Electronic Supplementary Material (ESI) for Green Chemistry.

Supporting Information

for

Heteropolyacid catalyzed *O*-alkylation of oximes with alcohols *via* carbocation in dimethyl carbonate and mechanism insight

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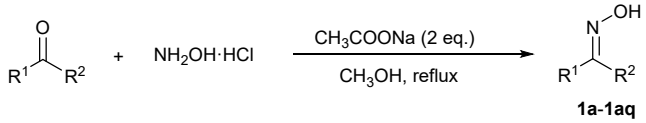
Contents

1. General Information

All the reagents and catalysts were purchased from Makclin Biochemical Co., Ltd. and used without further purification. Analytical thin layer chromatography (TLC) plates were bought from Qingdao Hailang. Column chromatography was performed using 200-300 mesh silica gels from Qingdao Hailang, and the eluent was a mixture of ethyl acetate and petroleum ether. Unless noted, all reactions were carried out in Schlenk tube purchased from Beijing Synthware Glass company. ^{1}H NMR and ^{13}C NMR were recorded on Bruker AVANCE III 400 MHz or 500 MHz spectrometer in $CDCl_3$. $CDCl_3$ residual signals were used as internal standard. Chemical shift values (δ) are reported in ppm and coupling contants (*J* values) are reported in Hertz (Hz). High resolution mass spectra (HRMS) were obtained on a Bruker micrOTOF-QII mass spectrometer with an ESI source.

2. General Procedures

(1) General Procedure for Preparation of Oximes

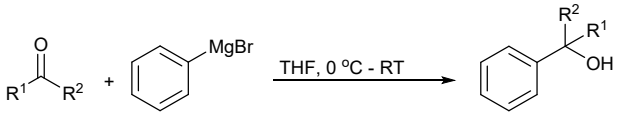


1a-1aq

The mixture of ketones or aldehydes, hydroxylamine hydrochloride (1.6 eq.) and sodium acetate (2 eq.) in CH_3OH was stirred under reflux and detected by TLC. After the reaction was completed, the mixture was poured into water and then extracted by ethyl acetate, washed by saturated aq. NaCl, and the organic layer was collected, dried by Na_2SO_4 and vacuumed under reduced pressure. The ketoximes or aldoximes were obtained by column chromatography.

The ketoximes and aldoximes were prepared according to the previous reports: **1a-1e**,[S1] **1f**,[S2] **1i**,[S3] **1l**,[S4] **1m-1p**,[S5] **1q-1t**,[S6] **1u**,[S7] **1x**,[S8] **1v-1w**,[S9] **1y-1z**,[S9] **1aa**,[S7] **1ab**,[S10] **1ac**,[S11] **1ad**,[S6] **1ae**,[S7] **1af**,[S6] **1ag**,[S12] **1aj**,[S13] **1ak-1am**,[S7] **1an**,[S8] **1ao**,[S14] **1ap**,[S15] **1aq**.[S6]

(2) General Procedure for Preparation of Tertiary Alcohols



2b-2l, **2o**

In a baked-out Schlenk flask under N_2 atmosphere, the phenylmagnesium bromide (1 M in THF) was slowly added to the solution of ketones in THF. The mixture was stirred at room temperature until completion detected by TLC. Then the reaction was quenched by saturated NH_4Cl in ice-water bath. And the mixture was extracted by EtOAc and the organic layer was collected, dried by Na_2SO_4 and vacuumed under reduced pressure. Finally, products were obtained by column chromatography.

The tertiary alcohols were prepared according to the previous reports: **2b-2c**,[S16] **2d**,[S17] **2e**,[S18] **2f-2h**,[S19] **2i-2j**,[S20] **2k**,[S16] **2l**,[S21] **2o**.[S22]

(3) The Typical Procedure for Oxime Etherification of Oximes with Alcohols

Diphenylmethanone oxime (**1a**, 0.3 mmol, 0.0592 g), triphenylmethanol (**2a**, 0.9 mmol, 0.2343 g), $H_3PW_{12}O_{40}\cdot xH_2O$ (1 mol%, 0.0087 g), additive $MgSO_4$ (0.36 mmol,

0.0433 g) and 2 mL DMC were added to a 25 mL Schlenk tube. The mixture was stirred at room temperature for 2 hours. After the reaction was completed, the suitable amount of triethylamine was added into the system to neutralize the acid catalyst. Then the mixture was filtered, washed with ethyl acetate (3×10 mL) and concentrated under vacuum. The product was purified by column chromatography with PE as eluent.

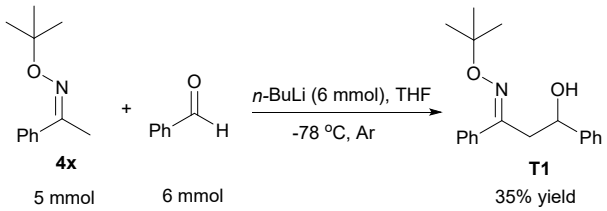
(4) The Procedure of Oxime Etherification Reaction from 1a and $Ph_3^+BF_4^-$

In a 25 mL Schlenk tube, diphenylmethanone oxime (**1a**, 0.3 mmol, 0.0592 g), $Ph_3^+BF_4^-$ (**5**, 0.9 mmol, 0.2971 g), catalyst $H_3PW_{12}O_{40}\cdot xH_2O$ (1 mol%, 0.0087 g), additive $MgSO_4$ (0.36 mmol, 0.0433 g) and 2 mL DMC were added. The mixture was stirred at room temperature for 2 hours. After the reaction was over detected by TLC, the suitable triethylamine was send to the system to neutralize the acid catalyst, and the color of the mixture changed from brownish yellow to purple, and finally appeared orange. Then the mixture was filtered, washed with ethyl acetate (3×10 mL) and concentrated under vacuum. The product was purified by column chromatography with PE as eluent.

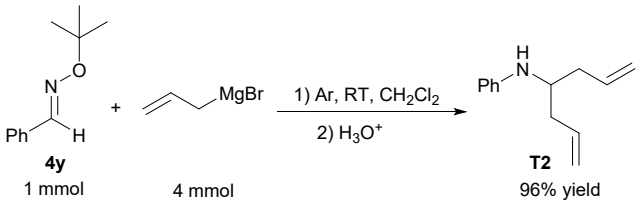
(5) The Procedure for Exploring the Influence of HBF_4 or $NaBF_4$

In a 25 mL Schlenk tube, diphenylmethanone oxime (**1a**, 0.3 mmol, 0.0592 g), triphenylmethanol (**2a**, 0.9 mmol, 0.2343 g), catalyst $H_3PW_{12}O_{40}\cdot xH_2O$ (1 mol%, 0.0087 g), aqueous HBF_4 (>40%, β eq.) or $NaBF_4$ (3 eq., 0.9 mmol, 0.0988 g), additive $MgSO_4$ (γ eq.) and 2 mL DMC were added and stirred at room temperature for 2 hours. After the reaction was detected by TLC, a certain amount of triethylamine was sent to the system to neutralize the acidic catalyst. Then the mixture was filtered, washed with EtOAc (3×10 mL) and concentrated under vacuum. The product was purified by column chromatography with PE as eluent.

(6) The Procedure for the Transformation of 4x[S23]



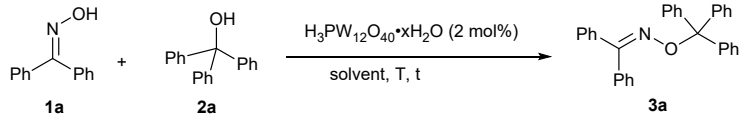
n-BuLi (6 mmol, 1.2 eq.) was dropwisely put into a solution of **4x** (5 mmol) in THF at -78 °C, which was added benzaldehyde (6 mmol) in THF over 5 min. Then the reaction was completed by stirring for 0.5 h at -78 °C and detected by TLC. The reaction was quenched with saturated NH_4Cl, extracted with ethyl acetate and dried with Na_2SO_4. Finally, 31% yield of **T1** was generated by column chromatography.



To a solution of oxime ether **4y** (1 mmol) in dry CH_2Cl_2 was added allylmagnesium bromide (4 mmol), which was stirred at room temperature for 45 min and detected by TLC. The reaction was quenched with saturated NH_4Cl, extracted with ethyl acetate and dried with Na_2SO_4. Then, **T2** was afforded by column chromatography in a 96% yield.

3. Optimization of Reaction Conditions

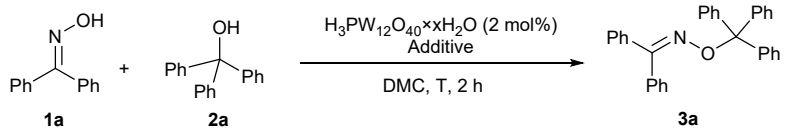
Table S1. Screening the Reaction Conditions for the Construction of C-O Bond Through the *O*-alkylation of 1a with 2a Catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$[a]



Entry	**1a**:**2a**	Solvent	T (^{o}C)	t (h)	Yield (%)[b]
1	1:1.2	DMC	80	2	61
2	1:1.2	DMC	60	2	56
3	1:1.2	DMC	40	2	54
4	1:1.2	DMC	RT	2	53
5	1:1.2	DMC	100	2	60
6	1:1.2	DMC	80	0.5	60
7	1:1.2	DMC	80	1	59
8	1:1.2	DMC	80	4	58
9	1:1.2	DMC	80	6	57
10	1:1.2	DMC	80	8	57
11	1:1.2	DMC	80	12	51
12	1:1.2	H_2O	80	2	12
13	1:1.2	DMSO	80	2	trace
14	1:1.2	DCE	80	2	62
15	1:1.2	CH_3CN	80	2	NRc
16	1:1.2	THF	80	2	31
17	1:1.2	EtOAc	80	2	58
18	1:1.2	EtOH	80	2	17
19	1:3	DMC	80	2	84
20	1:4	DMC	80	2	89
21	1:5	DMC	80	2	88

[a] Reaction conditions: diphenylmethanone oxime **1a** (0.3 mmol), triphenylmethanol **2a** (0.36-0.9 mmol), $H_3PW_{12}O_{40}{\cdot}xH_2O$ (2 mol% amount refers to **1a**), solvent (2 mL), at a certain temperature for some time; [b] Isolated yield; [c] NR = No reaction.

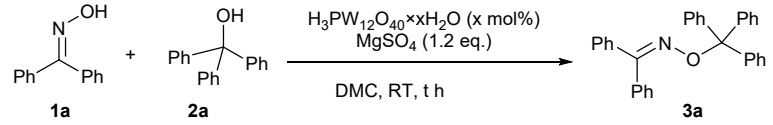
Table S2. The Influence of Different Additives and Temperatures[a]



Entry	Additive	T (°C)	Yield (%)[b]
1	-	80	84
2	4A molecular sieve (5 mg)	80	89
3	4A molecular sieve (10 mg)	80	89
4	4A molecular sieve (50 mg)	80	61
5	4A molecular sieve (150 mg)	80	46
6	silica gel (500 mg)	80	61
7	DCC[c] (2 eq.)	80	Trace
8	$MgSO_4$ (2 eq.)	80	93
9	$NaSO_4$ (2 eq.)	80	88
10	$MgSO_4$ (2 eq.)	60	94
11	$MgSO_4$ (2 eq.)	40	96
12	$MgSO_4$ (2 eq.)	RT	97
13	$MgSO_4$ (0 eq.)	RT[d]	89
14	$MgSO_4$ (0.1 eq.)	RT[d]	90
15	$MgSO_4$ (0.3 eq.)	RT[d]	90
16	$MgSO_4$ (0.5 eq.)	RT[d]	91
17	$MgSO_4$ (1 eq.)	RT[d]	94
18	$MgSO_4$ (1.2 eq.)	RT[d]	96
19	$MgSO_4$ (1.5 eq.)	RT[d]	96
20	$MgSO_4$ (3 eq.)	RT[d]	97

[a] Reaction conditions: diphenylmethanone oxime **1a** (0.3 mmol), triphenylmethanol **2a** (0.9 mmol), $H_3PW_{12}O_{40}·xH_2O$ (2 mol% amount refers to **1a**), additive (γ eq., amount refers to **1a**), dimethyl carbonate (DMC) (2 mL), at a certain temperature for 2 h. [b] Isolated yield. [c] DCC = *N,N′*-dicyclohexylcarbodiimide. [d] RT = room temperature.

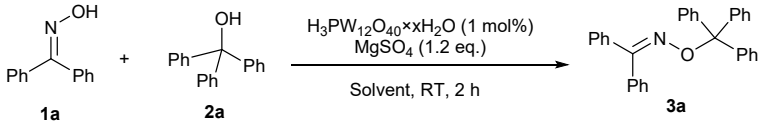
Table S3. Screening the Influence of 1a:2a Ratio, Time and Catalyst Amounts on the Reaction[a]



Entry	**1a**:**2a**	Catalyst (mol%)	Time (h)	Yield (%)[b]
1	1:5	2	2	97
2	1:4	2	2	98
3	1:3	2	2	96
4	1:2	2	2	92
5	1:1.5	2	2	88
6	1:1.2	2	2	84
7	1:1	2	2	76
8	2:1	2	2	93
9	3:1	2	2	93
10	1:3	2	0.5	93
11	1:3	2	1	94
12	1:3	2	4	95
13	1:3	2	8	94
14	1:3	2	12	92
15	1:3	10	2	73
16	1:3	5	2	83
17	1:3	1.5	2	98
18	1:3	1	2	98
19	1:3	0.5	2	94
20	1:3	0.2	2	94
21	1:3	-	2	NR

[a] Reaction conditions: diphenylmethanone oxime **1a** (0.3 mmol), triphenylmethanol **2a** (0.3-1.5 mmol), $H_3PW_{12}O_{40}{\cdot}xH_2O$ (α mol% amount refers to **1a**), $MgSO_4$ (1.2 eq., 0.36 mmol), DMC (2 mL), at RT for some time. [b] Isolated yield.

Table S4. The Effects of Different Solvents[a]



Entry	Solvent	Yield (%)[b]
1	DMC	98
2	ethyl acetate	95
3	dichloromethane	97
4	acetonitrile	98
5	acetone	91
6	diethyl ether	98
7	toluene	98
8	hexane	2
9	cyclohexane	3
10	tetrahydrofuran	trace
11	ethanol	trace
12	dimethyl sulfoxide	NR
13	*N,N*-dimethylformamide	NR

[a] Reaction conditions: diphenylmethanone oxime **1a** (0.3 mmol), triphenylmethanol **2a** (0.9 mmol), $H_3PW_{12}O_{40}\cdot xH_2O$ (1 mol% amount refers to **1a**), $MgSO_4$ (1.2 eq., 0.36 mmol), solvent (2 mL), at room temperature for 2 h. [b] Isolated yield.

4. The Experiments for Mechanism Investigation

(1) The Reaction Phenomenon of 2a and Catalyst

(a) (b) (c)

Figure S1. (a) 0.9 mmol **2a** dissolved in 3 mL CH_3CN, colorless and transparent; (b) 0.003 mol $H_3PW_{12}O_{40}{\cdot}xH_2O$ dissolved in 1 mL CH_3CN, colorless and transparent; (c) (b) was slowly added to (a), the color was changed into transparent yellow.

(2) UV-Vis Spectra Analysis

Preparation of diphenylmethanone oxime solution:

Diphenylmethanone oxime (0.0206 g, 0.1046 mmol) was dissolved in 4 mL CH_3CN,, and the UV-Vis absorption spectra was measured by preparing a solution with 1.07×10^{-5} mol/L in a 4 mL quartz cuvette as shown in Figure S2, **a**.

Preparation of triphenylmethanol solution:

Triphenylmethanol (0.0266 g, 0.1022 mmol) was dissolved in 1.5 mL CH_3CN,, and the UV-Vis absorption spectra was measured by preparing a solution with 1.77×10^{-3} mol/L in a 4 mL quartz cuvette as shown in Figure S2, **b**.

Preparation of $H_3PW_{12}O_{40}{\cdot}xH_2O$ solution:

$H_3PW_{12}O_{40}{\cdot}xH_2O$ (0.0258 g, 0.0090 mmol) was dissolved in 1 mL CH_3CN, and the UV-Vis absorption spectra was measured by preparing a solution with 1.96×10^{-5} mol/L in a 4 mL quartz cuvette as shown in Figure S2, **c**.

Preparation of oxime ether 3a solution:

Oxime ether **3a** (0.0430 g, 0.0978 mmol) was dissolved in 10 mL CH_3CN, then taking 40 μL the supernatant of **3a** and adding 3 mL CH_3CN to quartz cuvette, and the spectrogram was obtained in Figure S2, **d**.

The procedure of drawing the UV-Vis absorption spectra of reaction:

Triphenylmethanol (0.9 mmol, 0.2343 g), $H_3PW_{12}O_{40}{\cdot}xH_2O$ (0.003 mmol, 0.0087 g) and $MgSO_4$ (0.36 mmol, 0.0438 g) were added to a round bottom bottle with 8 mL CH_3CN and stirred. Then, diphenylmethanone oxime was added into the system batch by batch and measured after reacting for 5 min and standing. In addition, when 0.3 mmol diphenylmethanone oxime was added, the spectra of the reaction were measured for 2 h.

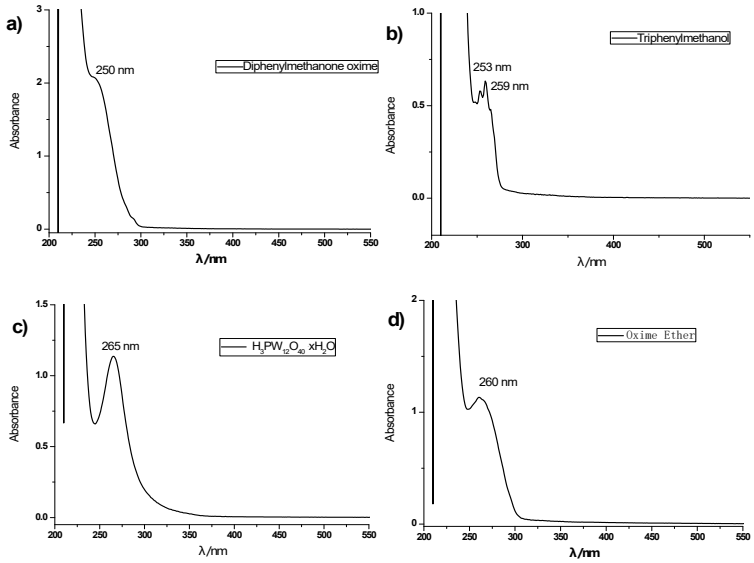


Figure S2. The UV-Vis absorption spectra of a) diphenylmethanone oxime; b) triphenylmethanol; **c)** $H_3PW_{12}O_{40}{\cdot}xH_2O$; d) Oxime ether **3a**.

FT-IR analysis

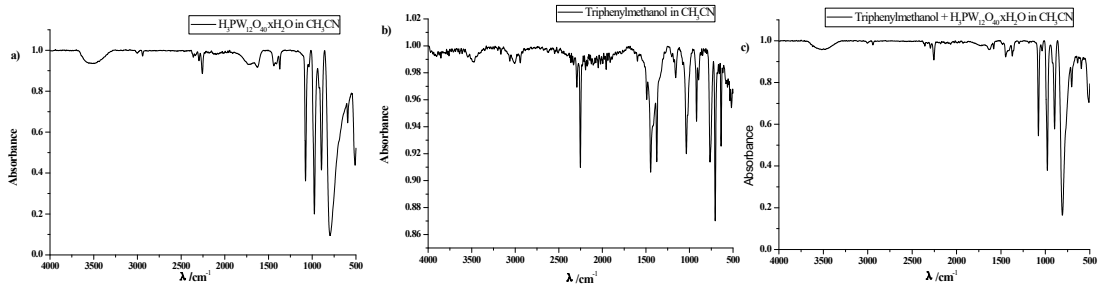


Figure S3. The FT-IR absorption spectra of a) $H_3PW_{12}O_{40}{\cdot}xH_2O$ in CH_3CN; b) triphenylmethanol in CH_3CN; c) $H_3PW_{12}O_{40}{\cdot}xH_2O$+ triphenylmethanol in CH_3CN.

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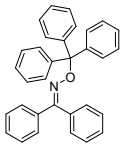
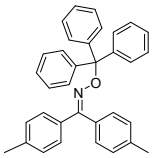
5. Characterization Data

Diphenylmethanone *O*-trityl oxime (3a)



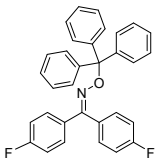
White solid, 129.1 mg, 98% yield; m.p. = 155.4-155.7 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49-7.38 (m, 5H), 7.33-7.17 (m, 20H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.8, 144.8, 136.8, 134.0, 129.4, 129.3, 129.2, 128.8, 128.17, 128.16, 128.1, 127.6, 127.1, 91.5. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{25}NONa$ 462.1828, found 462.1837.

Di-*p*-tolylmethanone *O*-trityl oxime (3b)



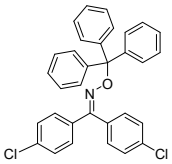
White solid, 129.0 mg, 92% yield; m.p. = 176.7-177.8 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.34-7.20 (m, 19H), 7.15 (d, *J* = 7.0 Hz, 2H), 7.01 (d, *J* = 7.8 Hz, 2H), 2.43 (s, 3H), 2.28 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.6, 144.9, 139.1, 138.6, 134.4, 131.0, 129.5, 129.4, 128.8, 128.7, 128.2, 127.6, 127.0, 91.3, 21.6, 21.4. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{34}H_{30}NO$ 468.2322, found 468.2316.

Bis(4-fluorophenyl)methanone *O*-trityl oxime (3c)



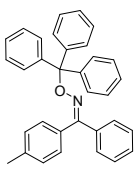
White solid, 135.5 mg, 95% yield; m.p. = 142.5-143.1 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40 (t, *J* = 6.8 Hz, 2H), 7.32-7.14 (m, 19H), 6.95-6.85 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 164.5 (d, *J* = 63.4 Hz), 162.0 (d, *J* = 62.7 Hz), 154.9, 144.6, 131.5 (d, *J* = 8.3 Hz), 129.9 (d, *J* = 8.4 Hz), 129.3, 127.6, 127.2, 115.3 (dd, *J* = 21.6, 11.8 Hz), 91.8. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{23}F_2NONa$ 498.1640, found 498.1641.

Bis(4-chlorophenyl)methanone *O*-trityl oxime (3d)



White solid, 136.9 mg, 90% yield; m.p. = 159.1-159.8 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.45 (d, *J* = 7.3 Hz, 2H), 7.36-7.23 (m, 17H), 7.16 (d, *J* = 10.6 Hz, 4H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 154.7, 144.4, 135.5, 135.1, 134.9, 131.7, 130.9, 129.3, 129.2, 128.6, 128.5, 127.7, 127.3, 92.0. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{32}H_{24}Cl_2NO$ 508.1229, found 508.1218.

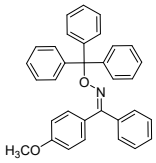
(*Z*)-phenyl(*p*-tolyl)methanone *O*-trityl oxime (3e)



White solid, 127.8 mg, 94% yield; m.p. = 149.6-150.1 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32 (d, *J* = 7.0 Hz, 8H), 7.28-7.12 (m, 16H), 2.36 (d, *J* = 56.7 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.7, 144.8, 138.7, 137.2, 130.8, 129.6, 129.4, 129.3, 129.1, 128.8, 128.3, 128.1, 127.6, 127.1, 91.5, 21.7. HRMS *m/z*: $[M+Na]^+$ calcd. for

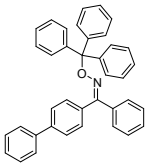
$C_{33}H_{27}NO$ Na 476.1985, found 476.1976.

(*Z*)-(4-methoxyphenyl)(phenyl)methanone *O*-trityl oxime (3f)



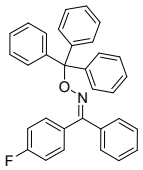
White solid, 133.7 mg, 95% yield; m.p. = 118.6-119.1 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.42 (dt, *J* = 20.9, 7.3 Hz, 4H), 7.34-7.20 (m, 18H), 7.02-6.70 (m, 2H), 3.81 (d, *J* = 49.9 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 160.5, 159.9, 156.4, 156.3, 144.84, 144.81, 137.4, 134.2, 131.4, 129.5, 129.40, 129.35, 129.3, 129.1, 128.7, 128.4, 128.12, 128.08, 127.60, 127.55, 127.1, 127.0, 113.6, 113.4, 91.5, 91.2, 55.5, 55.4. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{33}H_{27}NO_2Na$ 492.1934, found 492.1927.

(*Z*)-[1,1'-biphenyl]-4-yl(phenyl)methanone *O*-trityl oxime (3g)



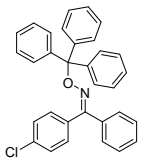
White solid, 145.3 mg, 94% yield; m.p. = 167.2-167.7 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.69 (t, *J* = 7.8 Hz, 4H), 7.49 (dd, *J* = 16.8, 8.0 Hz, 4H), 7.41-7.21 (m, 21H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.5, 144.7, 141.6, 140.8, 136.9, 132.7, 130.1, 129.3, 129.2, 129.0, 128.2, 128.2, 127.7, 127.6, 127.3, 127.1, 126.8, 91.6. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{38}H_{29}NONa$ 538.2141, found 538.2145.

(*Z*)-(4-fluorophenyl)(phenyl)methanone *O*-trityl oxime (3h)



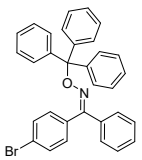
White solid, 130.3 mg, 95% yield; m.p. = 162.6-163.1 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.42 (dt, *J* = 19.0, 7.5 Hz, 3H), 7.32-7.11 (m, 20H), 6.93-6.85 (m, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 164.5 (d, *J* = 64.0 Hz), 162.0 (d, *J* = 63.1 Hz), 155.9, 155.8, 144.69, 144.65, 136.7, 131.50 (d, *J* = 8.1 Hz), 129.9, 129.8, 129.3, 128.3, 128.2, 128.1, 127.64, 127.61, 127.2, 127.1, 115.21 (dd, *J* = 21.6, 11.0 Hz), 91.7. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{24}FNONa$ 480.1734, found 480.1729.

(*Z*)-(4-chlorophenyl)(phenyl)methanone *O*-trityl oxime (3i)



White solid, 134.8 mg, 95% yield; m.p. = 130.7-131.5 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.44 (d, *J* = 9.1 Hz, 2H), 7.36 (d, *J* = 6.6 Hz, 2H), 7.32-7.18 (m, 18H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.7, 144.5, 136.4, 134.8, 132.2, 131.0, 129.4, 129.3, 128.5, 128.3, 128.0, 127.7, 127.2, 91.8 HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{24}ClNONa$ 496.1439, found 496.1431.

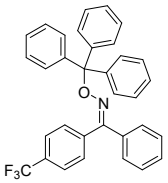
(*Z*)-(4-bromophenyl)(phenyl)methanone *O*-trityl oxime (3j)



White solid, 138.1 mg, 89% yield; m.p. =155.2-156.0 °C; ^{1}H NMR (400 MHz,

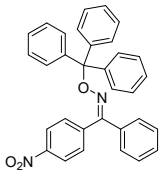
$CDCl_3$) δ 7.60 (d, *J* = 6.3 Hz, 1H), 7.46 (d, *J* = 6.8 Hz, 1H), 7.40-7.11 (m, 22H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.7, 144.6, 136.4, 132.8, 131.5, 131.2, 129.6, 129.3, 128.3, 128.0, 127.7, 127.2, 123.1, 91.8, HRMS *m/z*: $[M+H]^+$ calcd. for $C_{32}H_{25}BrNO$ 518.1114, found 518.1121.

(*Z*)-phenyl(4-(trifluoromethyl)phenyl)methanone *O*-trityl oxime (3k)



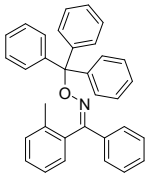
White solid, 141.5 mg, 93% yield; m.p. = 166.4-167.0 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.74 (d, *J* = 8.0 Hz, 2H), 7.51 (d, *J* = 7.9 Hz, 2H), 7.24 (q, *J* = 7.6, 5.9 Hz, 20H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.7, 144.4, 137.7, 135.9, 130.8 (d, *J* = 32.5 Hz), 129.7, 129.6, 129.2, 128.4, 127.8, 127.7, 127.3, 125.3 (q, *J* = 3.7 Hz), 91.9. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{33}H_{25}F_3NO$ 508.1883, found 508.1893.

(*Z*)-(4-nitrophenyl)(phenyl)methanone *O*-trityl oxime (3l)



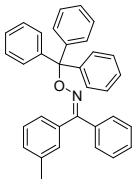
White solid, 136.5 mg, 94% yield; m.p. = 151.0-151.2 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 8.34 (d, *J* = 6.7 Hz, 2H), 7.56 (d, *J* = 6.8 Hz, 2H), 7.31-7.22 (m, 20H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.0, 147.9, 144.3, 144.2, 140.7, 135.4, 130.4, 129.8, 129.2, 128.5, 127.7, 127.4, 123.6, 92.3. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{24}N_2O_3Na$ 507.1679, found 507.1683.

(*Z*)-phenyl(*o*-tolyl)methanone *O*-trityl oxime (3m)



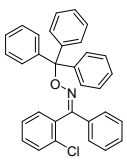
White solid, 130.5 mg, 96% yield; m.p. = 112.4-113.3 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.37-7.18 (m, 23H), 7.14 (d, *J* = 7.6 Hz, 1H), 1.95 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) 157.1, 144.7, 136.0, 135.9, 134.4, 130.0, 129.24, 129.20, 128.4, 128.3, 127.9, 127.6, 127.1, 127.0, 125.8, 91.0, 19.5. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{33}H_{27}NONa$ 476.1985, found 476.1988.

(*Z*)-phenyl(*m*-tolyl)methanone *O*-trityl oxime (3n)



White solid, 129.2 mg, 95% yield; m.p. = 123.5-124.3 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.51-7.34 (m, 2H), 7.34-7.16 (m, 21H), 7.06 (d, *J* = 18.3 Hz, 1H), 2.31 (d, *J* = 68.2 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.7, 144.6, 137.5, 136.8, 133.6, 129.9, 129.8, 129.4, 129.2, 129.2, 129.0, 127.99, 127.96, 127.8, 127.4, 126.9, 126.4, 125.1, 91.2, 21.5. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{33}H_{27}NONa$ 476.1985, found 476.1979.

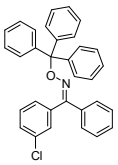
(*Z*)-(2-chlorophenyl)(phenyl)methanone *O*-trityl oxime (3o)



White solid, 136.3 mg, 96% yield; m.p. = 117.8-118.5 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.53 (d, *J* = 7.6 Hz, 1H), 7.38 (m, 2H), 7.33-7.15 (m, 21H). ^{13}C NMR (101

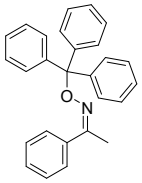
MHz, $CDCl_3$) δ 154.6, 144.6, 135.1, 134.0, 132.7, 129.9, 129.8, 129.7, 129.4, 129.2, 128.4, 127.6, 127.1, 127.0, 126.9, 91.5. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{24}ClNONa$ 496.1439, found 496.1430.

(*Z*)-(3-chlorophenyl)(phenyl)methanone *O*-trityl oxime (3p)



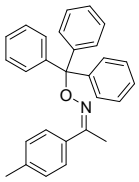
White solid, 139.1 mg, 98% yield; m.p. = 122.3-123.2 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.41 (d, *J* = 9.4 Hz, 3H), 7.33-7.19 (m, 21H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.4, 144.5, 136.1, 135.5, 134.2, 129.51, 129.50, 129.45, 129.3, 129.0, 128.3, 128.0, 127.7, 127.2, 91.8. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{24}ClNONa$ 496.1439, found 496.1437.

(*Z*)-1-phenylethan-1-one *O*-trityl oxime (3q)



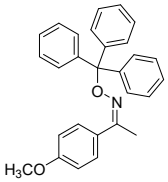
White solid, 103.0 mg, 91% yield; m.p. = 139.8-140.7 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.47-7.36 (m, 8H), 7.32-7.23 (m, 12H), 2.40 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 154.1, 144.9, 137.0, 129.4, 128.9, 128.3, 127.6, 127.1, 126.3, 91.0, 13.2. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{27}H_{24}NO$ 378.1852, found 378.1849.

(*Z*)-1-(*p*-tolyl)ethan-1-one *O*-trityl oxime (3r)



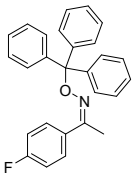
White solid, 102.1 mg, 87% yield; m.p. = 149.9-150.7 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.41-7.22 (m, 17H), 7.06 (d, *J* = 7.8 Hz, 2H), 2.38 (s, 3H), 2.29 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 153.9, 144.9, 138.8, 134.2, 129.3, 128.9, 127.5, 127.0, 126.1, 90.8, 21.3, 13.1. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{28}H_{26}NO$ 392.2009, found 392.2004.

(*Z*)-1-(4-methoxyphenyl)ethan-1-one *O*-trityl oxime (3s)



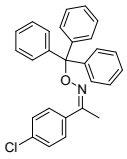
White solid, 101.4 mg, 83% yield; m.p. = 112.5-113.0 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.39 (d, *J* = 7.7 Hz, 8H), 7.31-7.23 (m, 9H), 6.77 (d, *J* = 6.9 Hz, 2H), 3.76 (s, 3H), 2.37 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 160.3, 153.6, 145.0, 129.7, 129.4, 127.58, 127.55, 127.1, 113.7, 90.8, 55.4, 13.1. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{28}H_{26}NO_2$ 408.1958, found 408.1950.

(*Z*)-1-(4-fluorophenyl)ethan-1-one *O*-trityl oxime (3t)



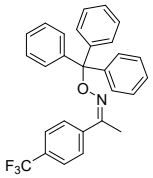
White solid, 116.2 mg, 98% yield; m.p. = 188.6-189.5 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.51-7.24 (m, 17H), 6.92 (t, *J* = 8.5 Hz, 2H), 2.38 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 164.6, 162.1, 153.2, 144.9, 133.1 (d, *J* = 3.3 Hz), 129.3, 127.6, 127.2, 115.2 (d, *J* = 21.6 Hz), 91.1, 13.2. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{27}H_{23}FNO$ 396.1758, found 396.1766.

(*Z*)-1-(4-chlorophenyl)ethan-1-one *O*-trityl oxime (3u)



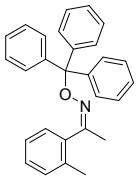
White solid, 114.7 mg, 93% yield; m.p. = 173.3-173.6 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.38 (d, *J* = 7.7 Hz, 7H), 7.20-7.31 (m, 12H), 2.38 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 153.2, 144.8, 135.4, 134.9, 129.3, 128.5, 127.7, 127.5, 127.2, 91.2, 13.1. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{27}H_{23}ClNO$ 412.1463, found 412.1468.

(*Z*)-1-(4-(trifluoromethyl)phenyl)ethan-1-one *O*-trityl oxime (3v)



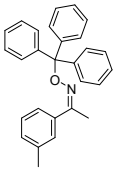
White solid, 128.2 mg, 96% yield; m.p. = 148.5-148.9 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.52 (q, *J* = 8.3 Hz, 4H), 7.41-7.25 (m, 15H), 2.42 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 153.1, 144.7, 140.3, 130.8, 130.5, 129.3, 127.7, 127.3, 126.5, 125.3 (q, *J* = 3.7 Hz), 91.5, 13.1. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{28}H_{22}F_3NONa$ 468.1546, found 468.1555.

(*Z*)-1-(*o*-tolyl)ethan-1-one *O*-trityl oxime (3w)



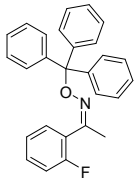
White solid, 111.5 mg, 95% yield; m.p. = 96.3-97.1 °C; ^{1}H1H NMR (400 MHz, $CDCl_3$) δ 7.43-7.05 (m, 19H), 2.36 (s, 3H), 1.93 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.8, 145.1, 137.7, 136.3, 130.7, 129.3, 128.4, 128.2, 127.7, 127.1, 125.6, 90.6, 20.4, 17.2. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{28}H_{25}NONa$ 414.1828, found 414.1826.

(*Z*)-1-(*m*-tolyl)ethan-1-one *O*-trityl oxime (3x)



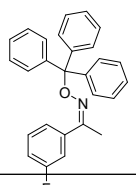
White solid, 100.9 mg, 86% yield; m.p. = 97.8-98.6 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40 (d, *J* = 8.1 Hz, 6H), 7.26 (dt, *J* = 18.2, 6.6 Hz, 11H), 7.18-7.04 (m, 2H), 2.38 (s, 3H), 2.28 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 154.2, 144.9, 137.6, 136.9, 129.5, 129.2, 128.1, 127.5, 127.0, 126.9, 123.3, 90.9, 21.4, 13.2. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{28}H_{26}NO$ 392.2009, found 392.2018.

(*Z*)-1-(2-fluorophenyl)ethan-1-one *O*-trityl oxime (3y)



White solid, 109.1 mg, 92% yield; m.p. = 126.4-126.8 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.39 (d, *J* = 7.5 Hz, 6H), 7.32-7.19 (m, 10H), 7.11-6.91 (m, 3H), 2.41 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 162.1, 159.6, 153.17, 153.16, 144.8, 130.41 (d, *J* = 8.4 Hz), 130.1 (d, *J* = 3.6 Hz), 129.3, 127.6, 127.2, 124.1 (d, *J* = 3.5 Hz), 116.1 (d, *J* = 22.1 Hz), 91.1, 16.3, 16.2. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{27}H_{23}FNO$ 396.1758, found 396.1767.

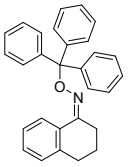
(*Z*)-1-(3-fluorophenyl)ethan-1-one *O*-trityl oxime (3z)



White solid, 100.9 mg, 92% yield; m.p. = 138.6-139.4 °C; ^{1}H NMR (400 MHz,

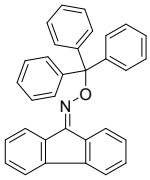
$CDCl_3$) δ 7.42-7.35 (m, 6H), 7.31-7.11 (m, 12H), 6.97-6.90 (m, 1H), 2.37 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ164.0, 161.6, 153.2 (d, *J* = 2.7 Hz), 144.8, 139.2 (d, *J* = 7.9 Hz), 129.8 (d, *J* = 8.2 Hz), 129.3, 127.7, 127.2, 121.9 (d, *J* = 2.9 Hz), 115.8 (d, *J* = 21.5 Hz), 113.1 (d, *J* = 22.9 Hz), 91.3, 13.2. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{27}H_{23}FNO$ 396.1758, found 396.1757.

(*Z*)-3,4-dihydronaphthalen-1(2H)-one *O*-trityl oxime (3aa)



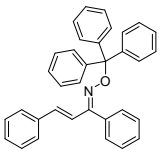
White solid, 111.3 mg, 92% yield; m.p. = 158.7-159.2 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.62 (d, *J* = 7.9 Hz, 1H), 7.39 (d, *J* = 7.6 Hz, 6H), 7.27 (dt, *J* = 13.8, 7.9 Hz, 9H), 7.16 (t, *J* = 7.5 Hz, 1H), 7.09-7.00 (m, 2H), 2.97 (t, *J* = 6.7 Hz, 2H), 2.73 (t, *J* = 6.1 Hz, 2H), 1.87 (p, *J* = 6.4 Hz, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 153.6, 145.0, 139.4, 131.4, 129.4, 128.8, 128.5, 127.6, 127.1, 126.3, 124.8, 90.9, 29.9, 25.1, 21.6. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{29}H_{25}NONa$ 426.1828, found 426.1829.

9H-fluoren-9-one *O*-trityl oxime (3ab)



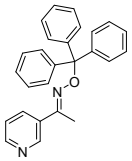
Yellow solid, 119.3 mg, 91% yield; m.p. = 152.5-153.0 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 8.52 (d, *J* = 7.5 Hz, 1H), 7.64 (d, *J* = 7.5 Hz, 1H), 7.57 (d, *J* = 7.6 Hz, 1H), 7.52-7.21 (m, 20H), 7.15 (t, *J* = 7.6 Hz, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 152.0, 144.3, 141.8, 140.0, 136.2, 131.0, 130.5, 129.8, 129.6, 129.0, 128.4, 127.84, 127.76, 127.5, 122.0, 120.0, 119.8, 93.4. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{32}H_{24}NO$ 438.1852, found 438.1858.

(1*Z*,2*E*)-1,3-diphenylprop-2-en-1-one *O*-trityl oxime (3ac)



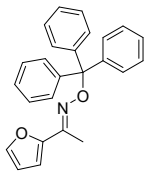
White solid, 121.4 mg, 87% yield; m.p. = 115.9-116.2 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.78 (d, *J* = 16.8 Hz, 1H), 7.50 (d, *J* = 7.5 Hz, 2H), 7.43-7.24 (m, 23H), 6.83 (d, *J* = 16.6 Hz, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.5, 144.8, 139.0, 136.5, 135.5, 129.5, 129.4, 129.20, 129.18, 128.97, 128.95, 128.3, 127.7, 127.6, 127.5, 127.2, 118.4, 91.5. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{34}H_{27}NONa$ 488.1985, found 488.1983.

(*Z*)-1-(pyridin-3-yl)ethan-1-one *O*-trityl oxime (3ad)



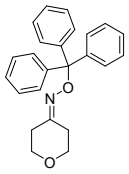
Yellow solid, 27.2 mg, 24% yield; m.p. = 160.8-161.2 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 8.68 (s, 1H), 8.50 (s, 1H), 7.71 (d, *J* = 8.0 Hz, 1H), 7.38 (d, *J* = 7.6 Hz, 6H), 7.28 (dt, *J* = 13.2, 6.1 Hz, 9H), 7.18 (t, *J* = 6.4 Hz, 1H), 2.41 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 151.9, 149.7, 147.5, 144.6, 133.6, 132.7, 129.3, 127.7, 127.3, 123.3, 91.5, 12.9. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{26}H_{23}N_2O$ 379.1805, found 379.1806.

(*Z*)-1-(furan-2-yl)ethan-1-one *O*-trityl oxime (3ae)



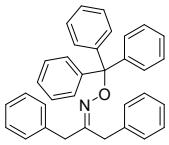
White solid, 112.8 mg, 80% yield; m.p. = 138.9-139.7 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48-7.18 (m, 16H), 6.46 (t, *J* = 2.7 Hz, 1H), 6.32 (d, *J* = 3.1 Hz, 1H), 2.33 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 150.9, 147.4, 144.8, 143.1, 129.4, 127.6, 127.2, 111.3, 108.9, 91.0, 12.5. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{25}H_{21}NO_2Na$ 390.1465, found 390.1463.

Tetrahydro-4H-pyran-4-one *O*-trityl oxime (3af)



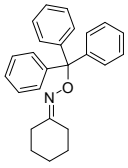
White solid, 63.2 mg, 59% yield; m.p. = 175.5-176.2 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.29 (dt, *J* = 22.8, 7.4 Hz, 15H), 3.68 (q, *J* = 5.7 Hz, 4H), 2.79 (t, *J* = 4.9 Hz, 2H), 2.25 (t, *J* = 4.8 Hz, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.0, 144.8, 129.2, 127.6, 127.1, 90.1, 68.7, 67.0, 32.7, 27.7. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{24}H_{24}NO_2$ 358.1802, found 358.1796.

1,3-diphenylpropan-2-one *O*-trityl oxime (3ag)



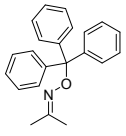
White solid, 130.4 mg, 93% yield; m.p. = 135.8-136.6 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49-7.09 (m, 23H), 6.85 (d, *J* = 6.7 Hz, 2H), 3.68 (s, 2H), 3.28 (s, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 158.2, 144.9, 137.1, 136.9, 129.34, 129.30, 129.26, 128.7, 128.4, 127.7, 127.1, 126.6, 126.5, 90.7, 39.8, 33.8. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{34}H_{30}NO$ 468.2322, found 468.2317.

Cyclohexanone *O*-trityl oxime (3ah)



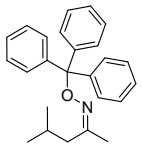
White solid, 68.2 mg, 64% yield; m.p. = 139.7-140.5 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.38-7.20 (m, 15H), 2.62 (t, *J* = 5.8 Hz, 2H), 2.08 (d, *J* = 6.1 Hz, 2H), 1.54 (t, *J* = 7.5 Hz, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 160.9, 145.1, 129.3, 127.5, 126.9, 89.6, 32.5, 27.3, 26.2, 26.1, 26.0. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{25}H_{26}NO$ 356.2009, found 356.2008.

Propan-2-one *O*-trityl oxime (3ai)



White solid, 50.1 mg, 53% yield; m.p. = 116.7-117.5 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.54-7.16 (m, 15H), 2.03 (d, *J* = 17.5 Hz, 3H), 1.79 (d, *J* = 16.5 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 154.8, 145.2, 129.3, 127.6 127.0, 89.7, 22.2, 16.5. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{22}H_{22}NO$ 316.1696, found 316.1688.

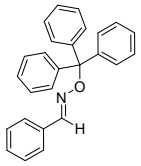
(*Z*)-4-methylpentan-2-one *O*-trityl oxime (3aj)



White solid, 71.9 mg, 67% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.44-7.40 (m, 6H), 7.35-7.26 (m, 9H), 2.02 (s, 3H), 2.01 (d, *J* = 7.3 Hz, 2H), 1.83 (dt, *J* = 13.7, 7.0 Hz,

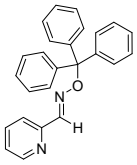
1H), 0.77 (d, J = 6.6 Hz, 6H). ^{13}C NMR (126 MHz, $CDCl_3$) δ 157.0, 145.3, 129.3, 127.5, 126.9, 89.8, 45.0, 25.8, 22.3, 15.1. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{25}H_{28}NO$ 358.2165, found 358.2166.

(*E*)-benzaldehyde *O*-trityl oxime (3ak)



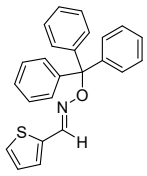
White solid, 93.8 mg, 86% yield; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.26 (s, 1H), 7.46-7.37 (m, 8H), 7.23-7.31 (m, 12H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 148.7, 144.5, 132.8, 129.7, 129.4, 128.7, 127.7, 127.3, 127.2, 91.3. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{26}H_{22}NO$ 386.1515, found 386.1510.

(*E*)-nicotinaldehyde *O*-trityl oxime (3al)



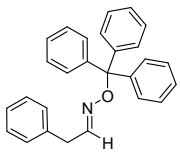
White solid, 26.2 mg, 24% yield; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.55 (s, 1H), 8.38 (s, 1H), 7.56 (d, J = 8.3 Hz, 2H), 7.38 (s, 6H), 7.32 (dd, J = 11.9, 4.6 Hz, 9H), 7.18 (d, J = 6.4 Hz, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 152.2, 149.7, 149.3, 144.2, 136.5, 129.4, 127.7, 127.3, 123.9, 120.8, 91.8. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{25}H_{20}N_2ONa$ 387.1468, found 387.1463.

(*E*)-thiophene-2-carbaldehyde *O*-trityl oxime (3am)



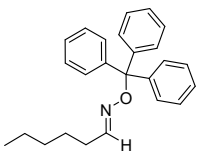
White solid, 84.2 mg, 76% yield; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.71 (s, 1H), 7.55 (d, J = 5.1 Hz, 1H), 7.43 (d, J = 7.2 Hz, 6H), 7.31 (q, J = 7.6 Hz, 10H), 7.10 (s, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 144.3, 140.5, 132.2, 131.5, 131.3, 129.4, 127.7, 127.4, 126.5, 93.1. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{24}H_{20}NOS$ 370.1260, found 370.1259.

(*E*)-2-phenylacetaldehyde *O*-trityl oxime (3an)



White solid, 40.8 mg, 36% yield; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.38-7.16 (m, 19H), 6.99 (d, J = 7.2 Hz, 1H), 6.89 (t, J = 5.8 Hz, 1H), 3.87 (d, J = 5.8 Hz, 1H), 3.41 (d, J = 5.4 Hz, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 150.3, 149.9, 144.6, 144.6, 137.0, 136.6, 129.3, 129.1, 128.90, 128.85, 128.6, 127.8, 127.7, 127.3, 127.2, 126.8, 126.7, 90.8, 90.5, 36.1, 33.1. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{27}H_{23}NONa$ 400.1672, found 400.1676.

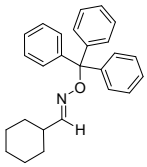
(*E*)-pentanal *O*-trityl oxime (3ao)



White solid, 84.7 mg, 79% yield; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.43-7.14 (m, 15H), 6.71 (t, J = 6.1 Hz, 1H), 2.52 (q, J = 7.0 Hz, 1H), 2.10 (q, J = 6.4, 5.7 Hz, 1H), 1.53-1.15 (m, 4H), 0.96-0.77 (m, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 152.5, 151.6, 144.8, 144.7, 129.2, 129.0, 127.6, 127.5, 127.1, 127.0, 90.2, 90.1, 29.2, 28.6, 28.4,

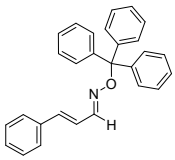
26.1, 22.6, 21.9, 13.9, 13.7. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{24}H_{25}NONa$ 366.1828, found 366.1827.

(*E*)-cyclohexanecarbaldehyde *O*-trityl oxime (3ap)



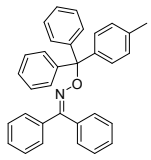
White solid, 56.5 mg, 51% yield; ^1H NMR (400 MHz, $CDCl_3$) δ 7.43 (d, *J* = 4.3 Hz, 1H), 7.28 (dt, *J* = 24.7, 8.8 Hz, 15H), 3.17-2.06 (m, 1H), 1.90-1.53 (m, 5H), 1.41-1.08 (m, 5H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.2, 155.5, 144.9, 144.7, 129.4, 129.1, 127.7, 127.5, 127.2, 127.0, 90.3, 38.5, 35.2, 30.4, 29.6, 26.1, 26.0, 25.5, 25.4. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{26}H_{27}NONa$ 392.1985, found 392.1991.

(1*E*,2*E*)-cinnamaldehyde *O*-trityl oxime (3aq)



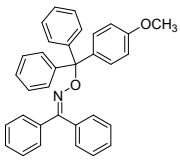
White solid, 76.0 mg, 65% yield; ^1H NMR (400 MHz, $CDCl_3$) δ 8.08 (d, *J* = 7.3 Hz, 1H), 7.40-7.22 (m, 20H), 6.76 (d, *J* = 5.8 Hz, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 151.2, 144.5, 138.3, 136.2, 129.3, 128.9, 128.8, 127.7, 127.3, 127.0, 122.9, 91.2. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{28}H_{24}NO$ 390.1852, found 390.1860.

Diphenylmethanone *O*-(diphenyl(*p*-tolyl)methyl) oxime (4a)



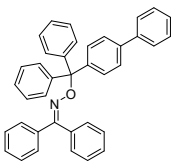
White solid, 129.2 mg, 95% yield; m.p. = 81.0-81.2 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.48-7.37 (m, 5H), 7.27-7.18 (m, 16H), 7.12-6.97 (m, 3H), 1.83 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.0, 145.0, 142.5, 138.6, 136.8, 133.7, 132.1, 131.0, 129.4, 129.2, 128.8, 128.6, 128.2, 128.1, 128.0, 127.71, 127.65, 126.9, 124.6, 93.0, 22.0. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{33}H_{27}NONa$ 476.1985, found 476.1987.

Diphenylmethanone *O*-((4-methoxyphenyl)diphenylmethyl) oxime (4b)



White solid, 132.3 mg, 94% yield; ^1H NMR (400 MHz, $CDCl_3$) δ 7.50-7.17 (m, 22H), 6.78 (d, *J* = 8.4 Hz, 2H), 3.76 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 158.6, 156.7, 145.0, 136.8, 134.0, 130.9, 129.4, 129.1, 128.8, 128.14, 128.05, 127.6, 127.0, 112.8, 91.2, 55.3. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{33}H_{27}NO_2Na$ 492.1934, found 492.1931.

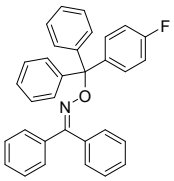
Diphenylmethanone *O*-([1,1'-biphenyl]-4-yldiphenylmethyl) oxime (4c)



White solid, 143.7 mg, 93% yield; m.p. = 159.8-160.3 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.58 (d, *J* = 7.6 Hz, 2H), 7.52-7.18 (m, 27H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.9, 144.7, 143.8, 140.9, 139.7, 136.8, 133.9, 129.7, 129.4, 129.3, 129.2, 128.84, 128.82, 128.19, 128.17, 128.14, 128.09, 128.05, 127.7, 127.3, 127.19, 127.15,

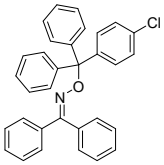
126.3, 91.3. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{38}H_{29}NONa$ 538.2141, found 538.2151.

Diphenylmethanone *O*-((4-fluorophenyl)diphenylmethyl) oxime (4d)



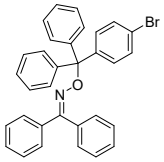
White solid, 134.4 mg, 98% yield; m.p. = 132.5-133.1 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53-7.36 (m, 5H), 7.25 (d, *J* = 14.8 Hz, 17H), 6.94 (t, *J* = 8.6 Hz, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 163.2, 160.2, 157.0, 144.6, 140.48, 140.45, 136.7, 133.9, 131.3 (d, *J* = 7.9 Hz), 129.30, 129.28, 129.1, 128.9, 128.2, 128.0, 127.7, 127.2, 114.4 (d, *J* = 21.1 Hz), 91.0. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{24}FNONa$ 480.1734, found 480.1727.

Diphenylmethanone *O*-((4-chlorophenyl)diphenylmethyl) oxime (4e)



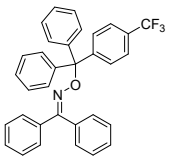
White solid, 139.1 mg, 98% yield; m.p. = 121.5-122.3 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.46 (d, *J* = 7.7 Hz, 3H), 7.38 (d, *J* = 7.1 Hz, 2H), 7.31-7.19 (m, 19H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 157.2, 144.3, 143.3, 136.6, 133.8, 133.1, 130.9, 129.34, 129.26, 129.1, 128.9, 128.2, 127.8, 127.7, 127.3, 91.0. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{32}H_{24}ClNONa$ 496.1439, found 496.1442.

Diphenylmethanone *O*-((4-bromophenyl)diphenylmethyl) oxime (4f)



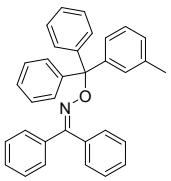
White solid, 147.4 mg, 95% yield; m.p. = 126.1-126.4 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.46 (d, *J* = 6.8 Hz, 3H), 7.38 (d, *J* = 7.7 Hz, 4H), 7.33-7.15 (m, 17H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 157.2, 144.2, 143.6, 136.6, 133.8, 131.2, 130.7, 129.34, 129.25, 129.1, 128.9, 128.2, 127.7, 127.3, 121.4, 91.0. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{32}H_{25}BrNO$ 518.1114, found 518.1108.

Diphenylmethanone *O*-(diphenyl(4-(trifluoromethyl)phenyl)methyl) oxime (4g)



White solid, 147.6 mg, 97% yield; m.p. = 115.0-115.4 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.55-7.37 (m, 9H), 7.33-7.19 (m, 15H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 157.4, 148.8, 143.9, 136.5, 133.8, 129.5, 129.4, 129.2, 128.99, 128.95, 128.3, 128.2, 128.1, 127.8, 127.5, 124.6 (q, *J* = 3.8 Hz), 91.0. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{33}H_{24}F_3NONa$ 530.1702, found 530.1698.

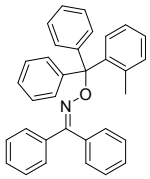
Diphenylmethanone *O*-(diphenyl(*m*-tolyl)methyl) oxime (4h)



White solid, 130.5 mg, 96% yield; m.p. = 94.8-95.0 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.50-7.38 (m, 5H), 7.32-7.19 (m, 15H), 7.15-7.00 (m, 4H), 2.25 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.7, 144.8, 144.7, 137.0, 136.8, 134.0, 129.8, 129.40, 129.37, 129.2, 128.8, 128.14, 128.06, 127.8, 127.5, 127.4, 127.1, 126.4, 91.4, 21.8.

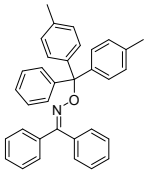
HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{33}H_{27}NONa$ 476.1985, found 476.1983.

Diphenylmethanone *O*-(diphenyl(*o*-tolyl)methyl) oxime (4i)



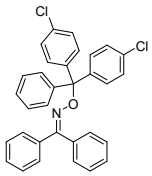
White solid, 127.8 mg, 94% yield; m.p. = 155.6-156.1 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.41 (q, J = 6.9, 6.4 Hz, 5H), 7.30-7.18 (m, 16H), 7.12-6.98 (m, 3H), 1.83 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.0, 145.0, 142.5, 138.6, 136.8, 133.7, 132.1, 131.0, 129.4, 129.1, 128.8, 128.6, 128.2, 128.1, 128.0, 127.71, 127.65, 126.9, 124.6, 93.0, 22.0. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{33}H_{27}NONa$ 476.1985, found 476.1979.

Diphenylmethanone *O*-phenyldi-*p*-tolylmethyl oxime (4j)



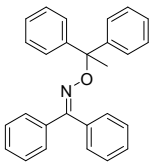
White solid, 130.4 mg, 93% yield; m.p. = 128.3-128.7 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48-7.38 (m, 5H), 7.31-7.17 (m, 14H), 7.05 (d, *J* = 6.5 Hz, 4H), 2.30 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.5, 145.1, 142.0, 136.9, 136.6, 134.0, 129.4, 129.24, 129.21, 129.1, 128.73, 128.70, 128.3, 128.12, 128.06, 128.0, 127.5, 126.9, 91.2, 21.2. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{34}H_{30}NO$ 468.2322, found 468.2313.

Diphenylmethanone *O*-(bis(4-chlorophenyl)(phenyl)methyl) oxime (4k)



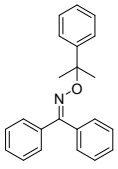
White solid, 144.5mg, 95% yield; m.p. = 148.2-148.7 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.47 (d, *J* = 6.4 Hz, 3H), 7.36 (d, *J* = 7.0 Hz, 2H), 7.24 (h, *J* = 7.1 Hz, 18H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 157.6, 143.9, 142.6, 136.4, 133.7, 133.3, 130.7, 129.5, 129.2, 129.0, 128.9, 128.3, 127.91, 127.89, 127.5, 90.5. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{32}H_{24}Cl_2NO$ 508.1229, found 508.1228.

Diphenylmethanone *O*-(1,1-diphenylethyl) oxime (4l)



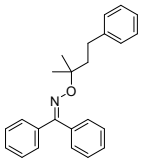
White solid, 73.5 mg, 65% yield; m.p. = 74.6-75.3 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.46 (q, *J* = 6.6 Hz, 5H), 7.36-7.18 (m, 15H), 2.14 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.8, 146.5, 136.9, 134.1, 129.4, 129.2, 128.7, 128.2, 127.99, 127.95, 126.80, 126.77, 85.9, 27.4. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{27}H_{24}NO$ 378.1852, found 378.1858.

Diphenylmethanone *O*-(2-phenylpropan-2-yl) oxime (4m)



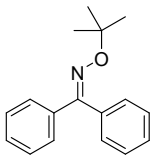
Colorless oily liquid, 26.5 mg, 28% yield; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.41 (d, *J* = 8.3 Hz, 7H), 7.35-7.18 (m, 8H), 1.69 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.8, 147.5, 137.3, 134.0, 129.6, 129.0, 128.6, 128.2, 128.1, 128.0, 126.6, 125.5, 82.4, 28.4. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{22}H_{21}NONa$ 338.1515, found 338.1516.

Diphenylmethanone *O*-(2-methyl-4-phenylbutan-2-yl) oxime (4o)



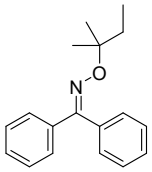
White solid, 17.5 mg, 17% yield; m.p. = 59.3-60.2 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.52 (d, *J* = 7.1 Hz, 2H), 7.45-7.23 (m, 10H), 7.15 (t, *J* = 8.9 Hz, 3H), 2.65-2.54 (m, 2H), 1.95 (d, *J* = 16.5 Hz, 2H), 1.37 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.2, 143.2, 137.5, 133.9, 129.7, 129.0, 128.53, 128.49, 128.4, 128.2, 127.9, 125.7, 80.9, 42.8, 30.6, 25.9. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{24}H_{26}NO$ 344.2009, found 344.2009.

Diphenylmethanone *O*-(*tert*-butyl) oxime (4p)



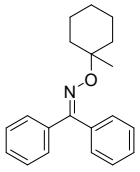
White solid, 35.7 mg, 47% yield; m.p. = 64.0-64.3 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.50 (d, *J* = 7.4 Hz, 2H), 7.43-7.21 (m, 8H), 1.34 (s, 9H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 154.7, 137.7, 133.8, 129.9, 128.9, 128.5, 128.2, 128.0, 127.9, 79.4, 27.8. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{17}H_{20}NO$ 254.1539, found 254.1546.

Diphenylmethanone *O*-(*tert*-pentyl) oxime (4q)



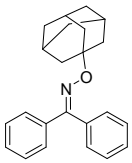
Colorless oily liquid, 10.4 mg, 13% yield; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.52 (dd, *J* = 7.4, 2.3 Hz, 2H), 7.4-7.29 (m, 8H), 1.70 (q, *J* = 7.5 Hz, 2H), 1.32 (s, 6H), 0.87 (t, *J* = 7.5 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 154.8, 137.8, 134.0, 129.7, 128.8, 128.4, 128.2, 128.0, 127.9, 81.6, 33.1, 25.4, 8.5. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{18}H_{22}NO$ 268.1696, found 268.1698.

Diphenylmethanone *O*-(1-methylcyclohexyl) oxime (4r)



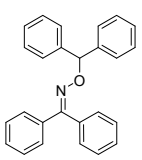
Colorless oily liquid, 8.8 mg, 10% yield; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.55-7.48 (m, 2H), 7.45-7.29 (m, 8H), 2.01-1.87 (m, 2H), 1.56-1.34 (m, 10H), 1.30-1.19 (m, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 154.9, 137.7, 134.1, 129.7, 128.8, 128.4, 128.2, 127.9, 80.0, 36.3, 26.3, 25.8, 22.3. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{20}H_{24}NO$ 294.1852, found 294.1851.

Diphenylmethanone *O*-adamantan-1-yl oxime (4s)



White solid, 91.4 mg, 92% yield; m.p. = 67.5-68.1 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.51 (dd, *J* = 7.5, 2.2 Hz, 2H), 7.43-7.28 (m, 8H), 2.27-2.14 (m, 3H), 1.95 (d, *J* = 3.0 Hz, 6H), 1.68 (t, *J* = 3.1 Hz, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 155.0, 137.8, 133.9, 129.9, 128.8, 128.5, 128.2, 128.0, 127.9, 78.4, 41.8, 36.7, 30.8. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{23}H_{26}NO$ 332.2009, found 332.2004.

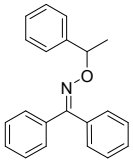
Diphenylmethanone *O*-benzhydryl oxime (4t)



White solid, 105.7 mg, 97% yield; m.p. = 101.8-102.5 °C; ^{1}H NMR (400 MHz,

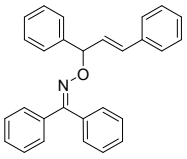
$CDCl_3$) δ 7.47-7.38 (m, 7H), 7.31-7.22 (m, 13H), 6.38 (s, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 157.5, 141.9, 136.6, 133.6, 129.5, 129.4, 128.9, 128.4, 128.3, 128.2, 128.1, 127.5, 127.4, 87.4. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{26}H_{22}NO$ 364.1696, found 364.1690.

Diphenylmethanone *O*-(1-phenylethyl) oxime (4u)



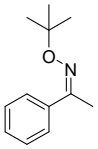
White solid, 70.5 mg, 78% yield; m.p. = 73.7-74.4 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 7.49-7.41 (m, 7H), 7.38-7.29 (m, 8H), 5.45 (q, *J* = 6.6 Hz, 1H), 1.59 (d, *J* = 6.7 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 156.6, 143.7, 136.9, 133.7, 129.6, 129.2, 128.8, 128.3, 128.2, 128.10, 128.05, 127.3, 126.4, 81.8, 22.4. HRMS *m/z*: $[M+H]^+$ calcd. for $C_{21}H_{20}NO$ 302.1539, found 302.1545.

Diphenylmethanone *O*-(1,3-diphenylallyl) oxime (4v)



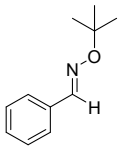
Colorless oily liquid, 109.7 mg, 94% yield; ^1H NMR (400 MHz, $CDCl_3$) δ 7.50-7.20 (m, 20H), 6.60 (d, *J* = 15.9 Hz, 1H), 6.43 (dd, *J* = 16.0, 6.6 Hz, 1H), 5.94 (d, *J* = 6.8 Hz, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 157.3, 140.9, 136.9, 136.7, 133.6, 132.0, 129.6, 129.4, 128.9, 128.6, 128.5, 128.3, 128.2, 128.1, 127.8, 127.7, 127.3, 126.8, 86.3. HRMS *m/z*: $[M+Na]^+$ calcd. for $C_{28}H_{23}NONa$ 412.1672, found 412.1678.

1-Dhenylethan-1-one *O*-(*tert*-butyl) oxime (4x)



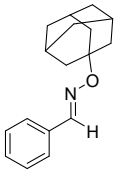
Colorless oily liquid, 18.9 mg, 33% yield; ^1H NMR (400 MHz, $CDCl_3$) δ 7.75 – 7.67 (m, 2H), 7.42 – 7.31 (m, 3H), 2.23 (s, 3H), 1.39 (s, 9H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 152.6, 137.9, 128.8, 128.5, 126.1, 78.9, 28.0, 12.5.

Benzaldehyde *O*-(*tert*-butyl) oxime (4y)



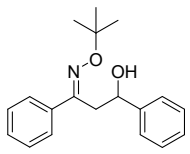
Colorless oily liquid, 18.6 mg, 35% yield; ^1H NMR (400 MHz, $CDCl_3$) δ 8.07 (s, 1H), 7.65 – 7.58 (m, 2H), 7.41 – 7.32 (m, 3H), 1.39 (s, 9H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 147.3, 133.4, 129.4, 128.7, 127.0, 79.3, 27.8.

Benzaldehyde *O*-adamantan-1-yl oxime (4z)



White solid, 36.8 mg, 48% yield; ^1H NMR (400 MHz, $CDCl_3$) δ 8.09 (s, 1H), 7.59 (dd, *J* = 7.3, 2.4 Hz, 2H), 7.42 – 7.31 (m, 3H), 2.26–2.16 (m, 3H), 1.95 (s, 6H), 1.69 (t, *J* = 3.0 Hz, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 147.6, 133.4, 129.4, 128.7, 127.0, 78.4, 41.8, 36.6, 30.8.

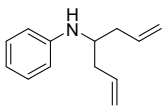
3-Hydroxy-1,3-diphenylpropan-1-one *O*-(*tert*-butyl) oxime (T1)



Light yellow oily liquid, 520.5 mg, 35% yield; ^1H NMR (400 MHz, $CDCl_3$) δ

7.64 (dd, *J* = 6.4, 3.0 Hz, 2H), 7.38 (d, *J* = 7.6 Hz, 2H), 7.30 (dt, *J* = 7.8, 4.9 Hz, 6H), 5.05 (dd, *J* = 9.0, 4.0 Hz, 1H), 3.25 (dd, *J* = 13.5, 9.1 Hz, 1H), 3.11 (dd, *J* = 13.6, 4.1 Hz, 1H), 1.38 (s, 9H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 154.4, 144.6, 136.6, 129.0, 128.5, 128.4, 127.6, 126.5, 126.0, 125.6, 79.9, 72.6, 37.4, 27.8.

N-(hepta-1,6-dien-4-yl)aniline (T2)



Light yellow oily liquid, 179.7 mg, 520.5 mg, 96% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.18 (dd, *J* = 8.6, 7.2 Hz, 2H), 6.70 (t, *J* = 7.3 Hz, 1H), 6.62 (d, *J* = 8.0 Hz, 2H), 5.84 (ddt, *J* = 16.3, 11.1, 7.1 Hz, 2H), 5.17 – 5.05 (m, 4H), 3.51 (p, *J* = 6.1 Hz, 1H), 2.33 (dd, *J* = 7.3, 6.0 Hz, 4H). ^{13}C NMR (126 MHz, $CDCl_3$) δ 134.9, 129.5, 117.9, 117.6, 113.8, 52.3, 38.2.

6. The NMR Spectra of the Products

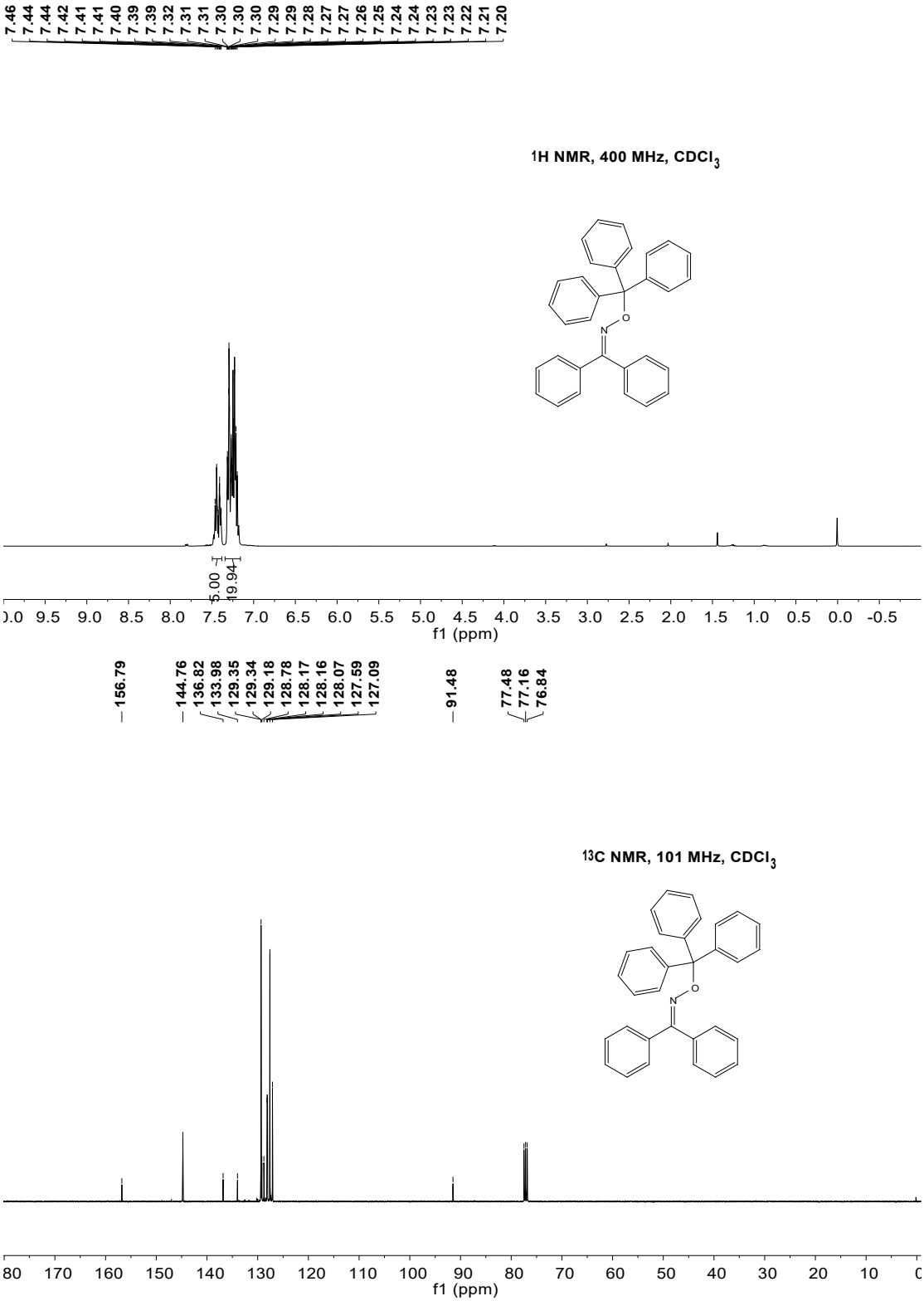


Figure S4. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3a** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

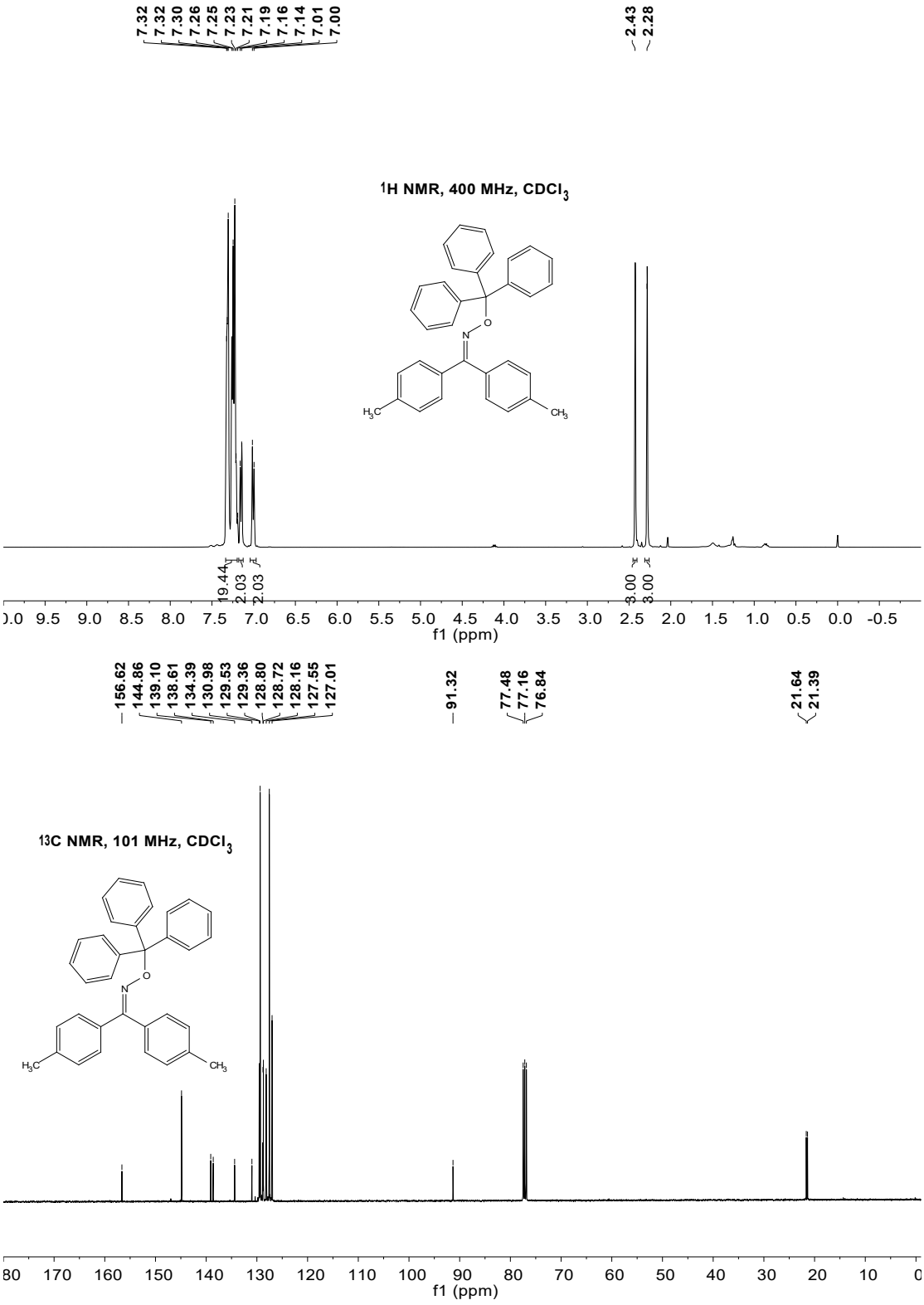


Figure S5. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3b** produced in the oxime etherification of di-*p*-tolylmethanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

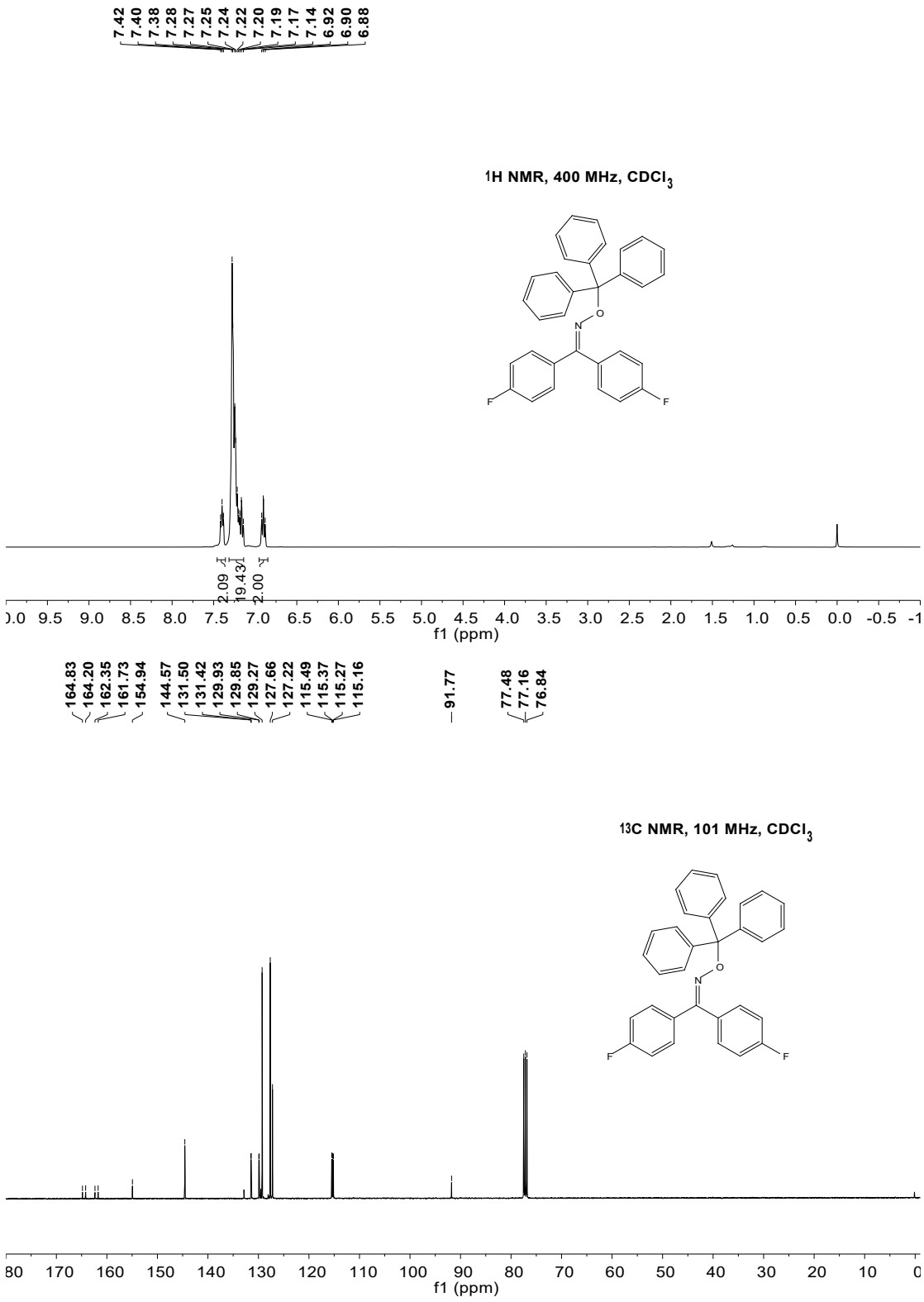


Figure S6. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3c** produced in the oxime etherification of bis(4-fluorophenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

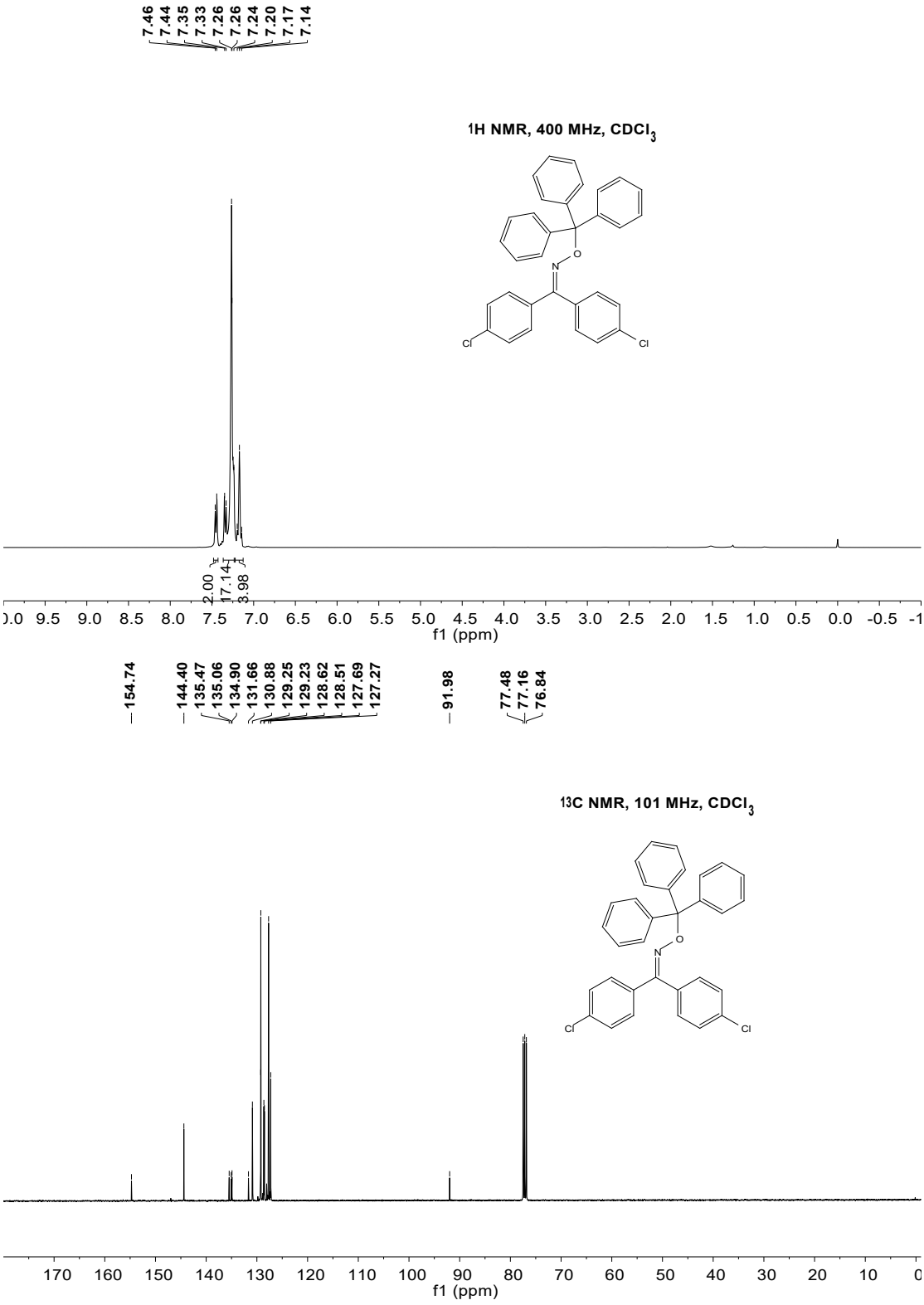


Figure S7. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3d** produced in the oxime etherification of bis(4-chlorophenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

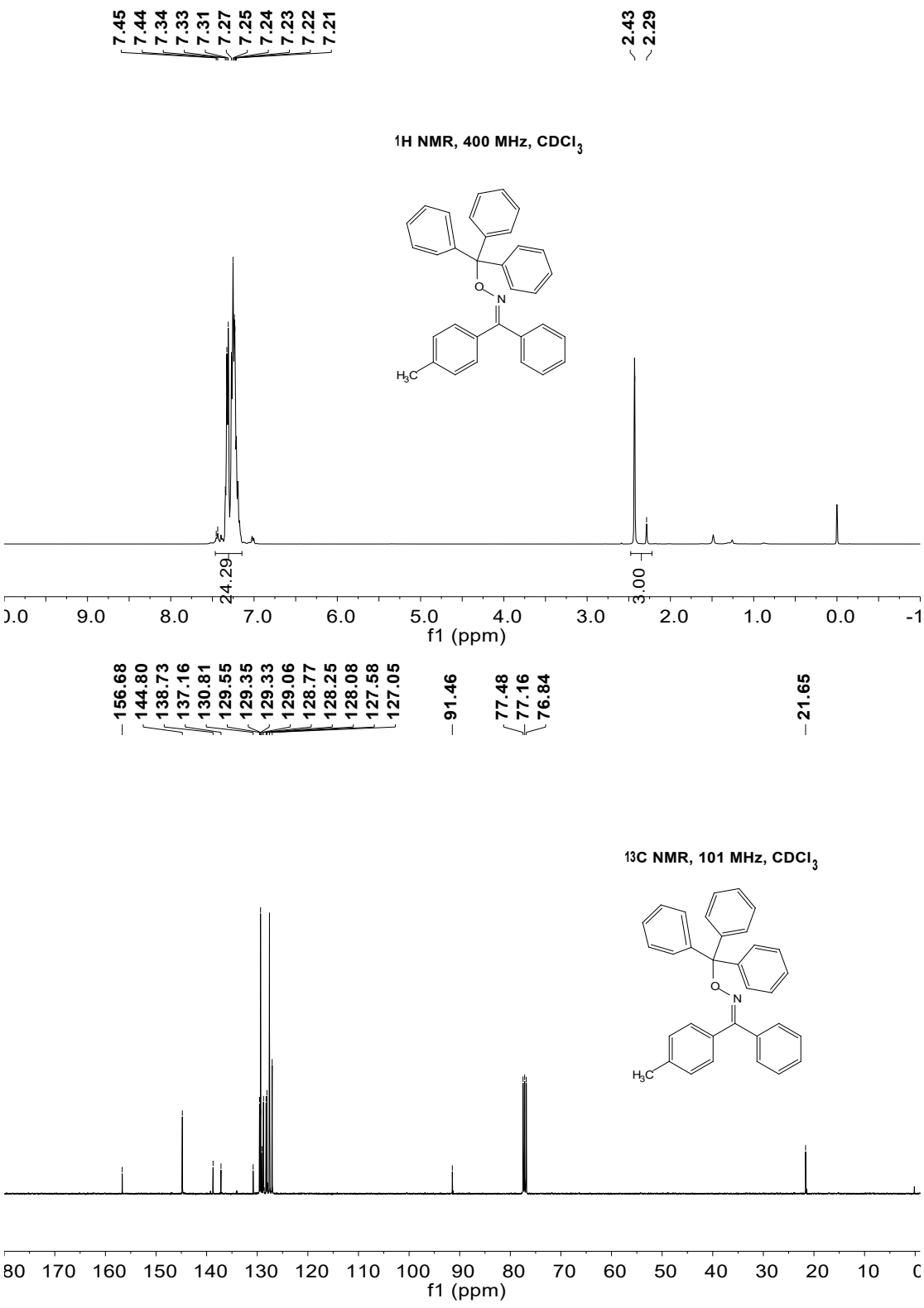


Figure S8. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3e** produced in the oxime etherification of phenyl(*p*-tolyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

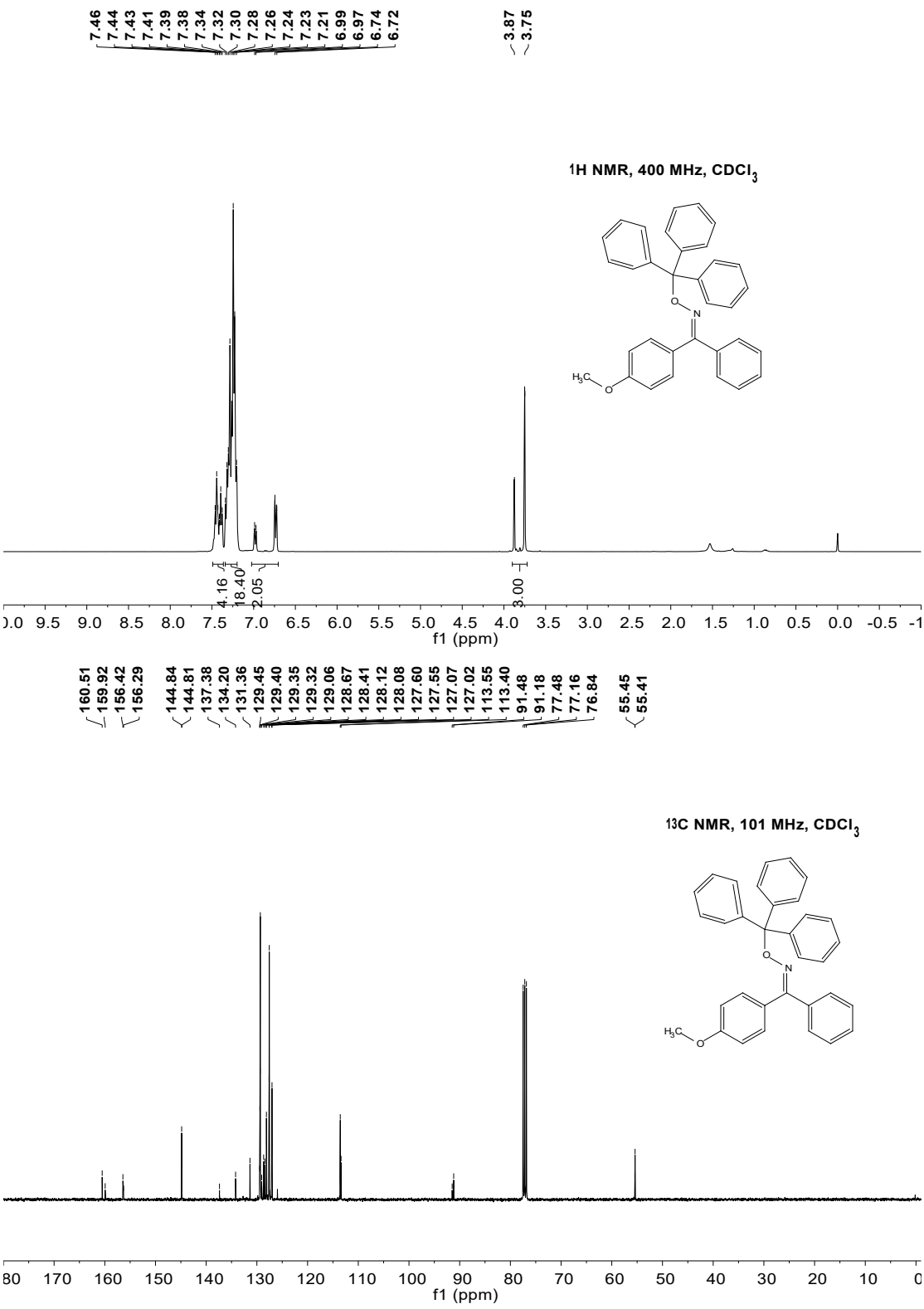


Figure S9. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3f** produced in the oxime etherification of (4-methoxyphenyl)(phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

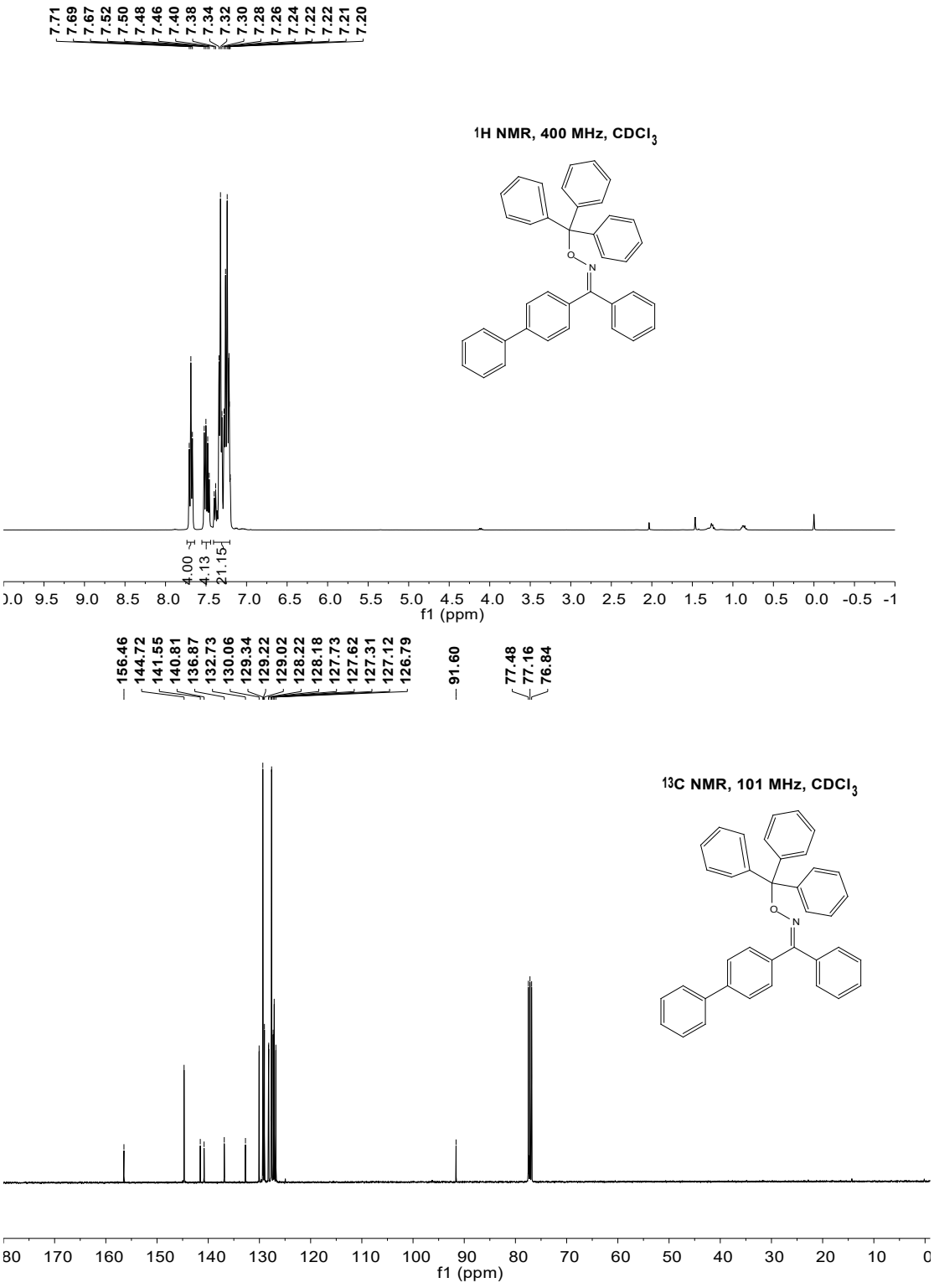


Figure S10. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3g** produced in the oxime etherification of [1,1'-biphenyl]-4-yl(phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

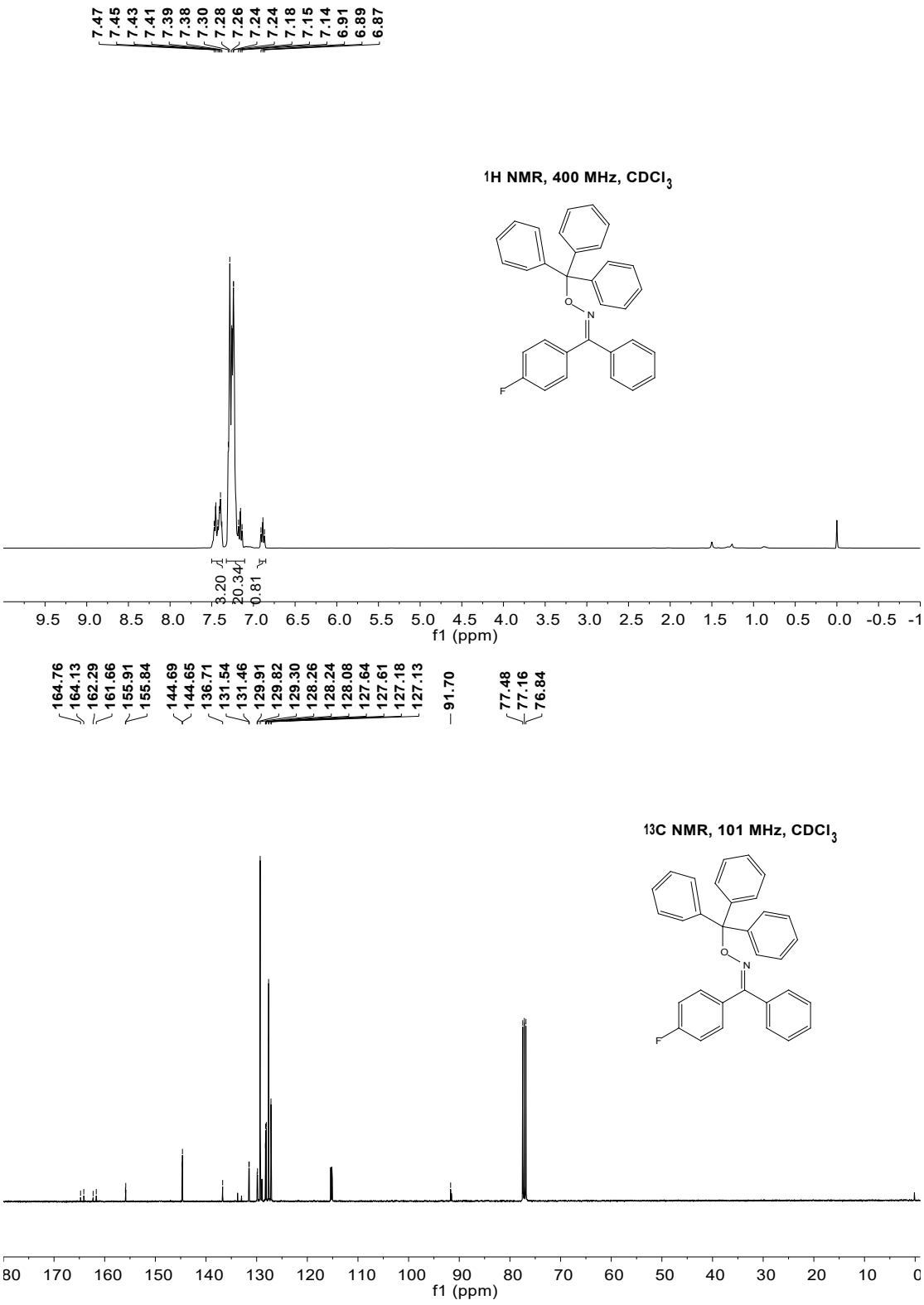


Figure S11. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3h** produced in the oxime etherification of (4-fluorophenyl)(phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

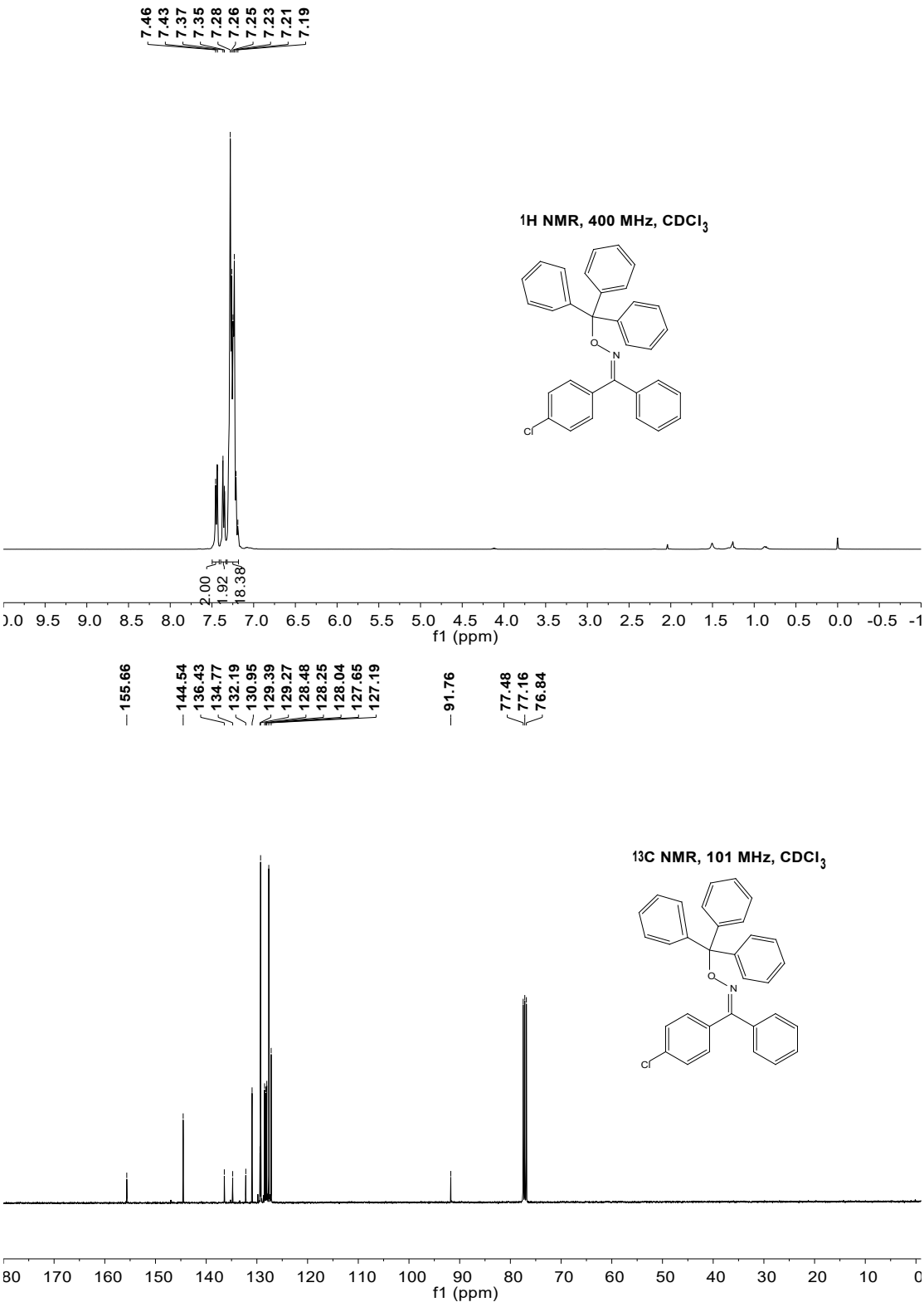


Figure S12. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3i** produced in the oxime etherification of (4-chlorophenyl)(phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

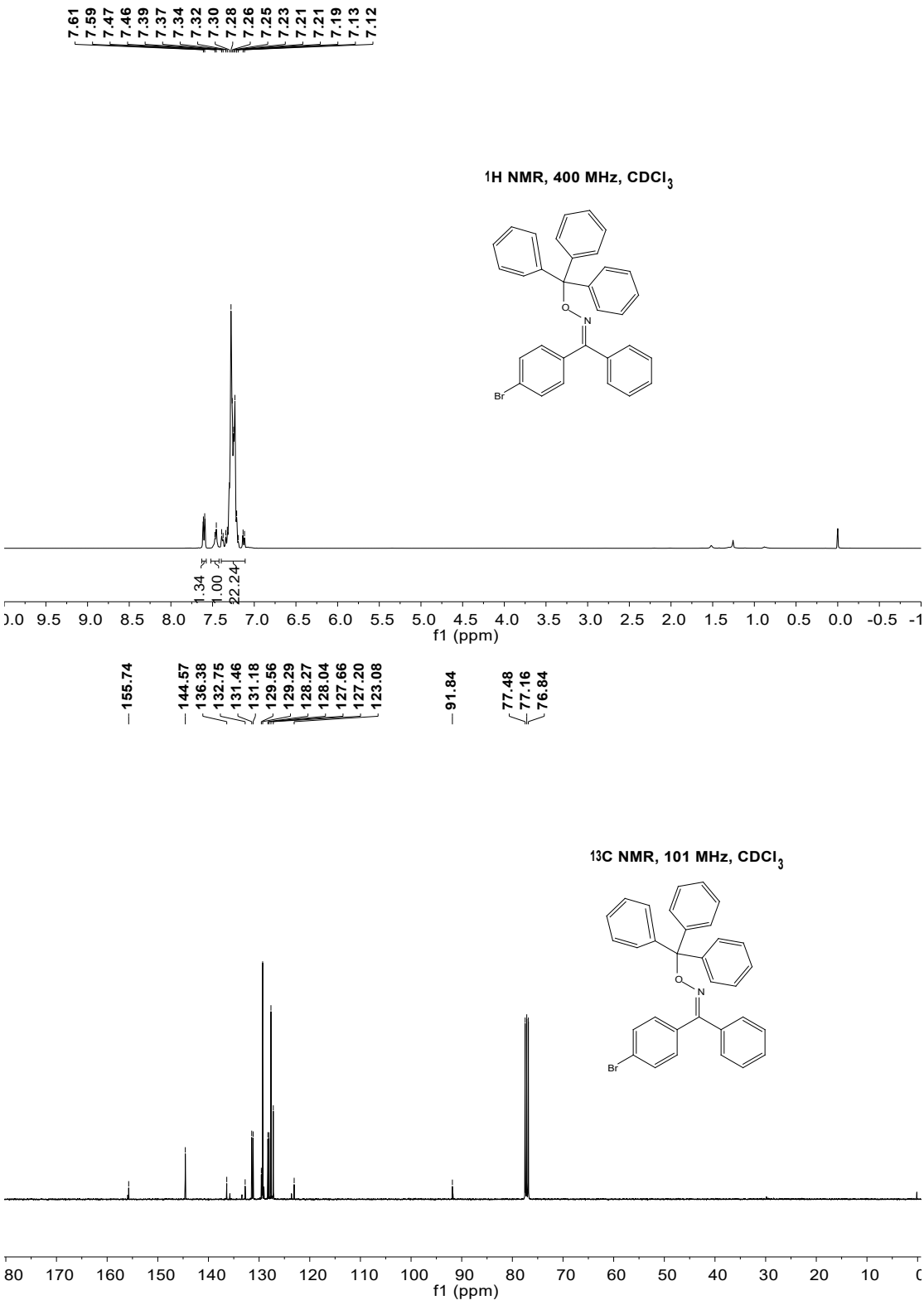


Figure S13. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3j** produced in the oxime etherification of (4-bromophenyl)(phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

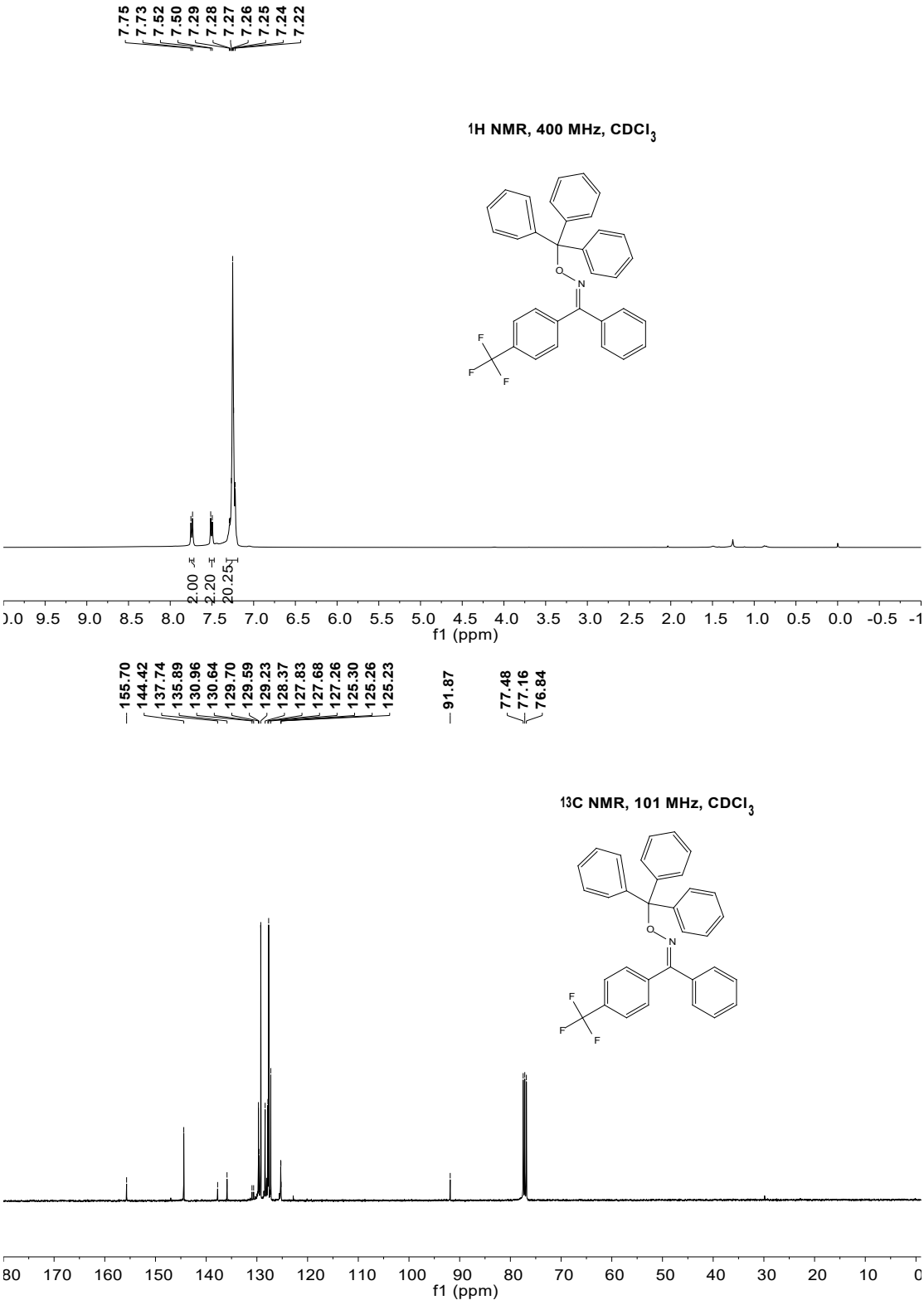


Figure S14. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3k** produced in the oxime etherification of phenyl(4-(trifluoromethyl)phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

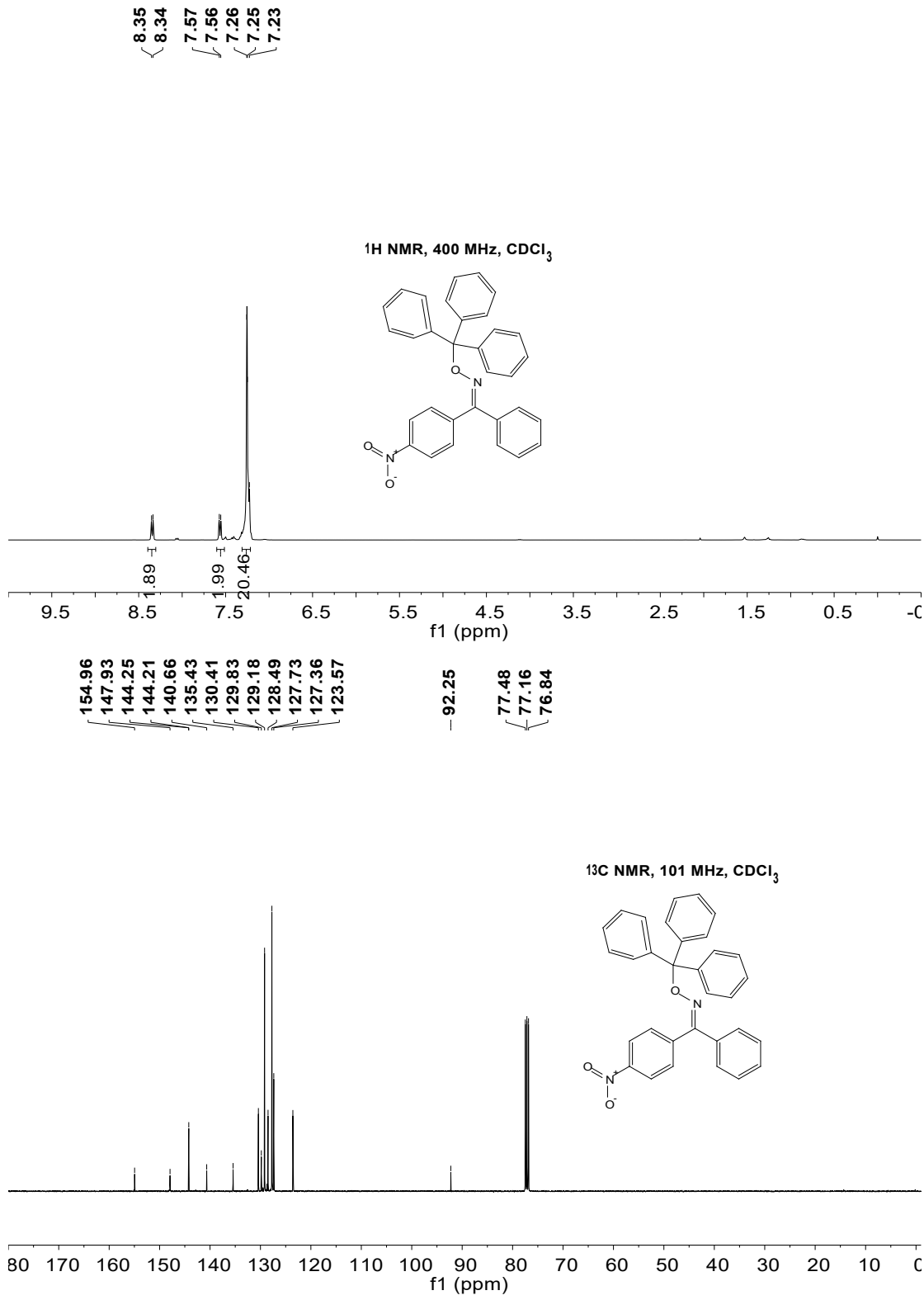


Figure S15. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3l** produced in the oxime etherification of (4-nitrophenyl)(phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

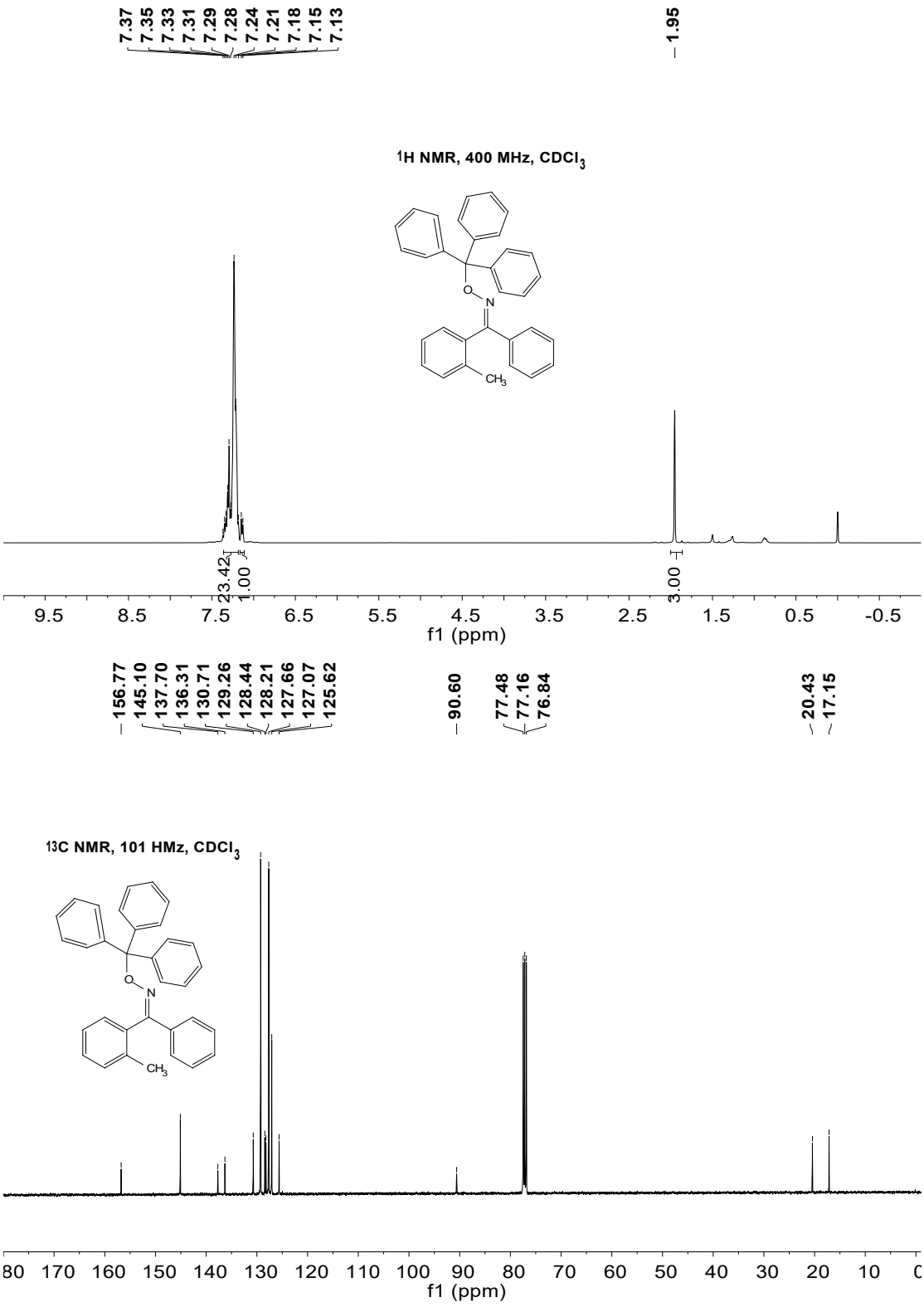


Figure S16. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3m** produced in the oxime etherification of phenyl(*o*-tolyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

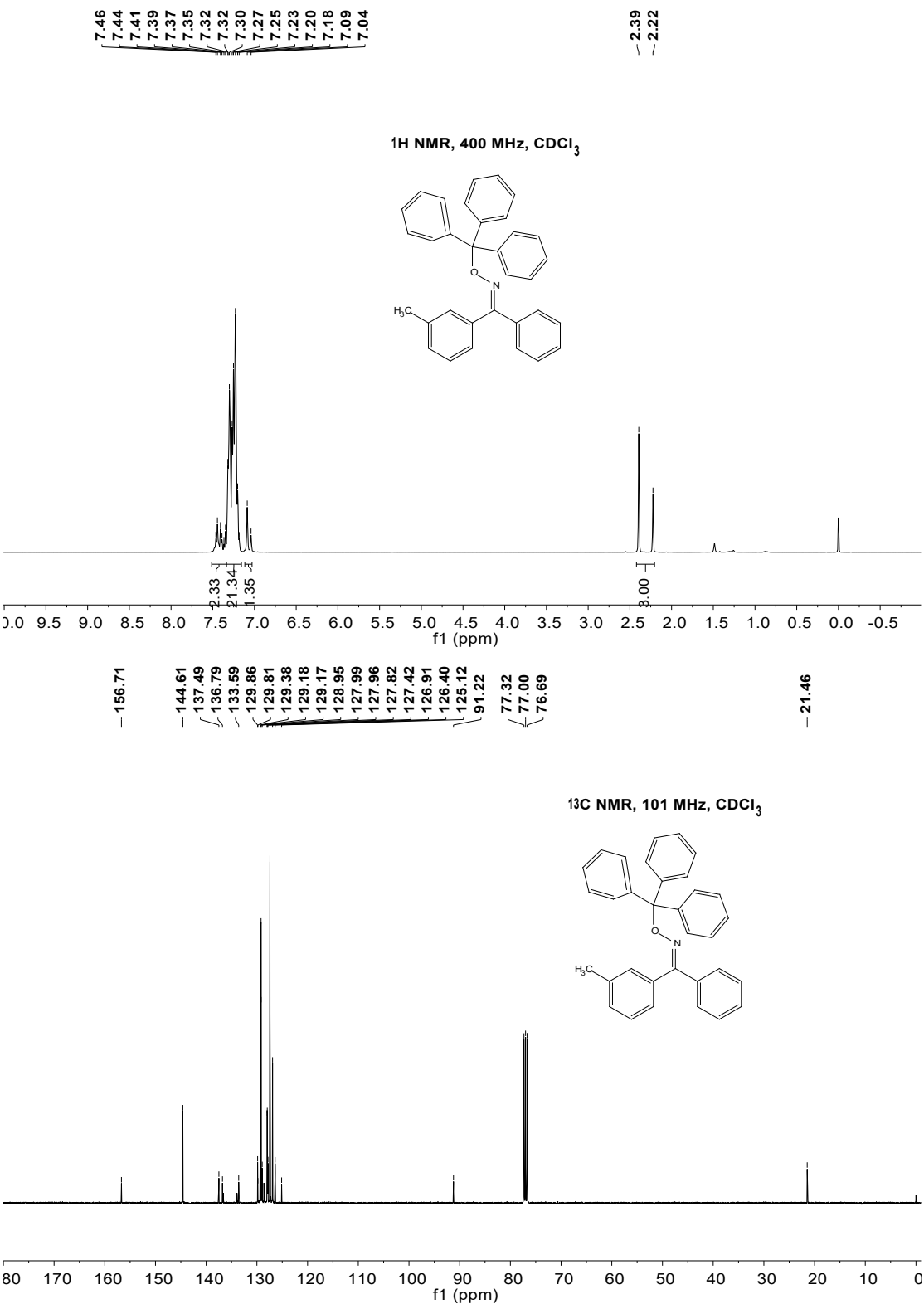


Figure S17. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3n** produced in the oxime etherification of phenyl(*m*-tolyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

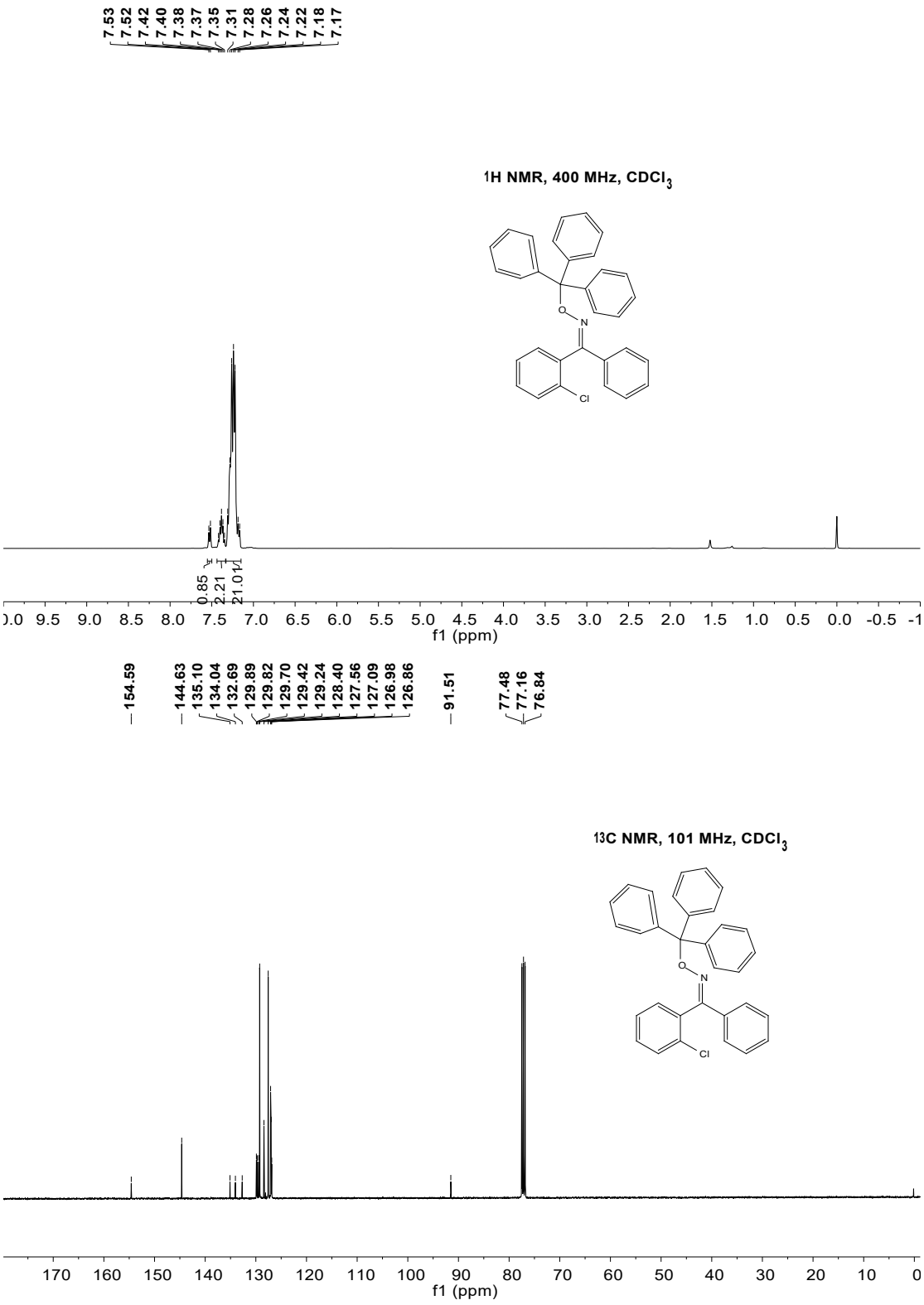


Figure S18. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3o** produced in the oxime etherification of (2-chlorophenyl)(phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

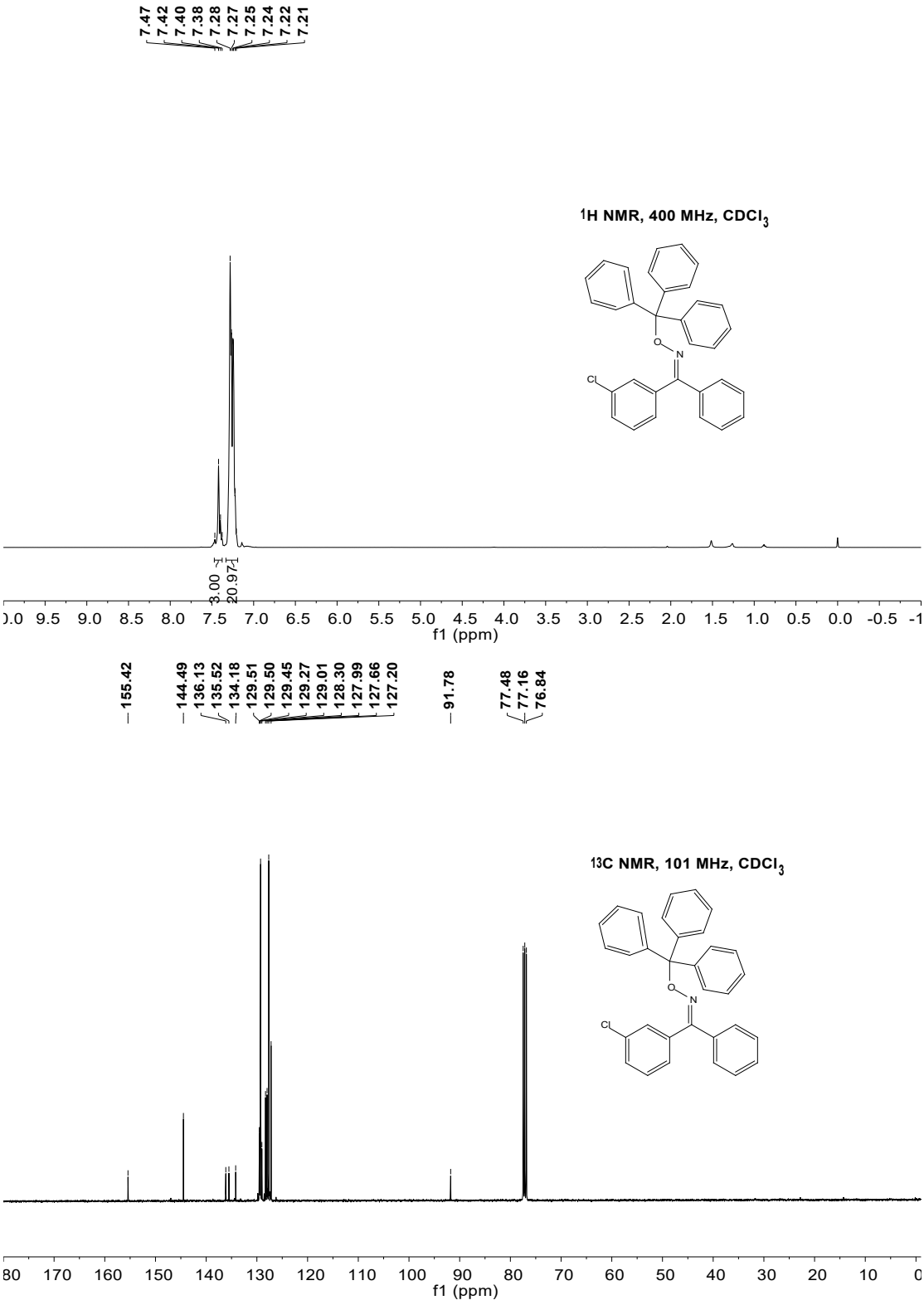


Figure S19. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3p** produced in the oxime etherification of (3-chlorophenyl)(phenyl)methanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

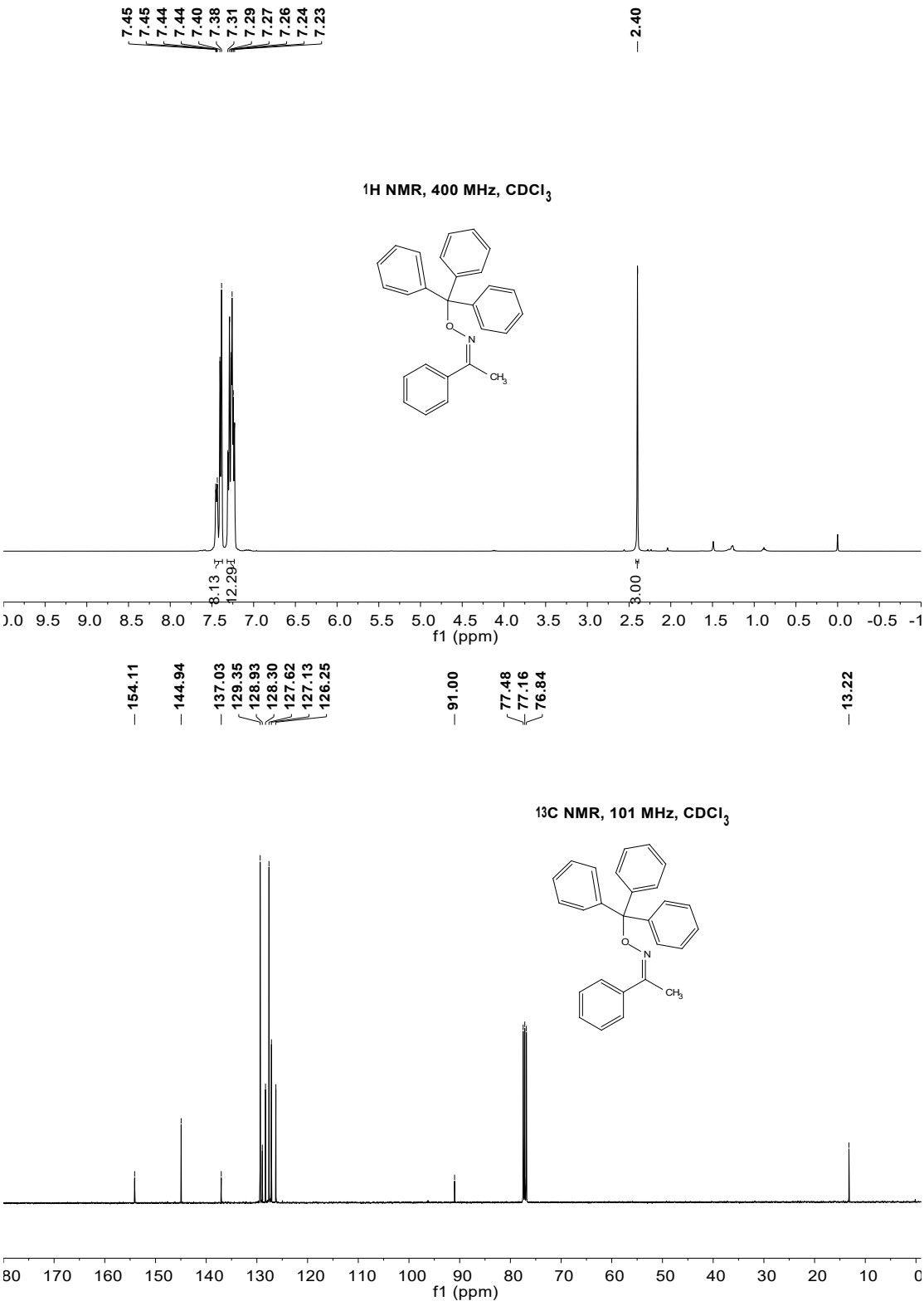


Figure S20. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3q** produced in the oxime etherification of acetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

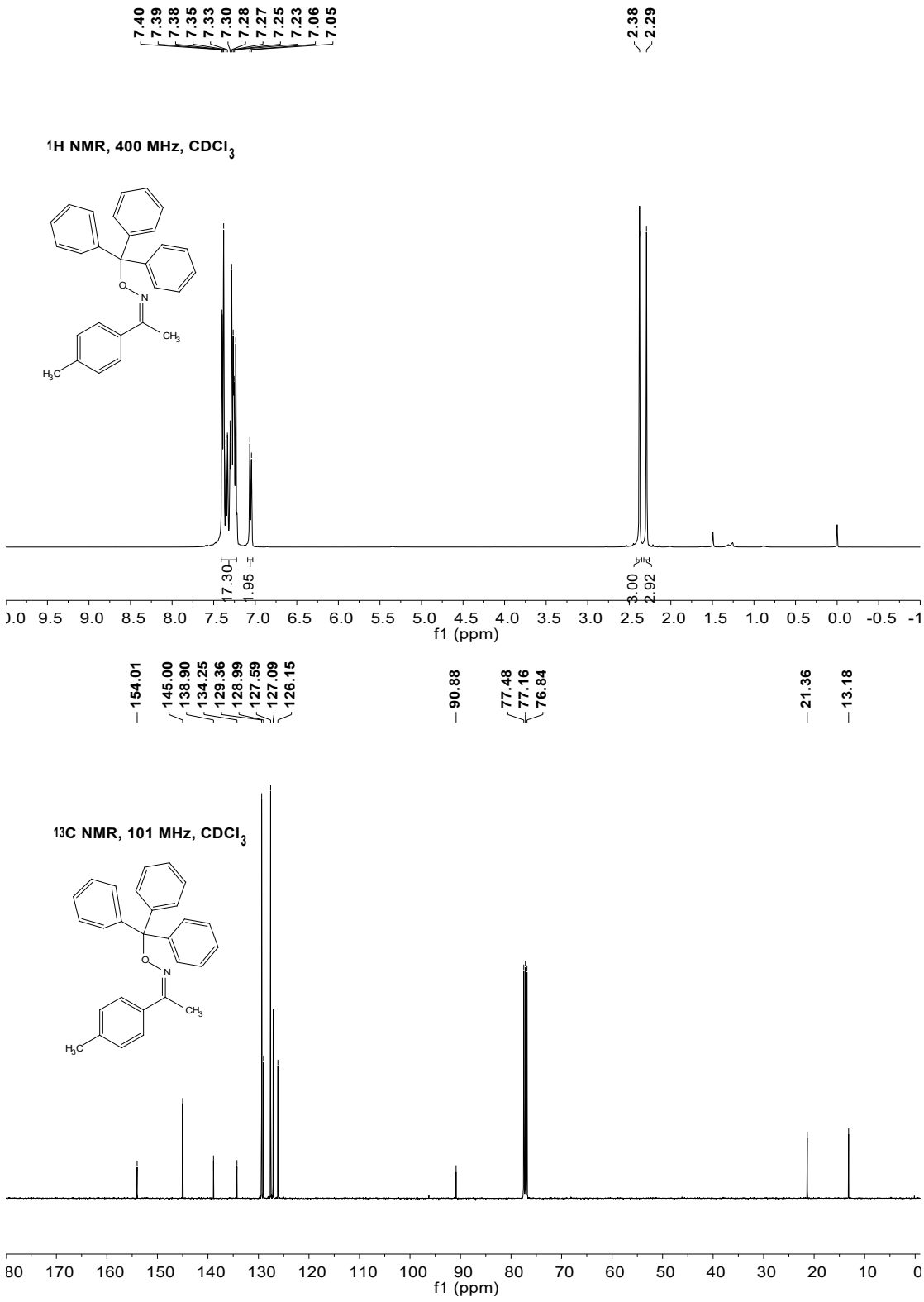


Figure S21. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3r** produced in the oxime etherification of *p*-methyl acetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

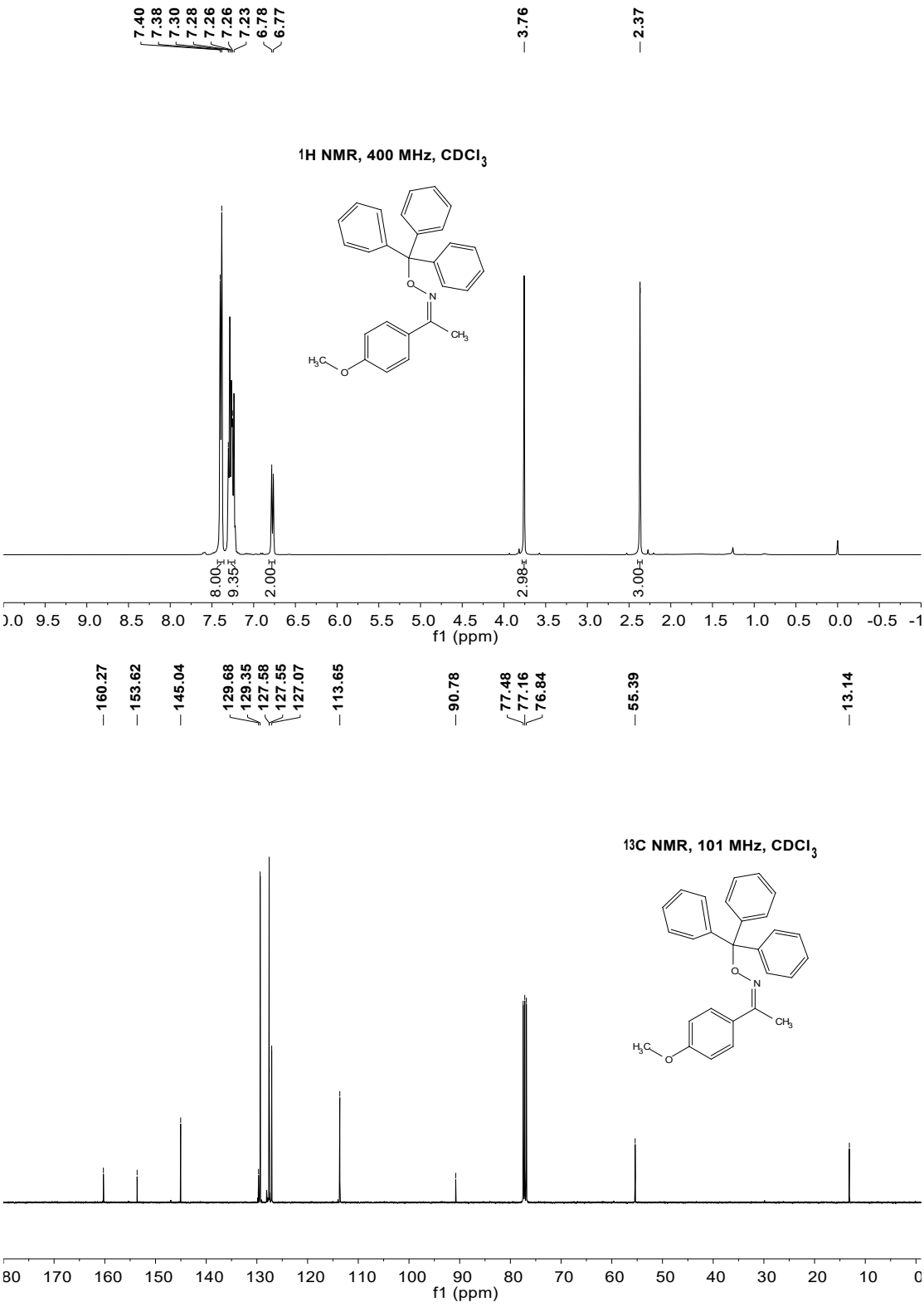


Figure S22. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3s** produced in the oxime etherification of *p*-methoxy acetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

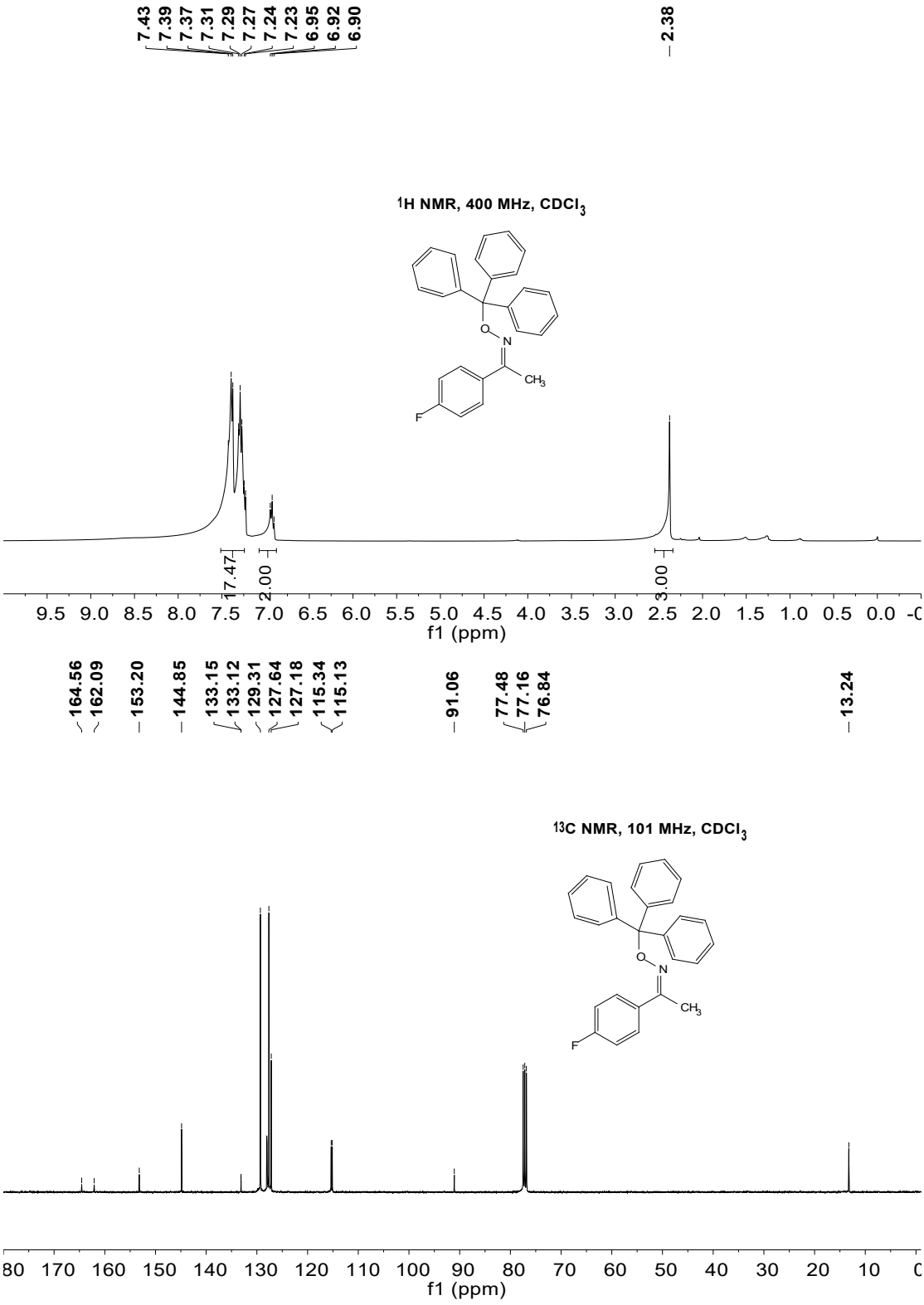


Figure S23. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3t** produced in the oxime etherification of *p*-fluoroacetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

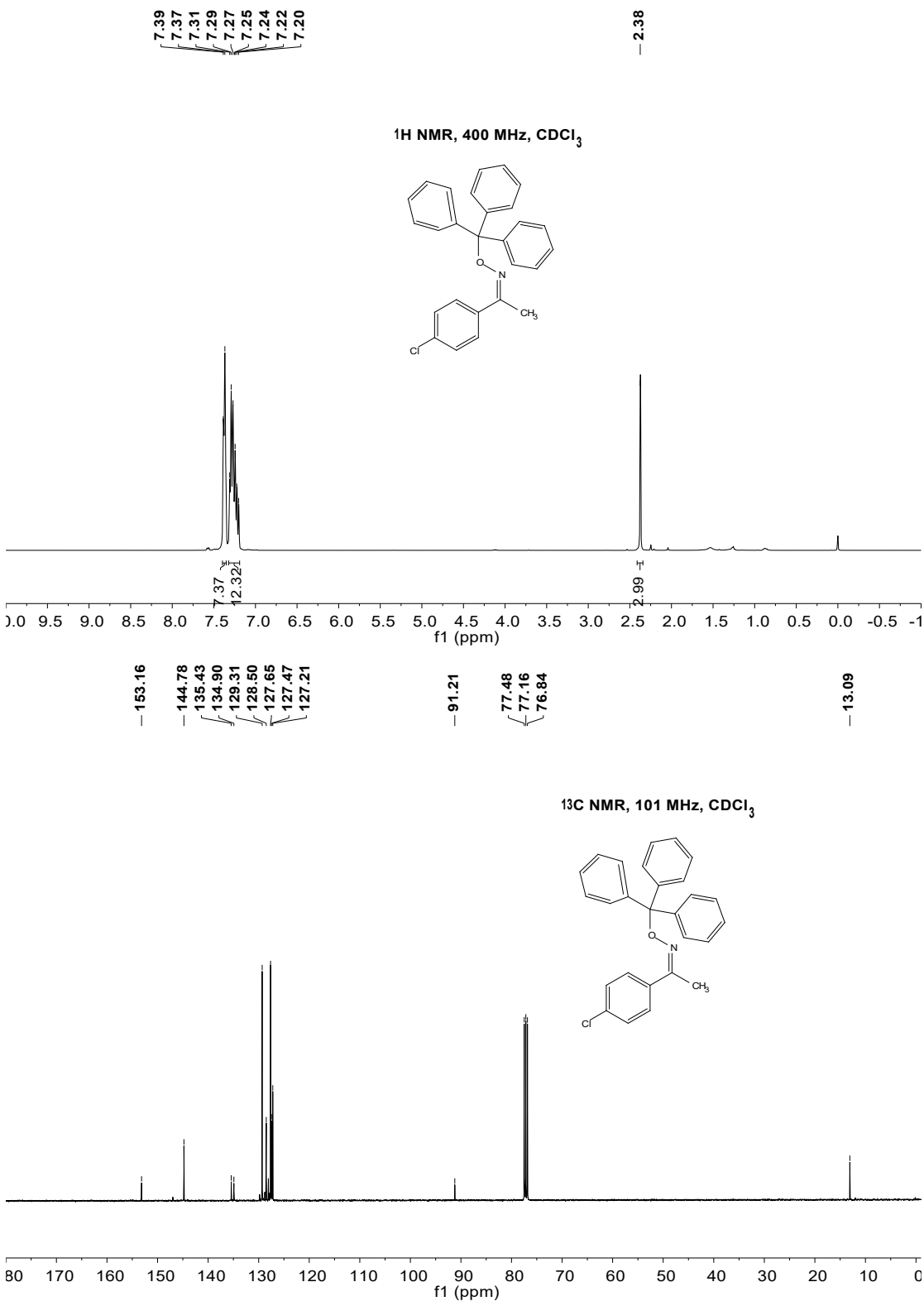


Figure S24. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3u** produced in the oxime etherification of *p*-chloroacetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

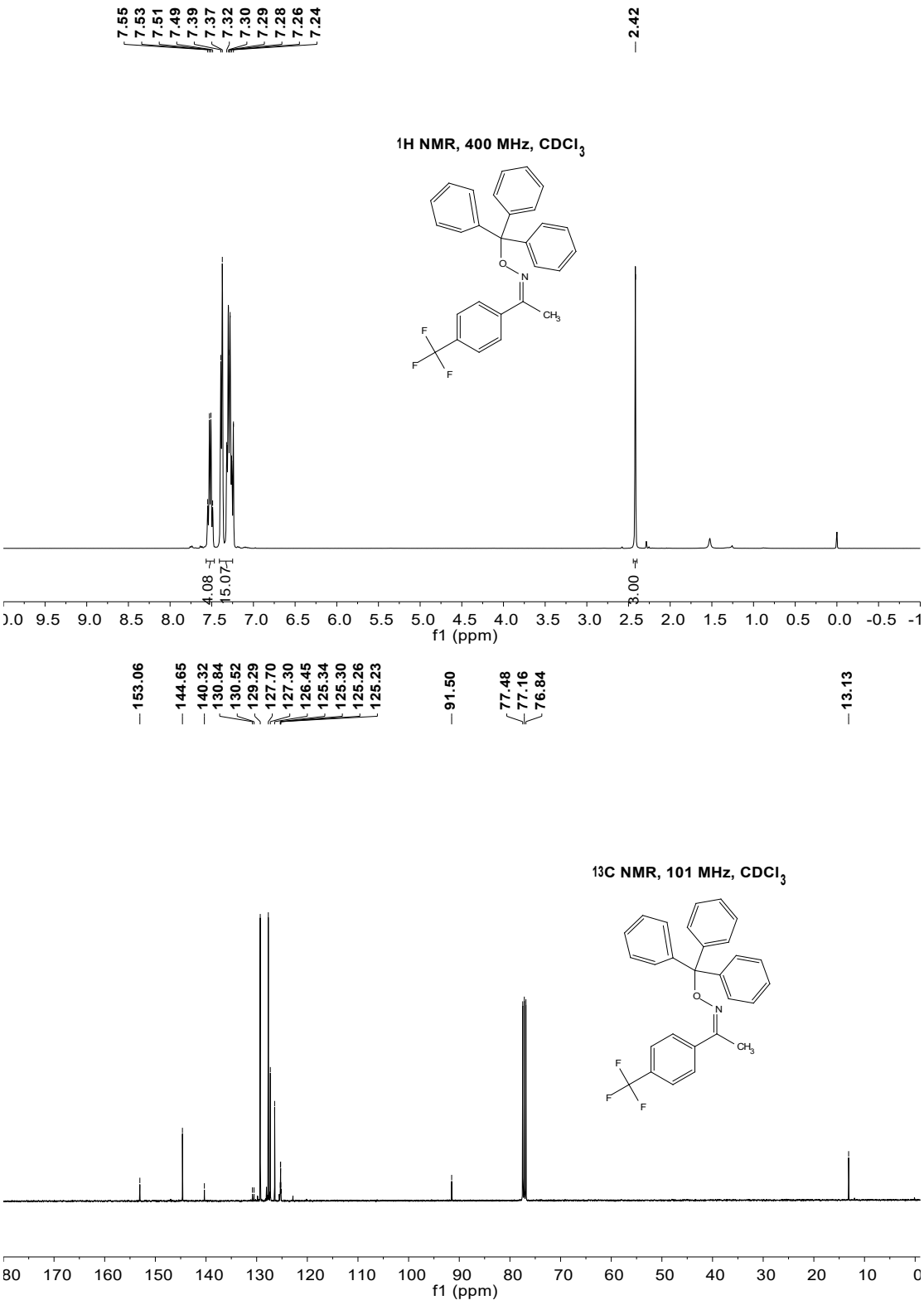


Figure S25. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3v** produced in the oxime etherification of *p*- trifluoromethylacetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

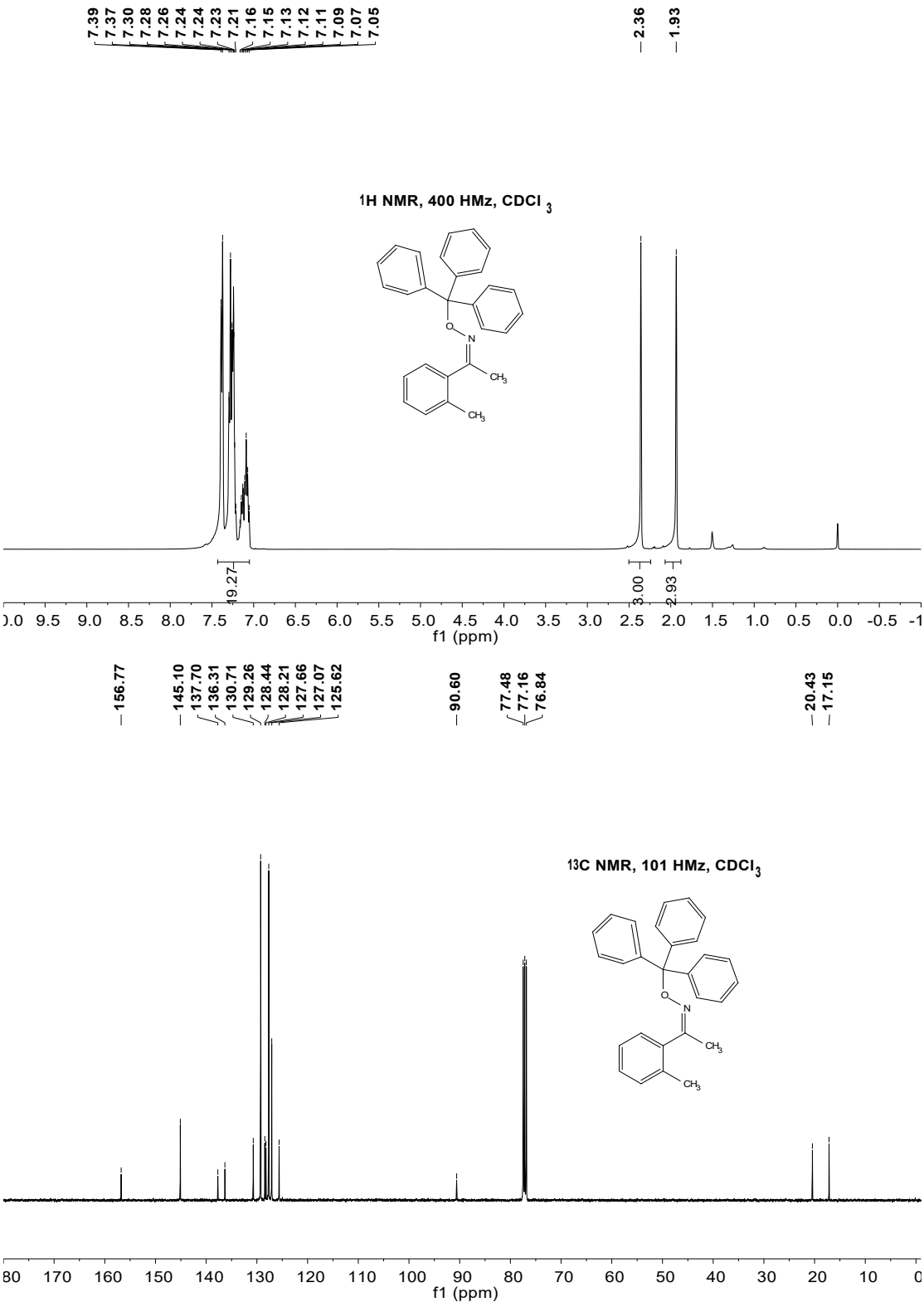


Figure S26. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3w** produced in the oxime etherification of *o*-methyl acetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

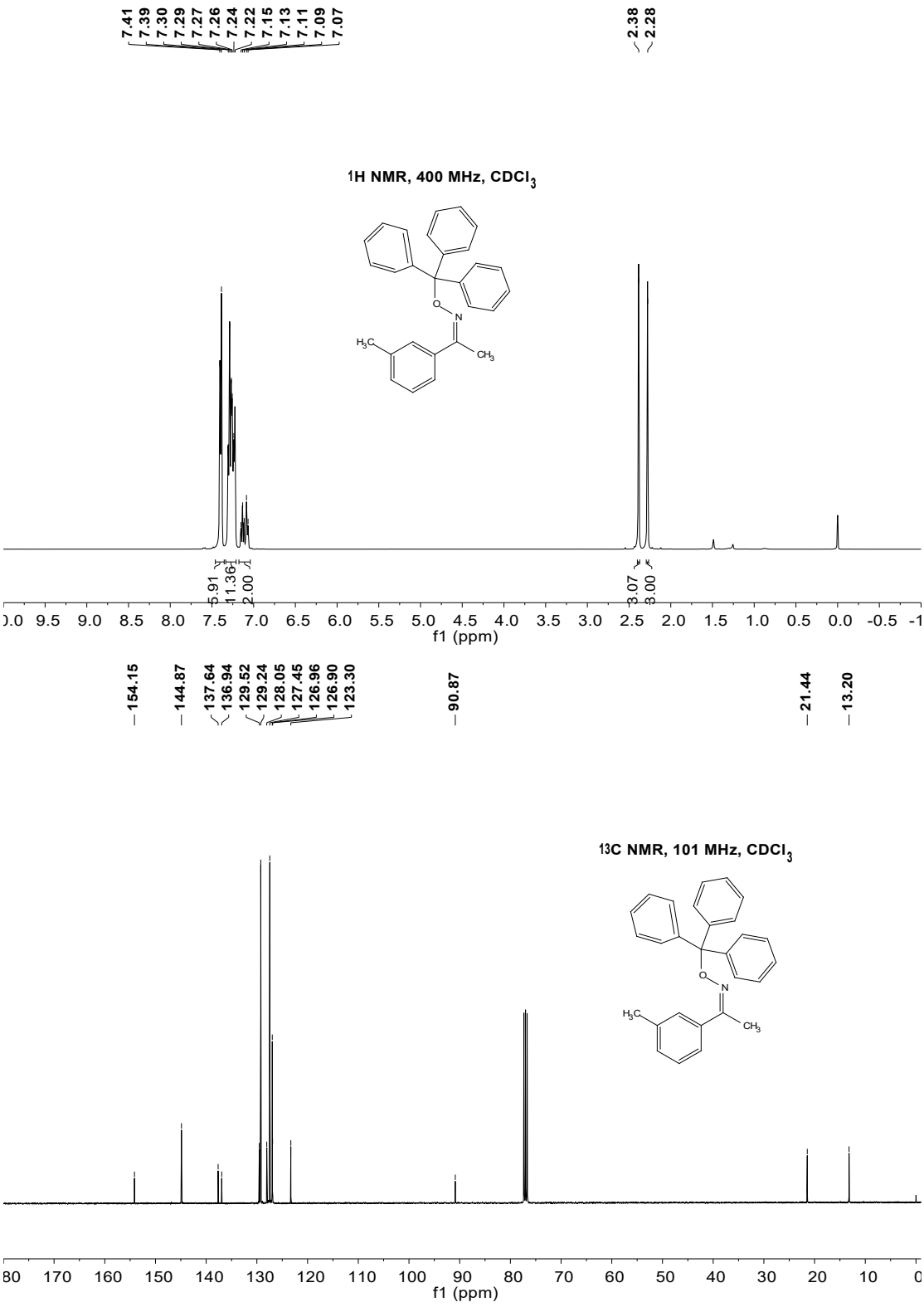


Figure S27. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3x** produced in the oxime etherification of *m*-methyl acetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

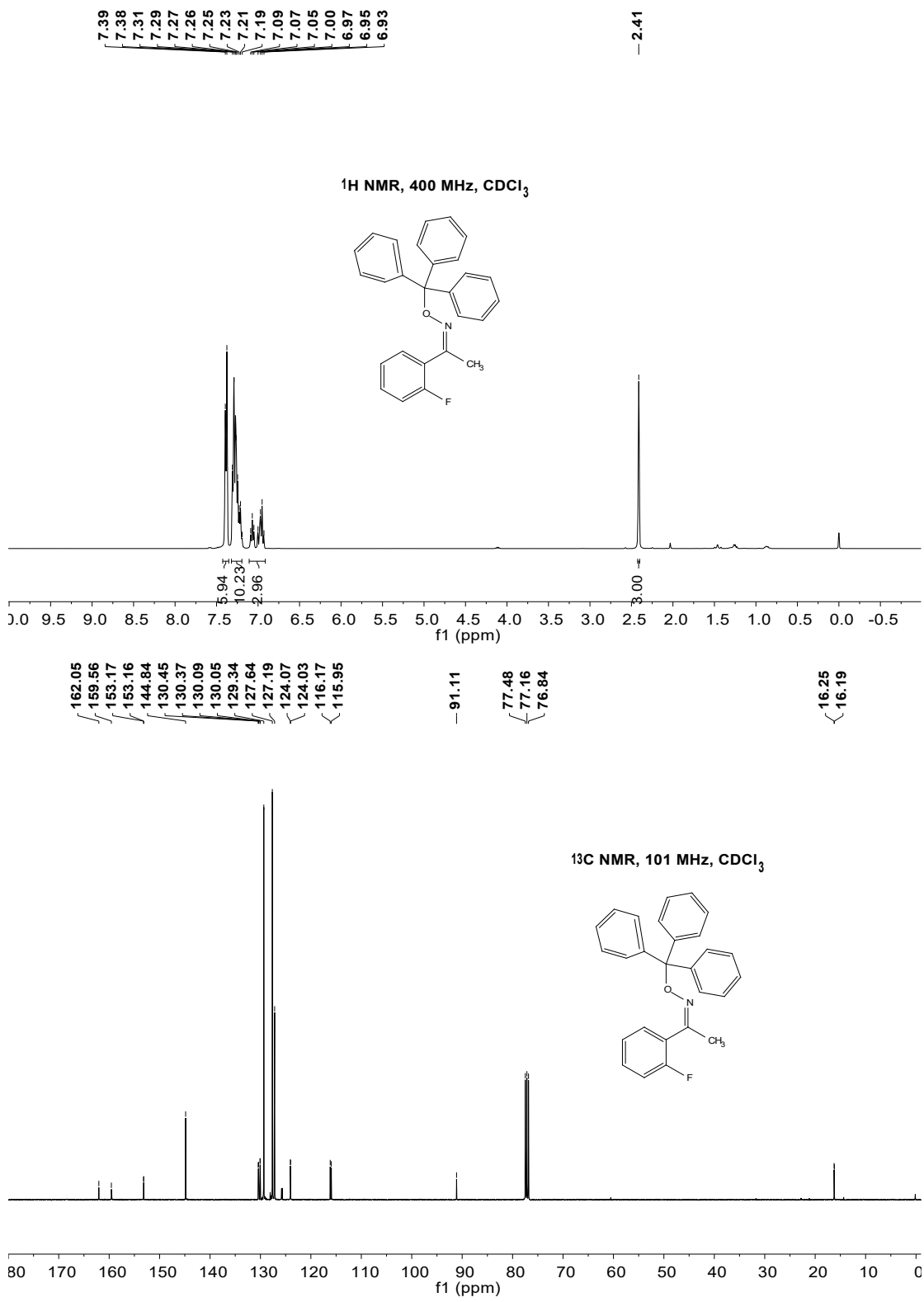


Figure S28. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3y** produced in the oxime etherification of *o*-fluoroacetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

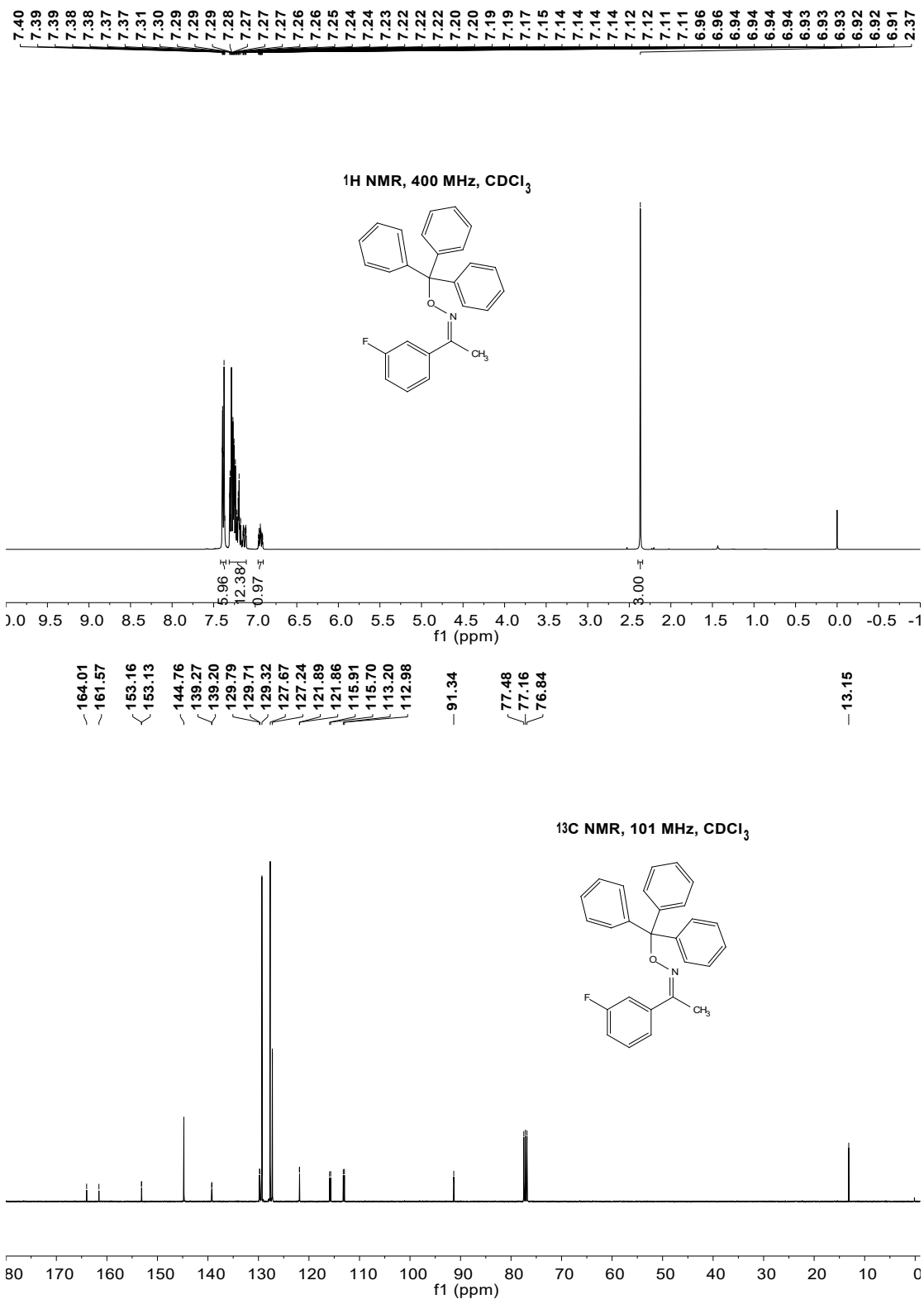


Figure S29. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3z** produced in the oxime etherification of *m*-fluoroacetophenone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

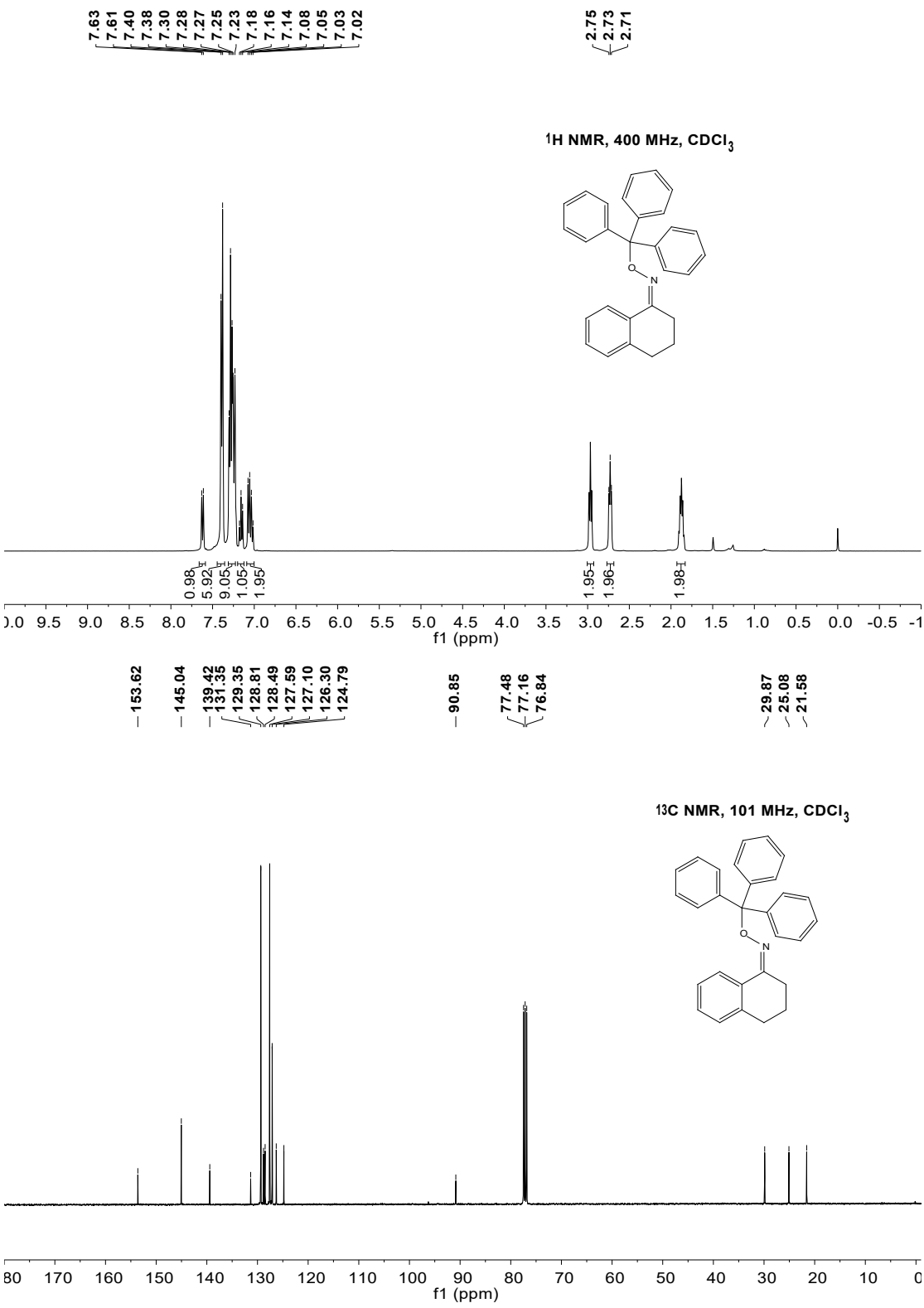


Figure S30. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3aa** produced in the oxime etherification of 3,4-dihydronaphthalen-1(2H)-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

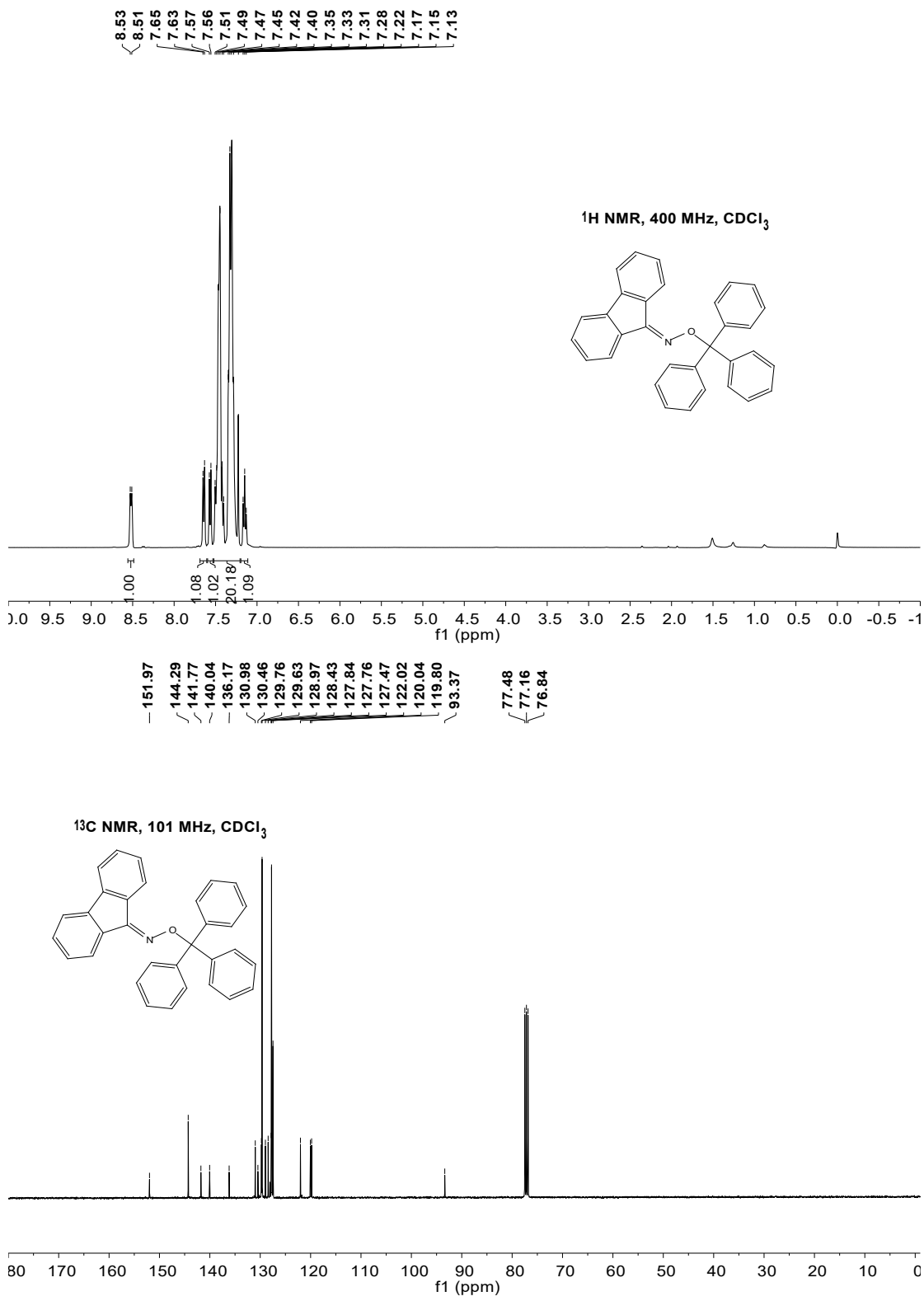


Figure S31. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ab** produced in the oxime etherification of 9H-fluoren-9-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

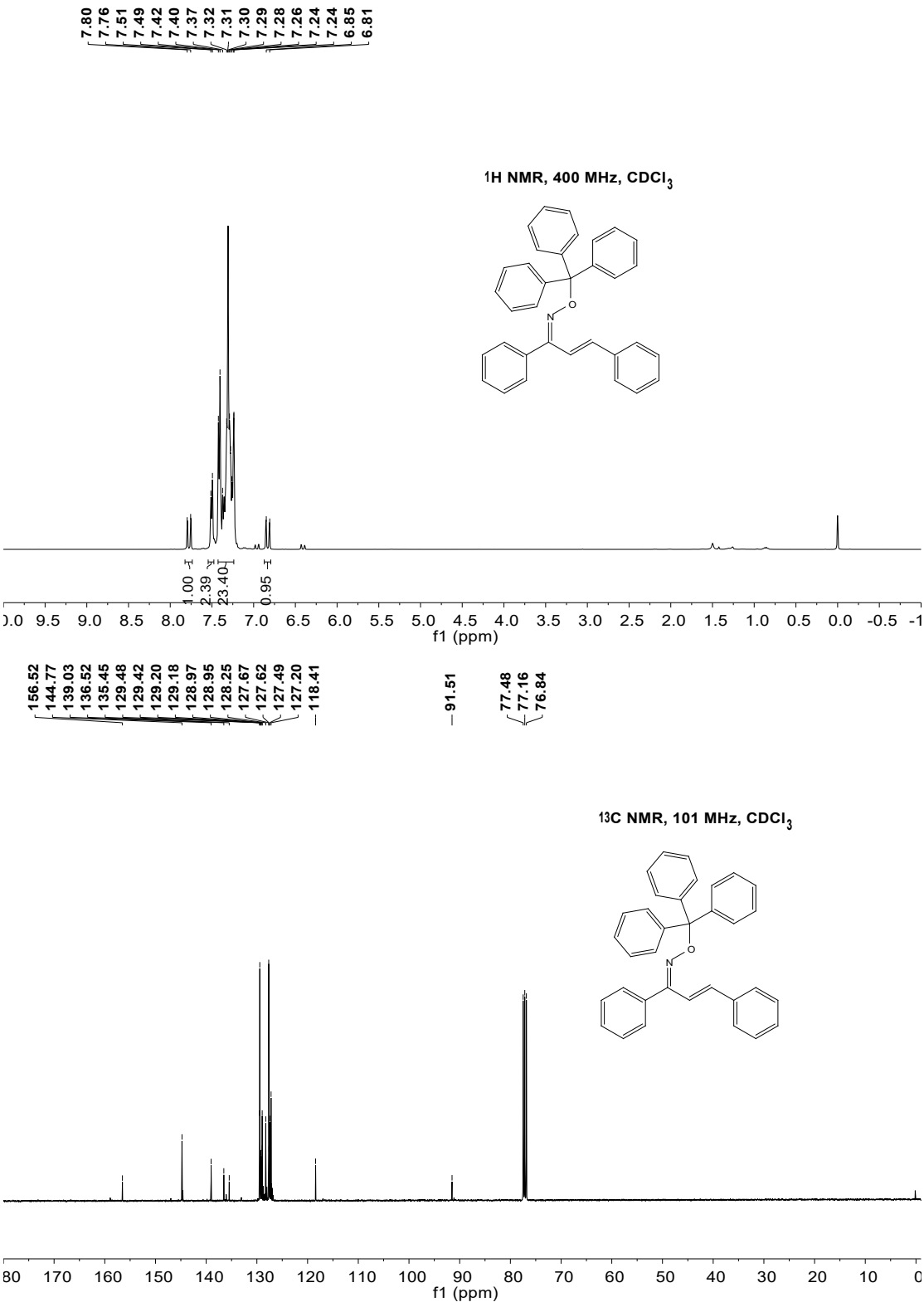


Figure S32. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ac** produced in the oxime etherification of 1,3-diphenylprop-2-en-1-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

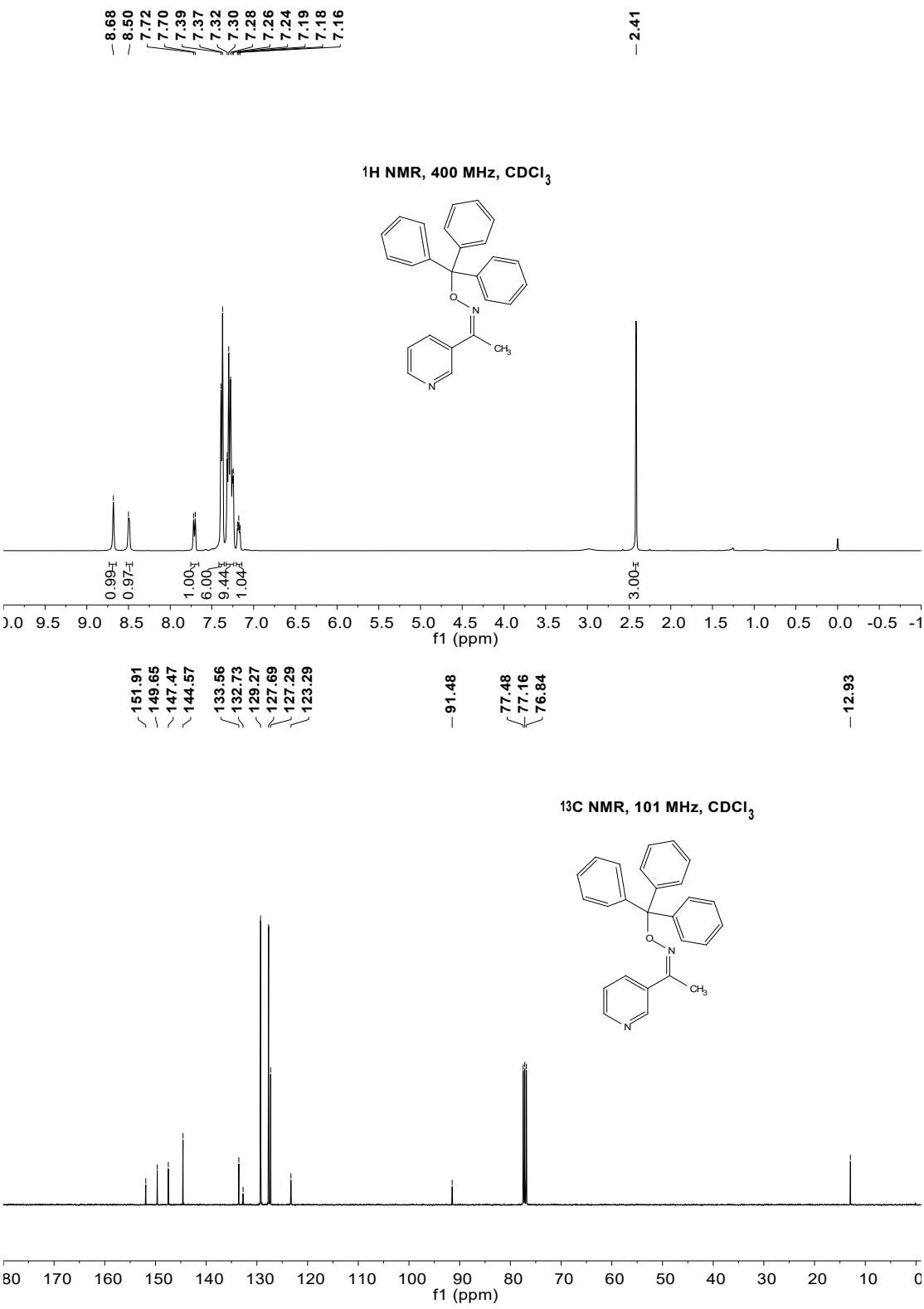


Figure S33. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ad** produced in the oxime etherification of 1-(pyridin-3-yl)ethan-1-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

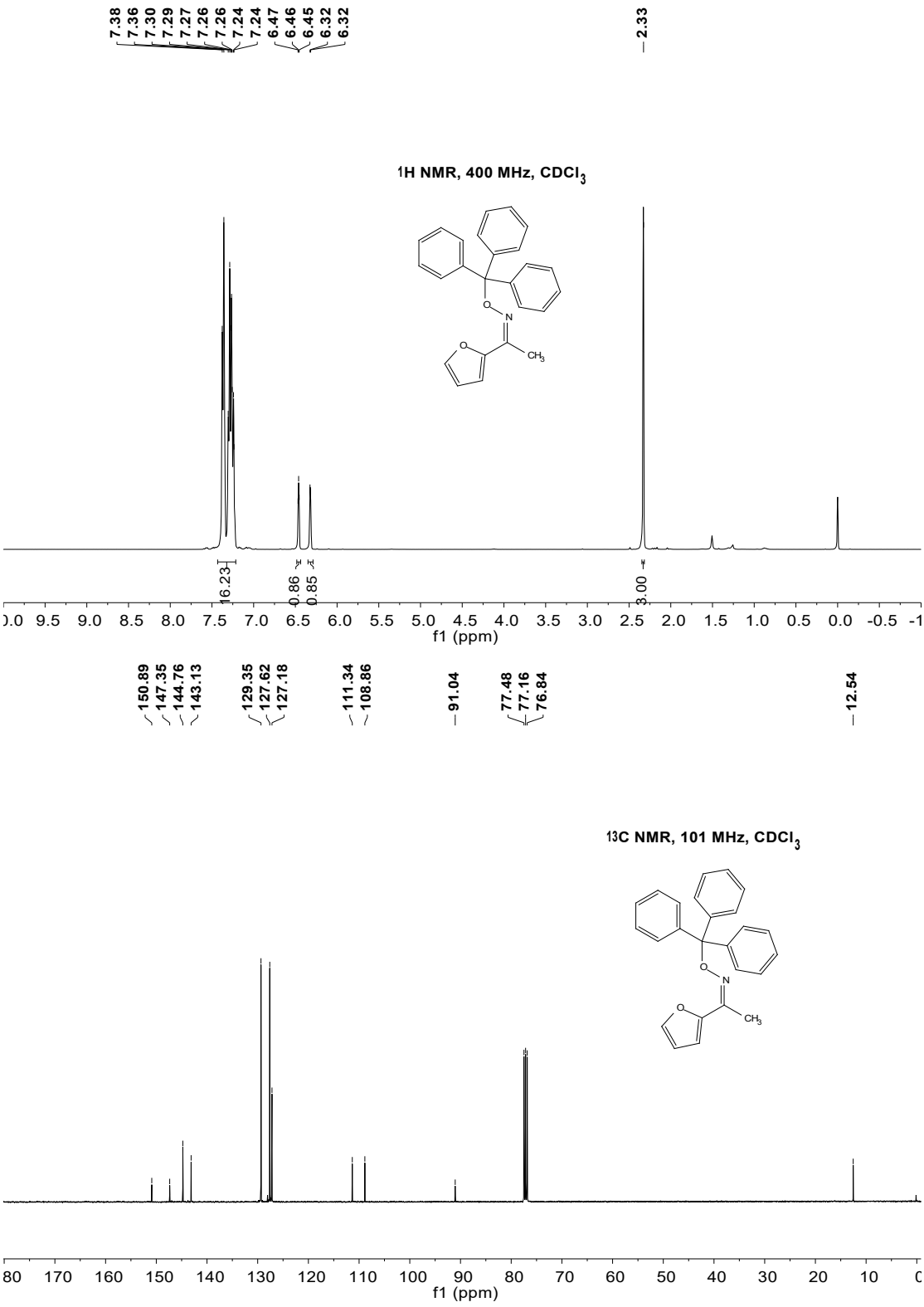


Figure S34. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ae** produced in the oxime etherification of 1-(furan-2-yl)ethan-1-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}·xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

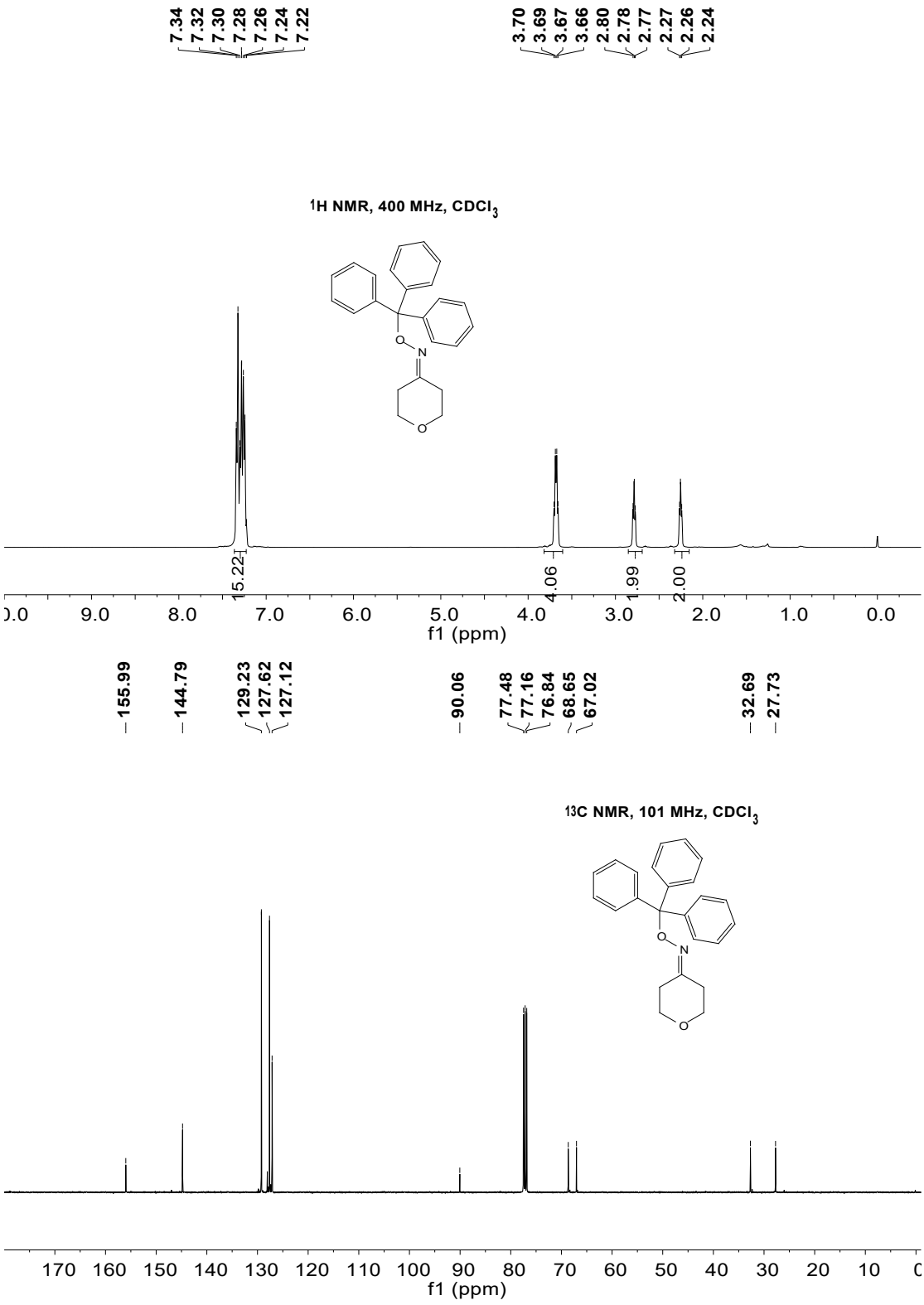


Figure S35. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3af** produced in the oxime etherification of tetrahydro-4H-pyran-4-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at 80 °C for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

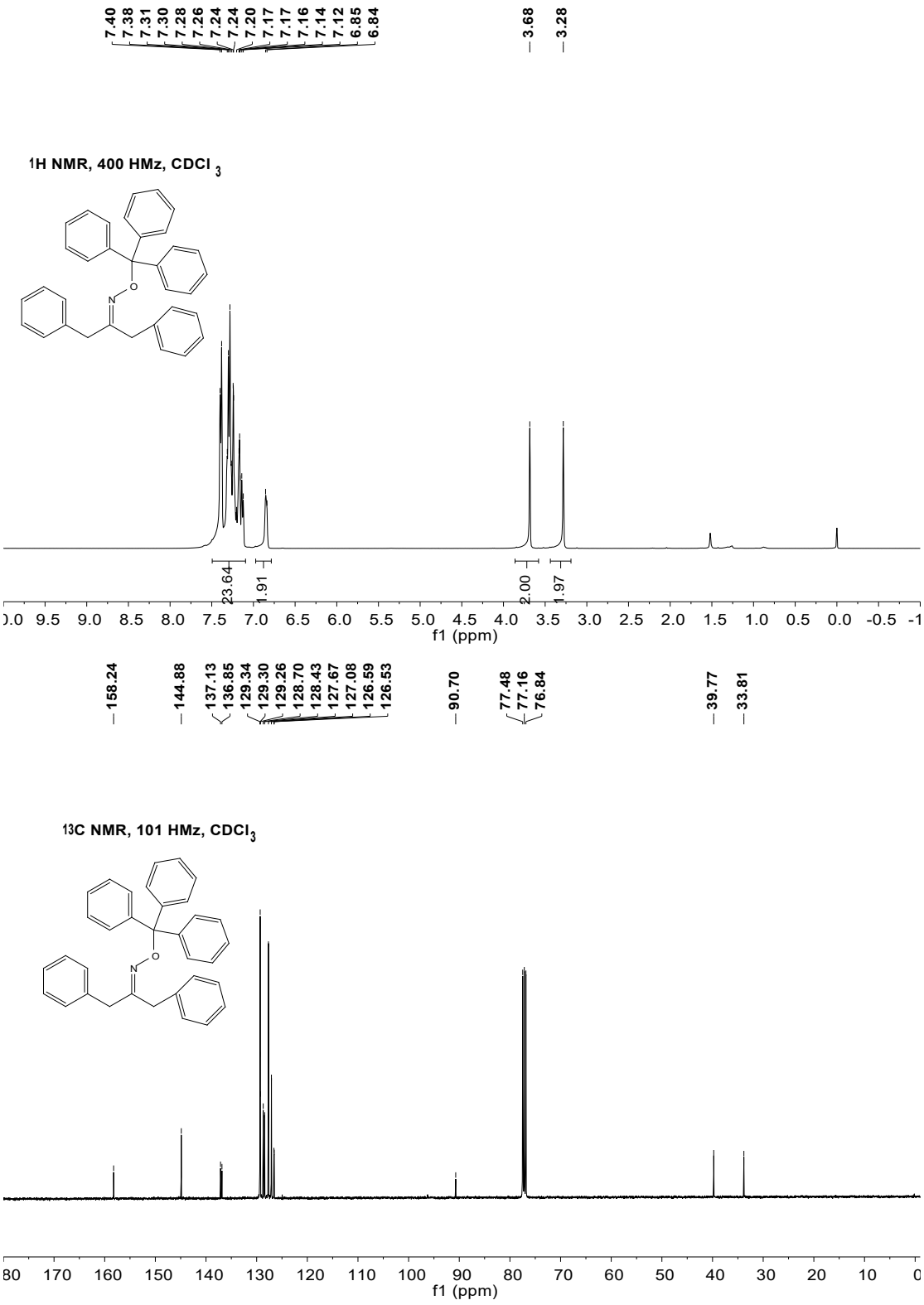


Figure S36. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ag** produced in the oxime etherification of 1,3-diphenylpropan-2-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

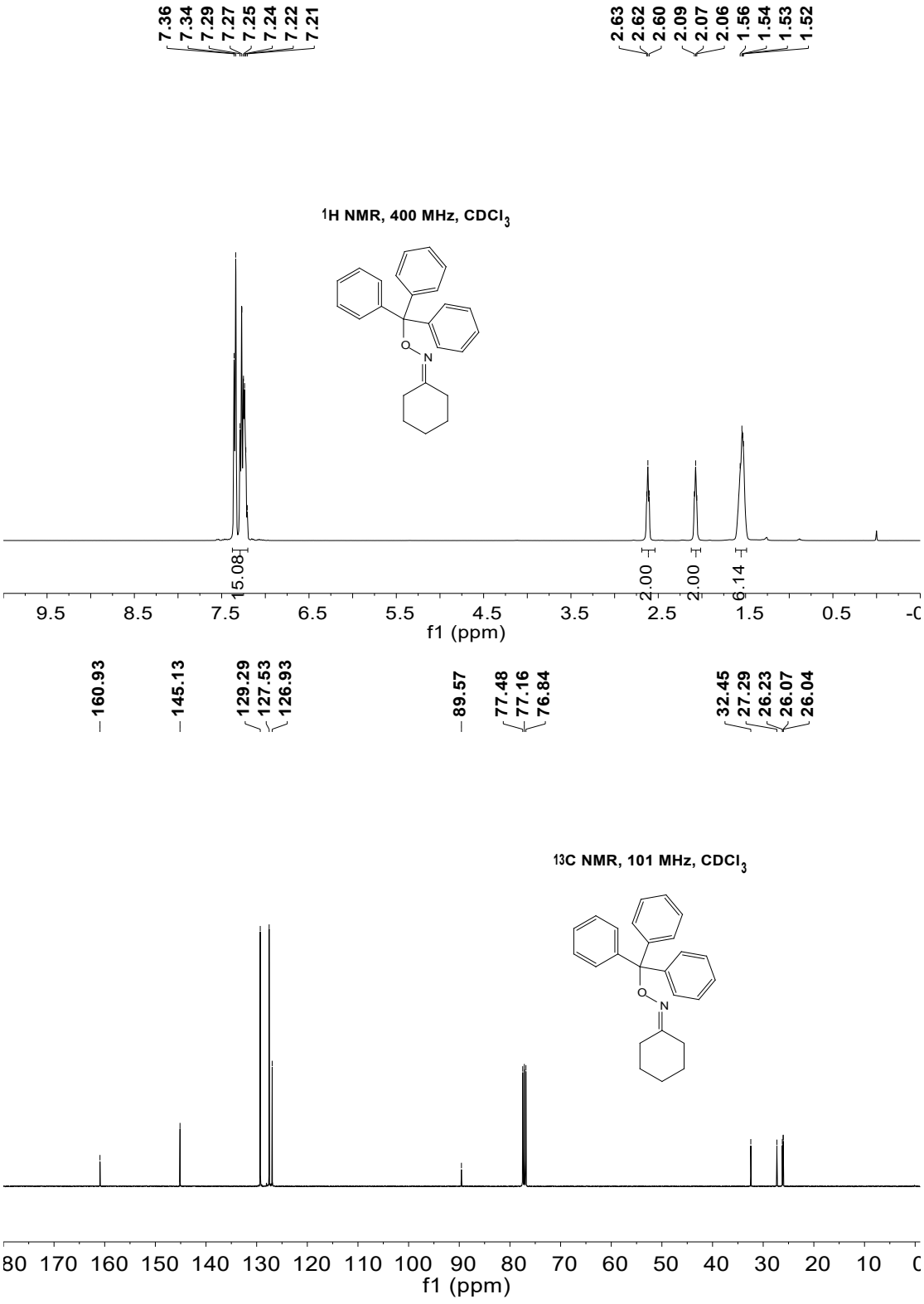


Figure S37. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ah** produced in the oxime etherification of cyclohexanone oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 80 °C for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

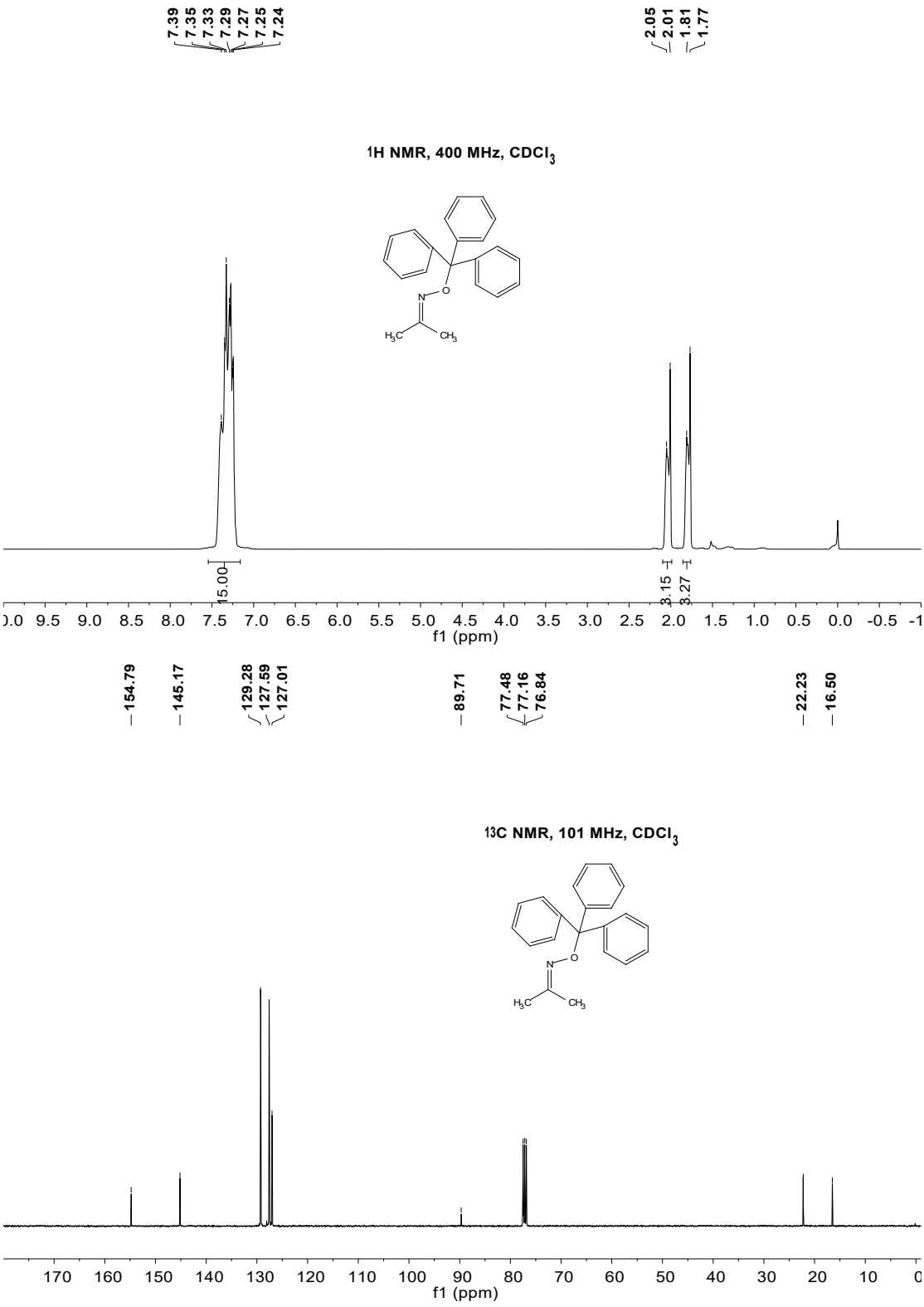


Figure S38. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ai** produced in the oxime etherification of propan-2-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 80 °C for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

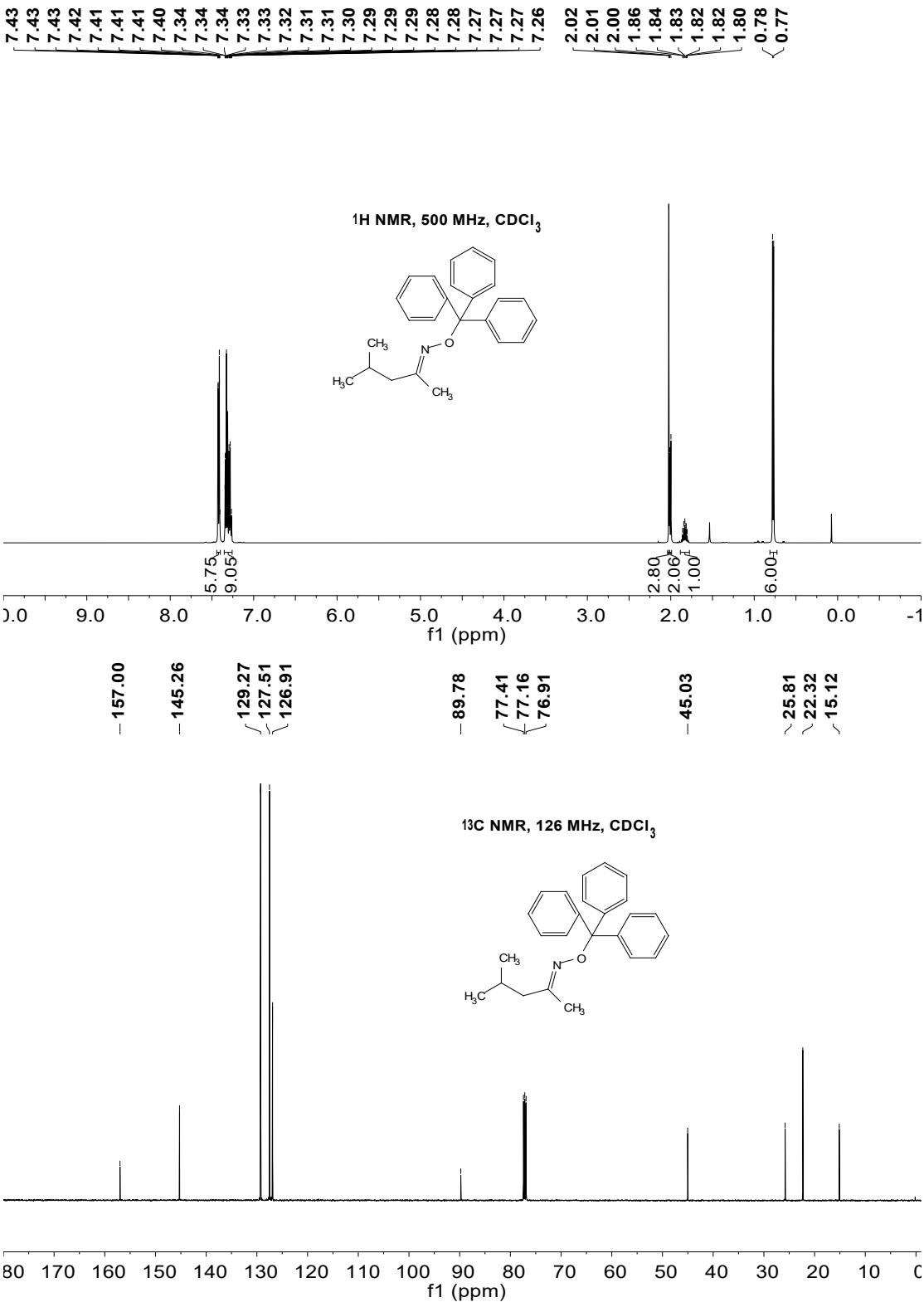


Figure S39. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3aj** produced in the oxime etherification of 4-methylpentan-2-one oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

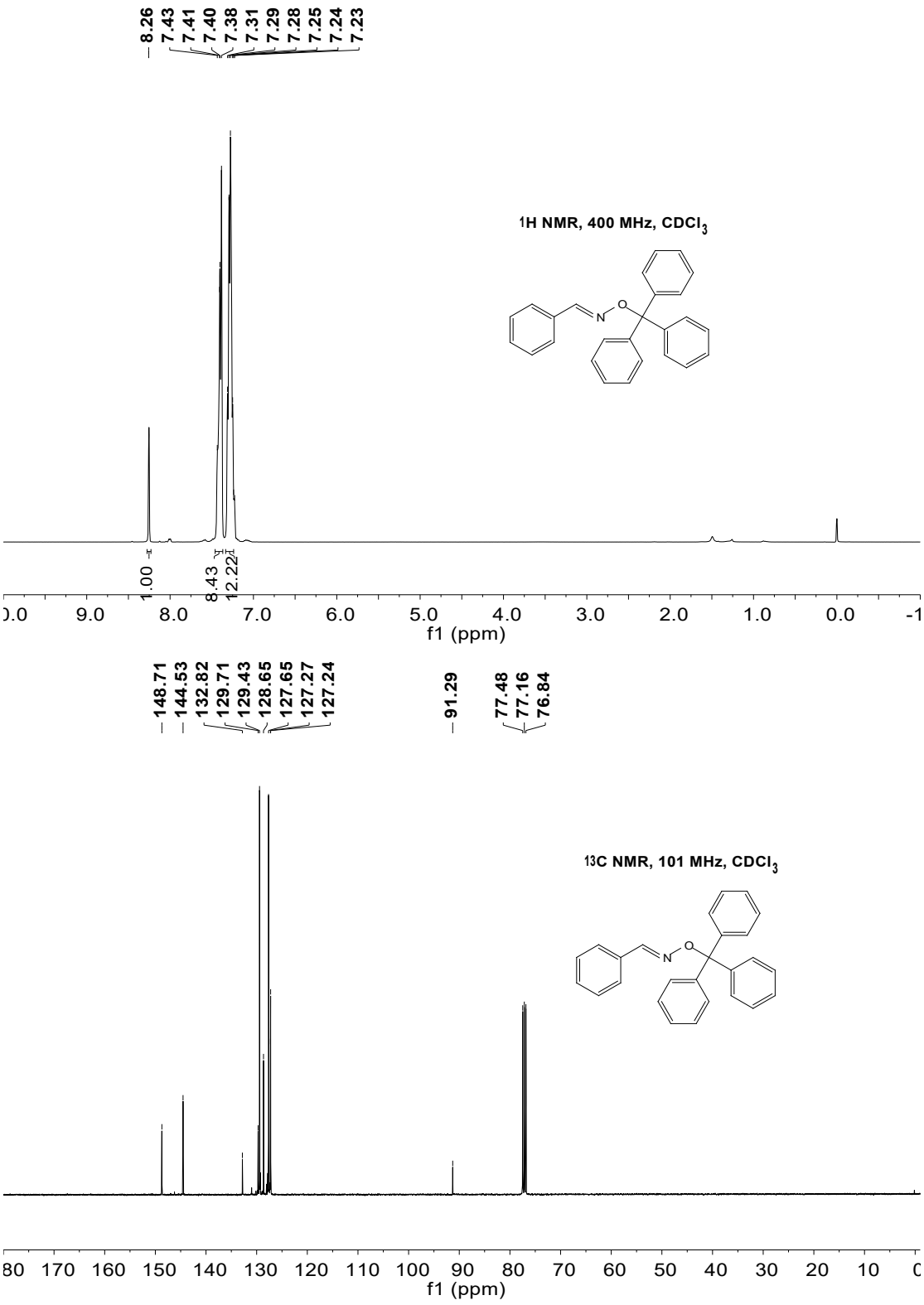


Figure S40. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ak** produced in the oxime etherification of benzaldehyde oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}·xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

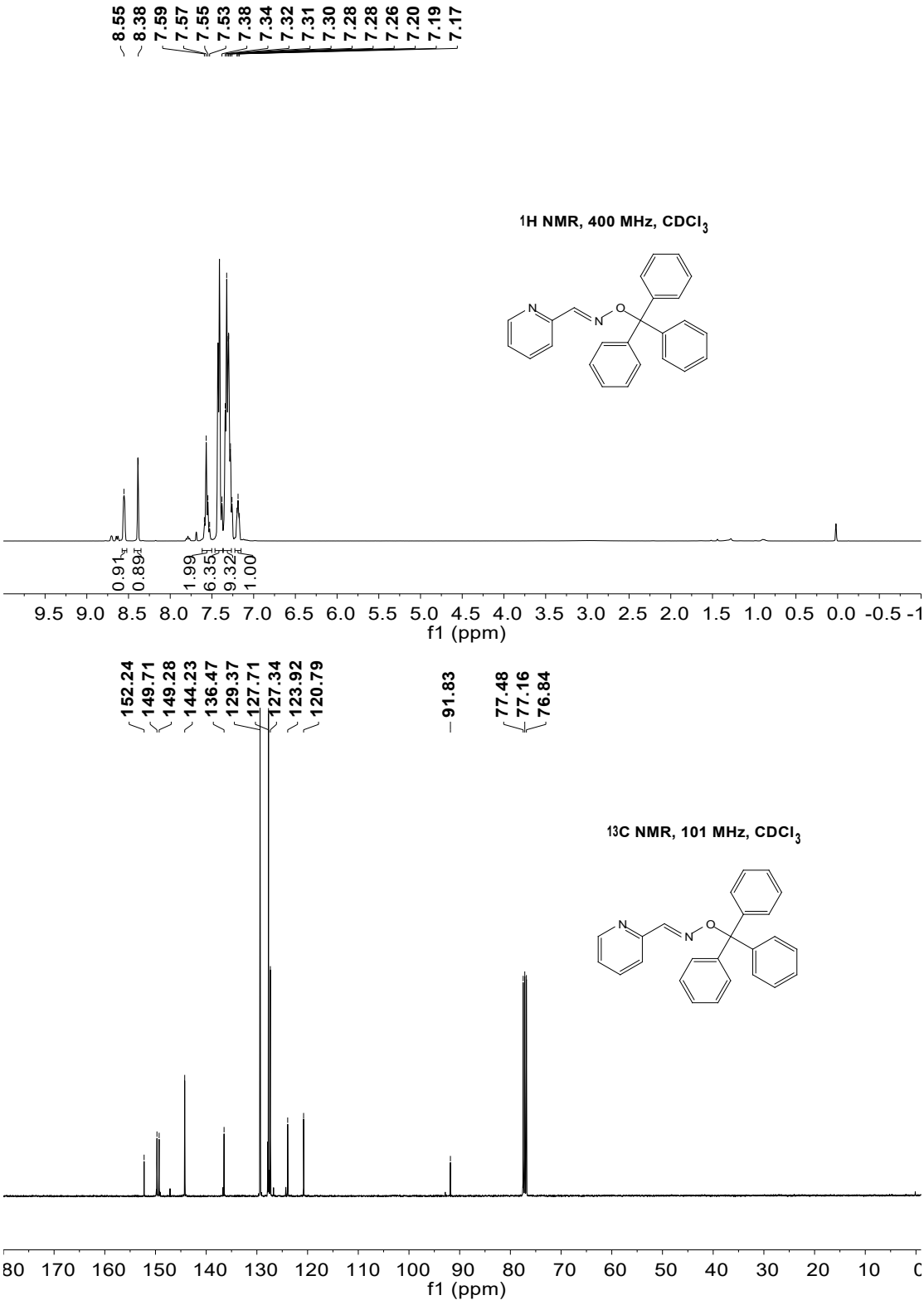


Figure S41. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3al** produced in the oxime etherification of picolinaldehyde oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

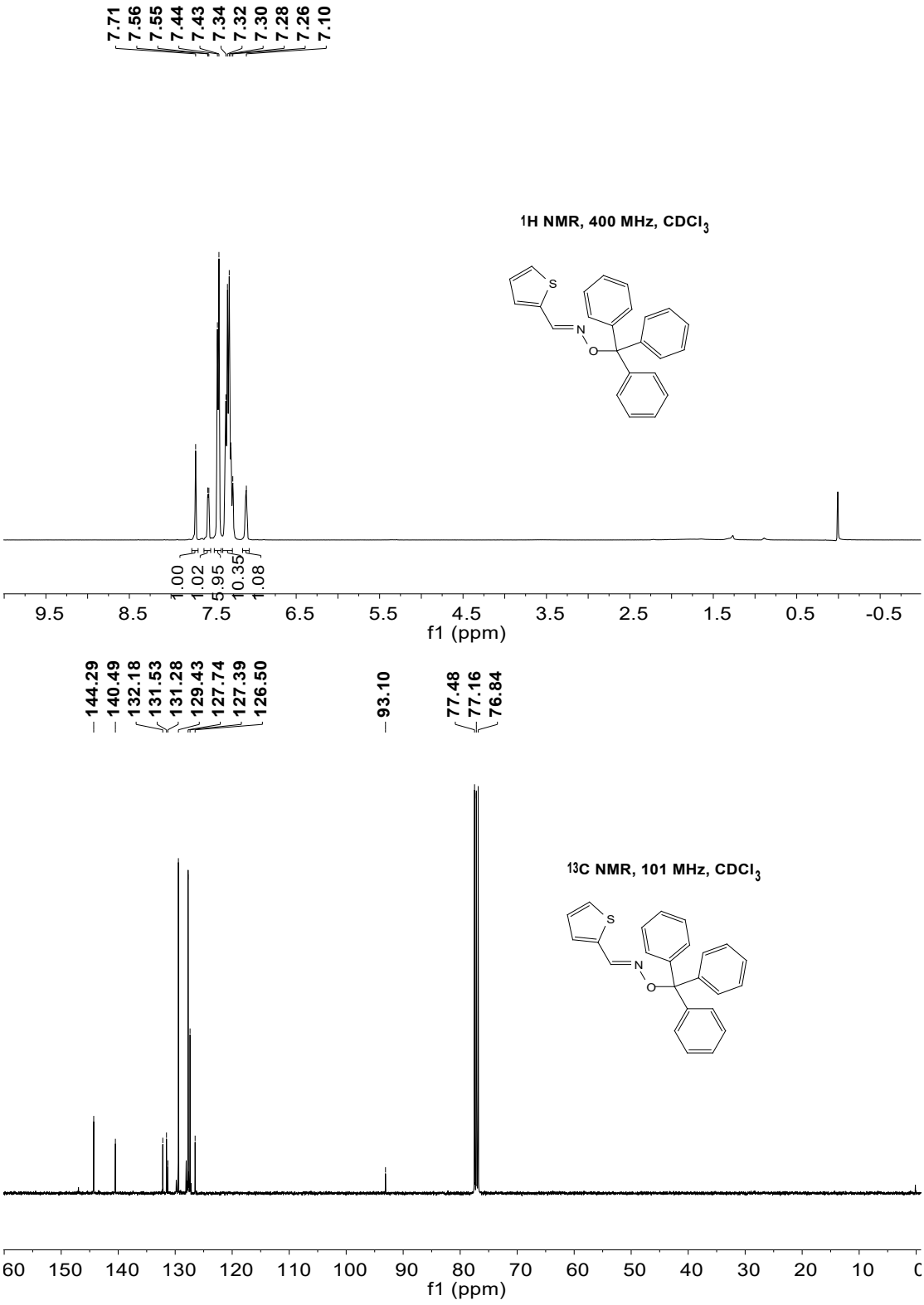


Figure S42. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3am** produced in the oxime etherification of thiophene-2-carbaldehyde oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

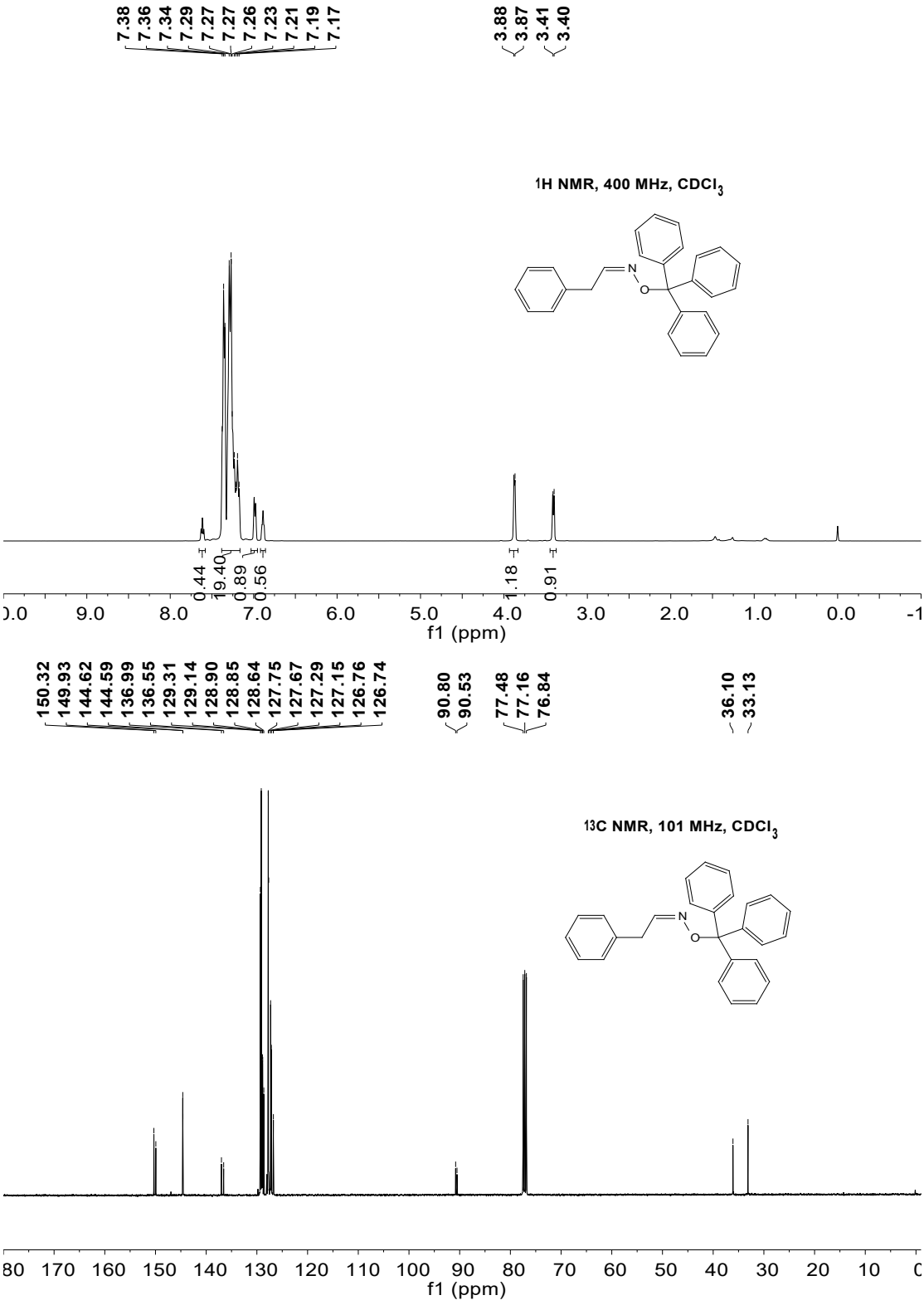


Figure S43. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3an** produced in the oxime etherification of 2-phenylacetaldehyde oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

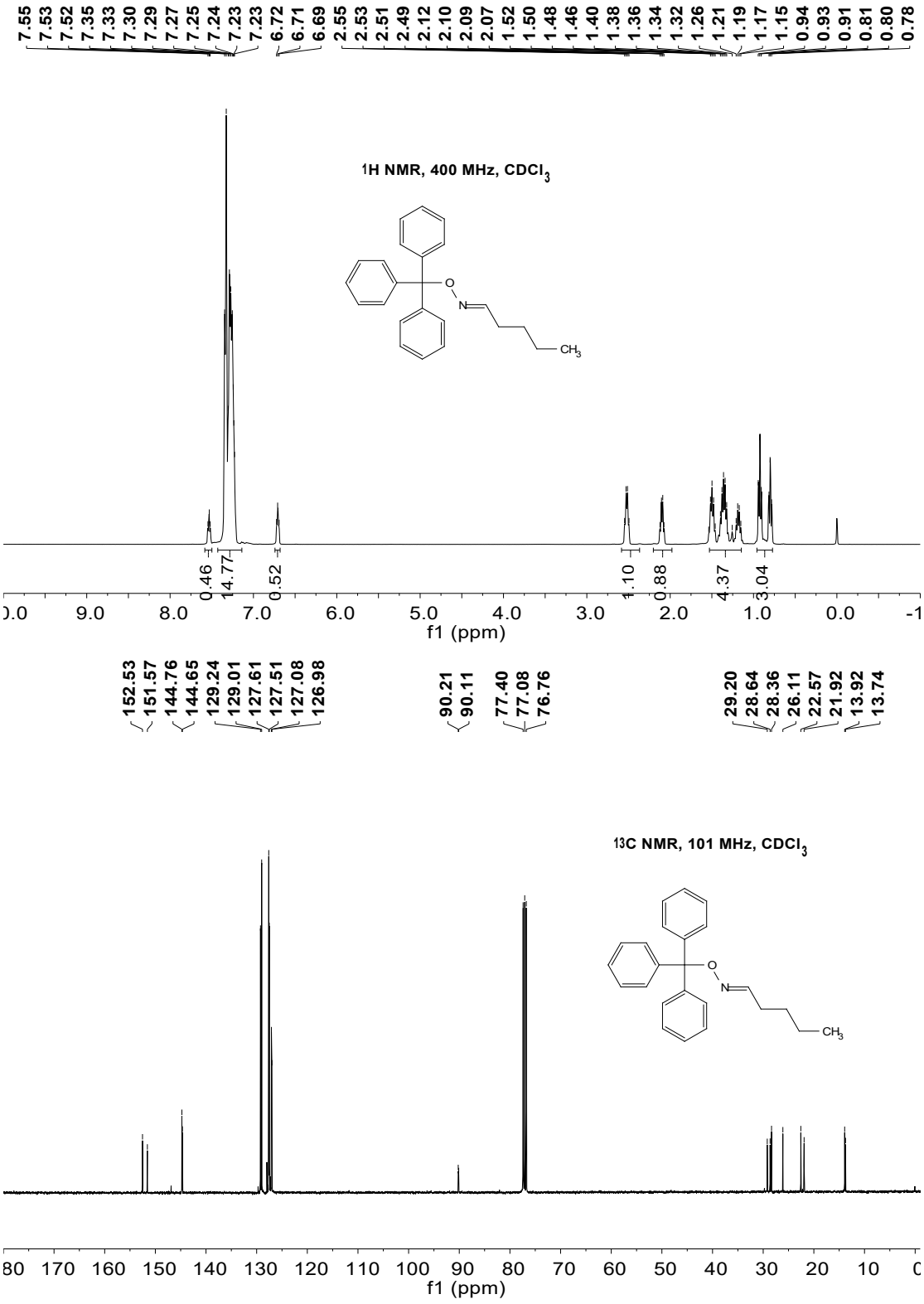


Figure S44. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ao** produced in the oxime etherification of hexanal oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

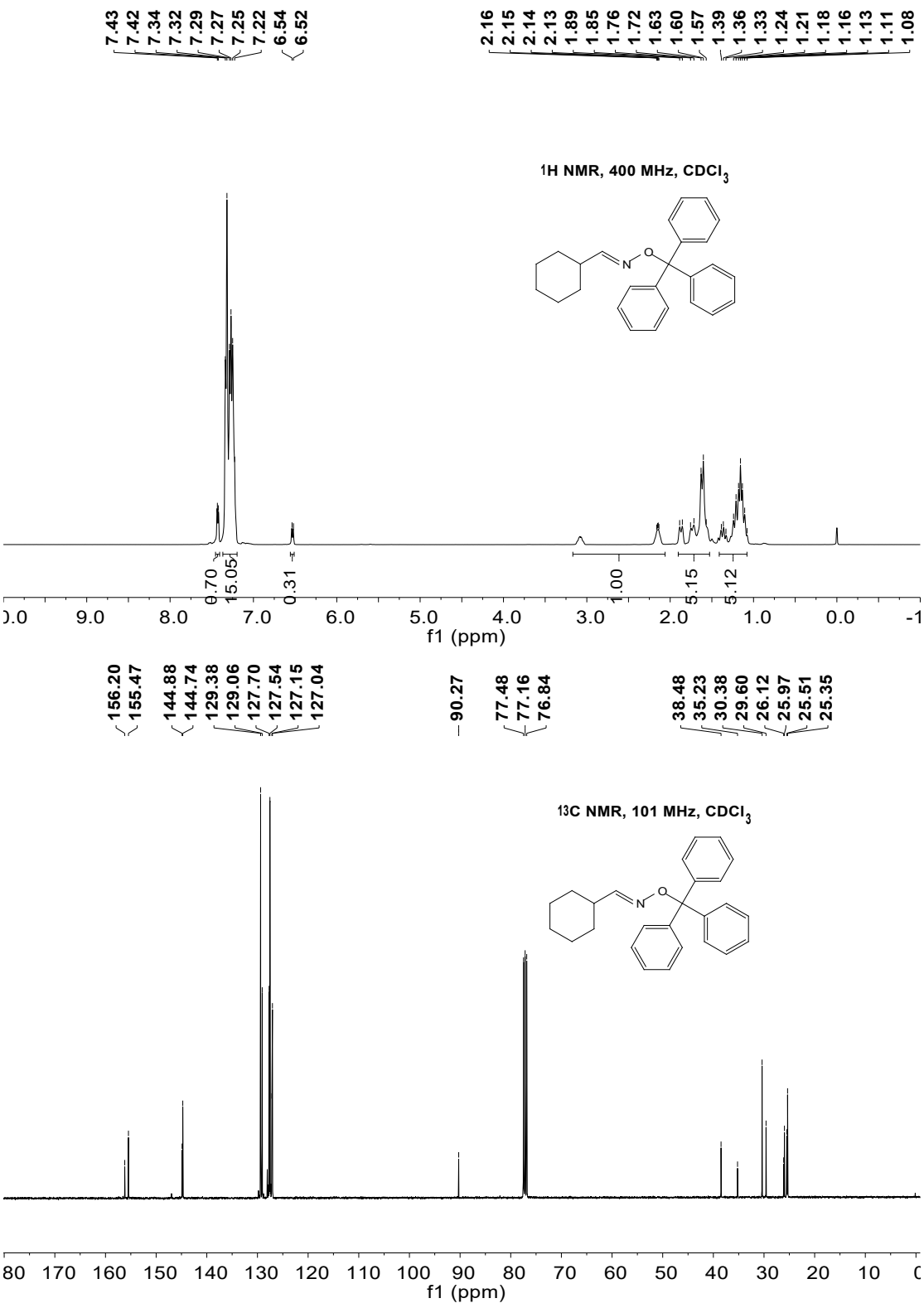


Figure S45. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3ap** produced in the oxime etherification of cyclohexanecarbaldehyde oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

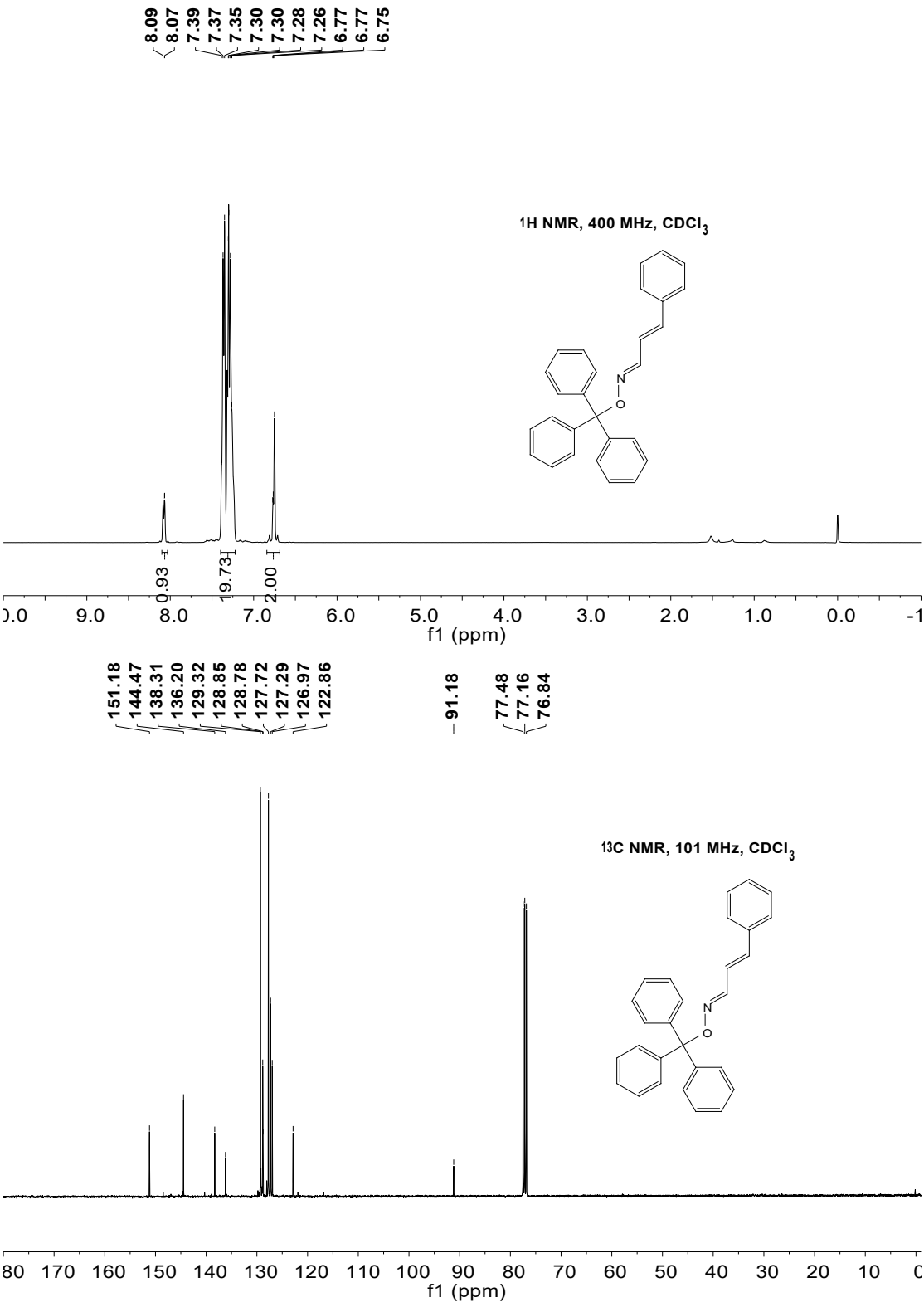


Figure S46. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **3aq** produced in the oxime etherification of cinnamaldehyde oxime (0.3 mmol) and triphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}·xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

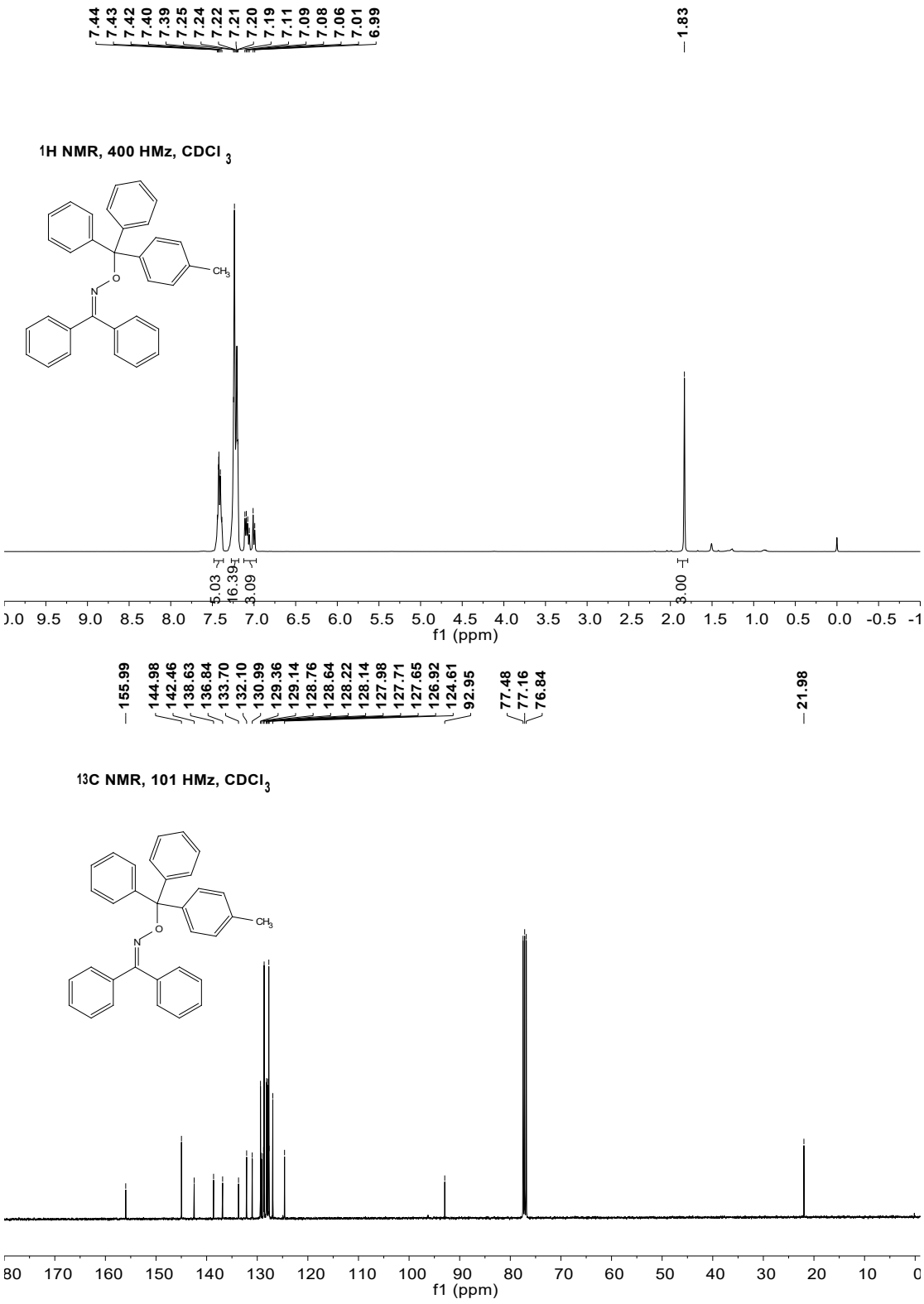


Figure S47. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4a** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and diphenyl(*p*-tolyl)methanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C..

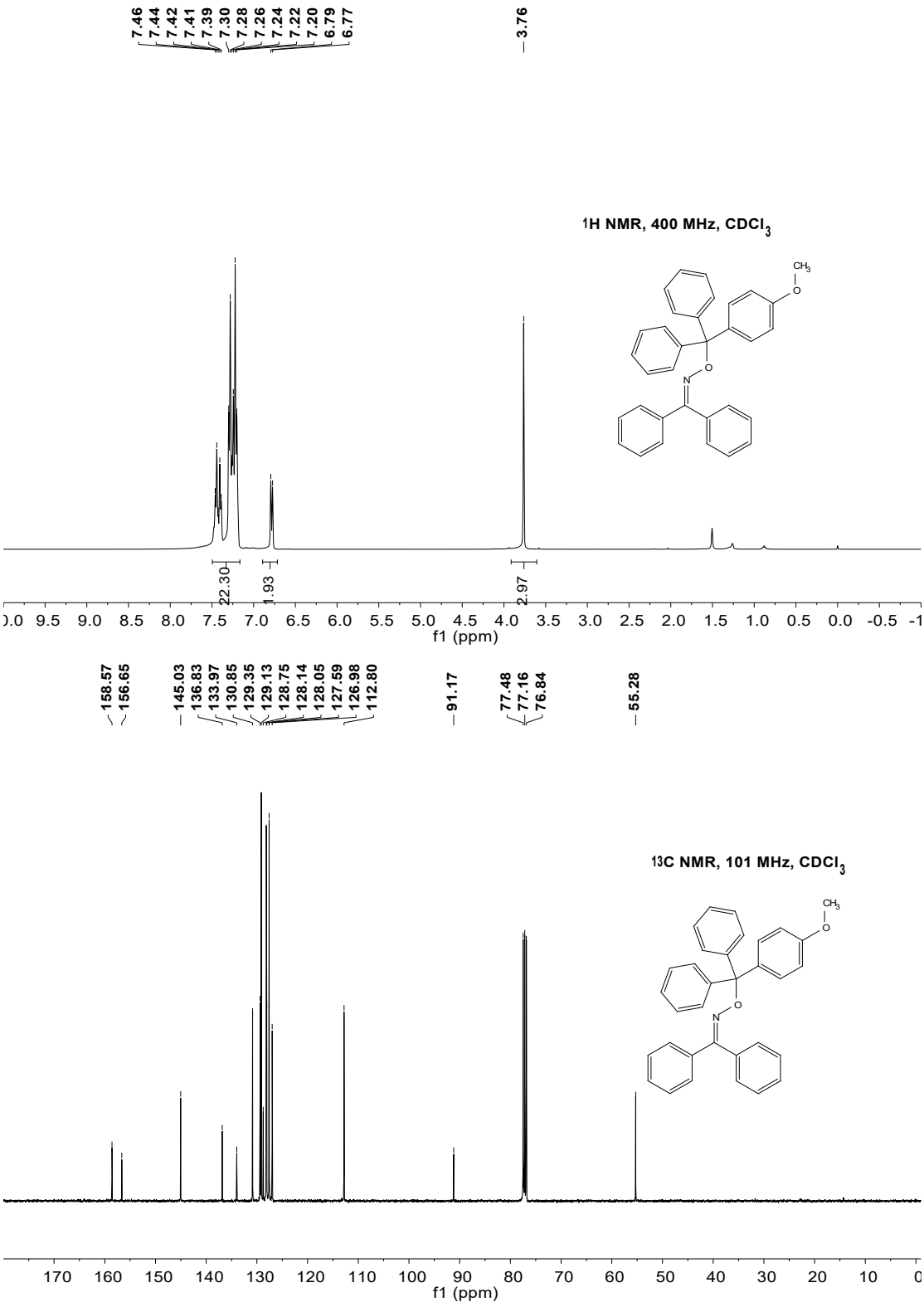


Figure S48. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4b** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and (4-methoxyphenyl)diphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

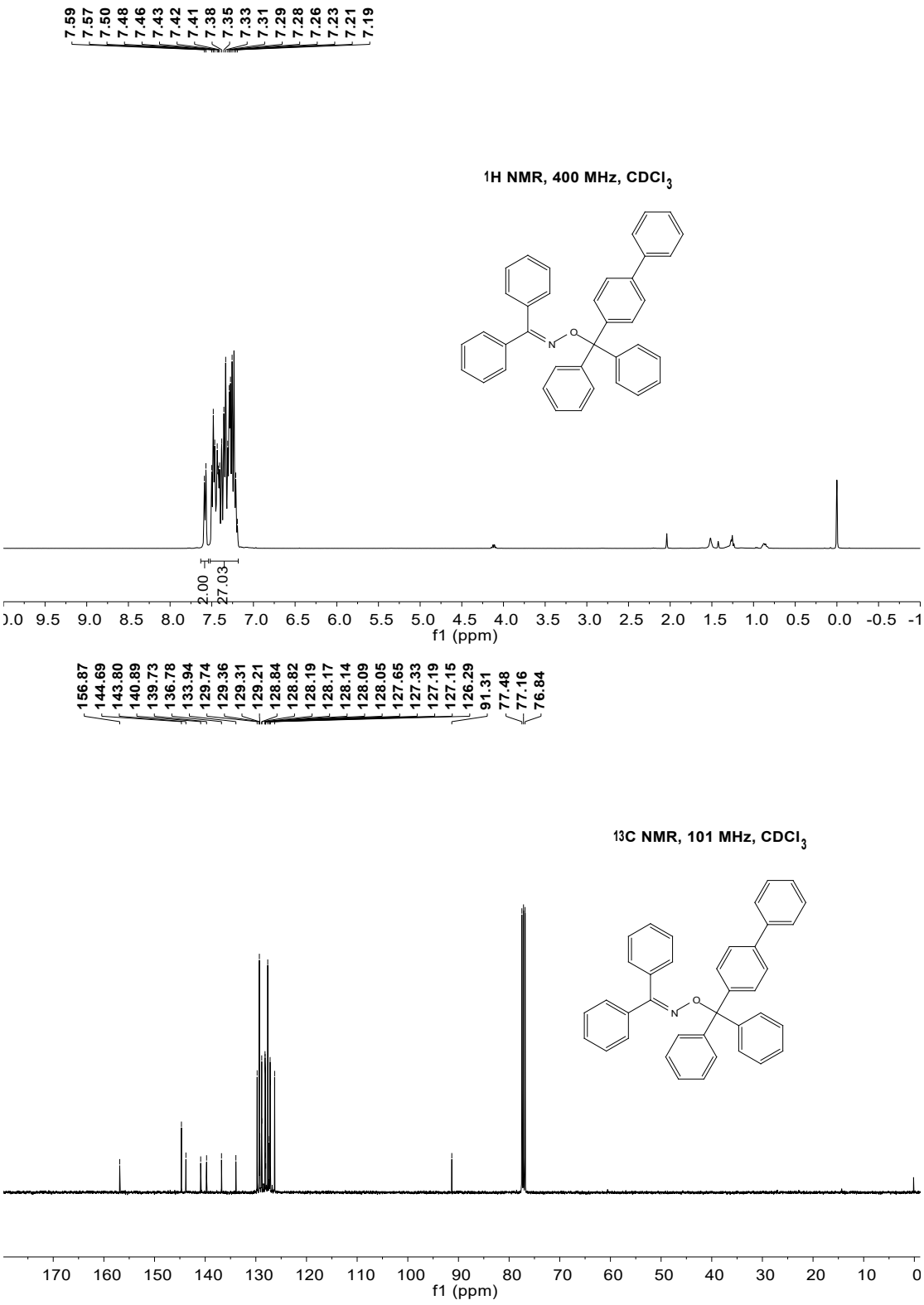


Figure S49. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4c** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and [1,1'-biphenyl]-4-yldiphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

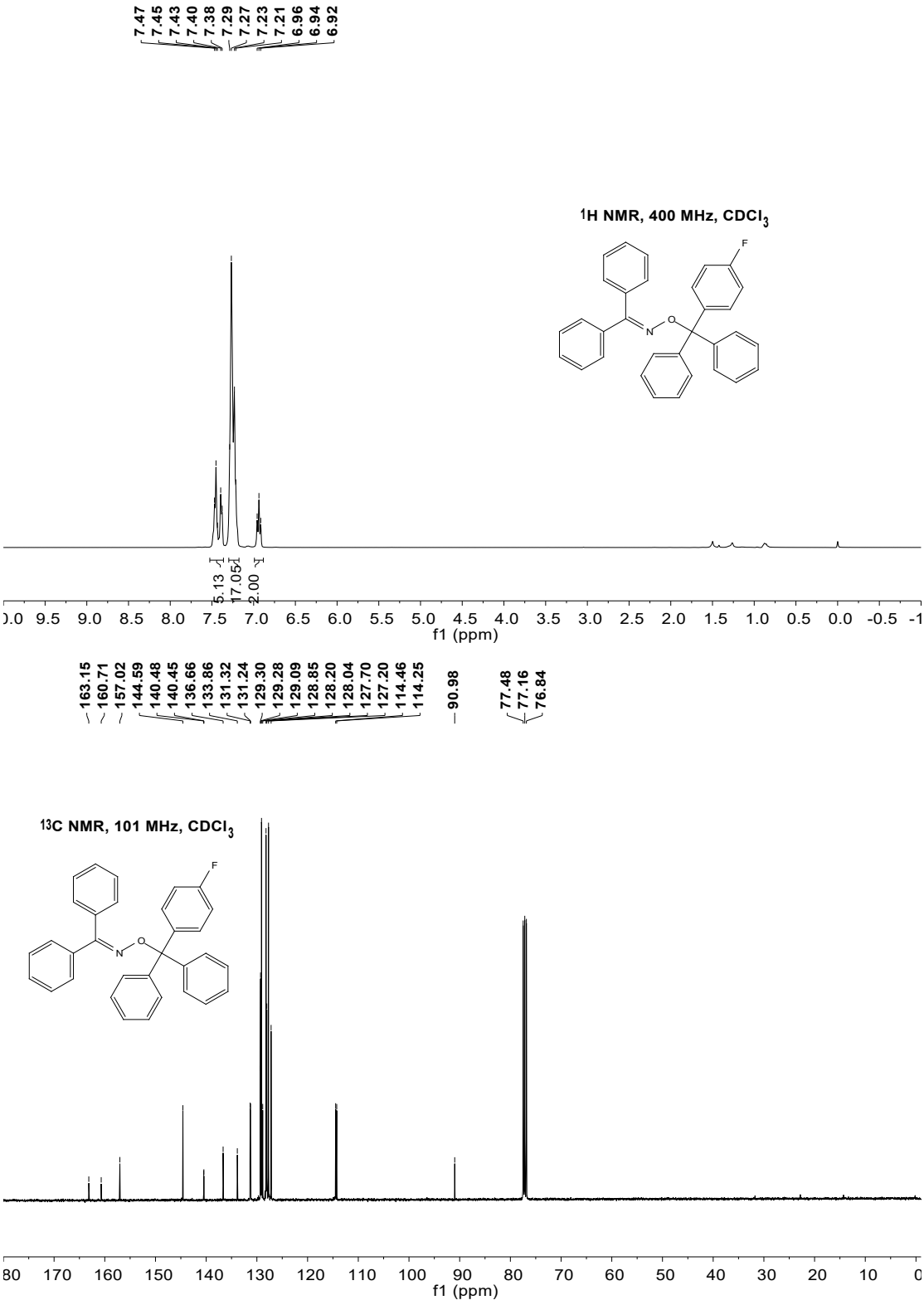


Figure S50. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4d** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and (4-fluorophenyl)diphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

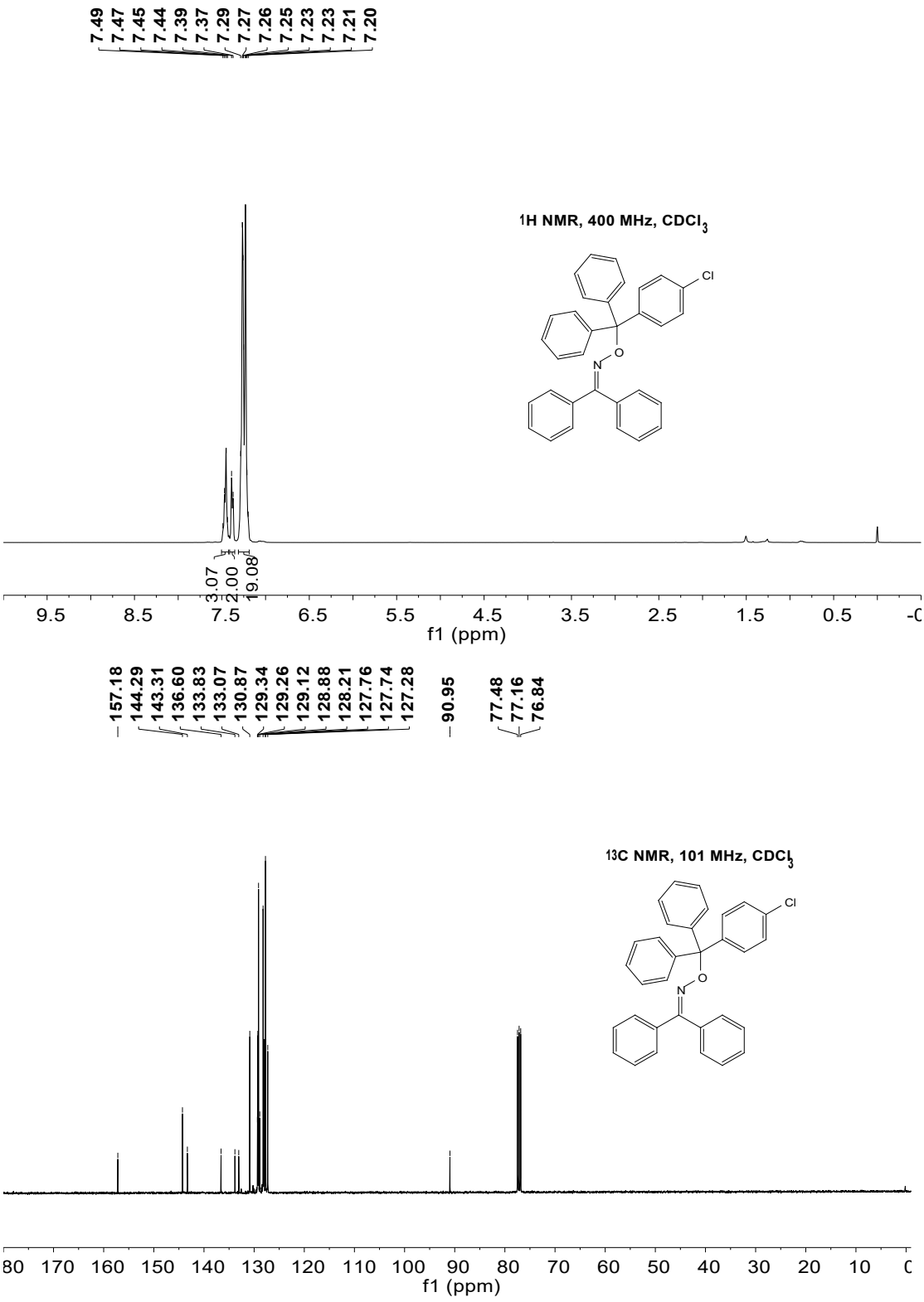


Figure S51. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4e** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and (4-chlorophenyl)diphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

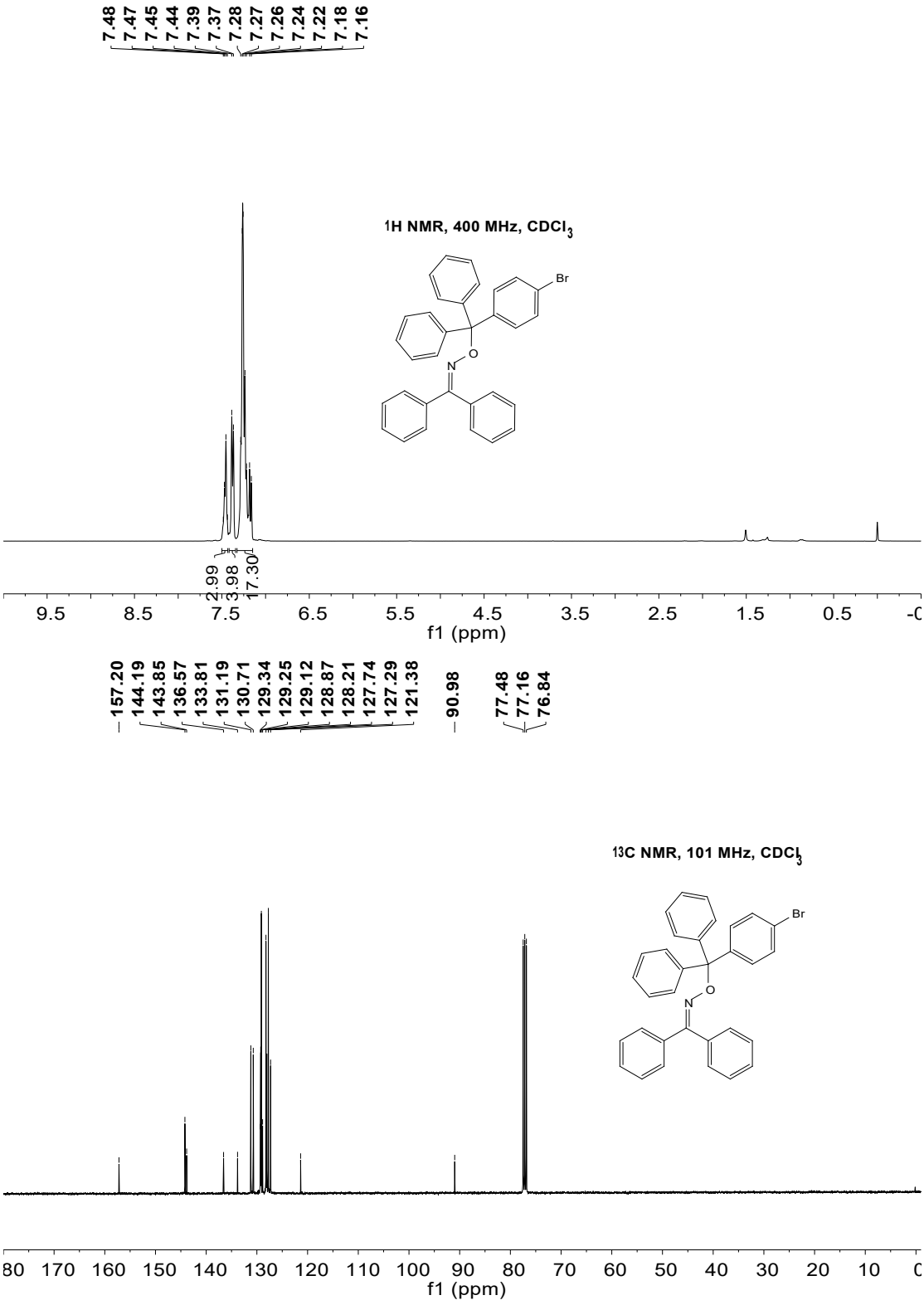


Figure S52. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4f** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and (4-bromophenyl)diphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

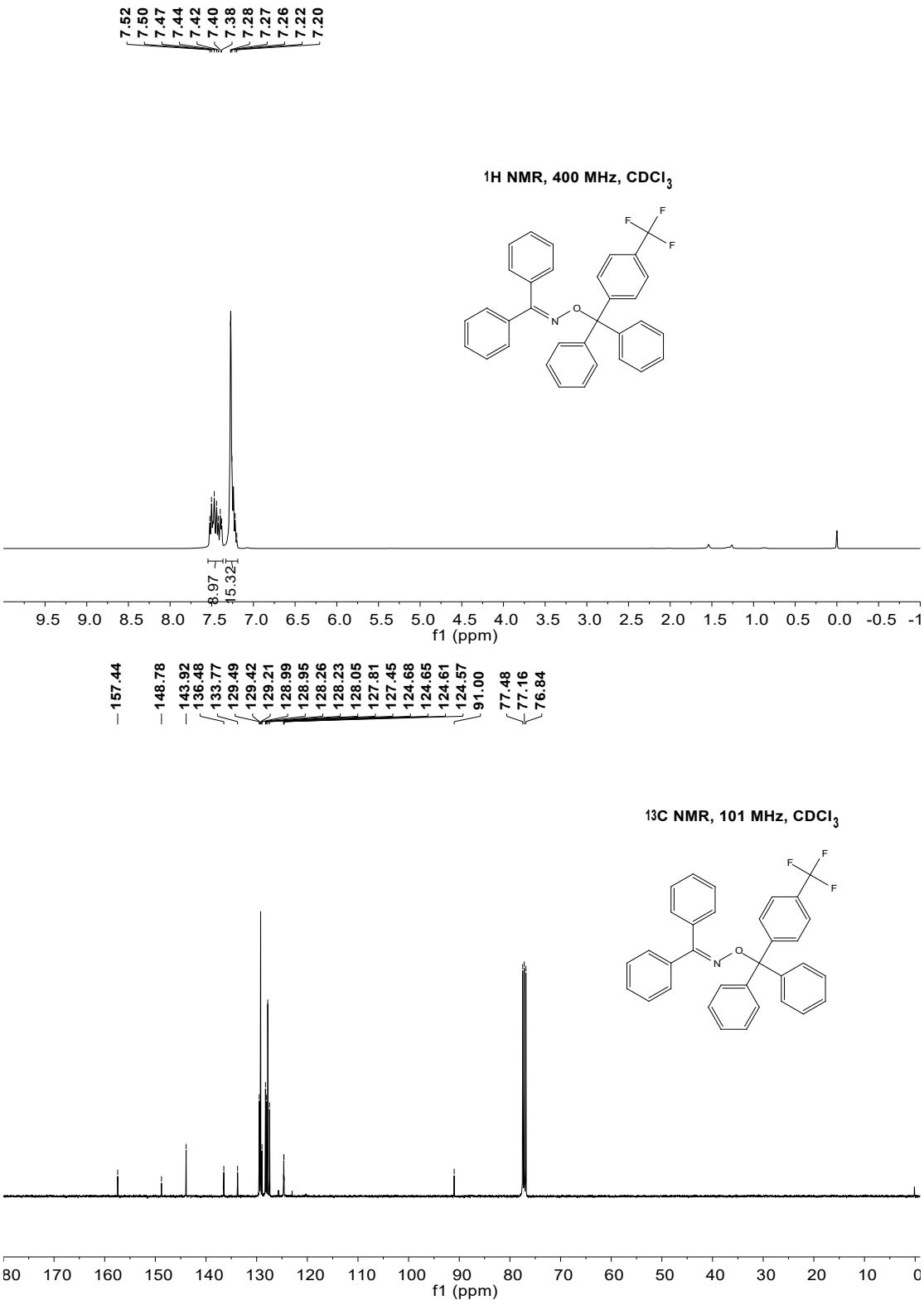


Figure S53. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4g** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and diphenyl(4-(trifluoromethyl)phenyl)methanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

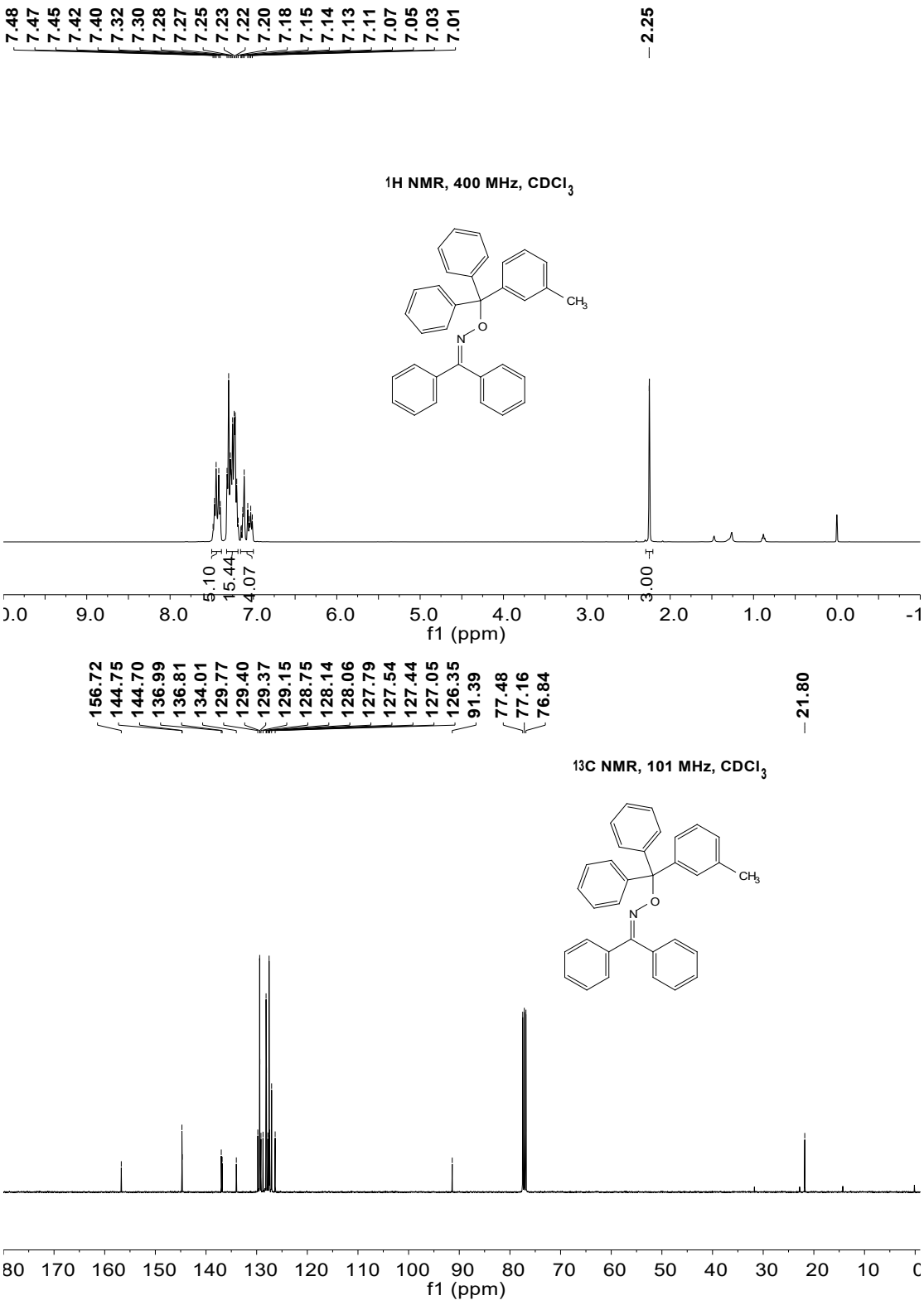


Figure S54. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4h** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and diphenyl(*m*-tolyl)methanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

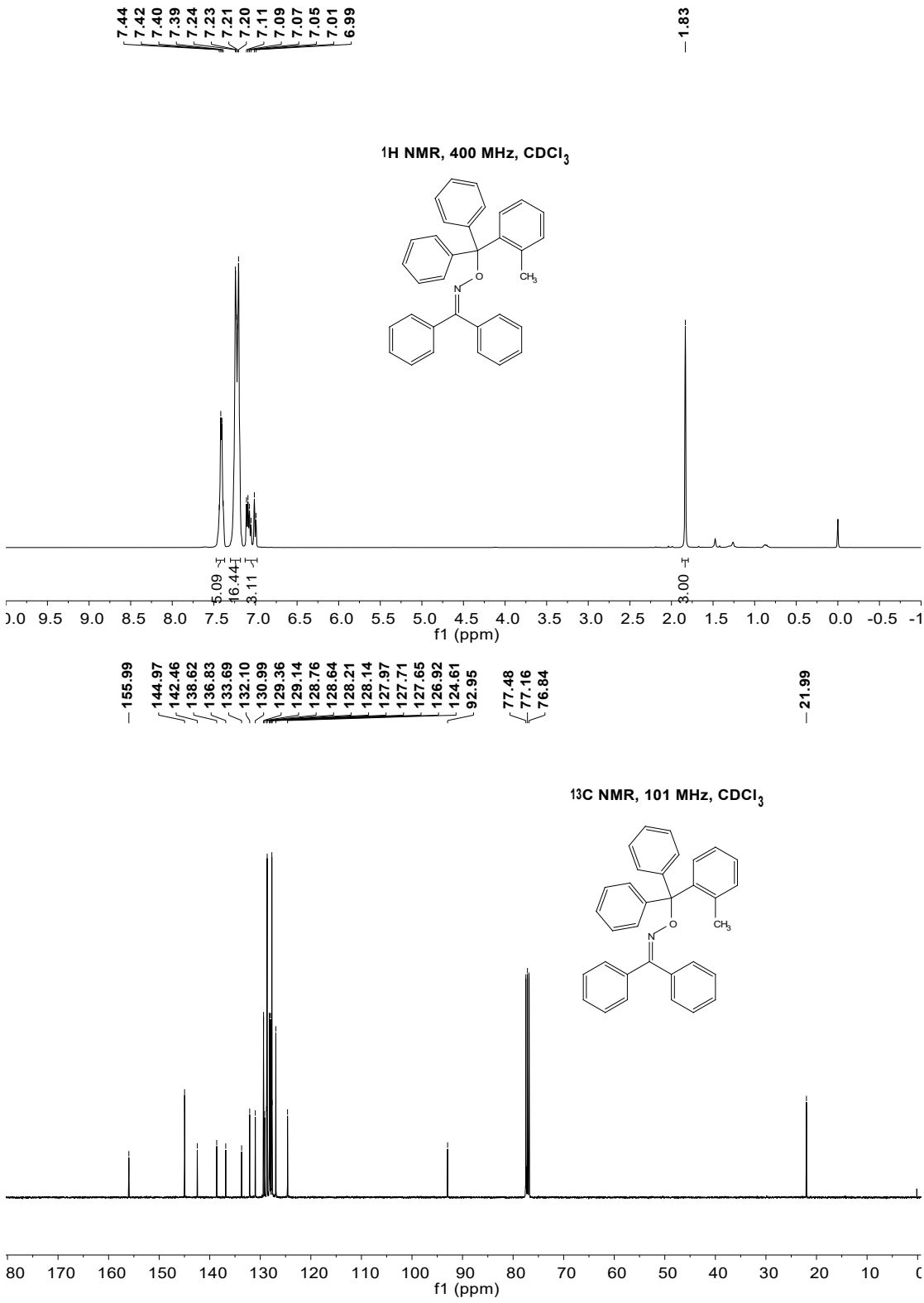


Figure S55. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4i** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and diphenyl(*o*-tolyl)methanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

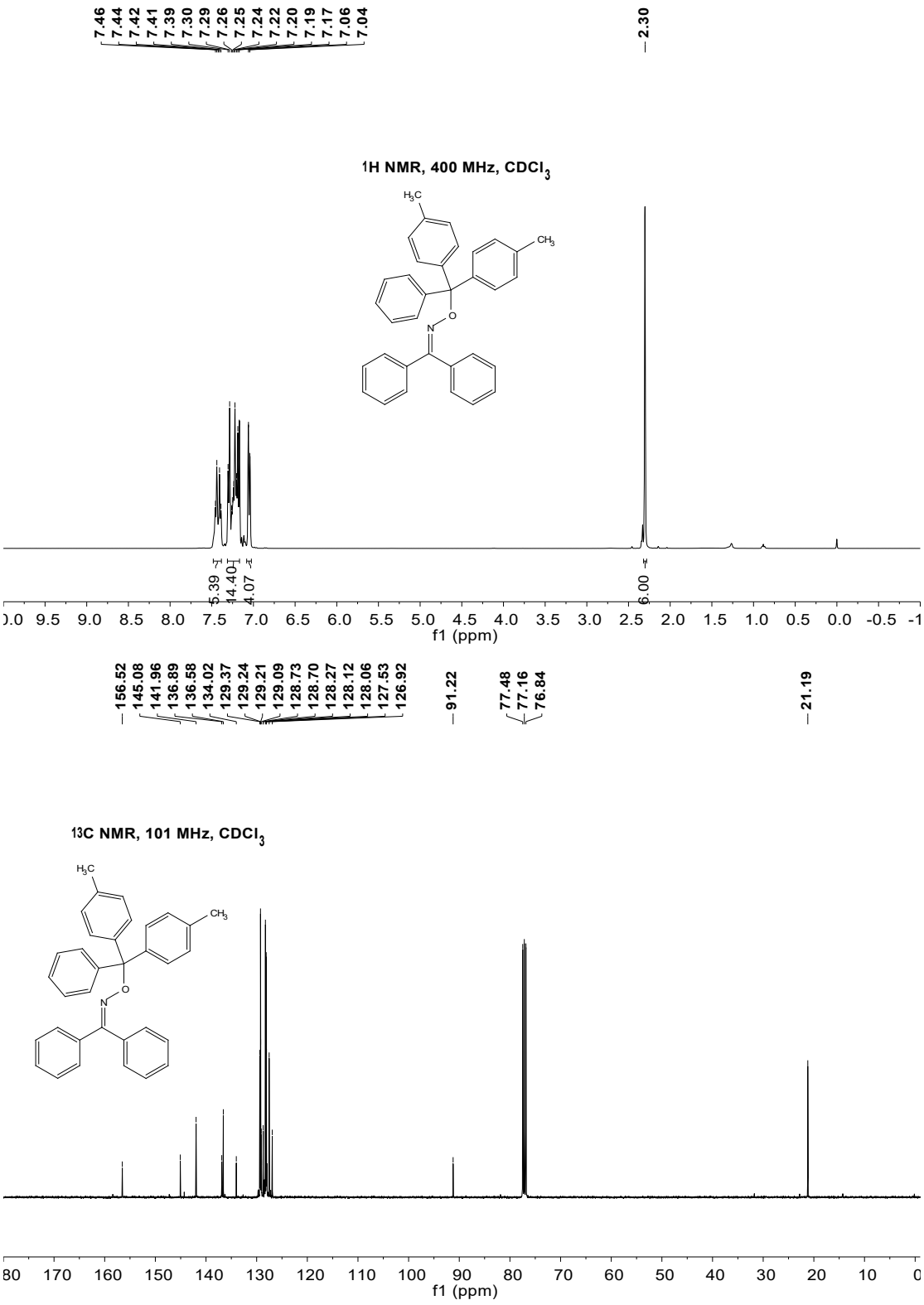


Figure S56. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4j** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and phenyldi-p-tolylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

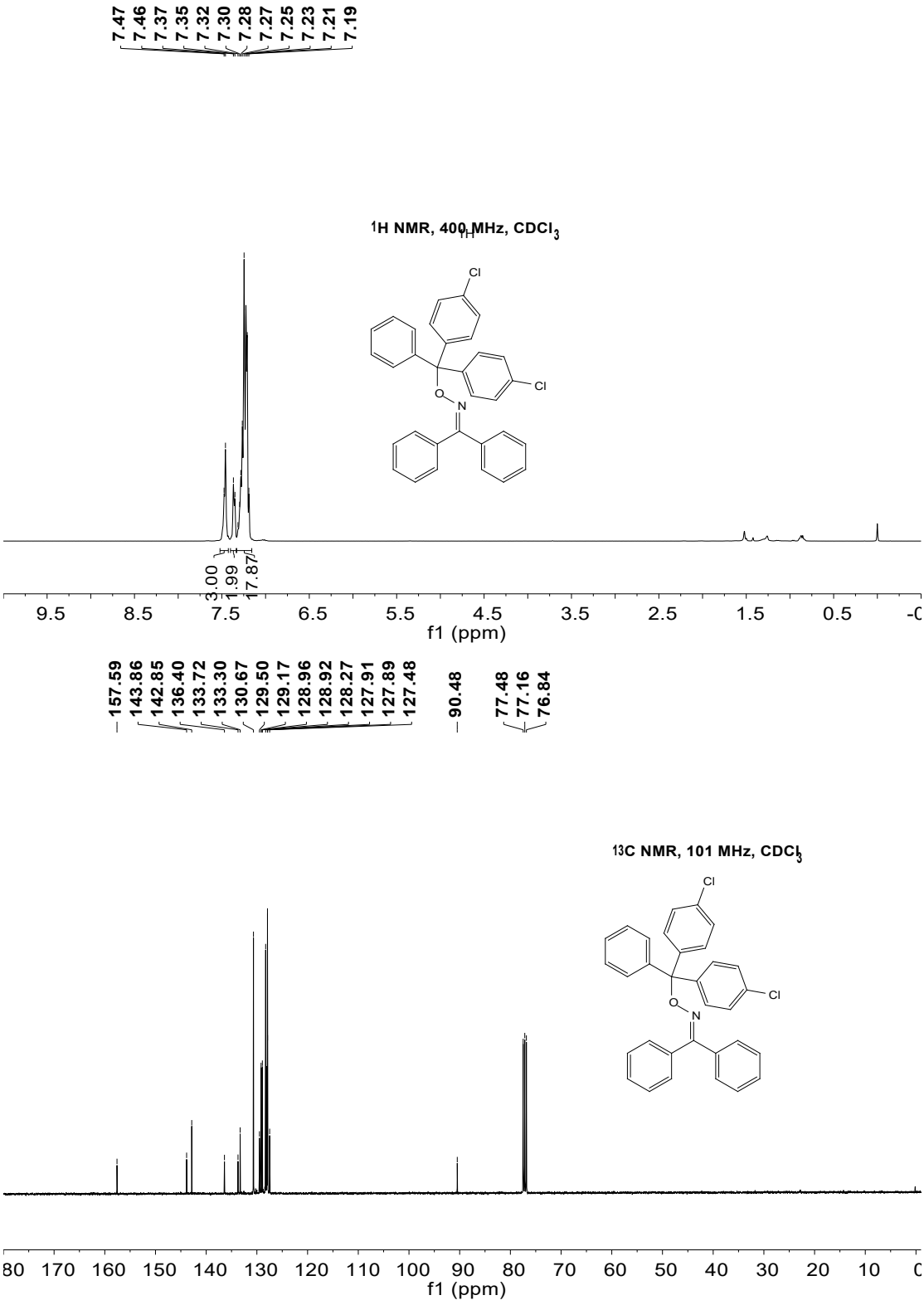


Figure S57. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4k** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and bis(4-chlorophenyl)(phenyl)methanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

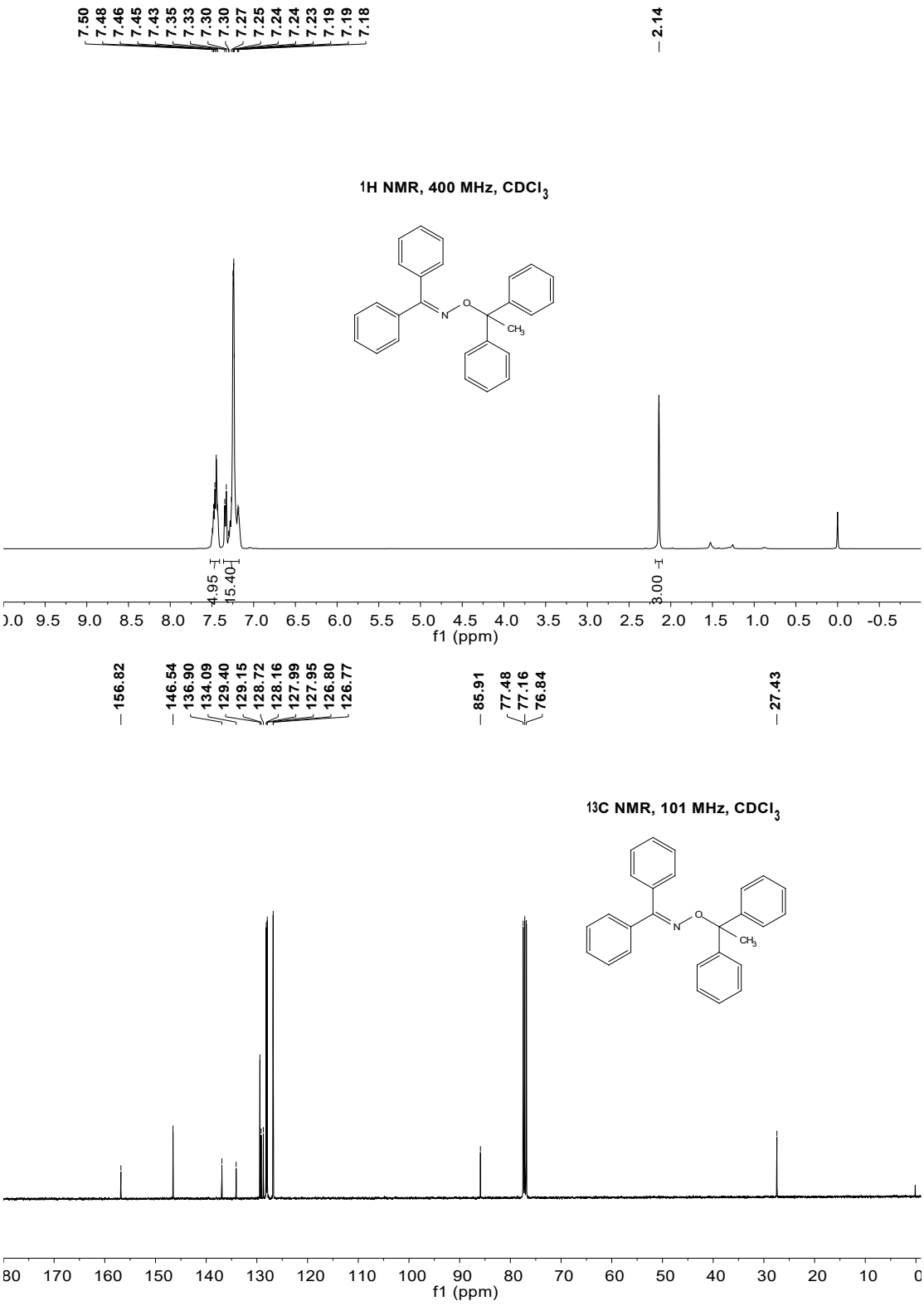


Figure S58. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4l** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and 1,1-diphenylethan-1-ol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

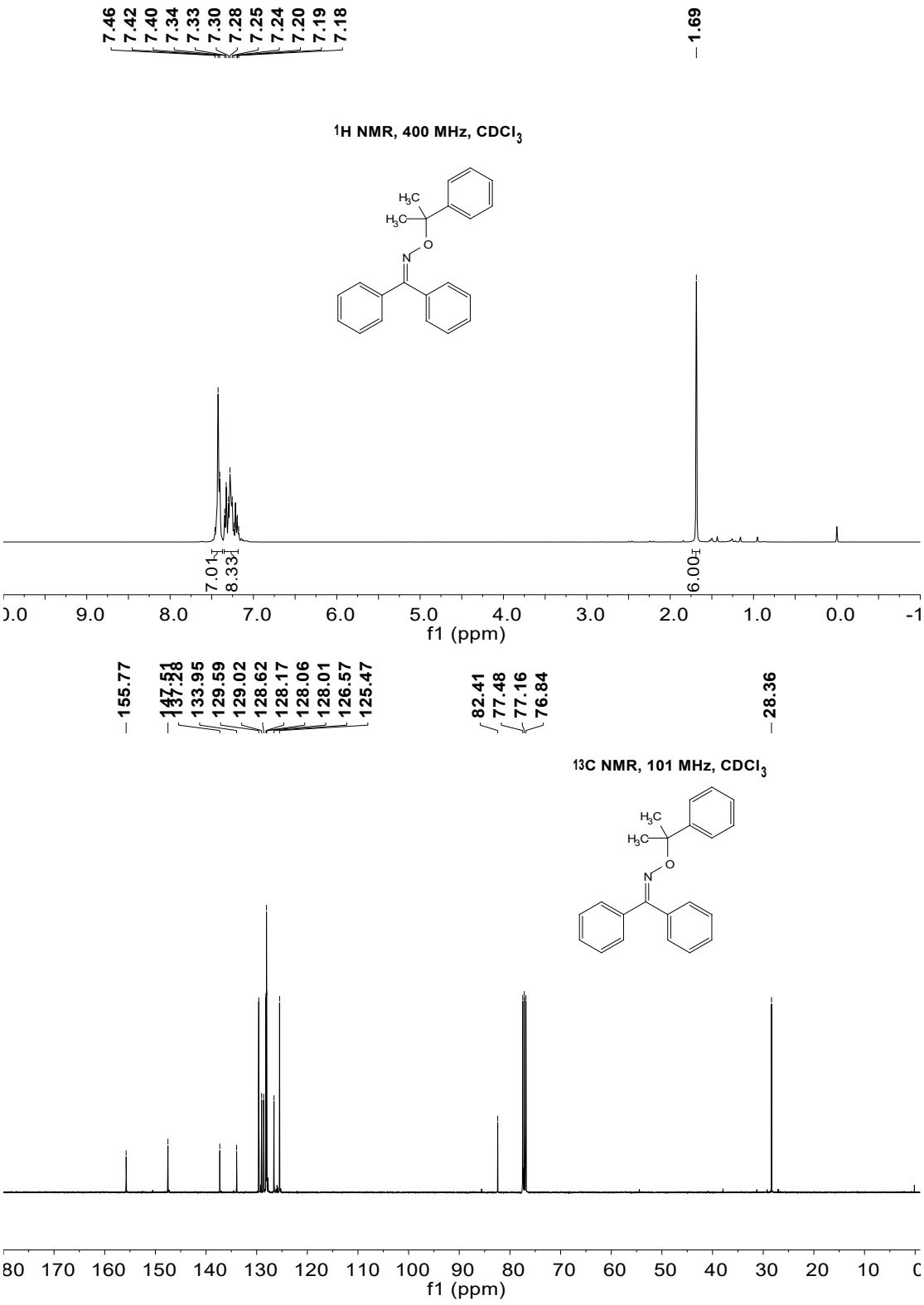


Figure S59. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4m** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and 2-phenylpropan-2-ol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

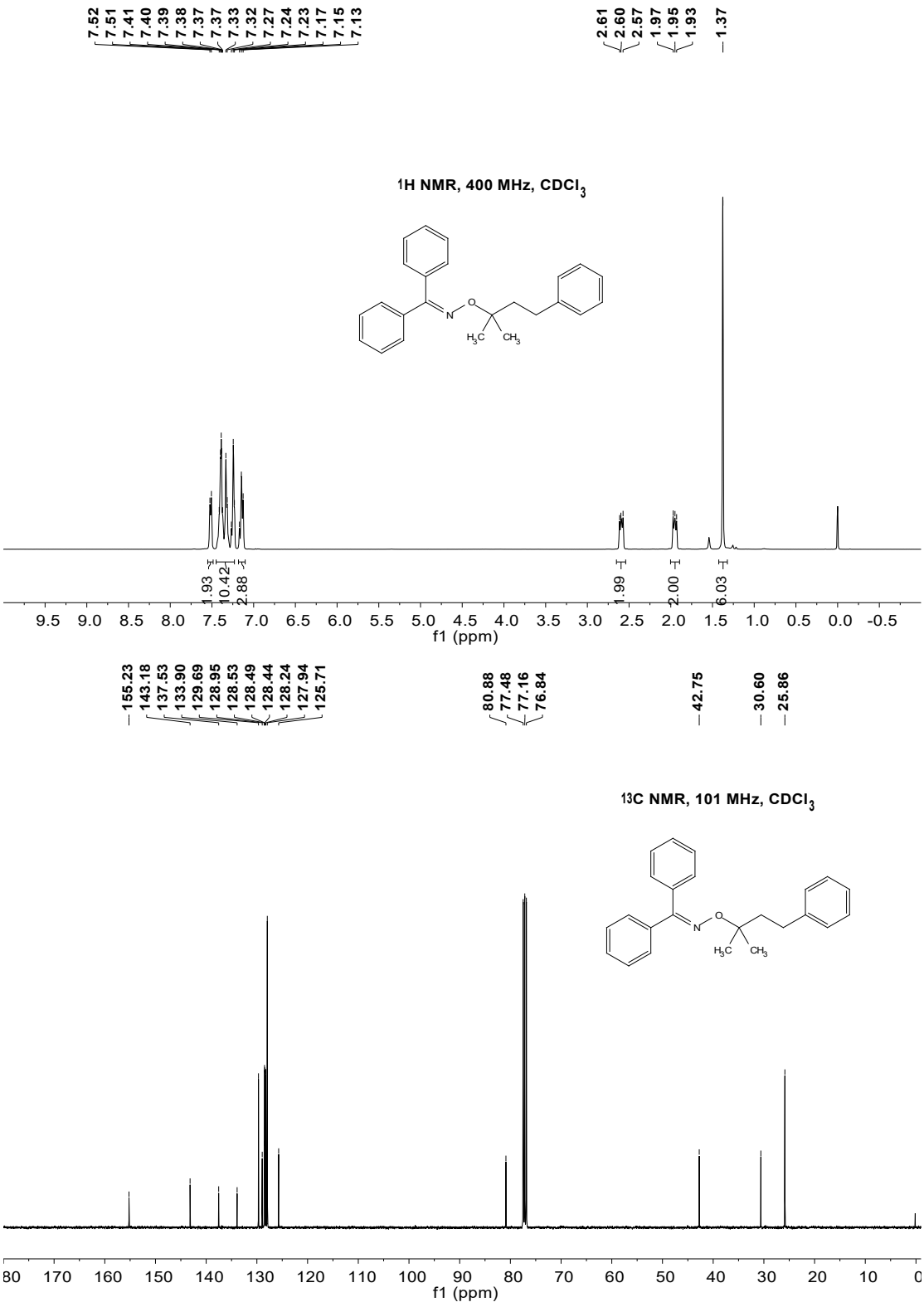


Figure S60. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4o** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and 2-methyl-4-phenylbutan-2-ol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

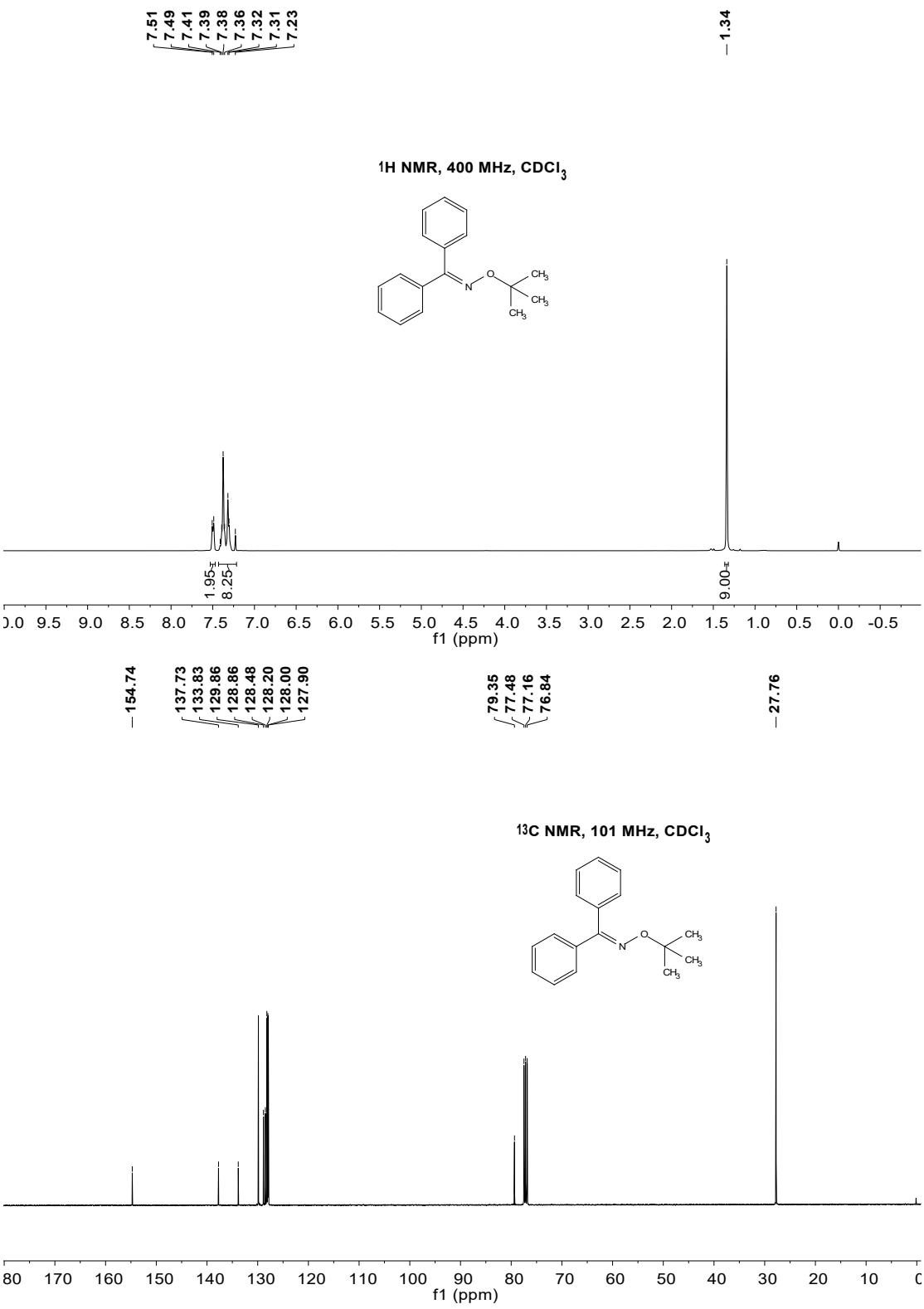


Figure S61. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4p** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and 2-methylpropan-2-ol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

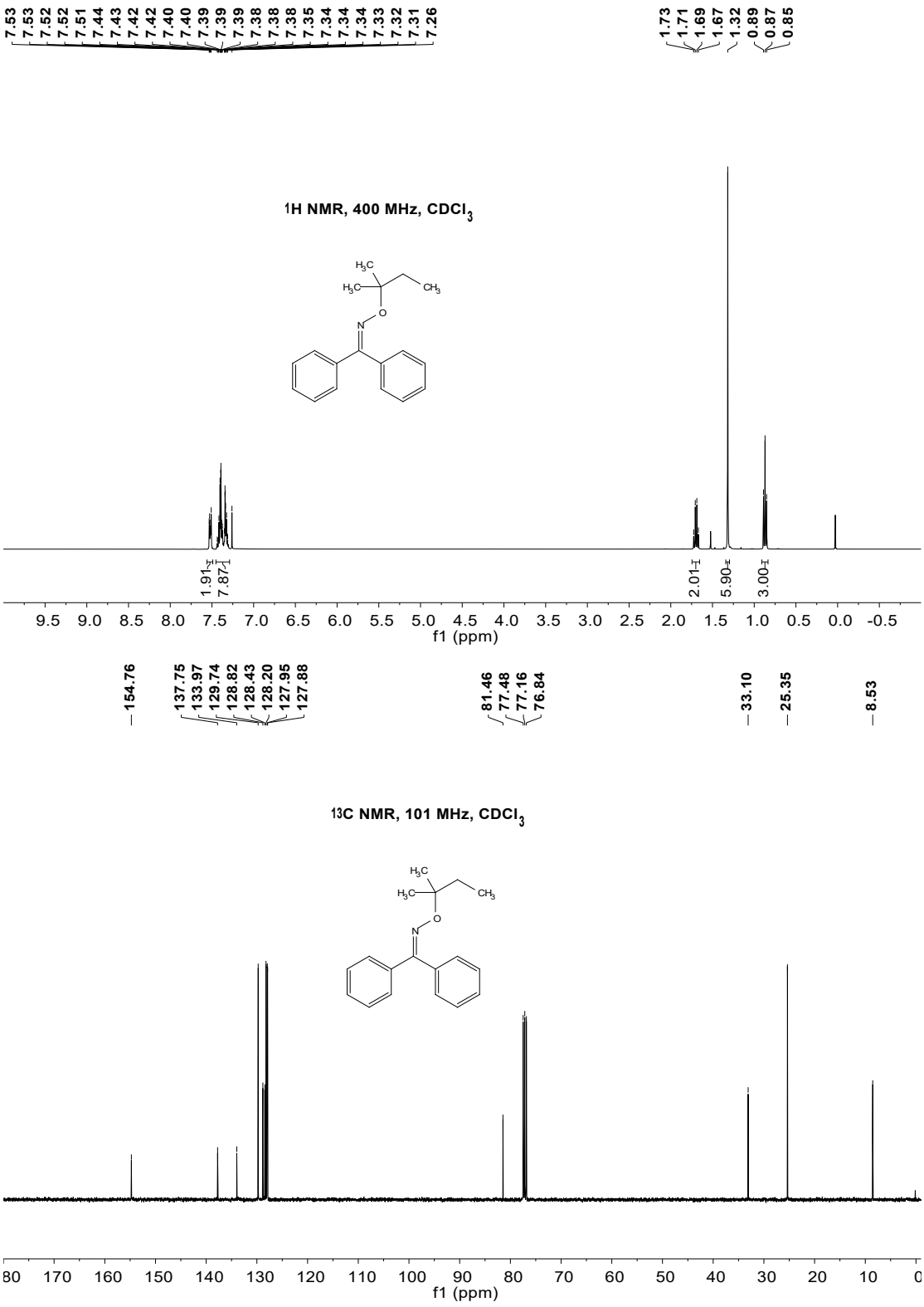


Figure S62. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4q** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and *tert*-amyl alcohol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

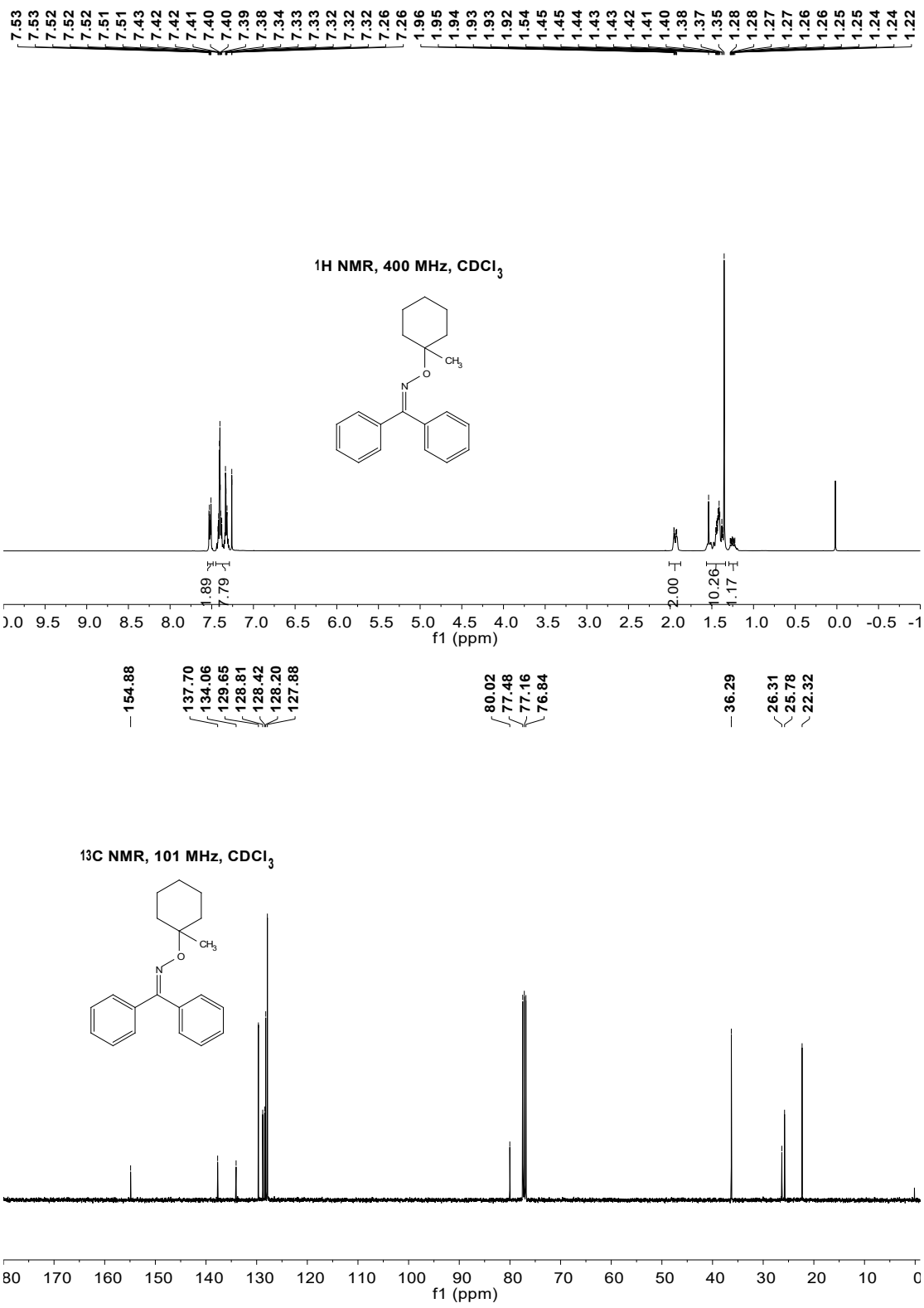


Figure S63. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4r** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and 1-methylcyclohexan-1-ol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

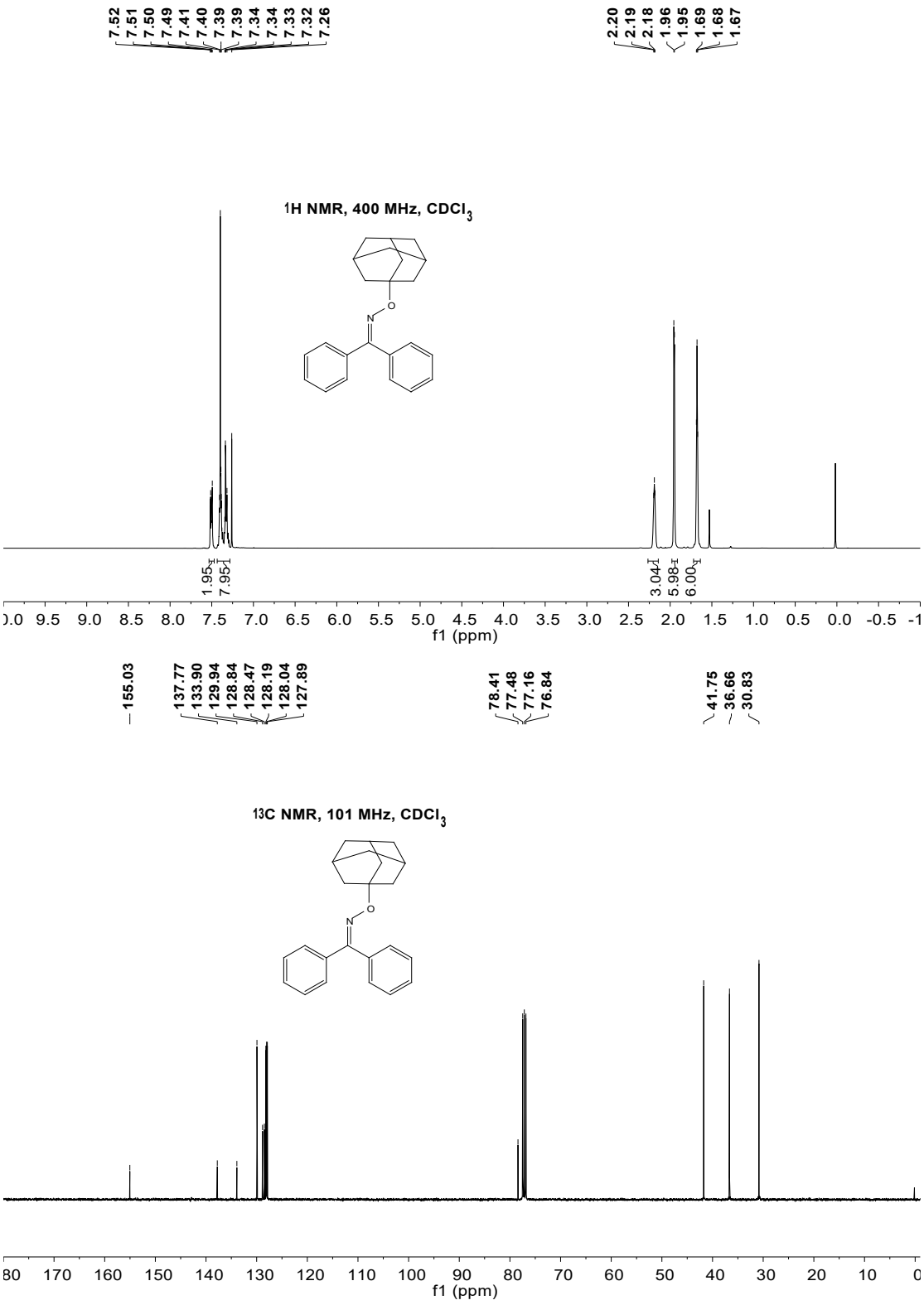


Figure S64. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4s** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and 1-adamantanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

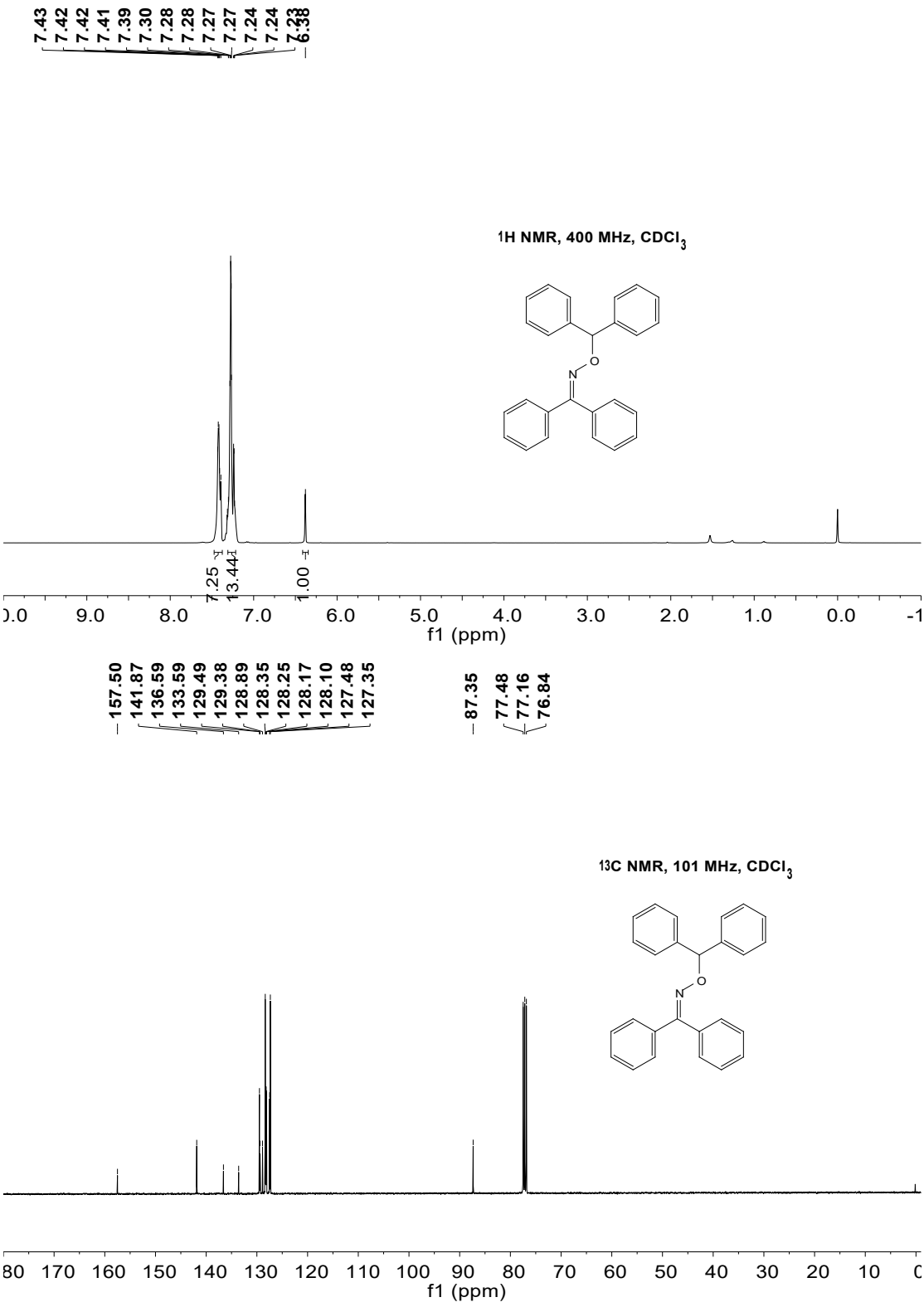


Figure S65. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4t** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and diphenylmethanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}\cdot xH_2O$ in DMC at 100 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

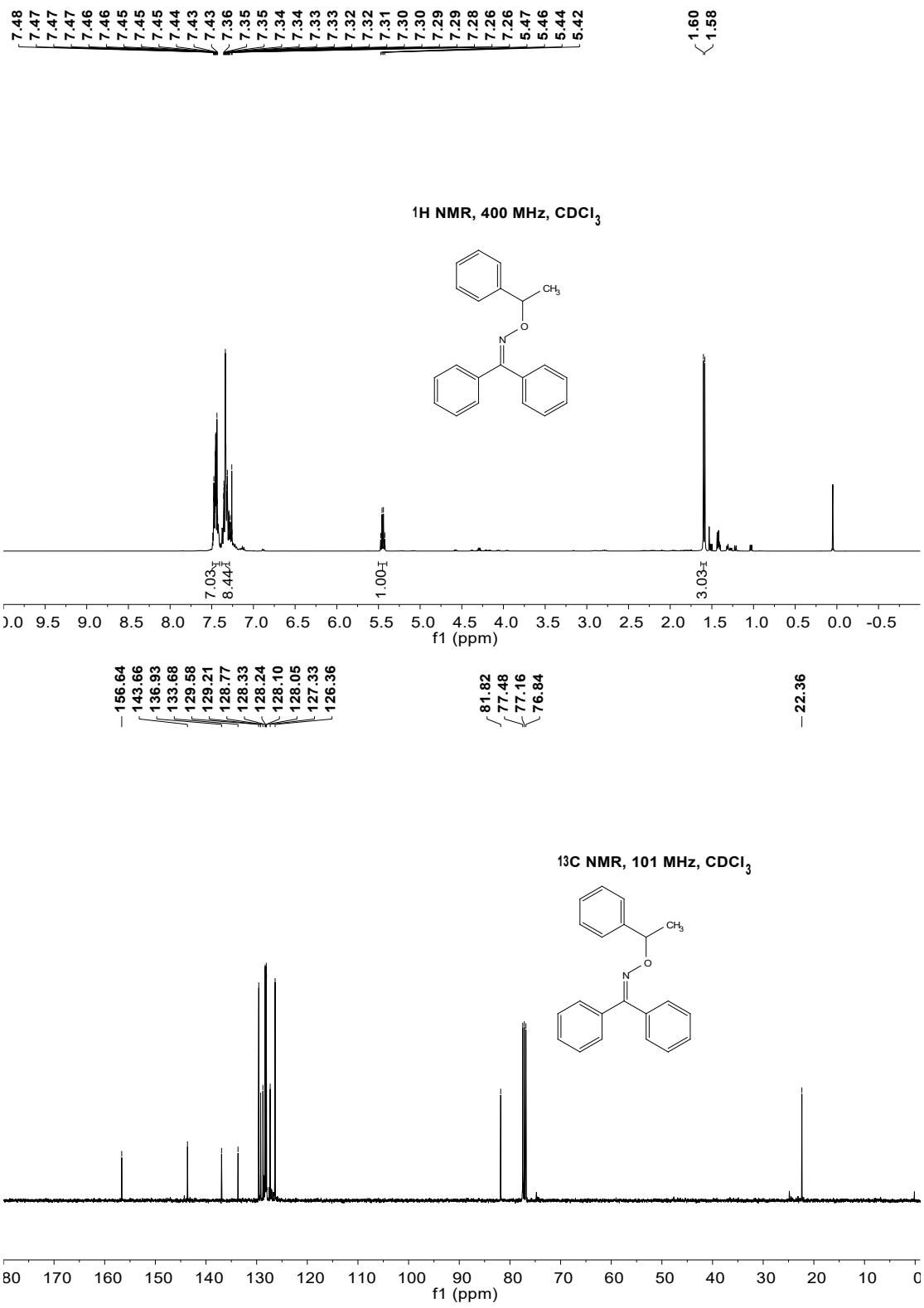


Figure S66. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4u** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and 1-phenylethan-1-ol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 80 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

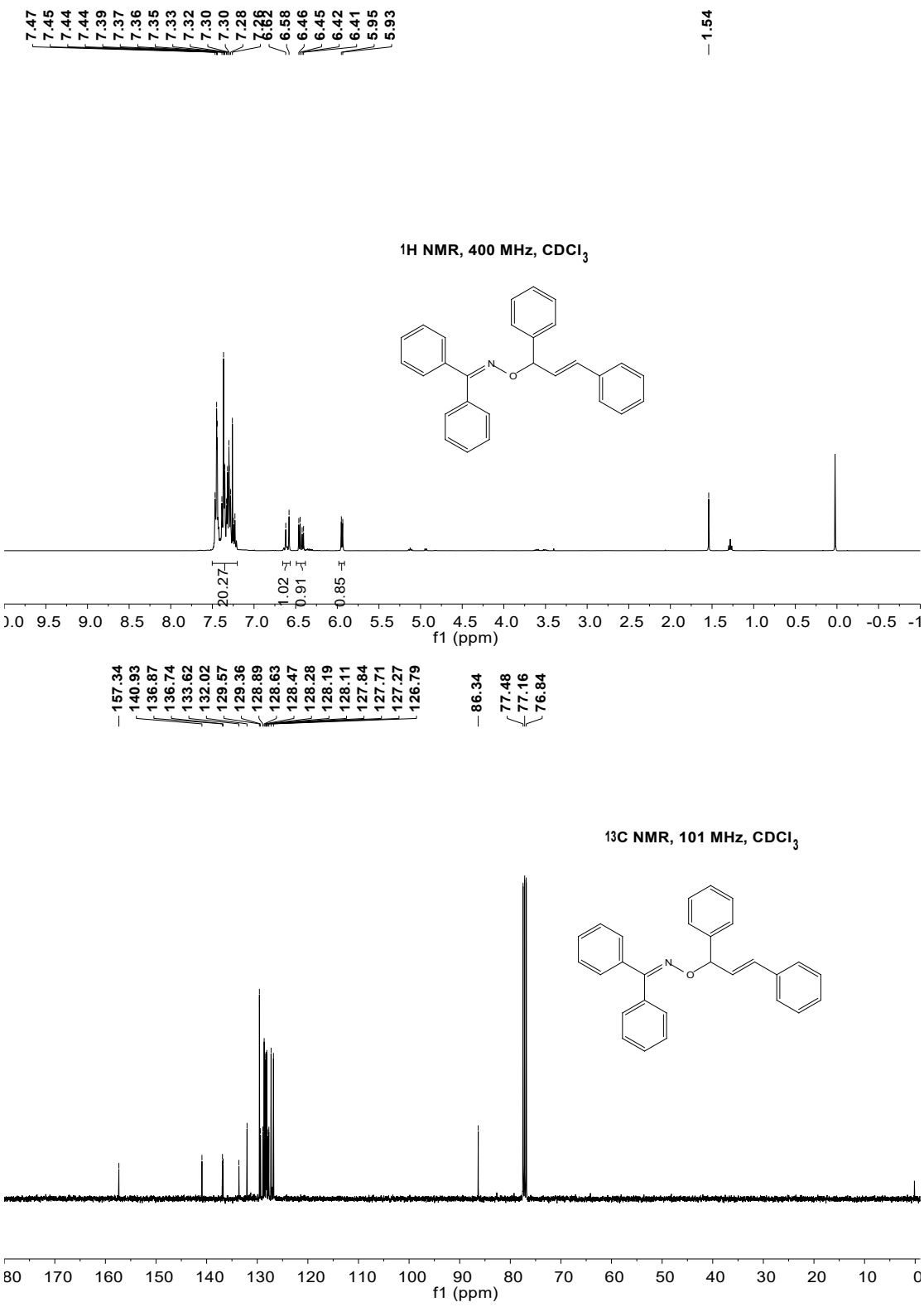


Figure S67. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4v** produced in the oxime etherification of diphenylmethanone oxime (0.3 mmol) and 1,3-diphenylprop-2-en-1-ol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at RT for 2 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

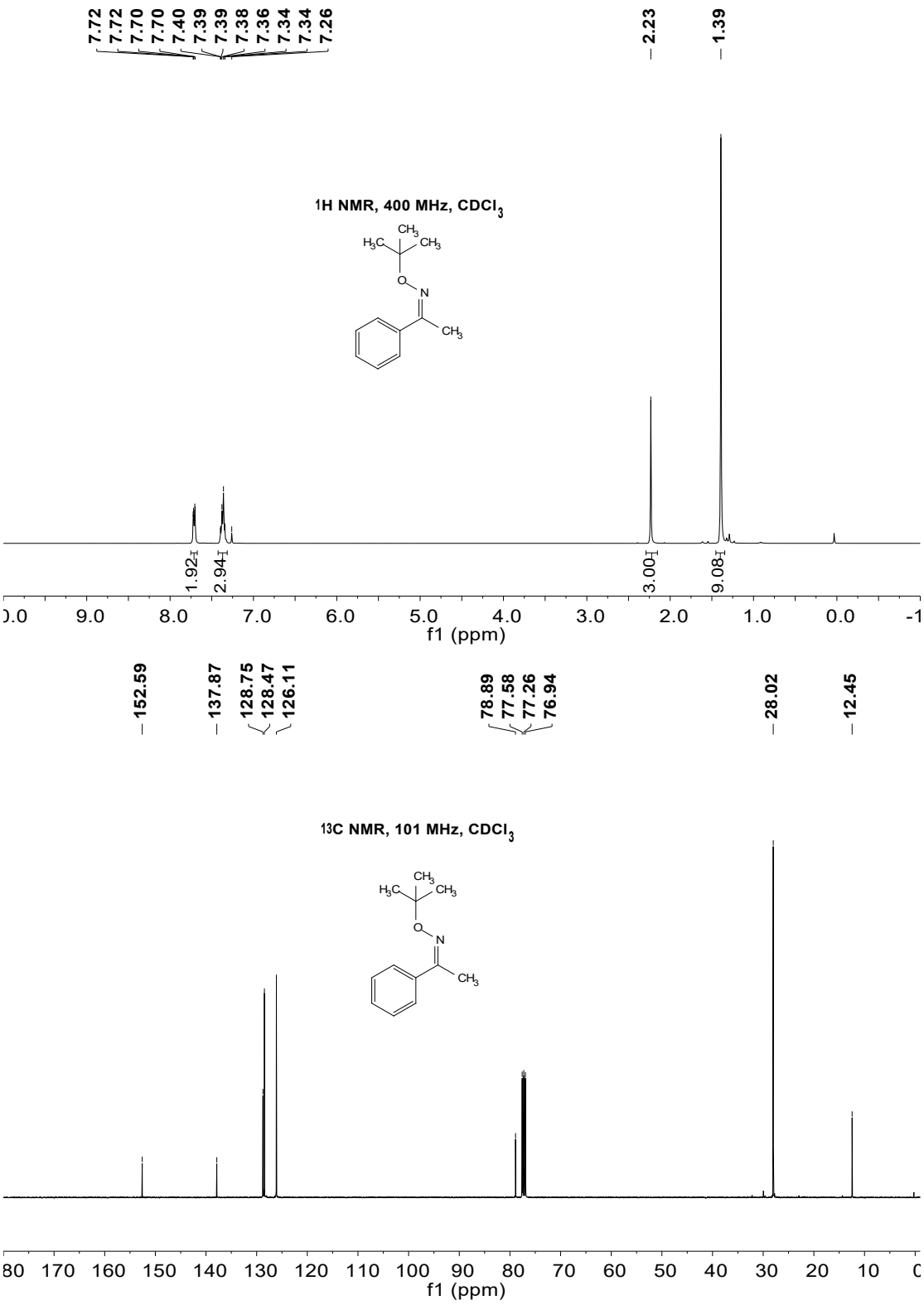


Figure S68. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4x** produced in the oxime etherification of acetophenone oxime (0.3 mmol) and *tert*-butanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 120 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

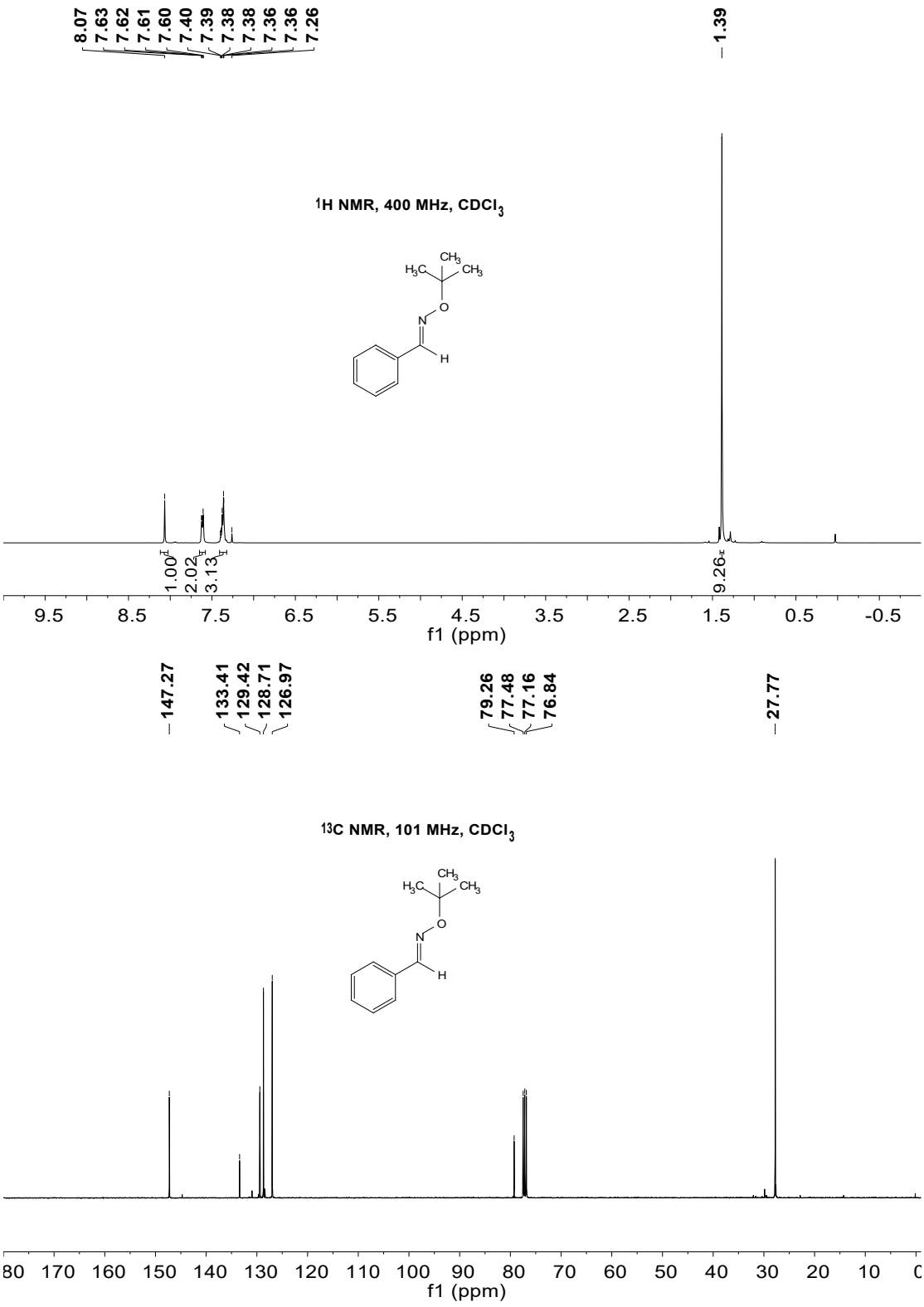


Figure S69. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4y** produced in the oxime etherification of benzaldehyde oxime (0.3 mmol) and *tert*-butanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 120 °C for 12 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

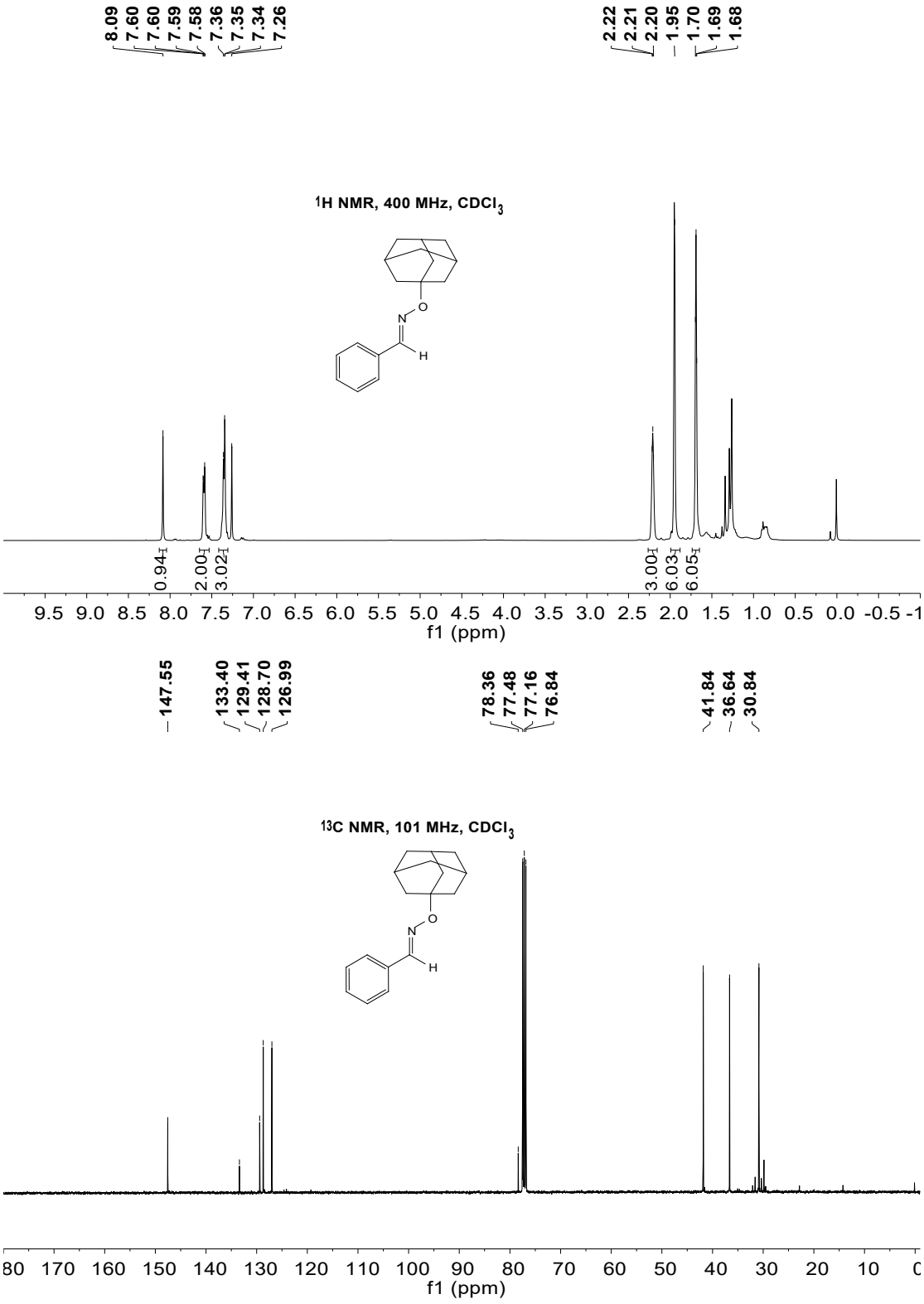


Figure S70. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **4z** produced in the oxime etherification of benzaldehyde oxime (0.3 mmol) and 1-adamantanol (0.9 mmol) catalyzed by $H_3PW_{12}O_{40}{\cdot}xH_2O$ in DMC at 120 °C for 24 h. NMR spectra were recorded in $CDCl_3$ at 25 °C.

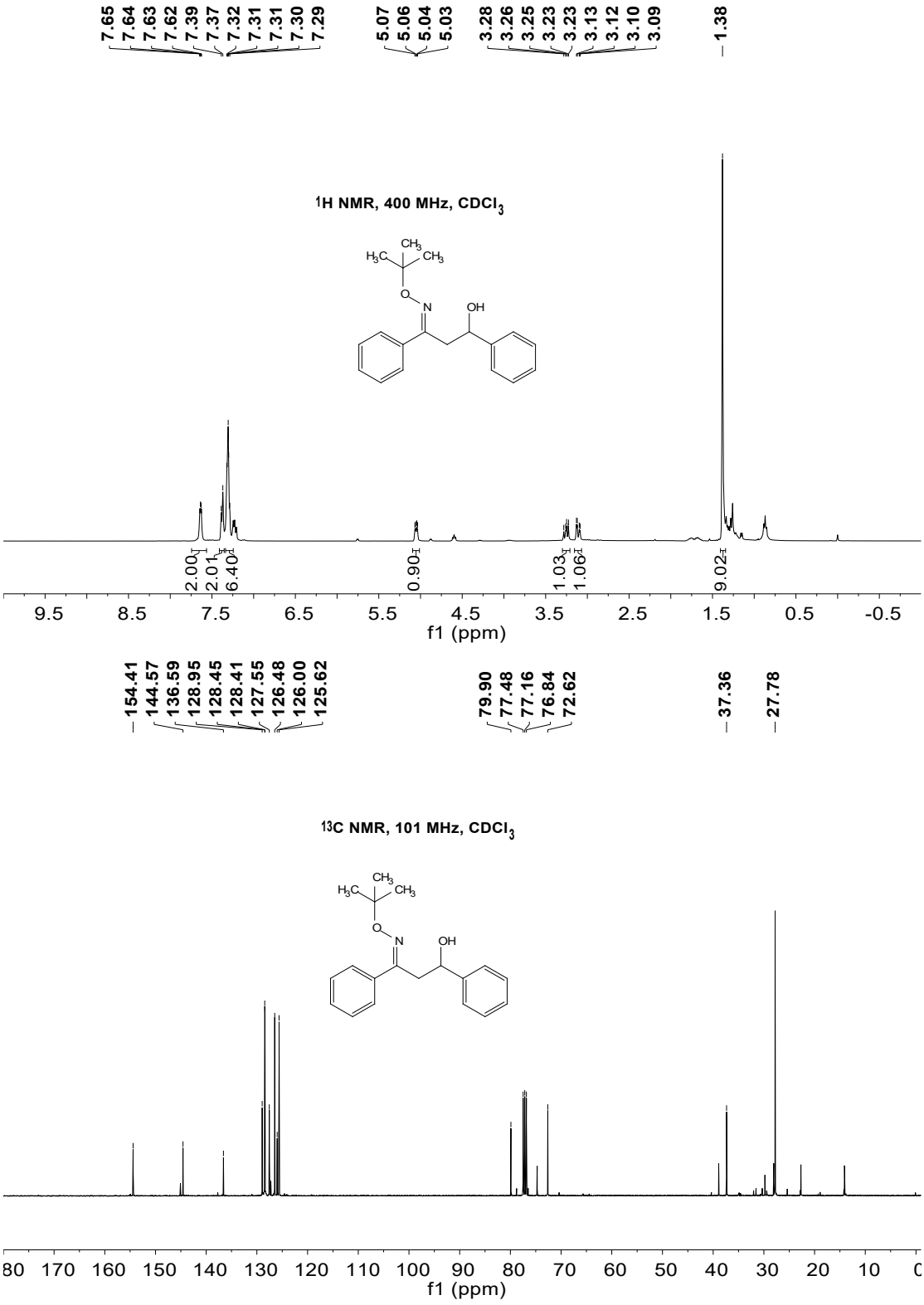


Figure S71. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **T1** produced from **4x** and benzaldehyde. NMR spectra were recorded in $CDCl_3$ at 25 °C.

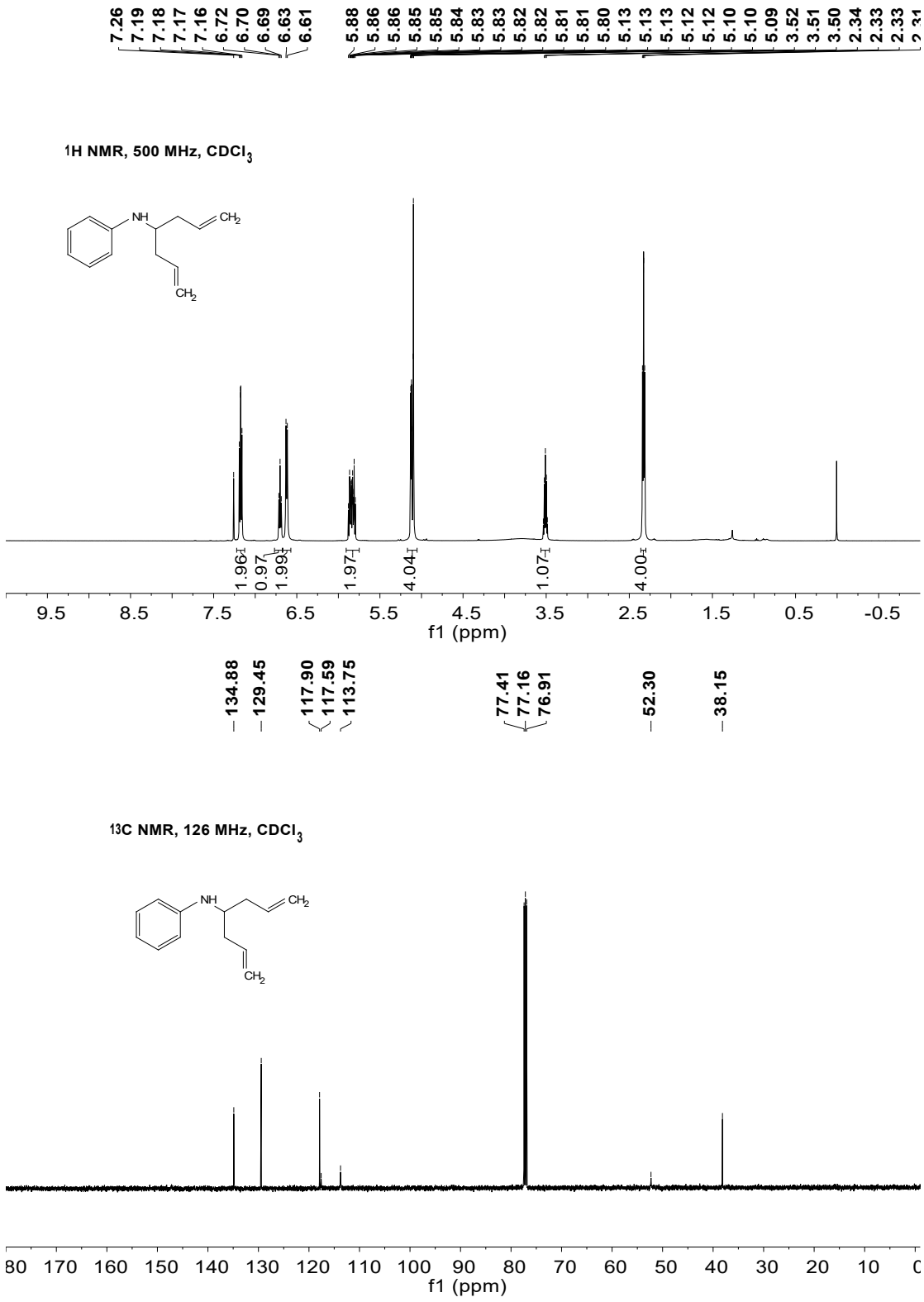


Figure S72. ^{1}H (top) and ^{13}C (bottom) NMR spectra of **T2** produced from **4x** and allylmagnesium bromide. NMR spectra were recorded in $CDCl_3$ at 25 °C.