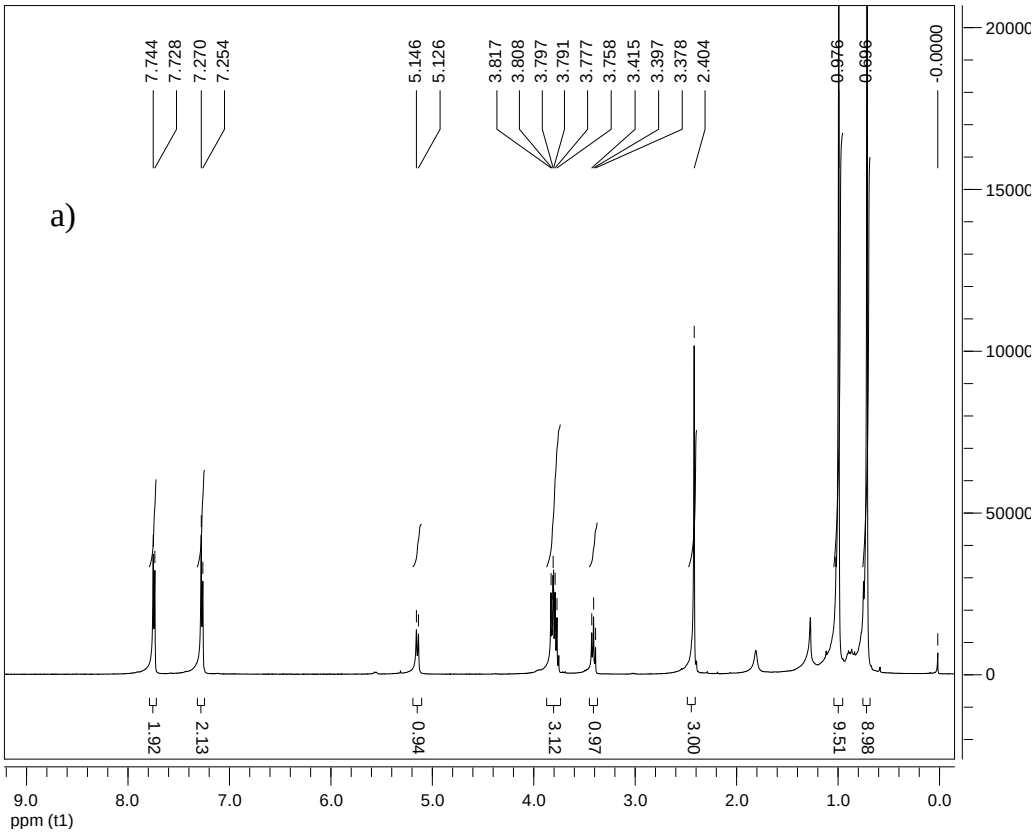


e) ^{13}C spectrum of catalyst (*S*,*S*)-**4** after interaction with allyltrichlorosilane, benzaldehyde and DIPEA (in $CDCl_3$)

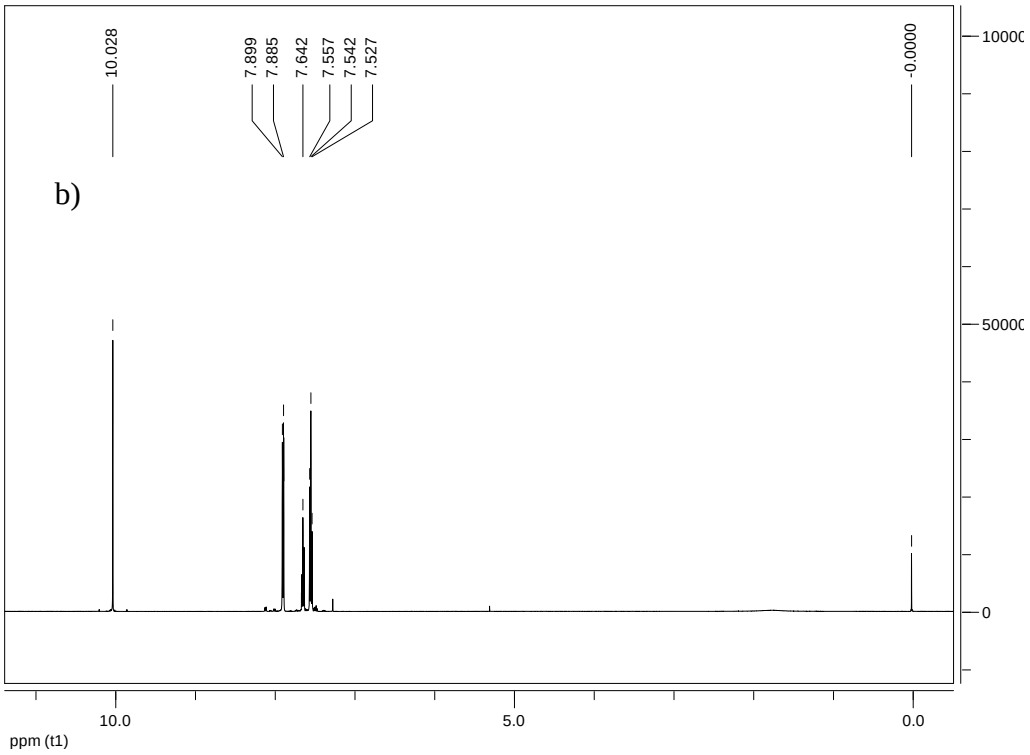


^{1}H NMR spectra of the catalyst, substrate, allyltrichlorosilane, DIPEA and reaction mixture (with respect to time) (Figure 2, main paper)

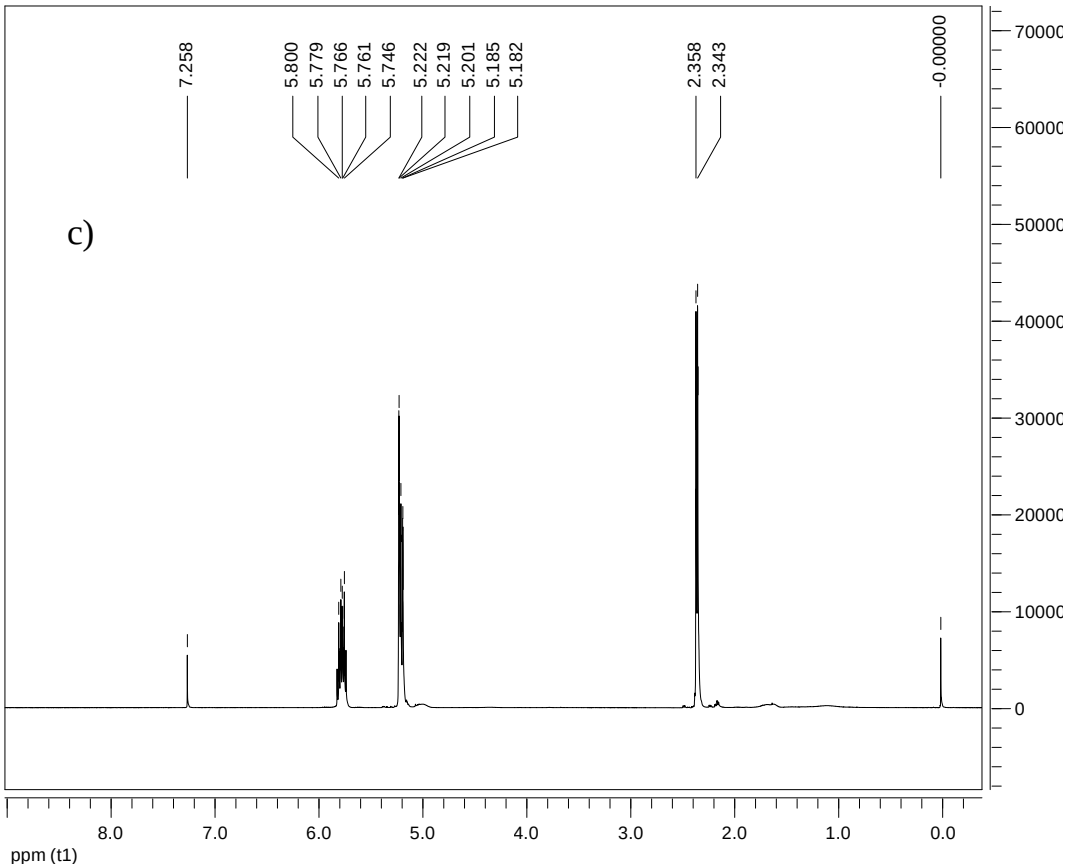
a) ^{1}H spectrum of catalyst (*S*,*S*)-**4**



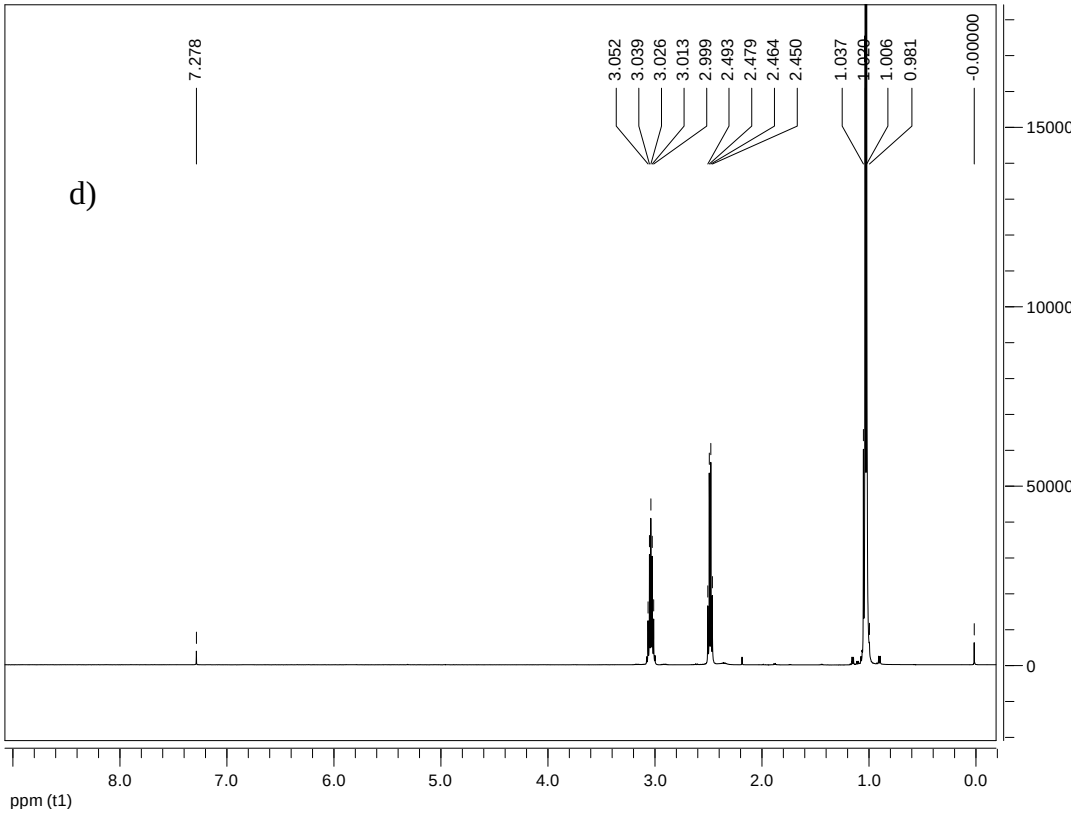
b) ^{1}H spectrum of benzaldehyde



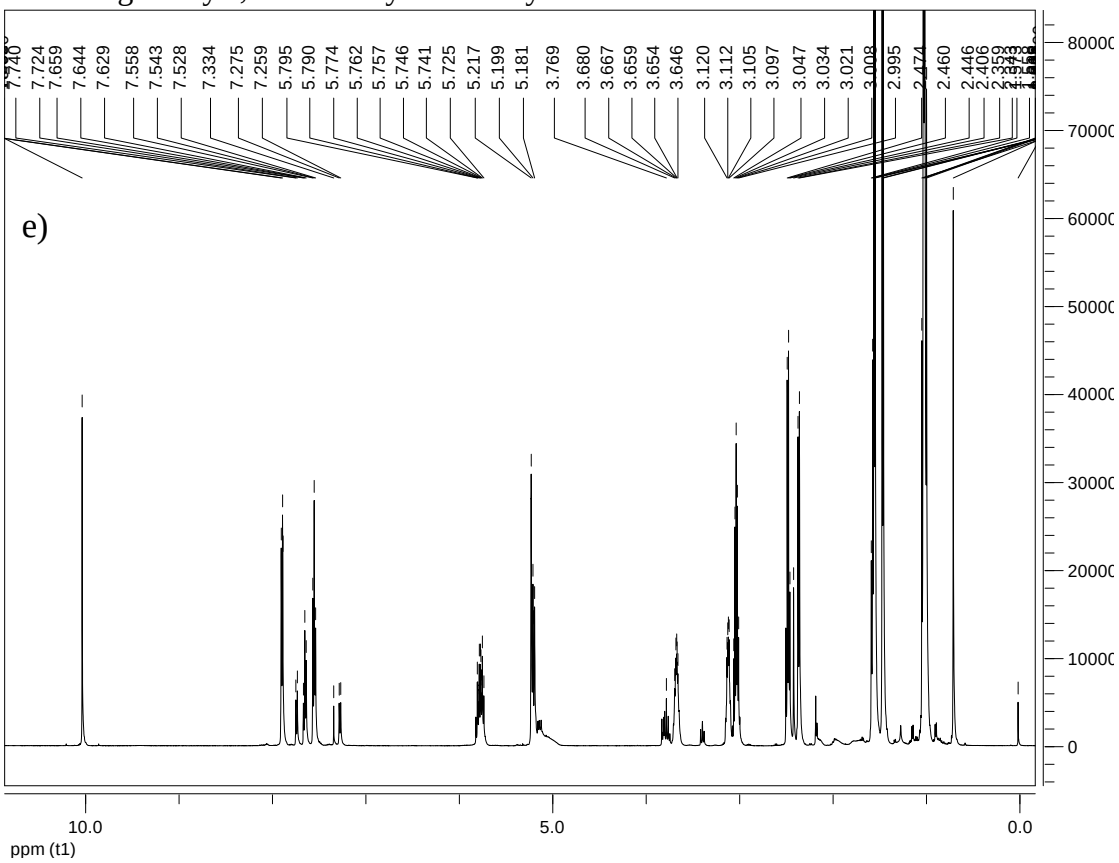
c) ^{1}H spectrum of allyltrichlorosilane



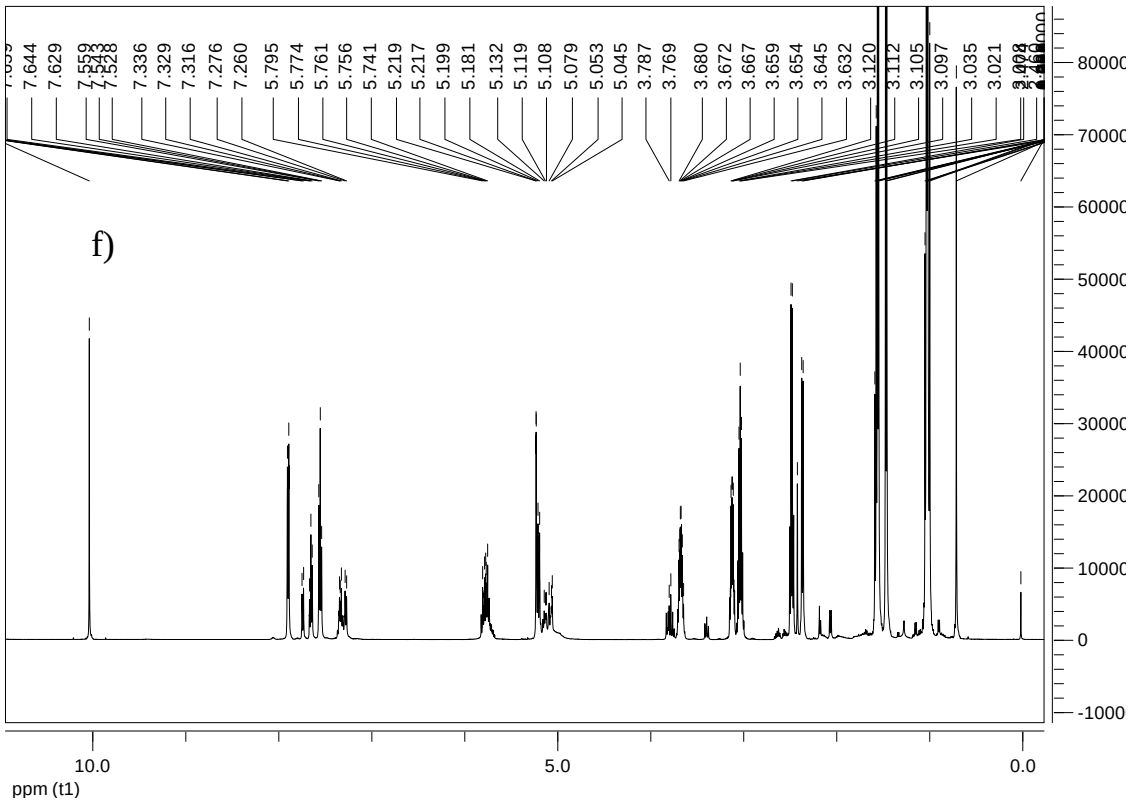
d) ^{1}H spectrum of DIPEA



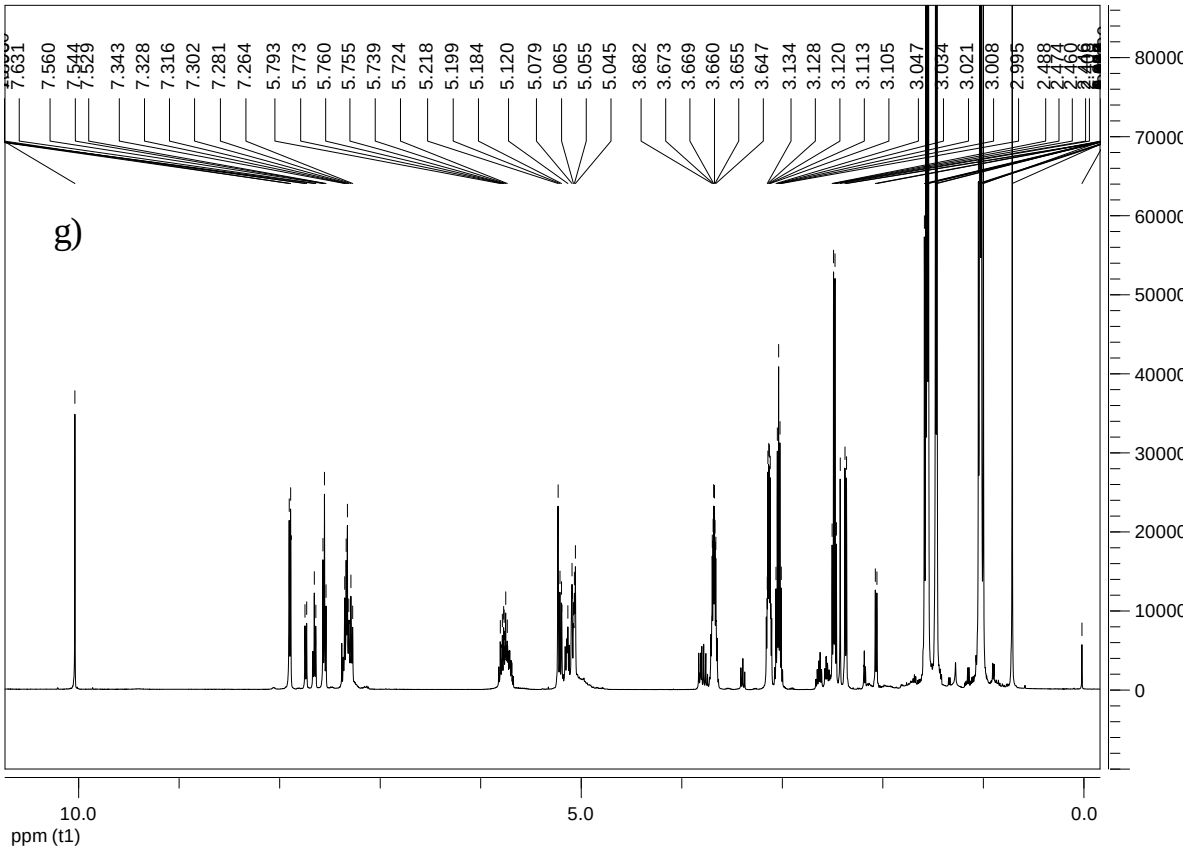
e) ^{1}H spectrum recorded at 0 h from the addition of DIPEA into the reaction mixture containing catalyst, benzaldehyde and allyltrichlorosilane



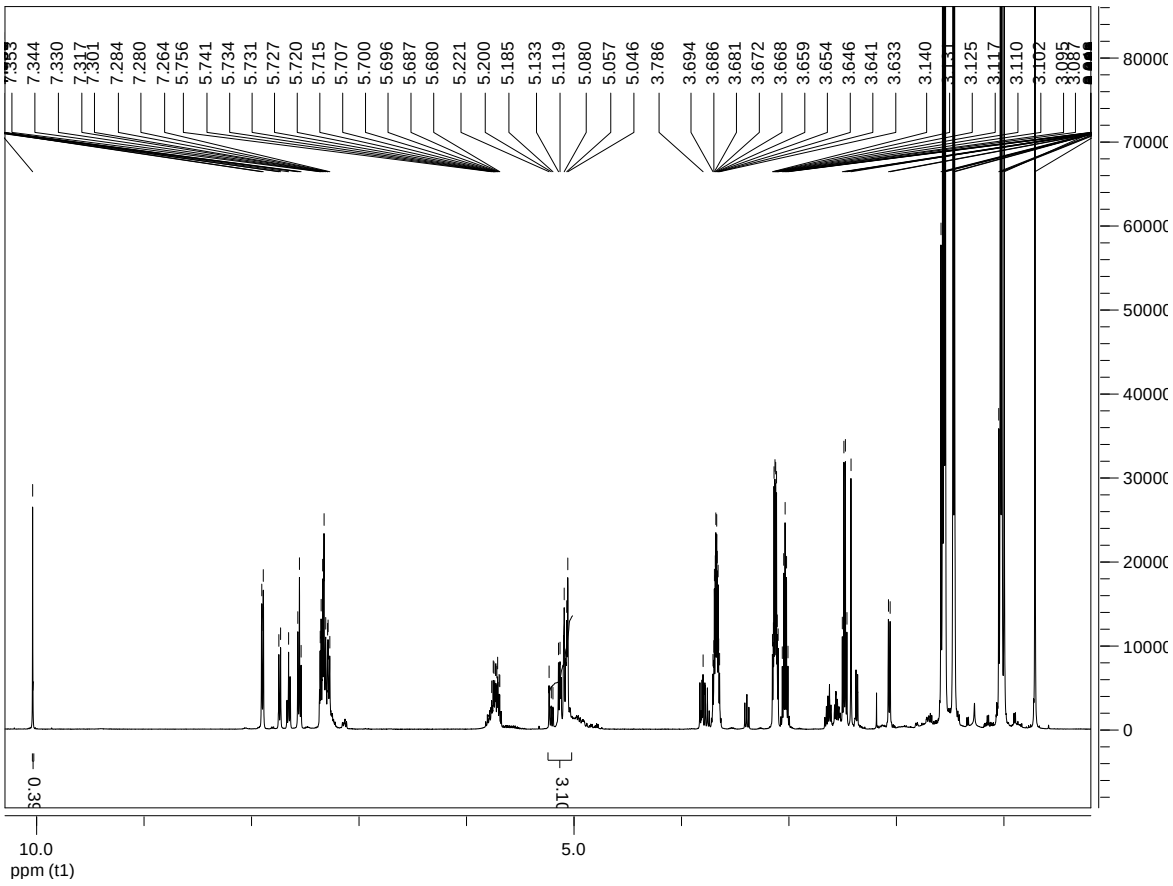
f) ^{1}H spectrum recorded after 4 h from the addition of DIPEA into the reaction mixture



g) ^{1}H spectrum recorded after 8 h from the addition of DIPEA into the reaction mixture



h) ^{1}H spectrum recorded after 12 h from the addition of DIPEA into the reaction mixture



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