Electronic Supplementary Information

Copper- or Iron-catalyzed stereoselective methylation of enamides with dicumyl peroxide as the methyl source

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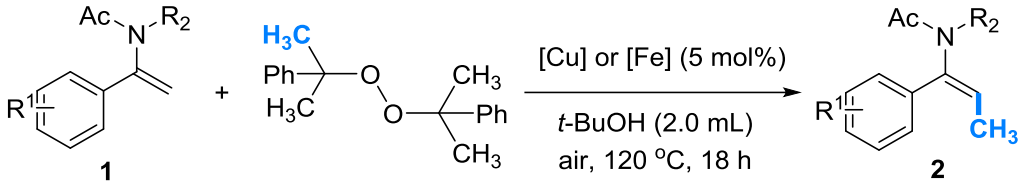
1. General experimental methods

Proton nuclear magnetic resonance (^{1}H NMR) and carbon nuclear magnetic resonance (^{13}C NMR) spectroscopy were performed on a Bruker Advance 300, 400 and 500 NMR spectrometers. Chemical shifts ^{1}H NMR spectra are reported as in units of parts per million (ppm) downfield from $SiMe_4$ (0.0) and relative to the signal of chloroform-*d* (δ = 7.264, singlet). Multiplicities were given as: s (singlet); d (doublet); t (triplet); q (quartet); dd (doublet of doublets); ddd (doublet of doublets of doublets); dddd (doublet of doublets of doublets of doublets); dt (doublet of triplets); m (multiplets) and etc. The number of protons (n) for a given resonance is indicated by nH. Coupling constants are reported as a *J* value in Hz. Carbon nuclear magnetic resonance spectra (^{13}C NMR) are reported as d in units of parts per million (ppm) downfield from $SiMe_4$ (0.0) and relative to the signal of chloroform-*d* (δ = 77.03, triplet). High resolution mass spectral analysis (HRMS) was performed on LCMS Q-TOF (SHIMADZU Corporation) ESI spectrometer.

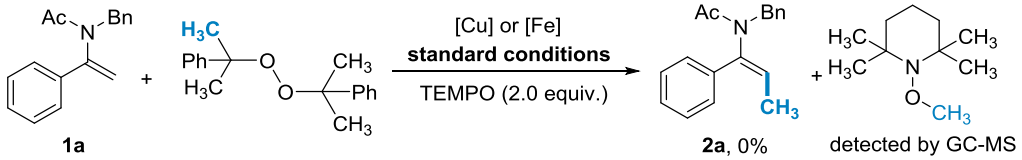
Unless otherwise noted, all reagents were purchased from commercial suppliers (Energy Chemistry; Tansoole) and used without further purification. All enamides were prepared using existing methods.[1, 2]

2. General procedures for the synthesis of methylated enamides

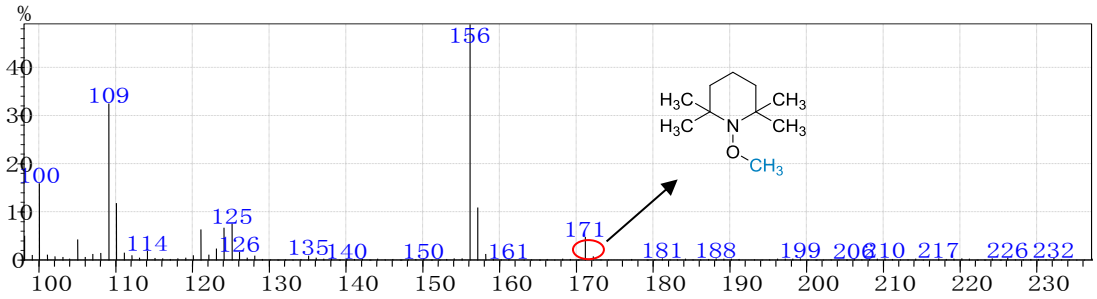


A sealed tube was charged with enamides **1** (0.3 mmol), $Cu(OAc)_2 \cdot H_2O$ or $FeCl_2$ (5 mol%) and dicumyl peroxide (0.6 mmol). Then, 2.0 mL of *t*-BuOH was added as solvent. The mixture was kept stirring under air at 120 °C or 130 °C for 18 h. After completion of the reaction (confirmed by checking TLC), the mixture was poured into water (15 mL) and was extracted with ethylacetate (3 x 15 mL). The combined organic layers were washed with brine (2 x 15 mL) and dried over Na_2SO_4. The residue was purified by flash chromatography on silica gel, eluting with ethylacetate/petroleum ether (1:12~1:6 v/v) to afford the desired products **2**.

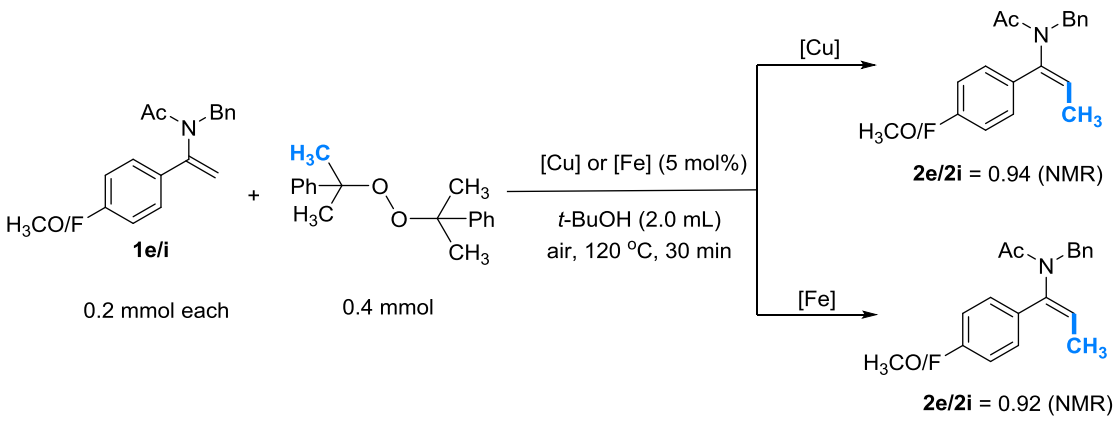
3. Free radical capture experiments



A sealed tube was charged with enamides **1** (0.3 mmol), $Cu(OAc)_2 \cdot H_2O$ or $FeCl_2$ (5 mol%), dicumyl peroxide (0.6 mmol) and 2,2,6,6-tetramethyl-1-piper-idinyloxy (TEMPO) (0.6 mmol). Then, 2.0 mL of *t*-BuOH was added as solvent. The mixture was kept stirring under air at 120 °C for 18 h. After the reaction finished, inspection of the crude reaction mixture by GC-MS.



4. Competitive reaction studides



Enamide **1e** (0.2 mmol, 1.0 equiv), enamide **1i** (0.2 mmol, 1.0 equiv), $Cu(OAc)_2 \cdot H_2O$ or $FeCl_2$ (5 mol%) and dicumyl peroxide (0.4 mmol), were dissolved in *t*-BuOH (2.0 mL). The mixture was kept stirring under air at 120 °C for 30 minutes. After the reaction finished, the mixture was removed in vacuum and the product was pale yellow oil. Inspection of the crude reaction mixture by ^1H NMR spectroscopy showed that the ratio of **2e** to **2i** was approximately 0.94 or 0.92.

5. The method of crystal synthesis

Synthesis was carried out by reaction of **1a** (0.3 mmol), $Cu(OAc)_2 \cdot H_2O$ (5 mol%) and dicumyl peroxide (0.6 mmol) in *t*-BuOH (2.0 mL) under air at 120 °C for 18 h. Single crystals suitable for X-ray analysis were growen from ethylacetate solution of **2a** by slow vapor diffusion of petroleum ether.

6. Structure analysis X-ray crystallography of 2a

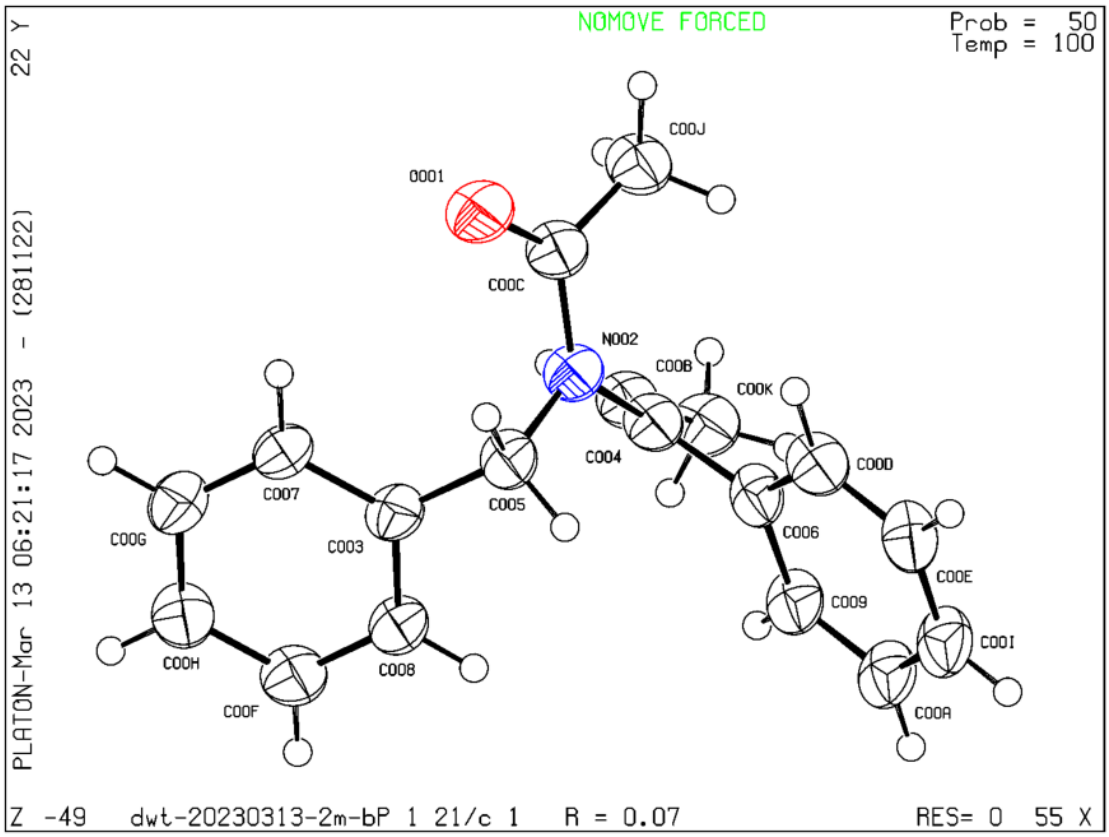


Figure S1. Thermal ellipsoid plot of the crystal structure of **2a**

Identification code	**2a**
Empirical formula	$C_{18}H_{19}NO$
Formula weight	265.34
Temperature	100.15 K
Crystal system	monoclinic
Space group	$P2_1/c$

Unit cell dimensions	a	9.5009(11) Å
	b	9.4353(11) Å
	c	16.3857(17) Å
	α	90 °
	β	90.365(11) °
	γ	90 °
Volume	1468.8(3) $Å^3$	
Z	4	
Density (calculated)	1.200 g/cm^3	
Absorption coefficient	0.574 μ/mm^{-1}	
F(000)	568.0	
Crystal size	0.1 × 0.1 × 0.1 $/mm^3$	
Theta range for data collection	9.308 to 131.902	
Index ranges	$-9 \leq h \leq 11$, $-9 \leq k \leq 11$, $-19 \leq l \leq 19$	
Reflections collected	8504	
Independent reflections	2407 [R_{int} = 0.0508, R_{sigma} = 0.0462]	
Data / restraints / parameters	2407/0/183	
Goodness-of-fit on F^2	1.043	
Final R indices [I>2σ(I)]	R_1 = 0.0686, wR_2 = 0.1927	
R indices (all data)	R_1 = 0.0793, wR_2 = 0.2049	
Largest diff. peak and hole	0.34/-0.25 e $Å^{-3}$	

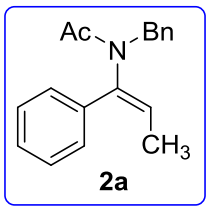
7. References

1 X. Li, K. Sun, W. Shen, Y. Zhang, M.-Z. Lu, X. Luo, and H. Luo, Rhodium(III)-Catalyzed Direct C–H Arylation of Various Acyclic Enamides with Arylsilanes, *Org. Lett.* 2021, **23**, 31-36.

2 X.-H. Chang, Z.-L. Wang, M. Zhao, C. Yang, J.-J. Li, W.-W. Ma, and Y.-H. Xu, Synthesis of Functionalized Vinylsilanes via Metal-Free Dehydrogenative Silylation of Enamides, *Org. Lett.*, 2020, **22**, 1326-1330.

8. Characterization data for the products

(*E*)-*N*-benzyl-*N*-(1-phenylprop-1-en-1-yl)acetamide (2a)

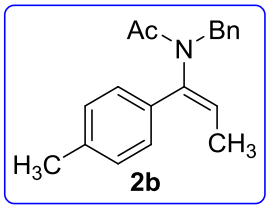


2a

Yellow oil ([Cu] 63.7 mg, 80% yield; [Fe] 60.5 mg, 76% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.42 – 7.31 (m, 3H), 7.29 – 7.22 (m, 5H), 7.21 – 7.18 (m, 2H), 5.43 (q, *J* = 7.3 Hz, 1H), 4.49 (s, 2H), 2.21 (s, 3H), 1.76 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.8, 139.1, 137.5, 134.6, 128.7, 128.6, 128.4, 128.3, 128.1, 127.0, 126.7, 48.9, 22.0, 14.3;

HRMS (ESI) m/z: $[M+Na]^+$ Calcd for $C_{18}H_{19}NONa^+$ 288.1359, found 288.1366.

(*E*)-*N*-benzyl-*N*-(1-(p-tolyl)prop-1-en-1-yl)acetamide (2b)

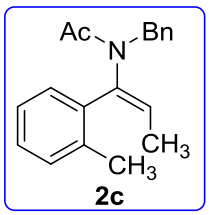


2b

Yellow oil ([Cu] 71.2 mg, 85% yield; [Fe] 64.5 mg, 77% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.29 – 7.23 (m, 3H), 7.22 – 7.20 (m, 2H), 7.20 (s, 2H), 7.18 – 7.14 (m, 2H), 5.38 (q, *J* = 7.3 Hz, 1H), 4.48 (s, 2H), 2.38 (s, 3H), 2.20 (s, 3H), 1.76 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.9, 139.1, 138.2, 137.6, 131.7, 129.1, 128.7, 128.5, 128.1, 126.9, 126.1, 48.9, 22.0, 21.1, 14.3;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{19}H_{22}NO^+$ 280.1696, found 280.1704.

(*E*)-*N*-benzyl-*N*-(1-(o-tolyl)prop-1-en-1-yl)acetamide (2c)



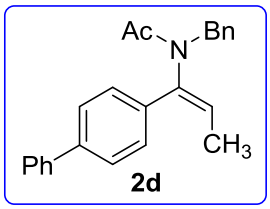
2c

Yellow oil ([Cu] 57.0 mg, 68% yield; [Fe] 60.3 mg, 72% yield): **^{1}H NMR** (400 MHz,

$CDCl_3$) δ 7.31 – 7.21 (m, 6H), 7.20 – 7.13 (m, 3H), 5.59 (q, *J* = 7.1 Hz, 1H), 4.44 (s, 2H), 2.40 (s, 3H), 2.15 (s, 3H), 1.55 (d, *J* = 7.2 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.9, 138.4, 137.7, 137.3, 133.8, 130.6, 129.3, 128.4, 128.1, 128.0, 126.8, 126.0, 125.8, 48.2, 22.2, 19.5, 14.2;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{19}H_{22}NO^+$ 280.1696, found 280.1705.

(*E*)-*N*-(1-([1,1'-biphenyl]-4-yl)prop-1-en-1-yl)-*N*-benzylacetamide (2d)

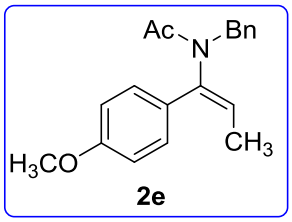


2d

Yellow oil ([Cu] 78.9 mg, 77% yield; [Fe] 60.3 mg, 76% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.69 – 7.65 (m, 4H), 7.52 – 7.49 (m, 2H), 7.43 – 7.41 (m, 1H), 7.40 – 7.38 (m, 2H), 7.33 – 7.26 (m, 5H), 5.51 (q, *J* = 7.3 Hz, 1H), 4.60 (s, 2H), 2.27 (s, 3H), 1.87 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.8, 140.9, 140.0, 138.8, 137.5, 133.5, 129.6, 128.9, 128.7, 128.0, 127.5, 127.0, 127.0, 126.9, 126.8, 49.0, 22.0, 14.4;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{24}H_{24}NO^+$ 342.1852, found 342.1864.

(*E*)-N-benzyl-*N*-(1-(4-methoxyphenyl)prop-1-en-1-yl)acetamide (2e)

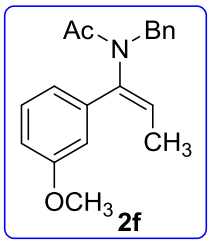


2e

Yellow oil ([Cu] 64.69 mg, 73% yield; [Fe] 65.5 mg, 74% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.26 – 7.20 (m, 4H), 7.18 – 7.16 (m, 3H), 6.91 – 6.88 (m, 2H), 5.32 (q, *J* = 7.3 Hz, 1H), 4.46 (s, 2H), 3.82 (s, 3H), 2.16 (s, 3H), 1.73 (d, *J* = 7.2 Hz, 1H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 171.0, 159.6, 139.0, 137.8, 130.0, 128.9, 128.2, 127.1, 125.6, 114.0, 113.7, 55.3, 49.1, 22.2, 14.5;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{19}H_{22}NO_2^+$ 296.1645, found 296.1656.

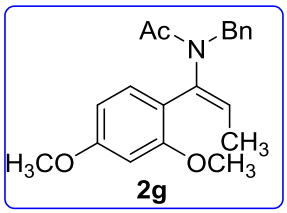
(*E*)-*N*-benzyl-*N*-(1-(3-methoxyphenyl)prop-1-en-1-yl)acetamide (2f)



Yellow oil ([Cu] 67.3 mg, 76% yield; [Fe] 62.1 mg, 70% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.44 – 7.10 (m, 6H), 6.90 – 6.82 (m, 2H), 6.77 – 6.73 (m, 1H), 5.43 (q, *J* = 7.3 Hz, 1H), 4.49 (s, 2H), 3.77 (s, 3H), 2.18 (s, 3H), 1.77 (d, *J* = 5.5 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.8, 159.6, 139.1, 137.6, 136.1, 129.4, 128.8, 128.1, 127.0, 126.9, 121.1, 114.4, 113.5, 55.1, 49.1, 22.0, 14.4;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{19}H_{22}NO_2^+$ 296.1645, found 296.1656.

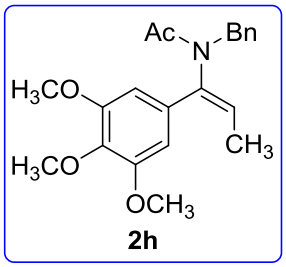
(*E*)-*N*-benzyl-*N*-(1-(2,4-dimethoxyphenyl)prop-1-en-1-yl)acetamide (2g)



Yellow oil ([Cu] 57.6 mg, 59% yield; [Fe] 69.3 mg, 71% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.23 – 7.15 (m, 5H), 6.92 (d, *J* = 8.2 Hz, 1H), 6.46 – 6.43 (m, 2H), 5.40 (q, *J* = 7.1 Hz, 1H), 4.42 (s, 2H), 3.80 (s, 3H), 3.71 (s, 3H), 2.26 (s, 3H), 1.54 (d, *J* = 7.1 Hz, 1H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 171.3, 161.1, 158.7, 138.0, 137.1, 132.3, 128.4, 127.8, 126.5, 126.4, 115.8, 104.0, 98.4, 55.2, 55.0, 48.2, 22.2, 14.0;

HRMS (ESI) m/z: $[M+K]^+$ Calcd for $C_{20}H_{23}NO_3K^+$ 364.1310, found 364.1322.

(*E*)-*N*-benzyl-*N*-(1-(3,4,5-trimethoxyphenyl)prop-1-en-1-yl)acetamide (2h)

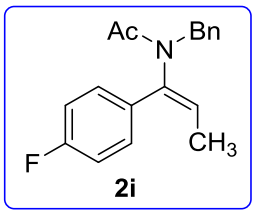


Yellow oil ([Cu] 57.6 mg, 54% yield; [Fe] 66.1 mg, 62% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.24 – 7.22 (m, 2H), 7.20 – 7.18 (m, 3H), 6.36 (s, 1H), 5.46 (q, *J* = 7.3 Hz, 1H), 4.53 (s, 2H), 3.84 (s, 3H), 3.76 (s, 6H), 2.14 (s, 3H), 1.80 (d, *J* = 7.4 Hz, 3H); **^{13}C**

NMR (101 MHz, $CDCl_3$) δ 170.9, 153.1, 139.6, 138.1, 137.6, 130.3, 128.8, 128.1, 127.1, 125.9, 105.9, 60.8, 56.1, 49.7, 22.2, 14.5;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{21}H_{26}NO_4^+$ 356.1856, found 356.1869.

(*E*)-*N*-benzyl-*N*-(1-(4-fluorophenyl)prop-1-en-1-yl)acetamide (2i)

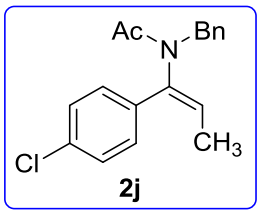


2i

White solid ([Cu] 50.2 mg, 59% yield; [Fe] 47.6 mg, 56% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.26 – 7.19 (m, 5H), 7.19 – 7.14 (m, 2H), 7.07 (t, *J* = 8.6 Hz, 2H), 5.42 (q, *J* = 7.3 Hz, 1H), 4.47 (s, 2H), 2.18 (s, 3H), 1.73 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.7, 162.3 (d, *J* = 248.8 Hz), 138.30, 137.4, 130.7 (d, *J* = 3.3 Hz), 130.4 (d, *J* = 8.2 Hz), 128.7, 128.1, 127.1, 126.7, 115.5 (d, *J* = 21.6 Hz), 49.0, 22.0, 14.3;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{18}H_{19}NOF^+$ 284.1445, found 284.1455.

(*E*)-*N*-benzyl-*N*-(1-(4-chlorophenyl)prop-1-en-1-yl)acetamide (2j)

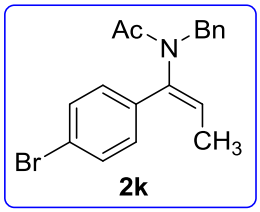


2j

Yellow oil ([Cu] 54.9 mg, 61% yield; [Fe] 64.75 mg, 72% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.36 – 7.34 (m, 2H), 7.26 – 7.21 (m, 3H), 7.19 – 7.15 (m, 4H), 5.45 (q, *J* = 7.3 Hz, 1H), 4.47 (s, 2H), 2.17 (s, 3H), 1.74 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, CDCl3) δ 170.8, 138.1, 137.3, 134.1, 133.1, 130.5, 129.9, 128.7, 128.1, 127.4, 127.1, 49.0, 22.0, 14.4;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{18}H_{19}NOCl^+$ 300.1150, found 300.1162.

(*E*)-*N*-benzyl-*N*-(1-(4-bromophenyl)prop-1-en-1-yl)acetamide (2k)

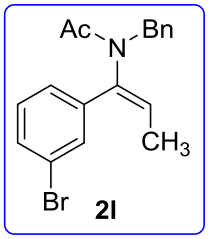


2k

Yellow oil ([Cu] 68.2 mg, 65% yield; [Fe] 65.1 mg, 63% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.51 – 7.49 (m, 2H), 7.26 – 7.20 (m, 3H), 7.17 – 7.14 (m, 2H), 7.12 – 7.08 (m, 2H), 5.45 (q, *J* = 7.3 Hz, 1H), 4.46 (s, 2H), 2.16 (s, 3H), 1.73 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.7, 138.2, 137.3, 133.6, 131.6, 130.2, 128.7, 128.1, 127.4, 127.1, 122.3, 49.0, 22.0, 14.4;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{18}H_{19}NOBr^+$ 344.0645, found 344.0659.

(*E*)-*N*-benzyl-*N*-(1-(3-bromophenyl)prop-1-en-1-yl)acetamide (2l)

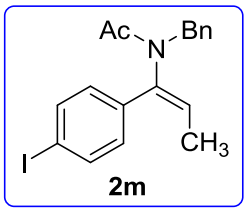


2l

Yellow oil ([Cu] 69.2 mg, 67% yield; [Fe] 67.1 mg, 65% yield): **^{1}H NMR** (400 MHz, CDCl3) δ 7.46 (d, *J* = 7.9 Hz, 1H), 7.36 (t, *J* = 1.7 Hz, 1H), 7.27 – 7.21 (m, 4H), 7.19 – 7.15 (m, 3H), 5.47 (q, *J* = 7.4 Hz, 1H), 4.48 (s, 2H), 2.17 (s, 3H), 1.76 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.8, 137.9, 137.3, 136.9, 131.4, 130.0, 128.7, 128.2, 128.0, 127.3, 127.2, 122.6, 49.1, 22.1, 14.4;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{18}H_{19}NOBr^+$ 344.0645, found 344.0659.

(*E*)-*N*-benzyl-*N*-(1-(4-iodophenyl)prop-1-en-1-yl)acetamide (2m)



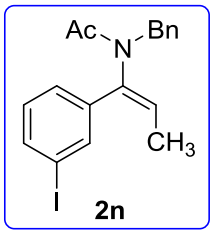
2m

Yellow oil ([Cu] 55.2 mg, 48% yield; [Fe] 63.4 mg, 54% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.72 – 7.68 (m, 2H), 7.27 – 7.21 (m, 3H), 7.18 – 7.13 (m, 2H), 6.98 (d, *J* = 8.4 Hz, 2H), 5.45 (q, *J* = 7.3 Hz, 1H), 4.47 (s, 2H), 2.16 (s, 3H), 1.74 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.8, 138.3, 137.7, 137.3, 134.3, 130.4, 128.7,

128.2, 127.5, 127.1, 94.1, 49.1, 22.1, 14.5;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{18}H_{19}NOI^+$ 392.0506, found 392.0524.

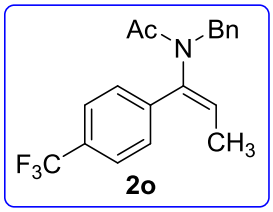
(*E*)-*N*-benzyl-*N*-(1-(3-iodophenyl)prop-1-en-1-yl)acetamide (2n)



Yellow oil ([Cu] 68.1 mg, 58% yield; [Fe] 71.6 mg, 61% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.65 (d, *J* = 7.8 Hz, 1H), 7.54 – 7.53 (m, 1H), 7.25 – 7.22 (m, 3H), 7.19 – 7.15 (m, 3H), 7.10 – 7.08 (m, 1H), 5.46 (q, *J* = 7.3 Hz, 1H), 4.47 (s, 2H), 2.16 (s, 3H), 1.74 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.7, 137.8, 137.2, 137.2, 136.9, 130.0, 128.7, 128.1, 127.9, 127.8, 127.1, 94.3, 49.1, 22.1, 14.4;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{18}H_{19}NOI^+$ 392.0506, found 392.0525.

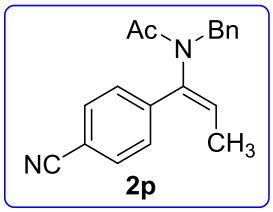
(*E*)-*N*-benzyl-*N*-(1-(4-(trifluoromethyl)phenyl)prop-1-en-1-yl)acetamide (2o)



White solid ([Cu] 53.1 mg, 55% yield; [Fe] 71.0 mg, 71% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.67 (d, *J* = 8.2 Hz, 2H), 7.39 (d, *J* = 8.1 Hz, 2H), 7.30 – 7.24 (m, 3H), 7.21 – 7.18 (m, 2H), 5.59 (q, *J* = 7.4 Hz, 1H), 4.52 (s, 2H), 2.22 (s, 3H), 1.81 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.8, 138.6, 138.3, 137.3, 130.3 (q, *J* = 32.5 Hz), 129.0, 128.8, 128.7, 128.2, 127.2, 125.5 (q, *J* = 3.5 Hz), 123.8 (q, *J* = 272.2 Hz), 49.3, 22.1, 14.4;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{19}H_{19}NOF_3^+$ 334.1413, found 334.1423.

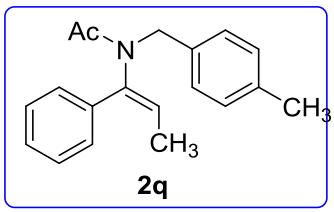
(*E*)-*N*-benzyl-*N*-(1-(4-cyanophenyl)prop-1-en-1-yl)acetamide (2p)



2p

Yellow oil ([Cu] 64.5 mg, 74% yield; [Fe] 56.6 mg, 65% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.67 – 7.63 (m, 2H), 7.35 – 7.30 (m, 2H), 7.22 – 7.19 (m, 3H), 7.14 – 7.11 (m, 2H), 5.59 (q, *J* = 7.4 Hz, 1H), 4.47 (s, 2H), 2.15 (s, 3H), 1.77 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.7, 139.5, 137.9, 137.0, 132.2, 129.6, 129.2, 128.7, 128.2, 127.3, 126.2, 118.3, 111.9, 49.4, 22.0, 14.5;
HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{19}H_{19}N_2O^+$ 291.1492, found 291.1506.

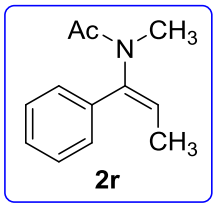
(*E*)-*N*-(4-methylbenzyl)-*N*-(1-phenylprop-1-en-1-yl)acetamide (2q)



2q

Yellow oil ([Cu] 60.4 mg, 72% yield; [Fe] 62.9 mg, 75% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.45 – 7.36 (m, 3H), 7.32 – 7.28 (m, 2H), 7.13 – 7.09 (m, 4H), 5.46 (q, *J* = 7.3 Hz, 1H), 4.47 (s, 2H), 2.35 (s, 3H), 2.22 (s, 3H), 1.80 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 170.8, 139.1, 136.5, 134.7, 134.5, 128.8, 128.7, 128.6, 128.4, 128.3, 126.7, 48.7, 22.1, 21.0, 14.4;
HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{19}H_{22}NO^+$ 280.1696, found 280.1709.

(*E*)-*N*-methyl-*N*-(1-phenylprop-1-en-1-yl)acetamide (2r)



2r

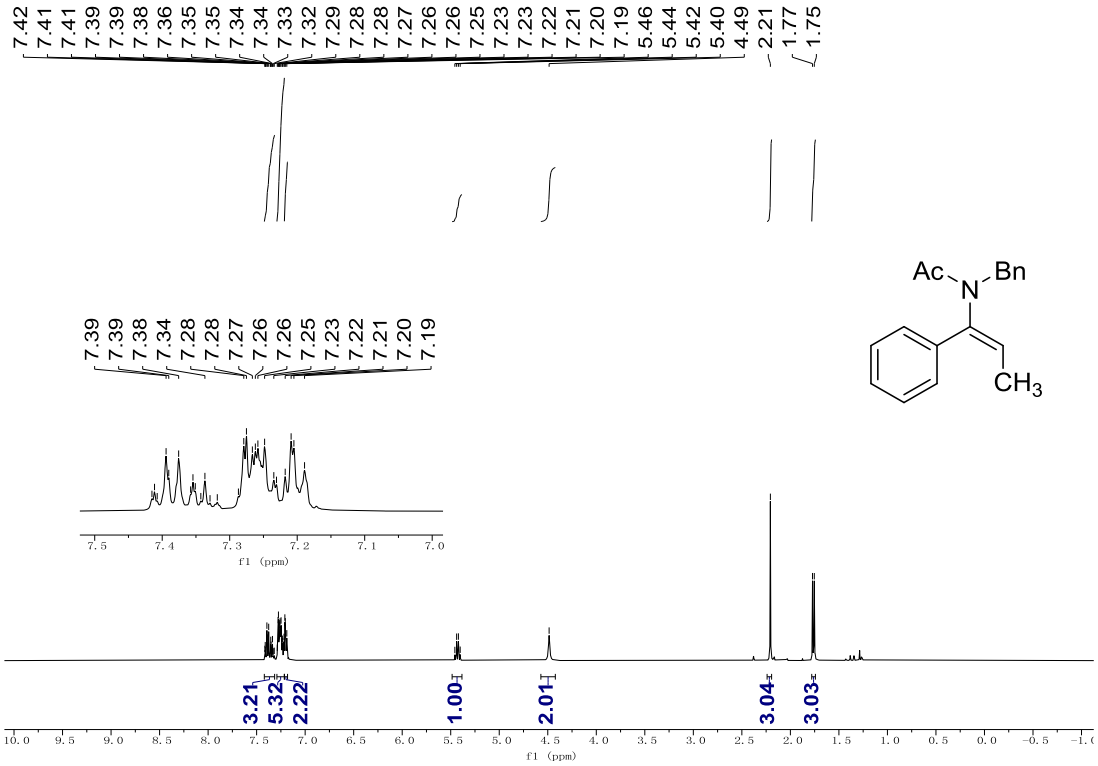
Yellow oil ([Cu] 34.6 mg, 61% yield; [Fe] 30.1 mg, 53% yield): **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.38 – 7.33 (m, 2H), 7.32 – 7.29 (m, 1H), 7.28 – 7.24 (m, 2H), 5.73 (q, *J* = 7.3 Hz, 1H), 2.93 (s, 3H), 2.07 (s, 3H), 1.85 (d, *J* = 7.4 Hz, 3H); **^{13}C NMR** (101 MHz, $CDCl_3$) δ 171.1, 141.6, 134.9, 128.4, 128.3, 128.2, 124.4, 35.0, 21.8, 14.3;

HRMS (ESI) m/z: $[M+H]^+$ Calcd for $C_{12}H_{16}NO^+$ 190.1226, found 190.1235.

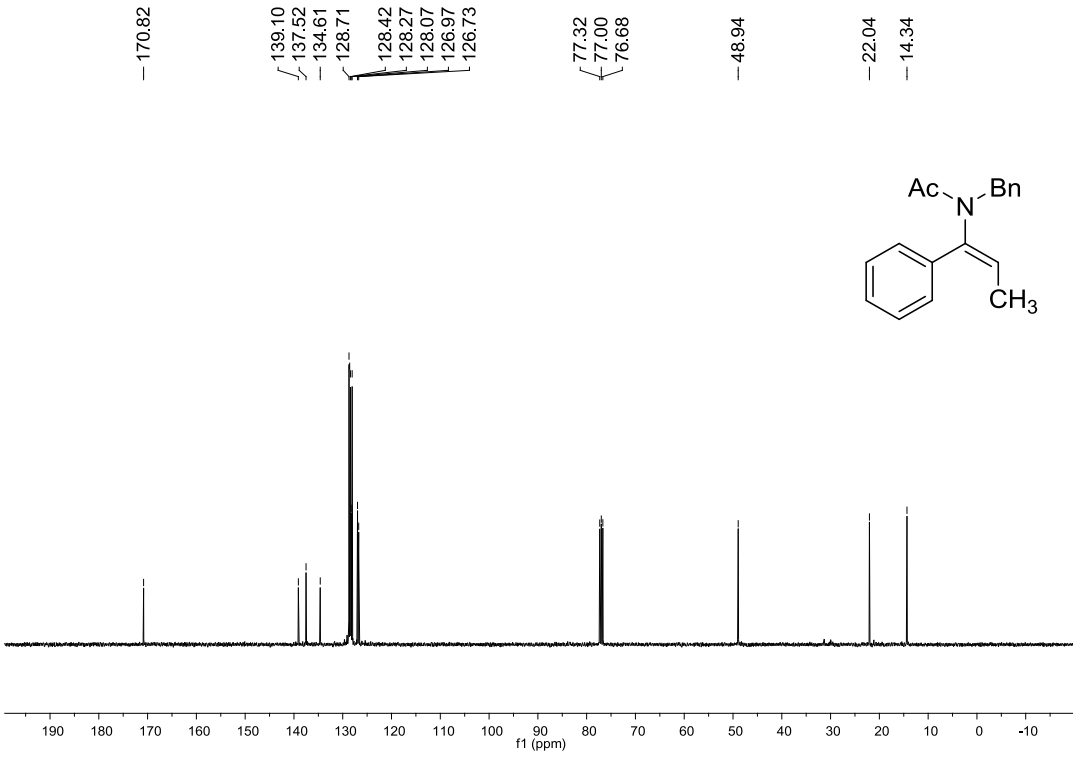
9. ^{1}H NMR and ^{13}C NMR spectra of the products

(*E*)-*N*-benzyl-*N*-(1-phenylprop-1-en-1-yl)acetamide (2a)

^{1}H NMR (400 MHz, $CDCl_3$)

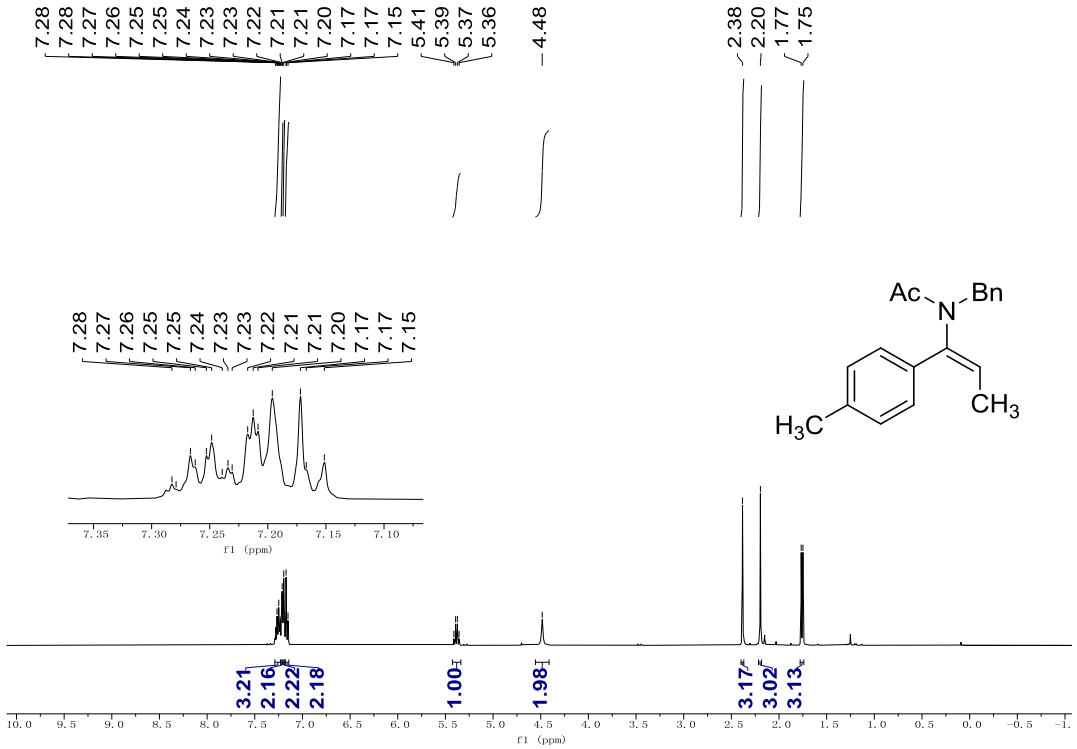


^{13}C NMR (101 MHz, $CDCl_3$)

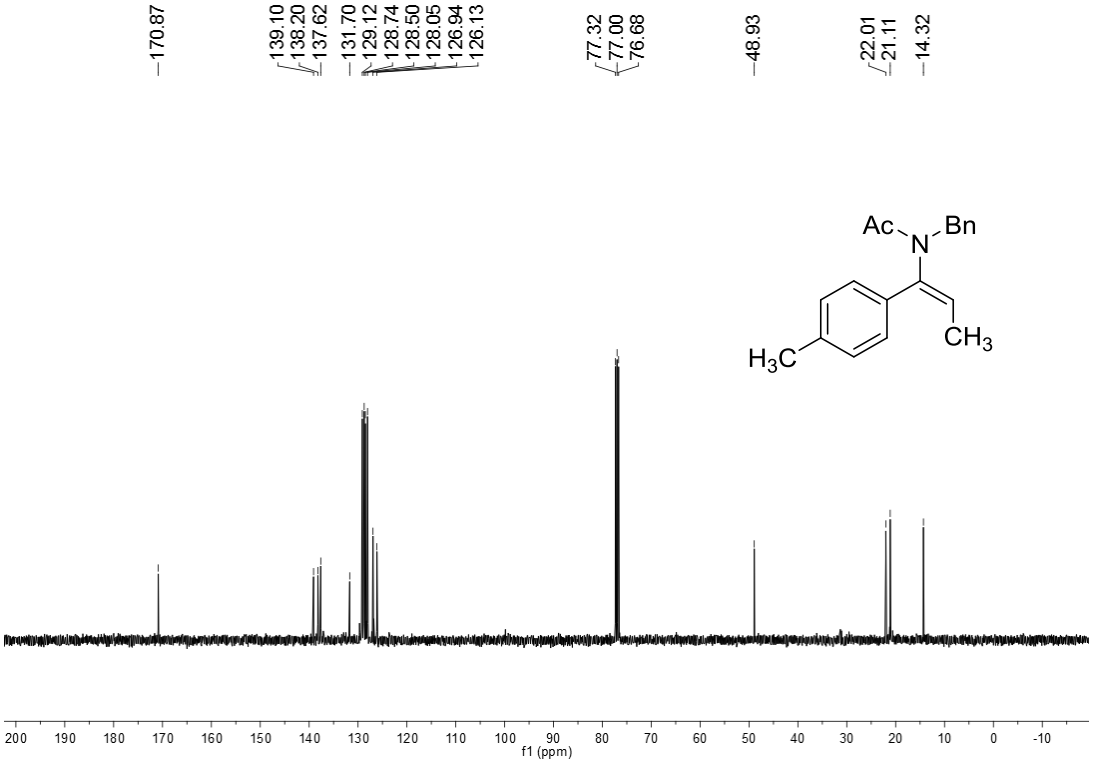


(*E*)-*N*-benzyl-*N*-(1-(p-tolyl)prop-1-en-1-yl)acetamide (2b)

^{1}H NMR (400 MHz, $CDCl_3$)

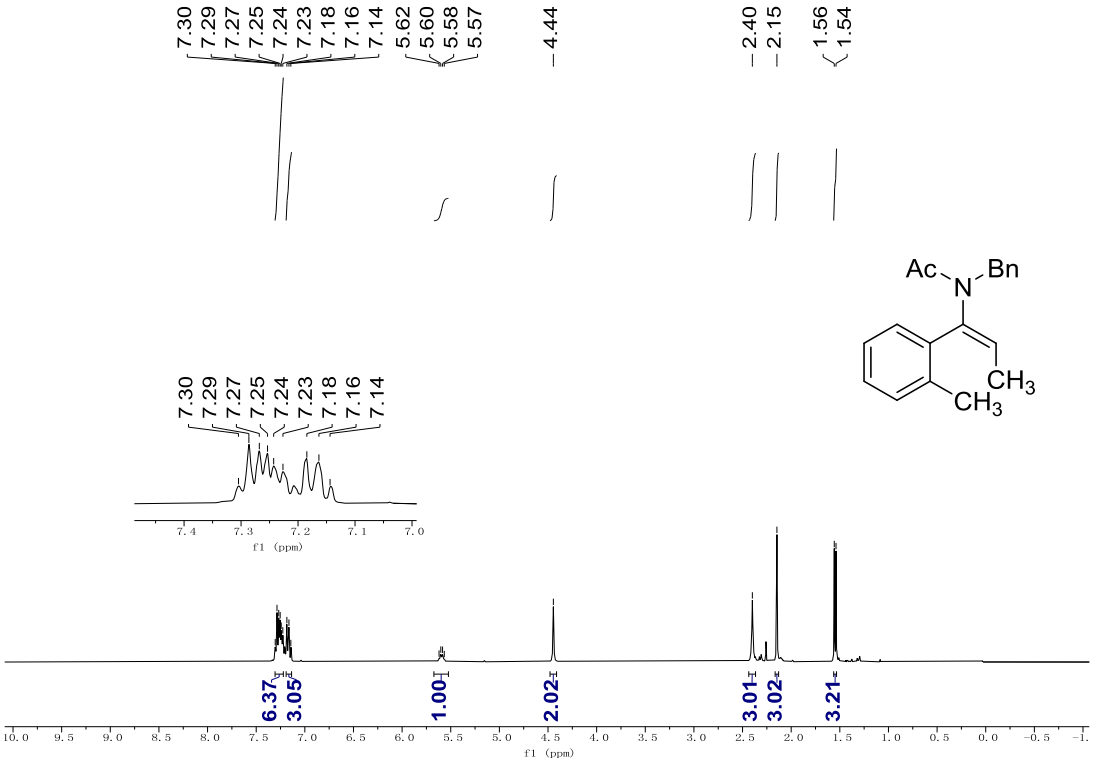


^{13}C NMR (101 MHz, $CDCl_3$)

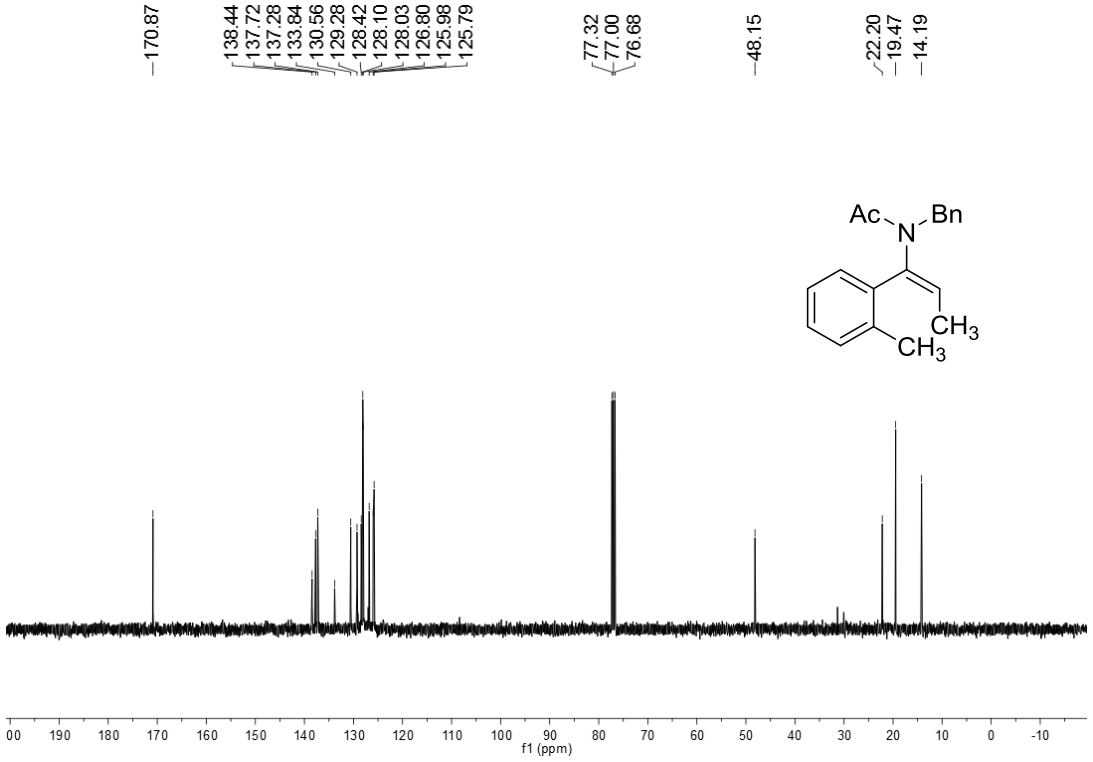


(*E*)-*N*-benzyl-*N*-(1-(o-tolyl)prop-1-en-1-yl)acetamide (2c)

^{1}H NMR (400 MHz, $CDCl_3$)

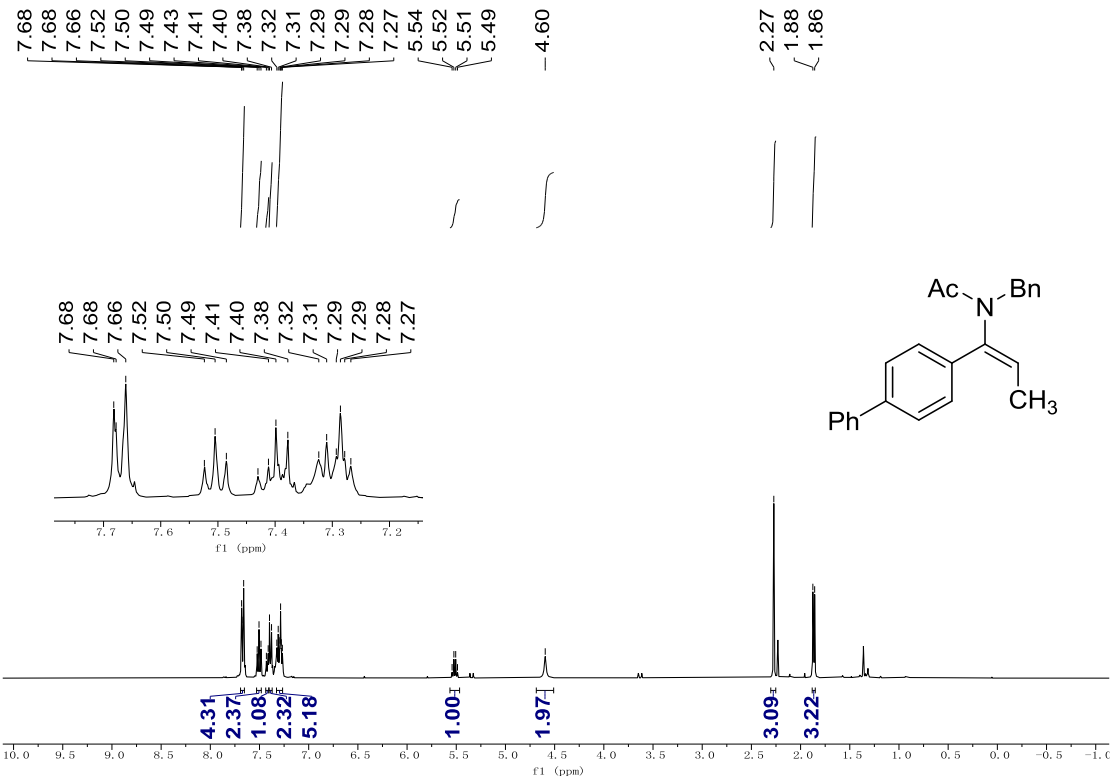


^{13}C NMR (101 MHz, $CDCl_3$)

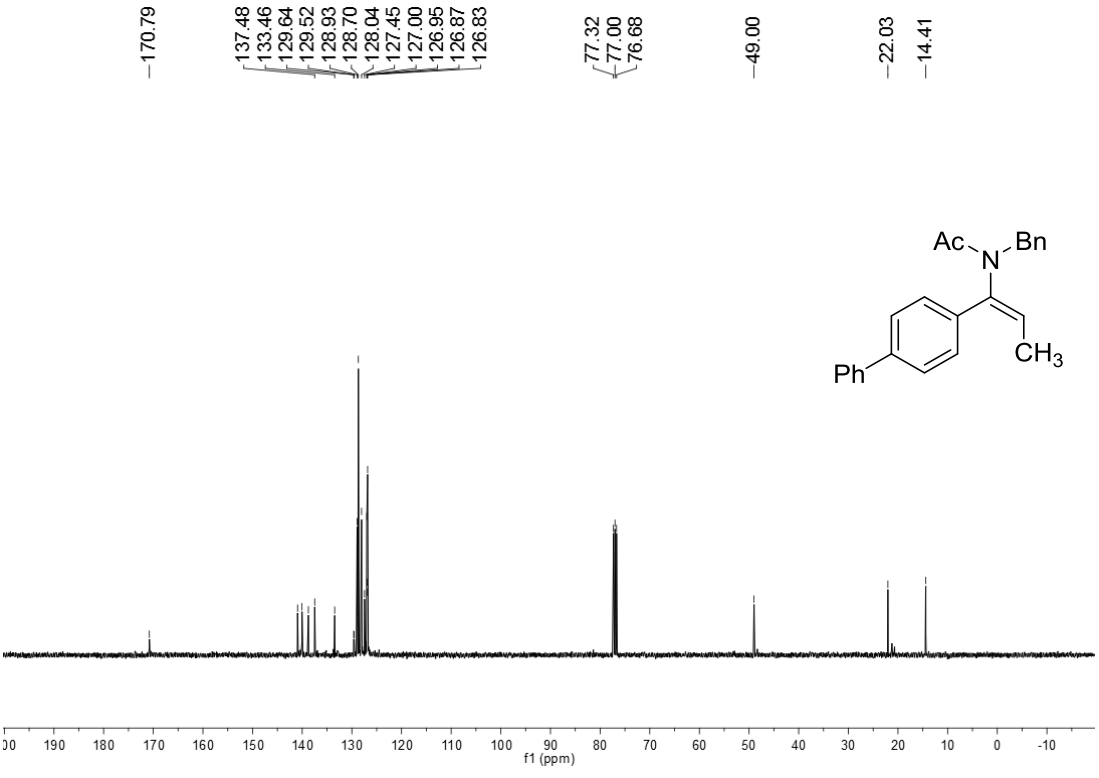


(*E*)-*N*-(1-([1,1'-biphenyl]-4-yl)prop-1-en-1-yl)-*N*-benzylacetamide (2d)

^{1}H NMR (400 MHz, $CDCl_3$)

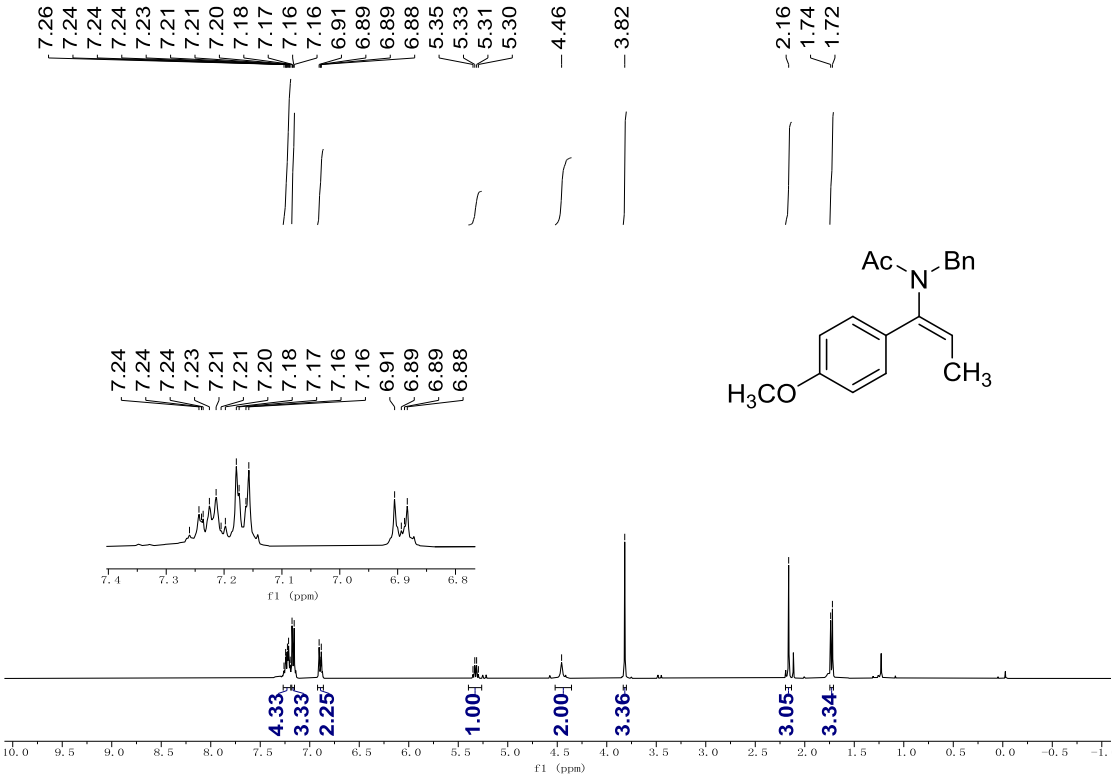


^{13}C NMR (101 MHz, $CDCl_3$)

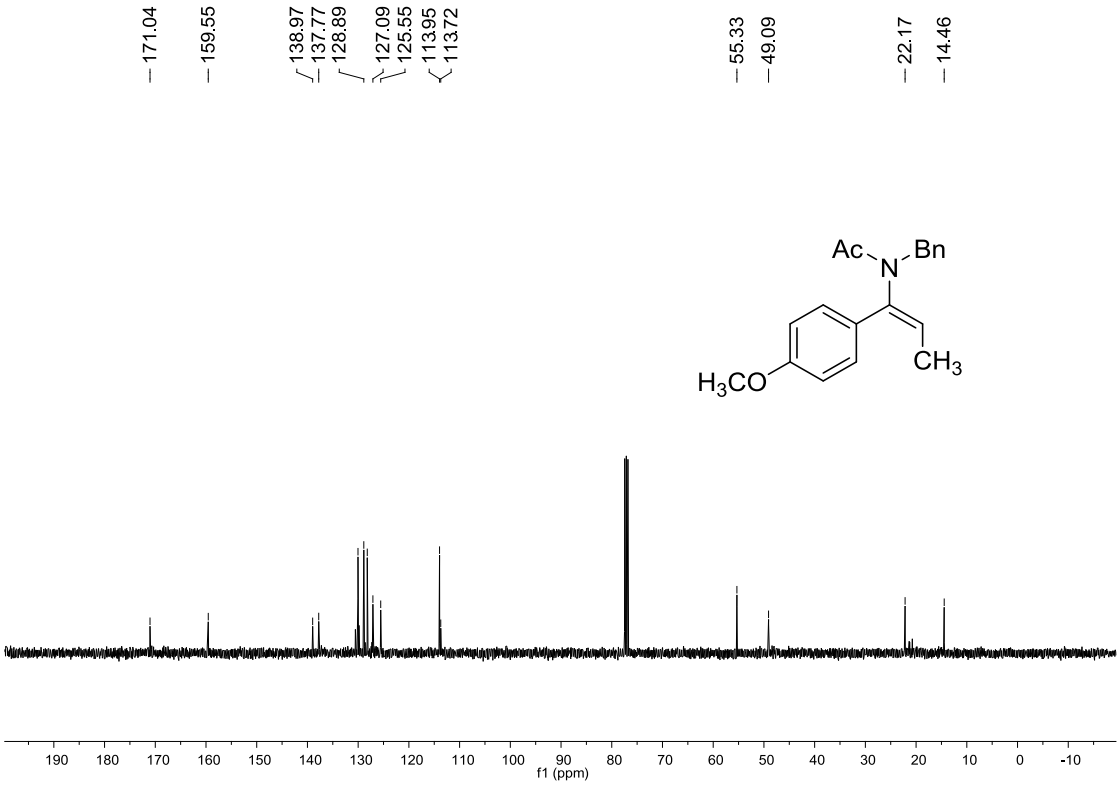


(*E*)-N-benzyl-*N*-(1-(4-methoxyphenyl)prop-1-en-1-yl)acetamide (2e)

^{1}H NMR (400 MHz, $CDCl_3$)

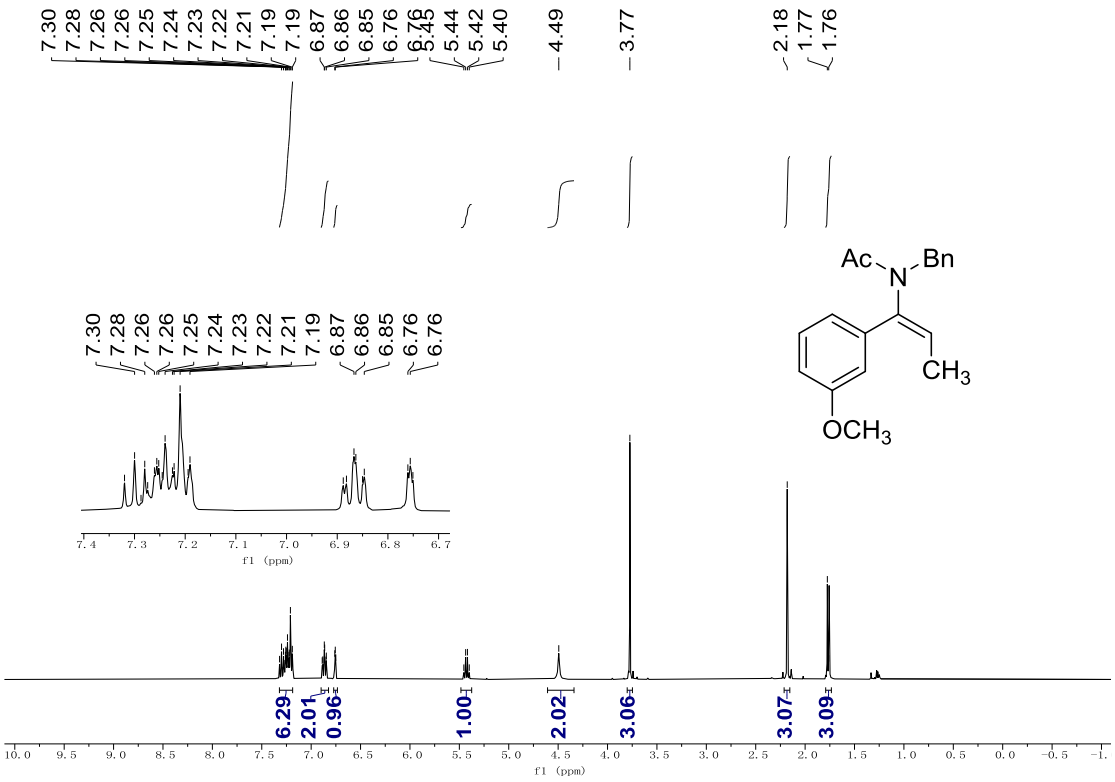


^{13}C NMR (101 MHz, $CDCl_3$)

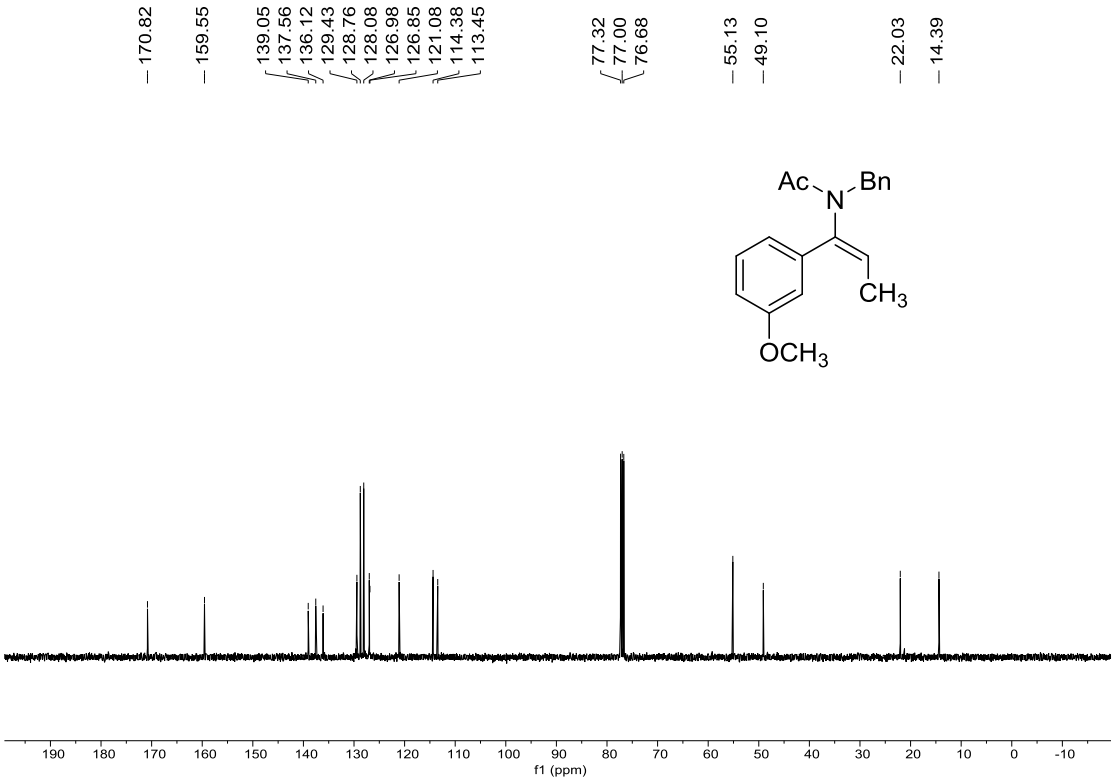


(*E*)-*N*-benzyl-*N*-(1-(3-methoxyphenyl)prop-1-en-1-yl)acetamide (2f)

^{1}H NMR (400 MHz, $CDCl_3$)

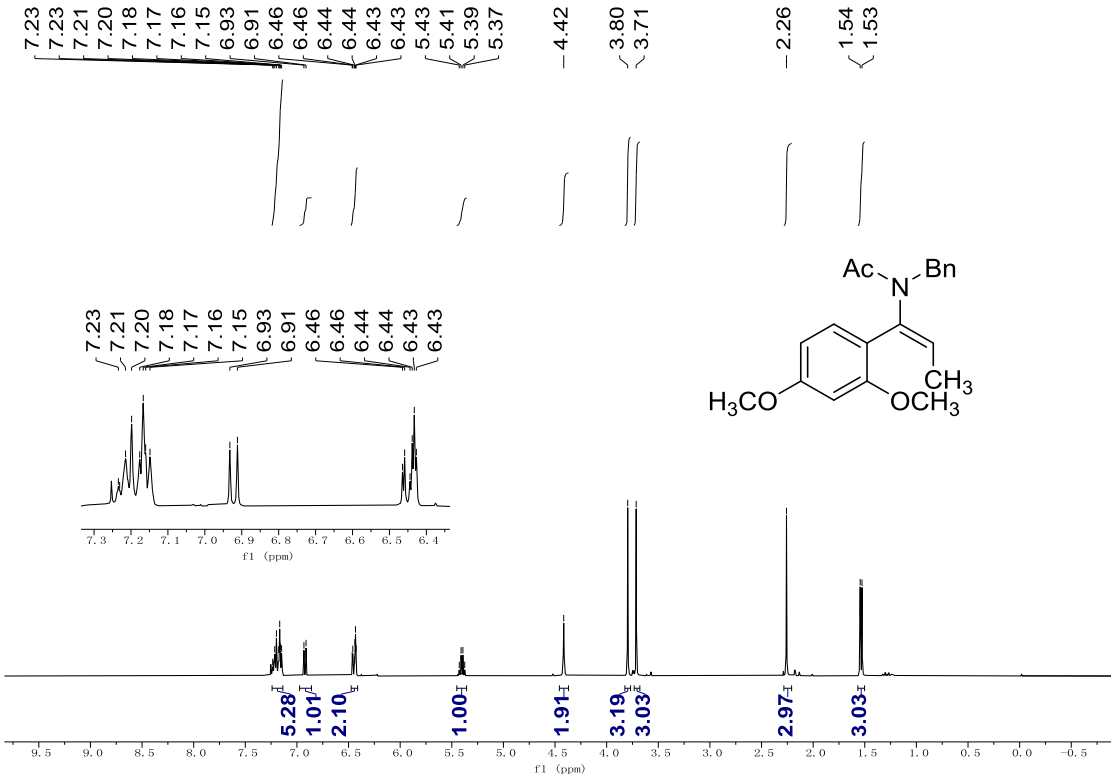


^{13}C NMR (101 MHz, $CDCl_3$)

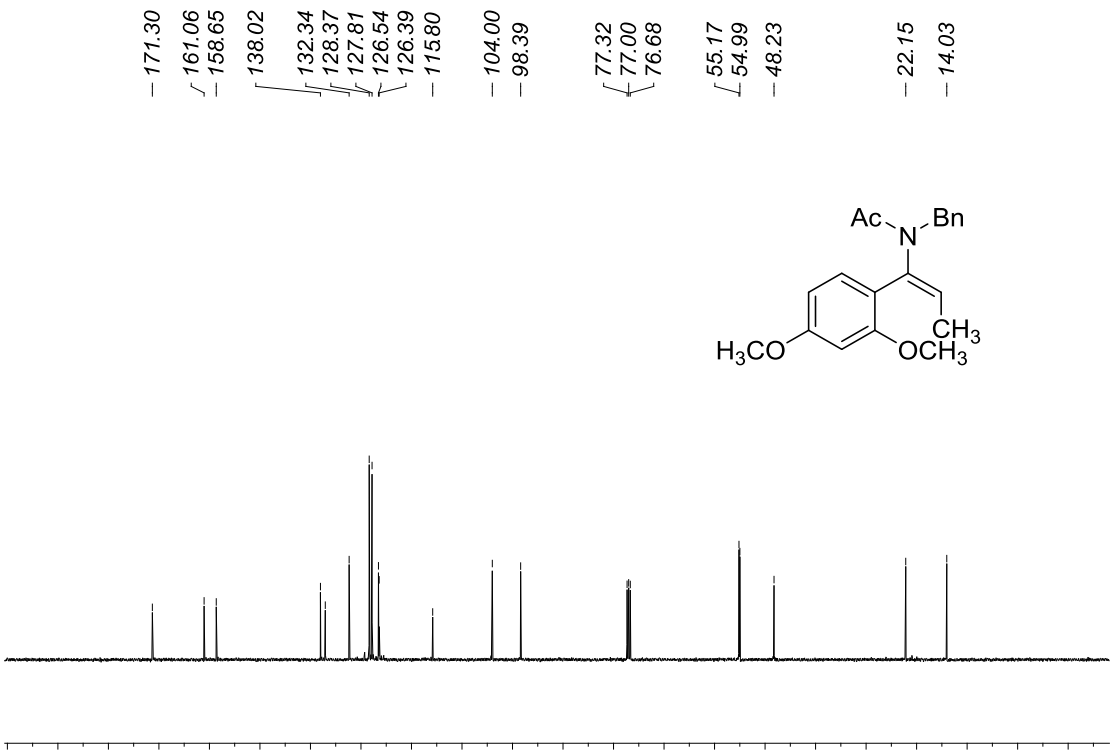


(*E*)-*N*-benzyl-*N*-(1-(2,4-dimethoxyphenyl)prop-1-en-1-yl)acetamide (2g)

^{1}H NMR (400 MHz, $CDCl_3$)

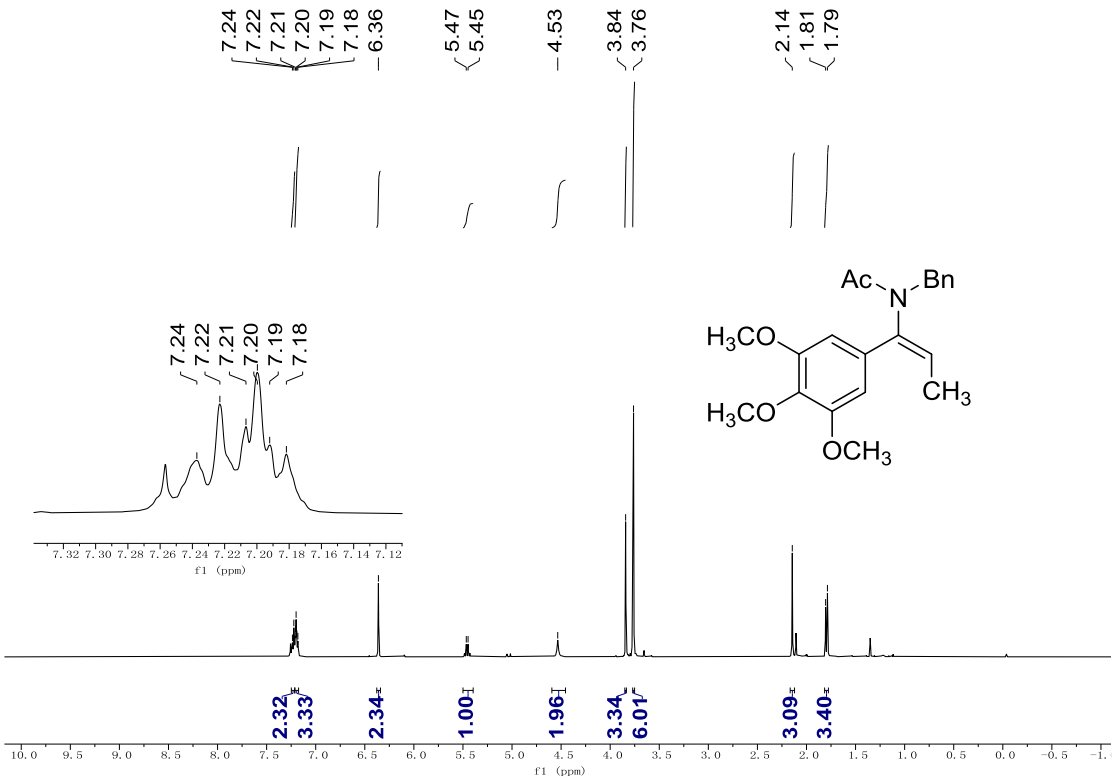


^{13}C NMR (101 MHz, $CDCl_3$)

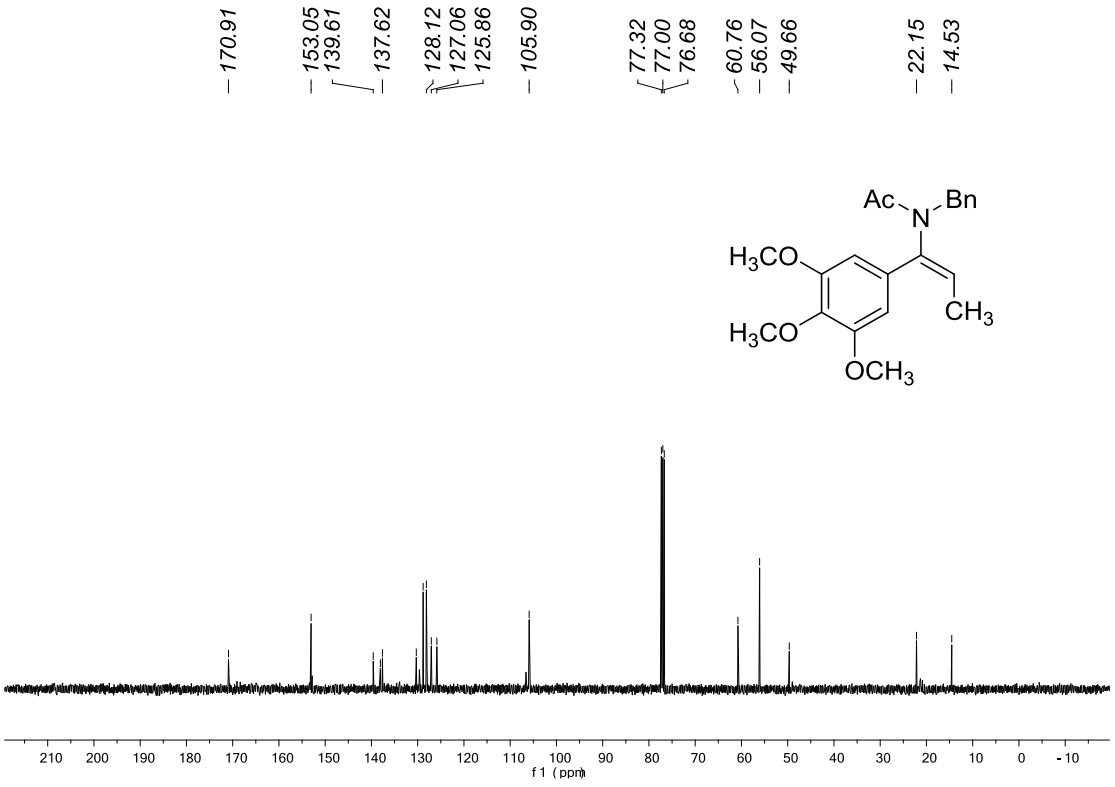


(*E*)-*N*-benzyl-*N*-(1-(3,4,5-trimethoxyphenyl)prop-1-en-1-yl)acetamide (2h)

^{1}H NMR (400 MHz, $CDCl_3$)

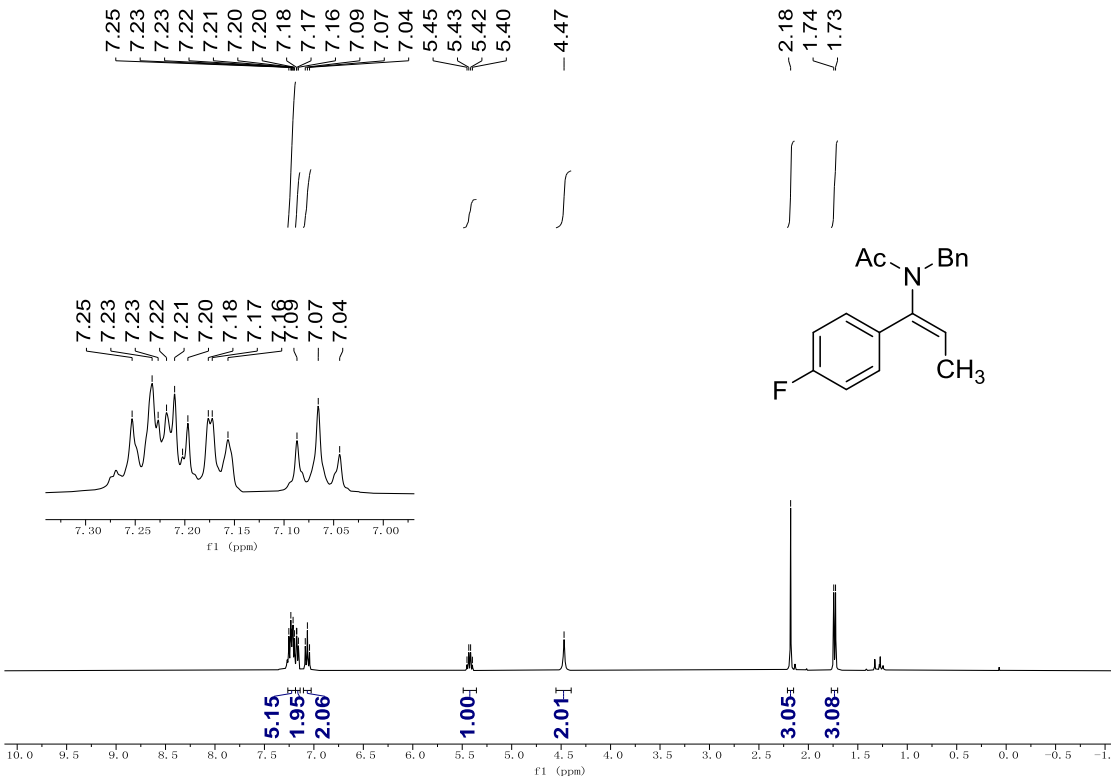


^{13}C NMR (101 MHz, $CDCl_3$)

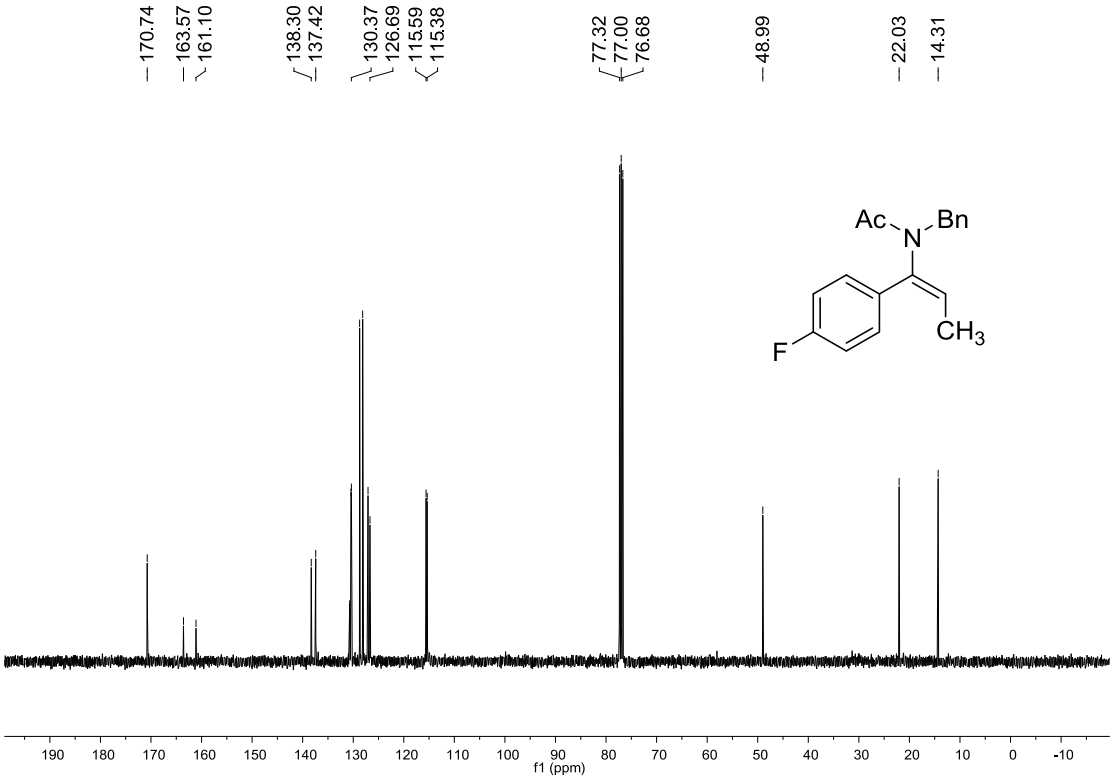


(*E*)-*N*-benzyl-*N*-(1-(4-fluorophenyl)prop-1-en-1-yl)acetamide (2i)

^{1}H NMR (400 MHz, $CDCl_3$)

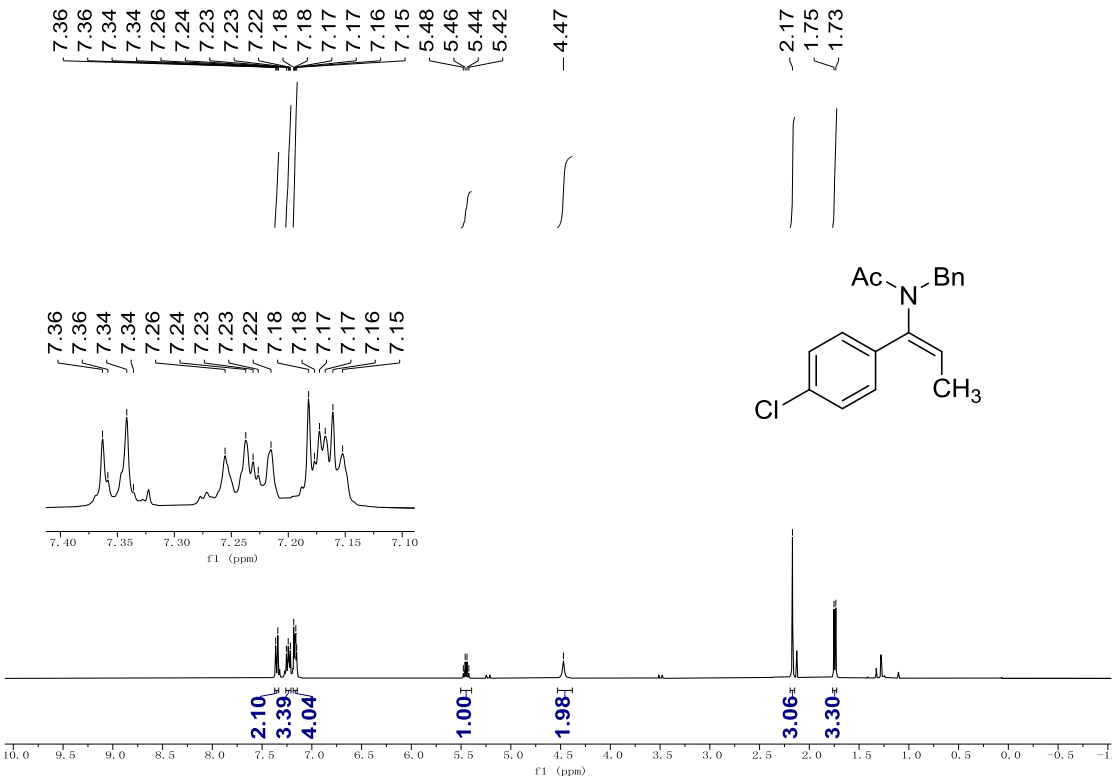


^{1}C NMR (101 MHz, $CDCl_3$)

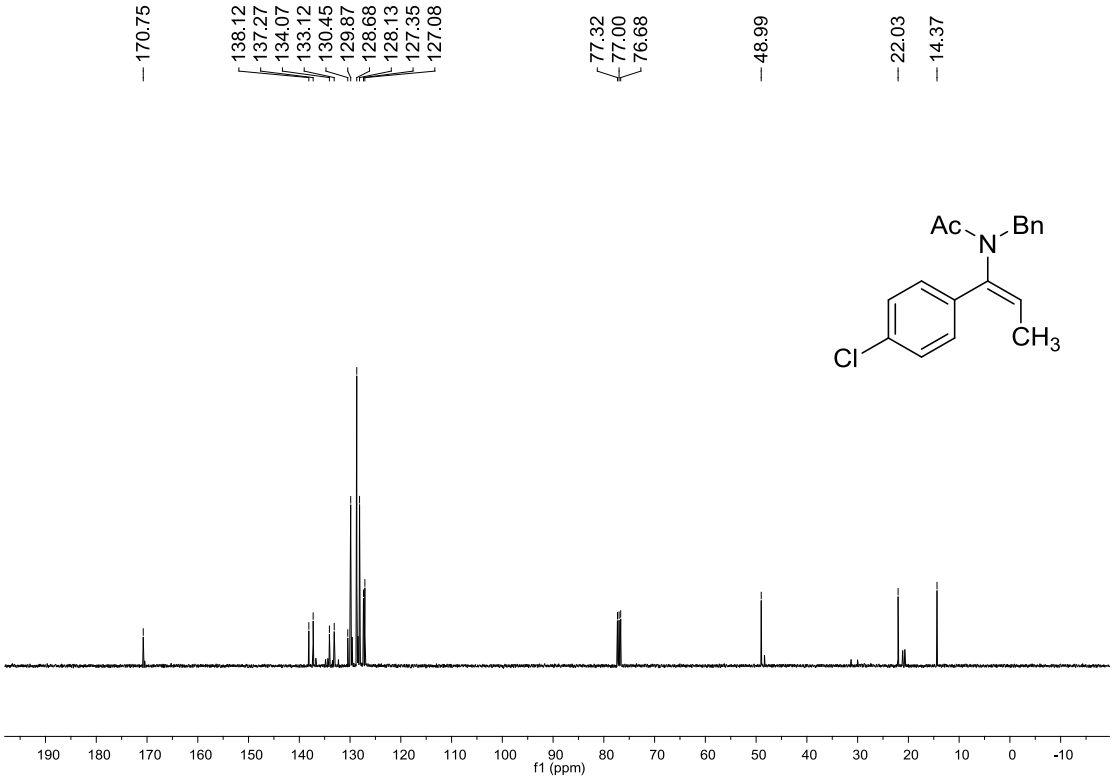


(*E*)-*N*-benzyl-*N*-(1-(4-chlorophenyl)prop-1-en-1-yl)acetamide (2j)

^{1}H NMR (400 MHz, $CDCl_3$)

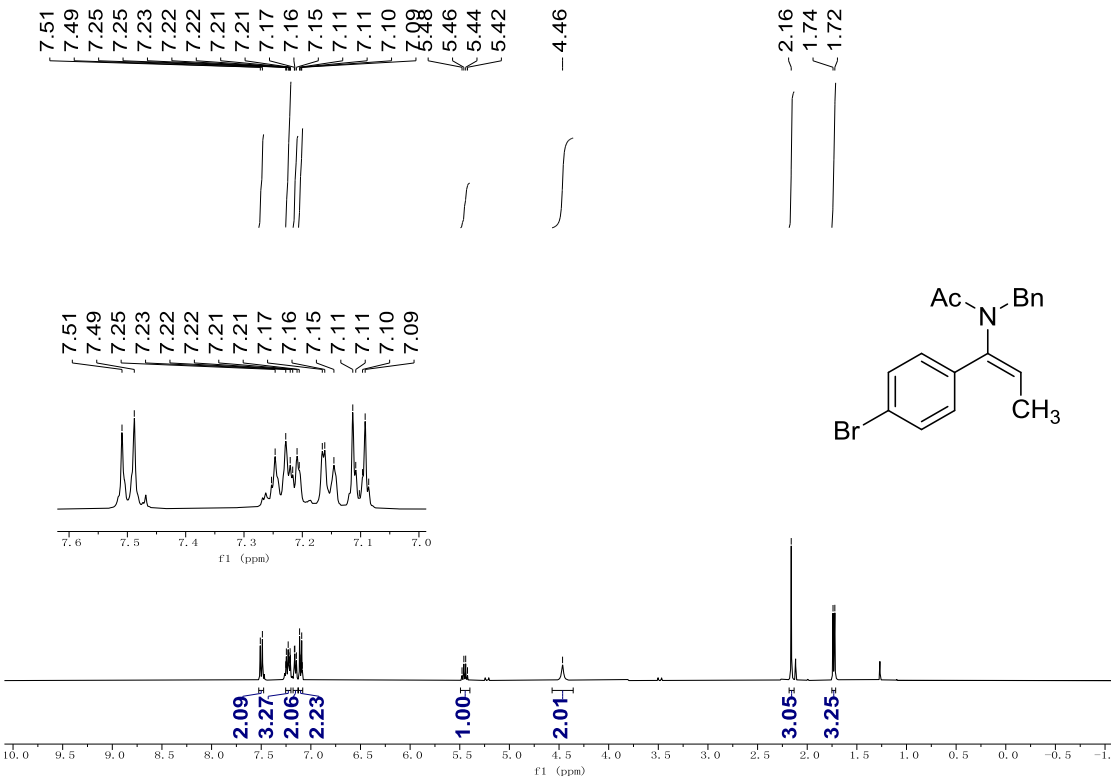


^{13}C NMR (101 MHz, $CDCl_3$)

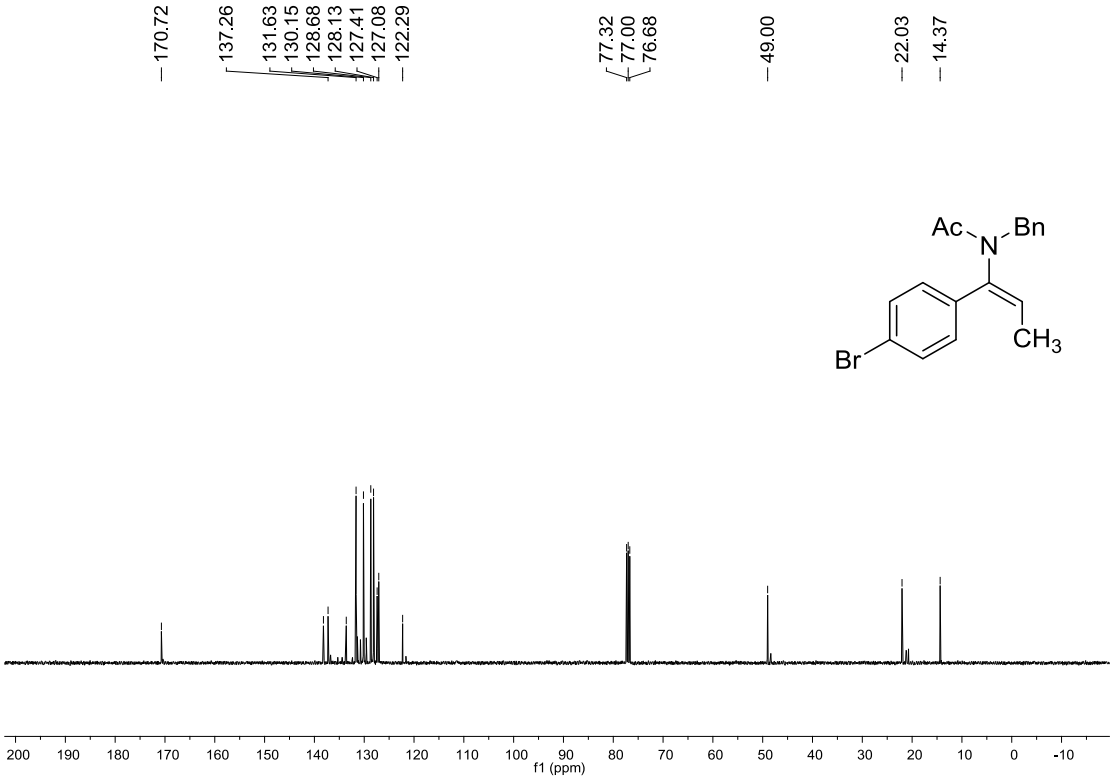


(*E*)-*N*-benzyl-*N*-(1-(4-bromophenyl)prop-1-en-1-yl)acetamide (2k)

^{1}H NMR (400 MHz, $CDCl_3$)

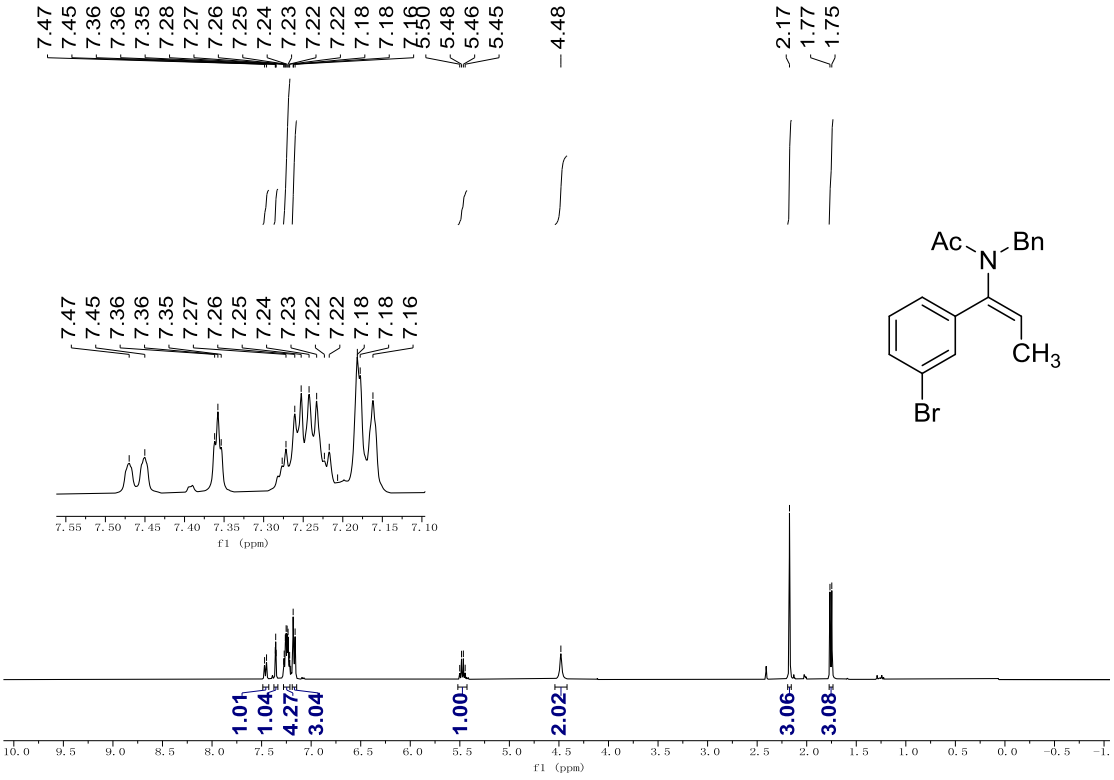


^{13}C NMR (101 MHz, $CDCl_3$)

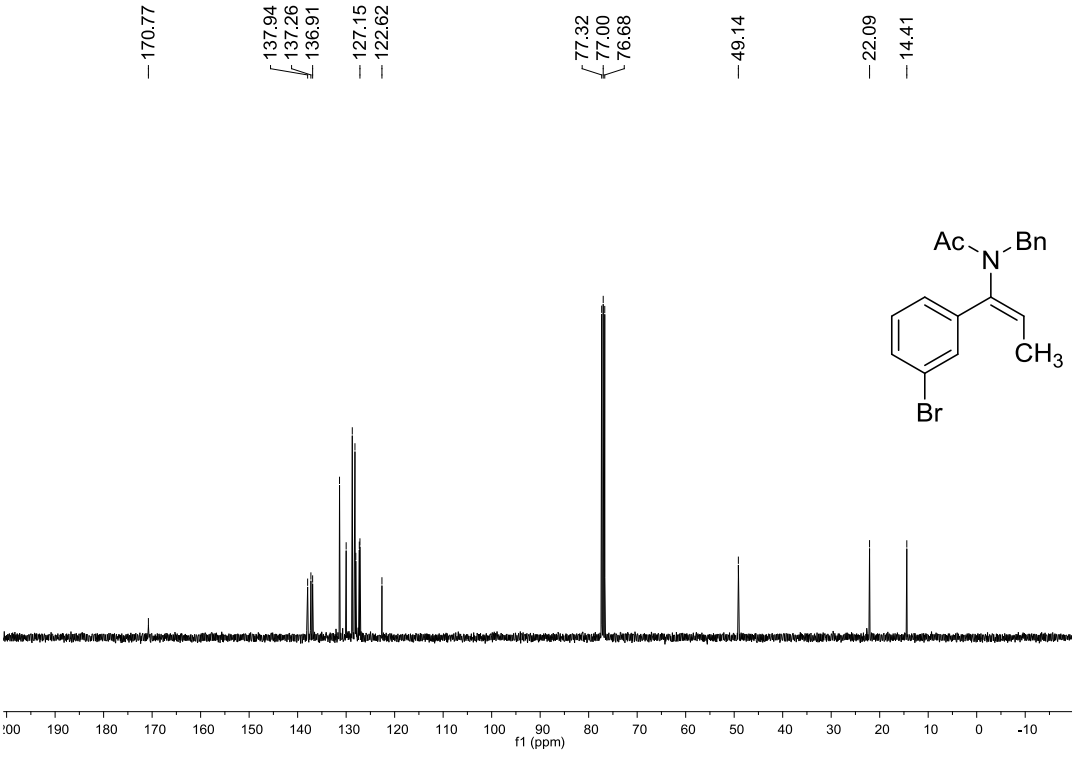


(*E*)-*N*-benzyl-*N*-(1-(3-bromophenyl)prop-1-en-1-yl)acetamide (2l)

^{1}H NMR (400 MHz, $CDCl_3$)

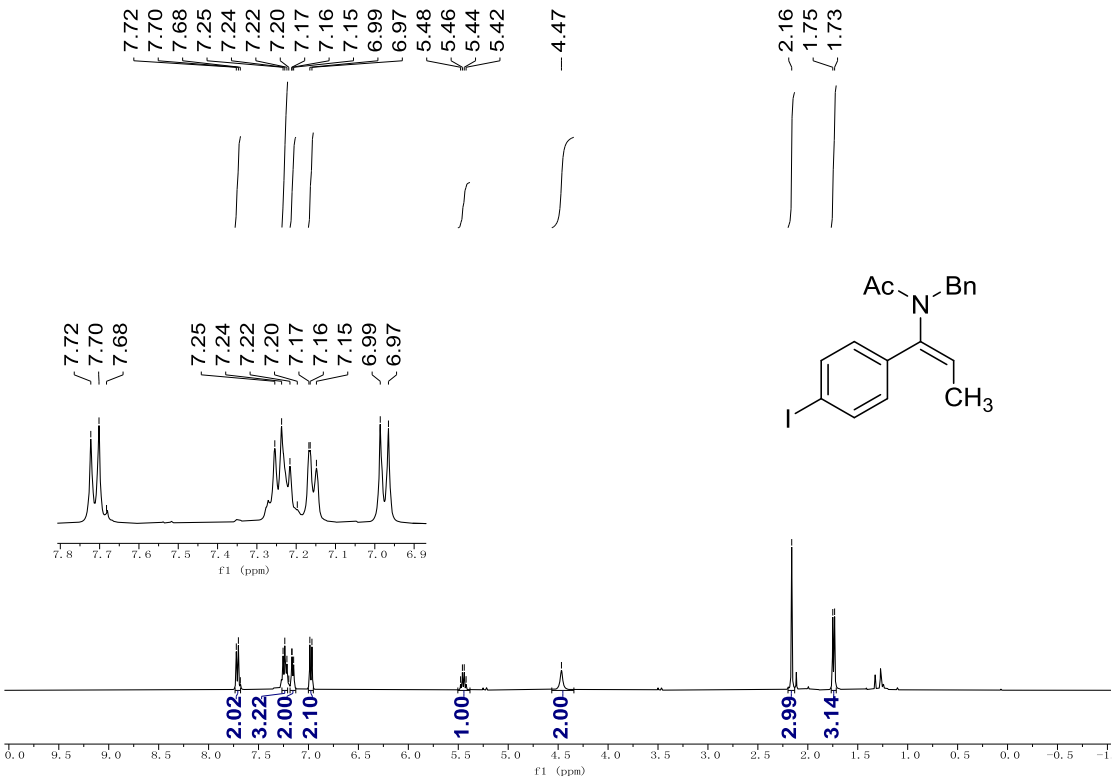


^{13}C NMR (101 MHz, $CDCl_3$)

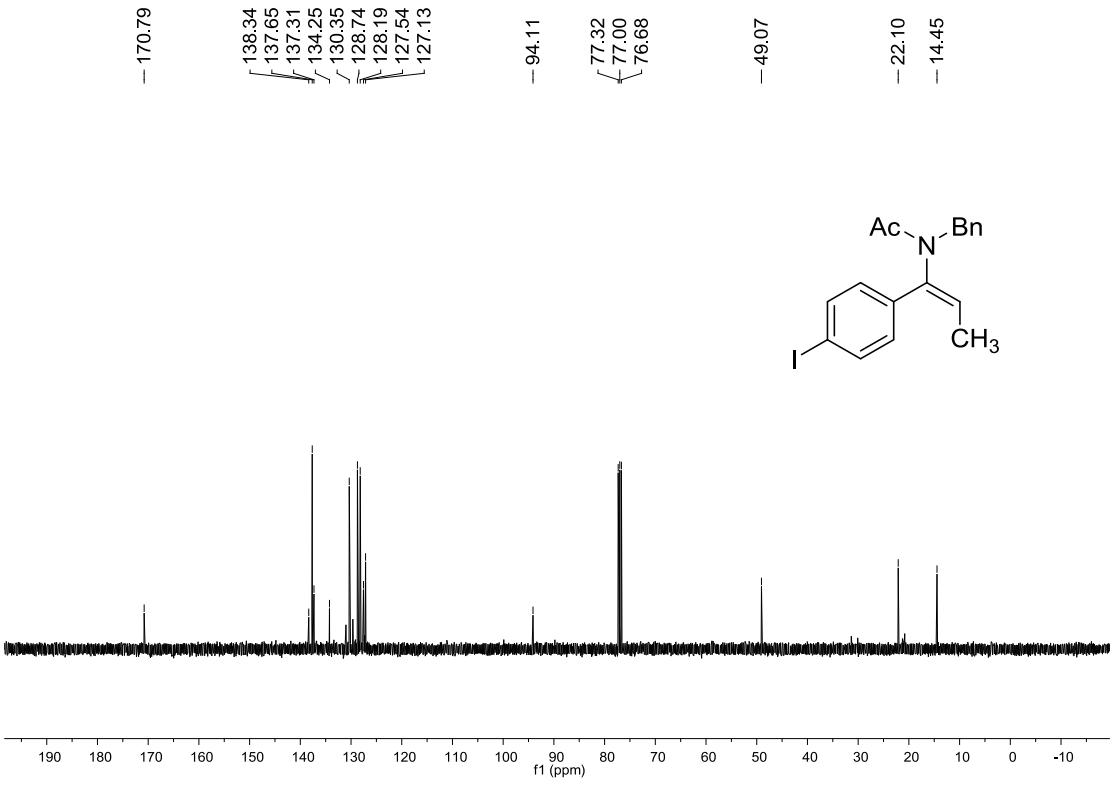


(*E*)-*N*-benzyl-*N*-(1-(4-iodophenyl)prop-1-en-1-yl)acetamide (2m)

^{1}H NMR (400 MHz, $CDCl_3$)

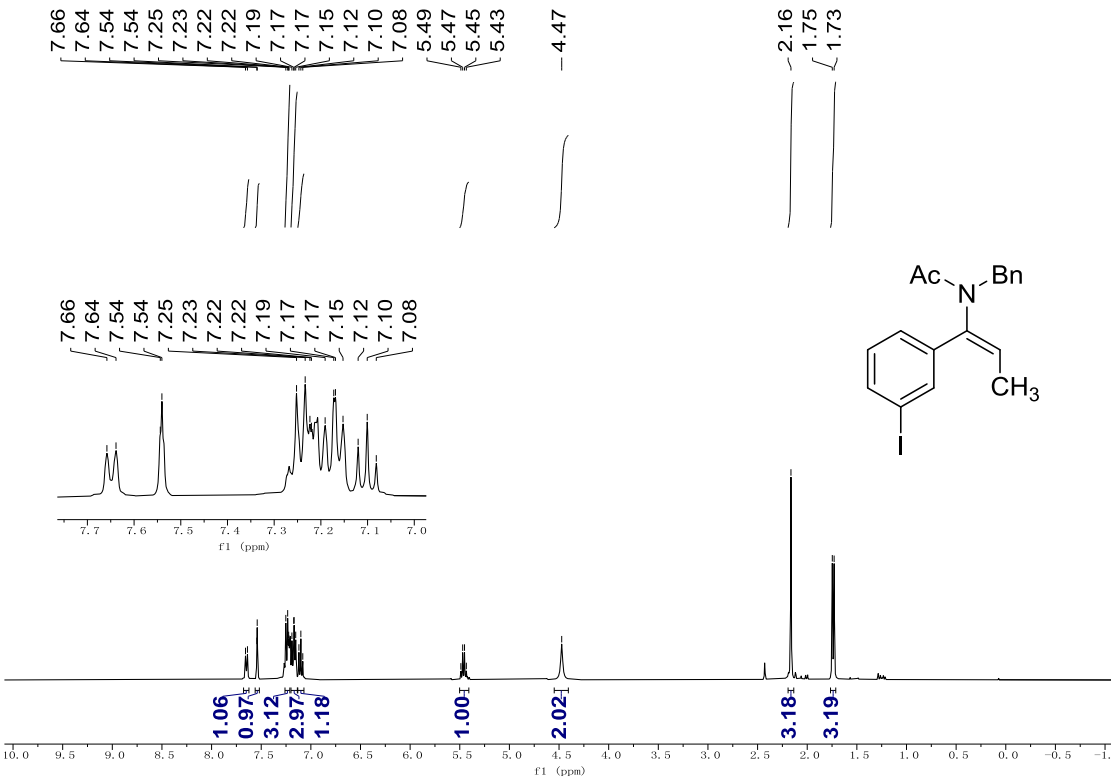


^{13}C NMR (101 MHz, $CDCl_3$)

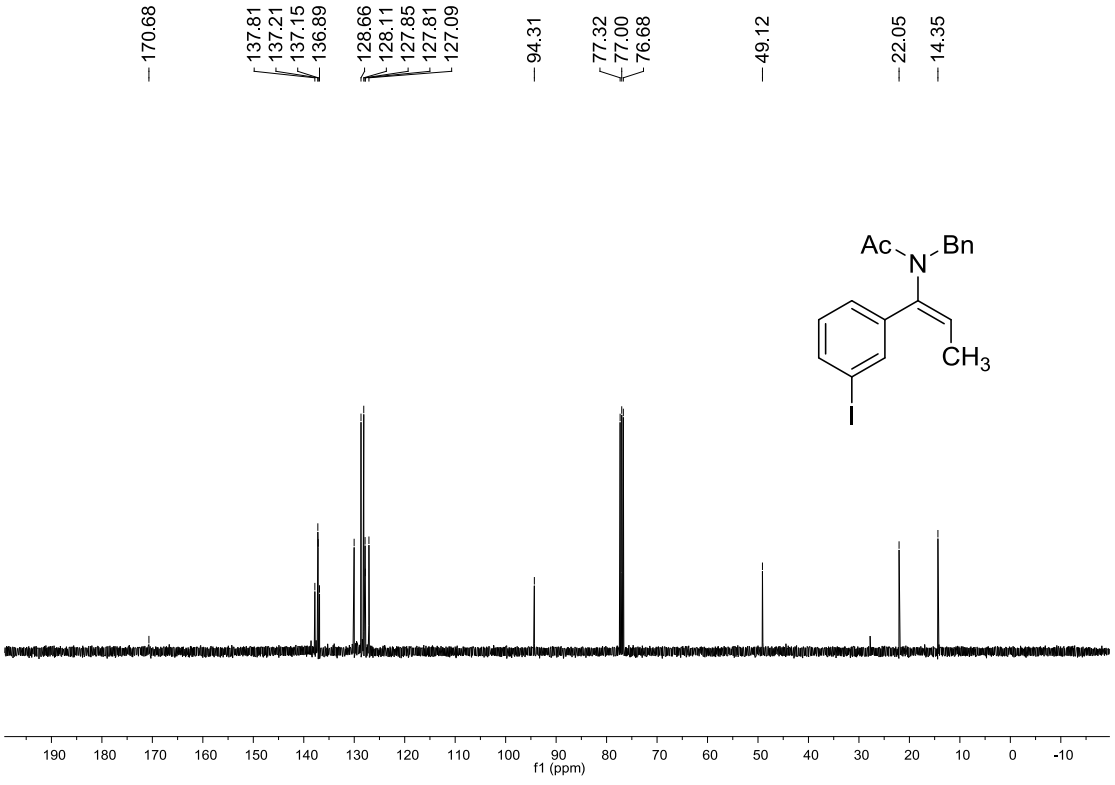


(*E*)-*N*-benzyl-*N*-(1-(3-iodophenyl)prop-1-en-1-yl)acetamide (2n)

^{1}H NMR (400 MHz, $CDCl_3$)

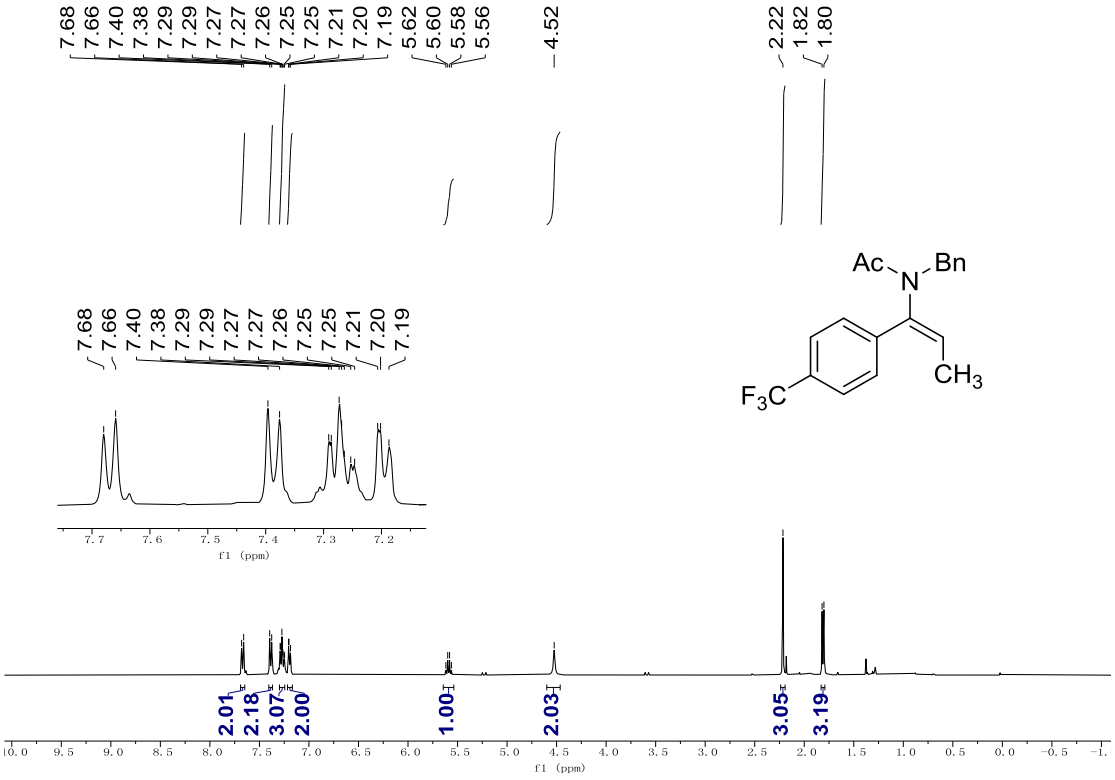


^{13}C NMR (101 MHz, $CDCl_3$)

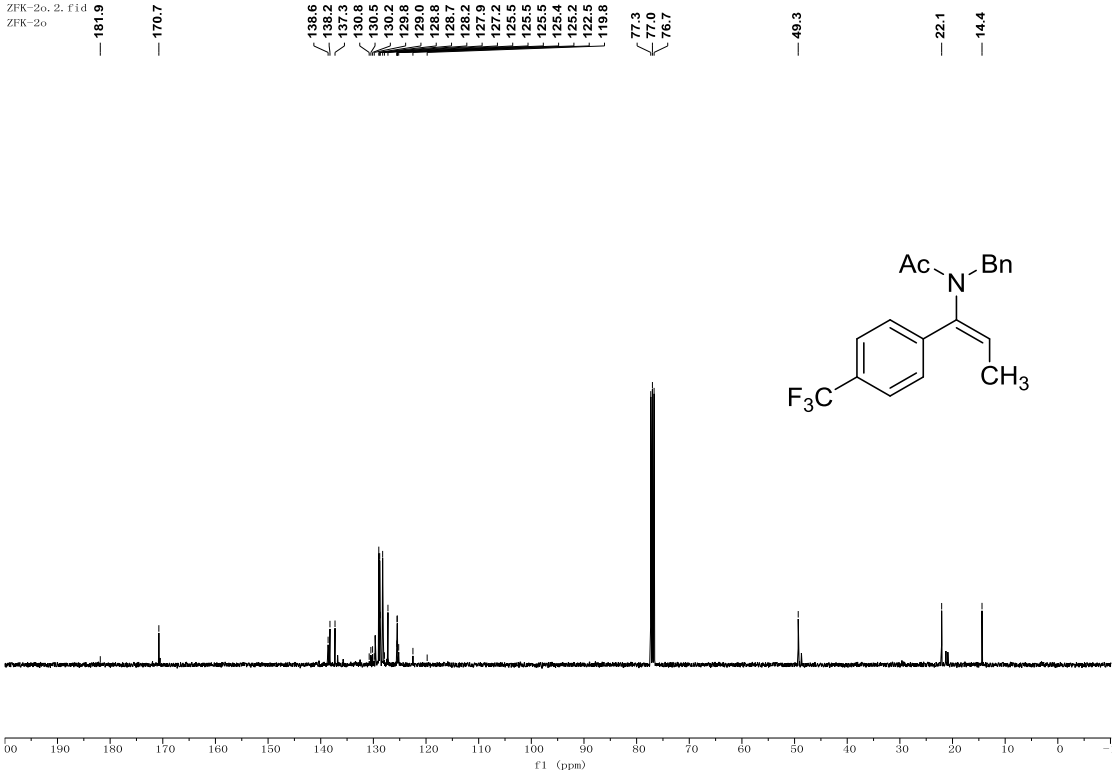


(*E*)-*N*-benzyl-*N*-(1-(4-(trifluoromethyl)phenyl)prop-1-en-1-yl)acetamide (2o)

^{1}H NMR (400 MHz, $CDCl_3$)

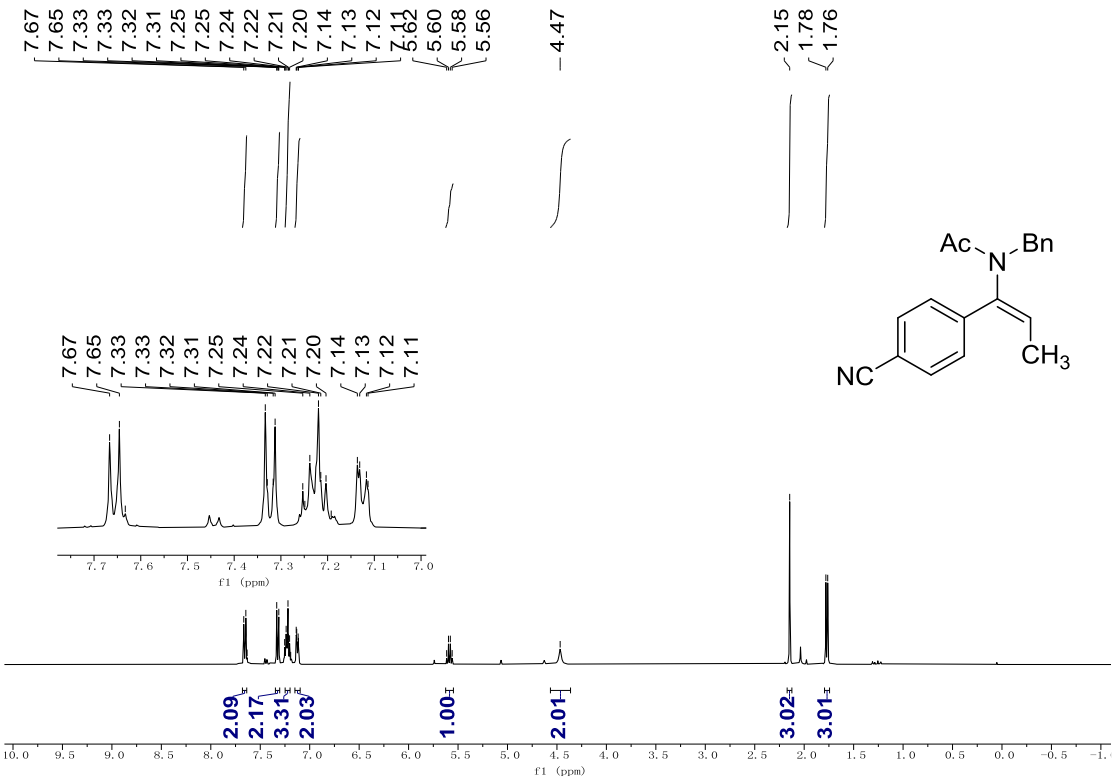


^{13}C NMR (101 MHz, $CDCl_3$)

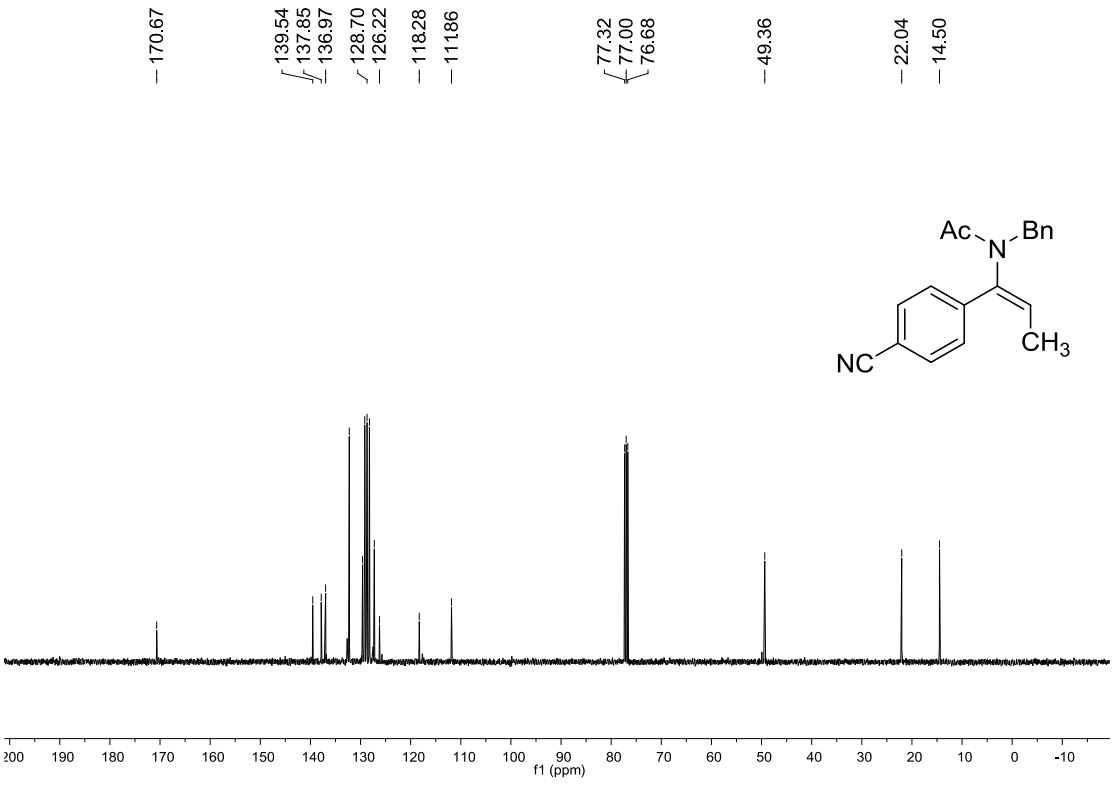


(*E*)-*N*-benzyl-*N*-(1-(4-cyanophenyl)prop-1-en-1-yl)acetamide (2p)

^{1}H NMR (400 MHz, $CDCl_3$)

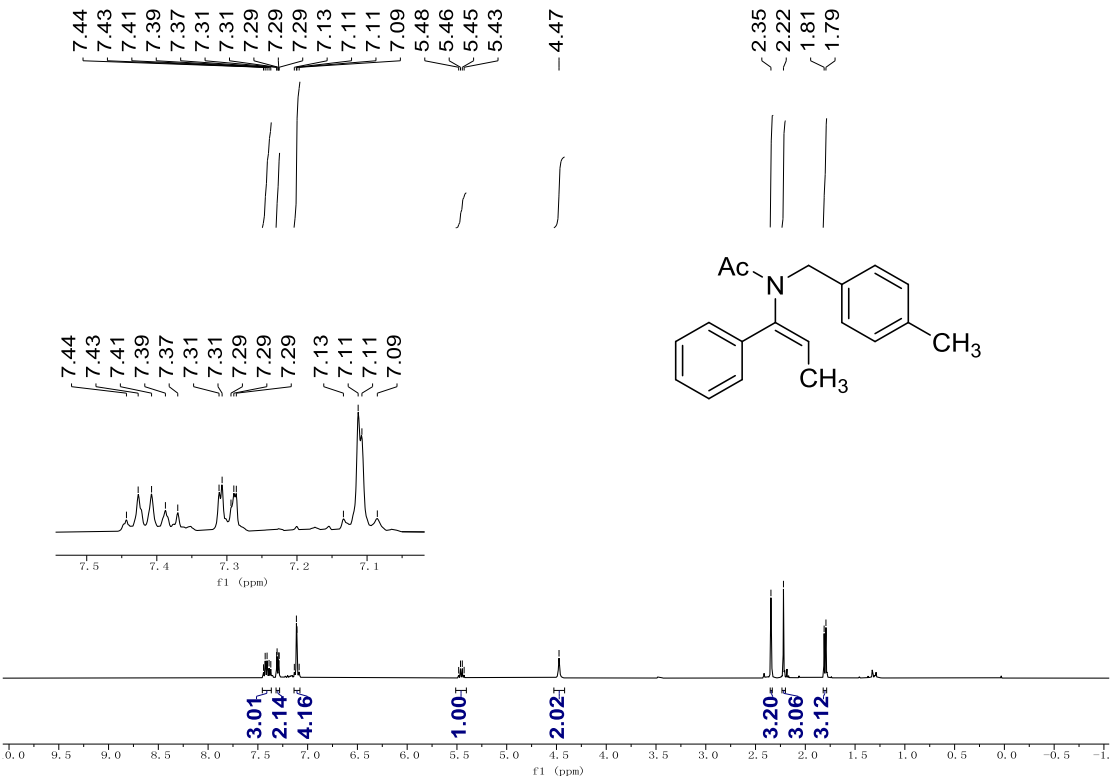


^{13}C NMR (101 MHz, $CDCl_3$)

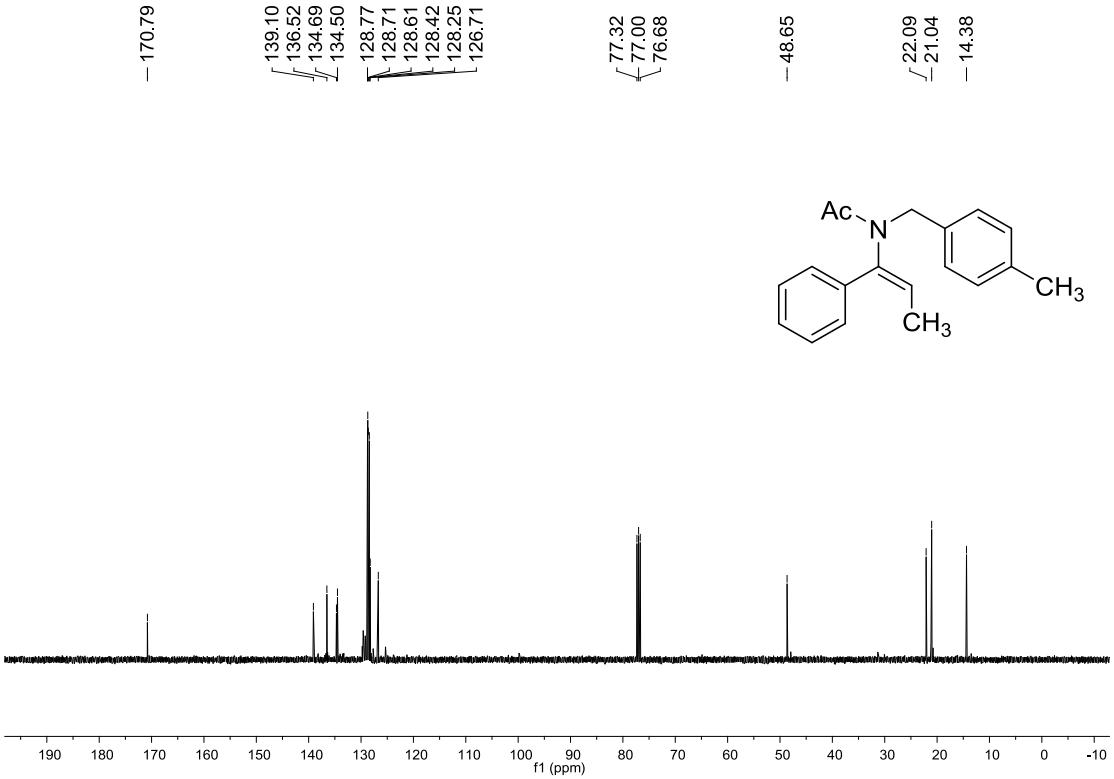


(*E*)-*N*-(4-methylbenzyl)-*N*-(1-phenylprop-1-en-1-yl)acetamide (2q)

^{1}H NMR (400 MHz, $CDCl_3$)

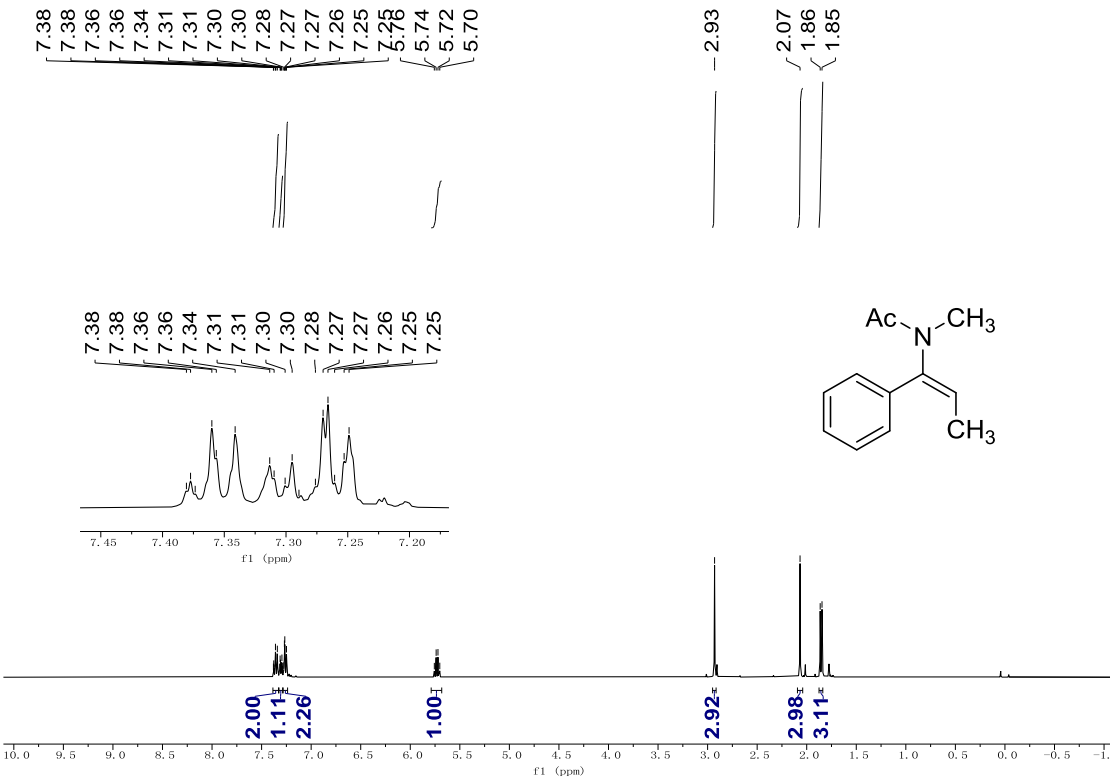


^{13}C NMR (101 MHz, $CDCl_3$)



(*E*)-*N*-methyl-*N*-(1-phenylprop-1-en-1-yl)acetamide (2r)

^{1}H NMR (400 MHz, $CDCl_3$)



^{13}C NMR (101 MHz, $CDCl_3$)