Supporting Information
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Supporting Information

Synthesis of Linear α,β- Unsaturated Amides from Isocyanates and Alkenylaluminum Reagents

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General Comments

NMR spectra were recorded on Bruker Avance 300 and Bruker ARX 500 spectrometers. Chemical shifts (ppm) are given relative to solvent: references for CDCl$_3$ were 7.26 ppm (1H-NMR) and 77.0 ppm (13C-NMR). $^{13}$CNMR spectra were acquired on a broad band decoupled mode. High resolution mass spectra (HRMS) were recorded on Agilent 6210. The data are given as mass units per charge (m/z). Multiplets were assigned as singlet, d (doublet), t (triplet), dd (doublet of doublet), m (multiplet). All measurements were carried out at room temperature unless otherwise stated. Gas chromatography analysis was performed on an Agilent HP-5890 instrument with a FID detector and HP-5 capillary column (polydimethylsiloxane with 5% phenyl groups, 30 m, 0.32 mm i.d., 0.25 μm film thickness) using argon as carrier gas. The products were isolated from the reaction mixture by column chromatography on silica gel 60, 0.063-0.2 mm, 70-230 mesh (Merck).

All reactions were carried out under Ar atmosphere. Except alkenylaluminums$^1$ were synthesized by the relevant literatures, all other reagents were purchased from Sigma-Aldrich or Alfa-Aesar or TCI chemical company.

General procedure

Under the Argon, a alkenylaluminum solution (0.6 mmol) was dropped into a fresh isocyanatobenzene (0.5 mmol) in THF (1 mL) at 0 °C. Then the reaction was warmed slowly to room temperature and continued to react for 16 hours. After removal of solvent under reduced pressure, pure product was obtained by column chromatography on silica gel (elucent: heptane/ethyl acetate 5:1).

The failed examples:

![Failed Examples](image)

References

(E)-N-Phenylnon-2-enamide

3aa, eluting with n-heptane and ethyl acetate 5:1 (V/V), colorless oil, 83 mg, yield 72%.

1H NMR (500 MHz, Chloroform-d) δ 7.64 (s, 1H), 7.51 (d, J = 8.1 Hz, 2H), 7.22 (t, J = 7.8 Hz, 2H), 7.02 (t, J = 7.4 Hz, 1H), 6.90 (dt, J = 15.1, 7.0 Hz, 1H), 5.89 (dt, J = 15.3, 1.6 Hz, 1H), 2.11 (qd, J = 7.1, 1.5 Hz, 2H), 1.41 – 1.32 (m, 2H), 1.21 (dddt, J = 14.6, 9.2, 6.6, 3.5 Hz, 6H), 0.82 (t, J = 6.9 Hz, 3H).

13C NMR (126 MHz, CDCl3) δ 164.43, 146.60, 138.21, 129.05, 128.96, 124.20, 120.04, 32.18, 31.65, 28.90, 28.23, 22.59, 14.06.

HRMS (ESI): calcd. for C15H21NO+[H]+ 232.1701, found 232.1702.

(E)-N-(o-Tolyl)non-2-enamide

3ba, eluting with n-heptane and ethyl acetate 5:1 (V/V), colorless oil, 70 mg, yield 57%.

1H NMR (250 MHz, Chloroform-d) δ 7.77 (s, 1H), 7.40 – 7.21 (m, 2H), 7.08 (t, J = 7.8 Hz, 1H), 6.94 – 6.73 (m, 2H), 5.89 (dt, J = 15.2, 1.5 Hz, 1H), 2.21 (s, 3H), 2.08 (qd, J = 7.0, 1.5 Hz, 2H), 1.38 – 1.27 (m, 2H), 1.24 – 1.14 (m, 6H), 0.84 – 0.76 (m, 3H).

13C NMR (63 MHz, CDCl3) δ 164.48, 146.31, 138.72, 138.11, 128.68, 124.96, 124.02, 120.76, 117.20, 32.12, 31.61, 28.86, 28.22, 22.54, 21.41, 14.03.

HRMS (ESI): calcd. for C16H23NO+[H]+ 246.1858, found 246.1861.

(E)-N-(m-Tolyl)non-2-enamide

3ca, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 94 mg, yield 77%.

1H NMR (250 MHz, Chloroform-d) δ 7.81 (s, 1H), 7.40 – 7.22 (m, 2H), 7.08 (t, J = 7.8 Hz, 1H), 6.96 – 6.75 (m, 2H), 5.89 (dt, J = 15.2, 1.5 Hz, 1H), 2.20 (s, 3H), 2.13 – 2.02 (m, 2H), 1.32 (tdd, J = 10.6, 5.0, 2.4 Hz, 2H), 1.24 – 1.14 (m, 6H), 0.83 – 0.75 (m, 3H).

13C NMR (63 MHz, CDCl3) δ 164.51, 146.31, 138.72, 138.11, 128.68, 124.96, 124.02, 120.76, 117.23, 32.12, 31.60, 28.86, 28.22, 22.53, 21.41, 14.03.

HRMS (ESI): calcd. for C16H23NO+[H]+ 246.1860, found 246.1864.

(E)-N-(p-Tolyl)non-2-enamide

3da, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 89 mg, yield 73%.

1H NMR (250 MHz, Chloroform-d) δ 7.98 (s, 1H), 7.38 (d, J = 8.0 Hz, 2H), 7.01 – 6.94 (m, 2H), 6.85 (dt, J = 15.2, 7.0 Hz, 1H), 5.89 (dt, J = 15.2, 1.5 Hz, 1H), 2.20 (s, 3H), 2.12 – 2.00 (m, 2H), 1.37 – 1.25 (m, 2H), 1.23 – 1.14 (m, 6H), 0.83 – 0.76 (m, 3H).

13C NMR (63 MHz, CDCl3) δ 164.52, 146.00, 135.71, 133.63, 129.33, 124.12, 120.22, 32.11, 31.62, 28.87, 28.25, 22.54, 20.82, 14.04.

HRMS (ESI): calcd. for C16H23NO+[H]+ 246.1860, found 246.1860.

(E)-N-(4-Fluorophenyl)non-2-enamide
3ea, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 93 mg, yield 75%.

\[ \text{H NMR (250 MHz, Chloroform-}d) \delta 7.85 (s, 1H), 7.45 (dd, J = 8.9, 4.8 Hz, 2H), 6.96 – 6.81 (m, 3H), 5.96 – 5.70 (m, 1H), 2.16 – 2.00 (m, 2H), 1.39 – 1.27 (m, 2H), 1.20 (dt, J = 4.3, 3.9, 1.7 Hz, 6H), 0.84 – 0.76 (m, 3H).

\[ \text{C NMR (63 MHz, CDCl}_3\) \delta 164.44, 159.31 (d, J = 243.8 Hz), 146.66, 134.14 (d, J = 3.1 Hz), 123.68, 121.84 (d, J = 8.2 Hz), 115.49 (d, J = 22.1 Hz), 32.13, 31.58, 28.83, 28.18, 22.51, 14.00.

HRMS-ESI: calcd. for C_{15}H_{20}NClO[H]^+ 266.1312, found 266.1312.

(E)-N-(4-Chlorophenyl)non-2-enamide

3fa, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 93 mg, yield 70%.

\[ \text{H NMR (250 MHz, Chloroform-}d) \delta 8.00 (s, 1H), 7.46 (d, J = 8.8 Hz, 2H), 7.19 – 7.14 (m, 2H), 6.88 (dt, J = 15.2, 7.0 Hz, 1H), 5.89 (d, J = 15.2 Hz, 1H), 2.14 – 2.04 (m, 2H), 1.33 (td, J = 7.9, 5.6, 3.2 Hz, 2H), 1.21 (td, J = 5.9, 4.4, 2.4 Hz, 6H), 0.85 – 0.78 (m, 3H).

\[ \text{C NMR (63 MHz, CDCl}_3\) \delta 164.56, 147.00, 136.75, 129.16, 128.87, 123.63, 121.37, 32.15, 31.58, 28.85, 28.17, 22.53, 14.03.

HRMS-ESI: calcd. for C_{15}H_{20}NOCl[H]^+ 266.1312, found 266.1312.

(E)-N-(4-Methoxyphenyl)non-2-enamide

3ga, eluting with n-heptane and ethyl acetate 3:1 (V/V), white solid, 91 mg, yield 70%.

\[ \text{H NMR (250 MHz, Chloroform-}d) \delta 7.84 (s, 1H), 7.52 – 7.32 (m, 2H), 6.85 (dt, J = 15.2, 7.0 Hz, 1H), 6.77 – 6.71 (m, 2H), 5.87 (d, J = 15.2 Hz, 1H), 3.68 (s, 3H), 2.15 – 2.01 (m, 2H), 1.38 – 1.27 (m, 2H), 1.26 – 1.16 (m, 6H), 0.83 – 0.76 (m, 3H).

\[ \text{C NMR (63 MHz, CDCl}_3\) \delta 164.34, 156.25, 145.85, 131.39, 124.01, 121.84, 114.03, 55.39, 32.11, 31.60, 28.85, 28.24, 22.53, 14.02.

HRMS-ESI: calcd. for C_{15}H_{22}NO[H]^+ 262.1807, found 262.1809.

(E)-N-(4-(Methylthio)phenyl)non-2-enamide

3ha, eluting with n-heptane and ethyl acetate 3:1 (V/V), yellow solid, 108 mg, yield 78%.

\[ \text{H NMR (250 MHz, Chloroform-}d) \delta 8.04 (s, 1H), 7.51 – 7.37 (m, 2H), 7.13 – 7.03 (m, 2H), 6.86 (dt, J = 15.2, 7.0 Hz, 1H), 5.90 (dt, J = 15.2, 1.5 Hz, 1H), 2.36 (s, 3H), 2.14 – 2.00 (m, 2H), 1.31 (dt, J = 8.3, 5.9 Hz, 2H), 123 – 1.14 (m, 6H), 0.83 – 0.75 (m, 3H).

\[ \text{C NMR (63 MHz, CDCl}_3\) \delta 164.55, 146.48, 135.87, 133.38, 127.83, 123.89, 120.78, 32.14, 31.60, 28.86, 28.22, 22.53, 16.60, 14.04.

HRMS-ESI: calcd. for C_{15}H_{22}NOS[H]^+ 278.1578, found 278.1578.

(E)-N-(4-Nitrophenyl)non-2-enamide

3ia, eluting with n-heptane and ethyl acetate 2:1 (V/V), light yellow oil, 77 mg, yield 56%.

\[ \text{H NMR (250 MHz, Chloroform-}d) \delta 8.13 (d, J = 9.2 Hz, 2H), 7.84 (s, 1H), 7.71 (d, J = 9.2 Hz, 2H), 6.99 (dt, J = 15.2, 7.0 Hz, 1H), 6.12 – 5.75 (m, 1H), 2.18 (td, J = 7.4, 6.7, 2.4 Hz, 2H), 1.38 (d, J = 8.3 Hz, 2H), 1.33 – 1.10 (m, 6H), 0.90 – 0.76 (m, 3H).

\[ \text{C NMR (63 MHz, CDCl}_3\) \delta 164.42, 148.86, 144.14, 143.35, 125.05, 123.11, 119.16, 32.24, 31.55, 28.81, 28.03, 22.50, 14.00.

HRMS-ESI: calcd. for C_{15}H_{20}NO_2[H]^+ 277.1552, found 277.1552.
(E)-N-Butynon-2-enamide

3ja, eluting with n-heptane and ethyl acetate 5:1 (V/V), colorless oil, 85 mg, yield 81%.

\(^1\)H NMR (250 MHz, Chloroform-d) δ 6.73 (dt, J = 15.3, 6.9 Hz, 1H), 6.35 – 5.94 (m, 1H), 5.83 – 5.65 (m, 1H), 3.23 (td, J = 7.0, 5.7 Hz, 2H), 2.21 – 1.99 (m, 2H), 1.48 – 1.18 (m, 12H), 0.87 – 0.77 (m, 6H).

\(^13\)C NMR (63 MHz, CDCl₃) δ 166.23, 144.21, 123.74, 39.18, 31.96, 31.56, 31.56, 31.56, 31.56, 31.56, 31.56, 28.80, 28.24, 22.47, 20.05, 13.95, 13.66.

HRMS-(ESI): calcd. for C₁₃H₂₅NO[²H]⁺ 212.2014, found 212.2015.

(E)-N-Cyclohexynon-2-enamide

3ka, eluting with n-heptane and ethyl acetate 5:1 (V/V), colorless oil, 81 mg, yield 68%.

\(^1\)H NMR (250 MHz, Chloroform-d) δ 6.73 (dt, J = 15.3, 6.9 Hz, 1H), 5.69 (dt, J = 15.2, 1.5 Hz, 1H), 5.57 (d, J = 8.4 Hz, 1H), 3.76 (dddd, J = 10.6, 8.2, 6.6, 4.1 Hz, 1H), 2.13 – 2.01 (m, 2H), 1.91 – 1.80 (m, 2H), 1.70 – 1.49 (m, 4H), 1.29 – 1.06 (m, 12H), 0.84 – 0.78 (m, 3H).

\(^13\)C NMR (63 MHz, CDCl₃) δ 165.12, 144.30, 123.92, 48.03, 33.15, 31.97, 31.58, 28.82, 28.24, 25.53, 24.85, 22.50, 13.99.

HRMS-(ESI): calcd. for C₁₅H₂₇NO[²H]⁺ 238.2171, found 238.2172.

(E)-N-Phenylhex-2-enamide

3ab, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 75 mg, yield 79%.

\(^1\)H NMR (250 MHz, Chloroform-d) δ 7.98 (s, 1H), 7.56 – 7.46 (m, 2H), 7.23 – 7.15 (m, 2H), 7.03 – 6.94 (m, 1H), 6.87 (dt, J = 15.2, 7.0 Hz, 1H), 5.91 (dt, J = 15.3, 1.5 Hz, 1H), 2.11 – 2.00 (m, 2H), 1.45 – 1.28 (m, 2H), 0.83 (t, J = 7.4 Hz, 3H).

\(^13\)C NMR (63 MHz, CDCl₃) δ 164.58, 146.10, 138.24, 128.85, 124.14, 120.17, 34.10, 21.45, 13.66.

HRMS-(ESI): calcd. for C₁₂H₁₅NO[²H]⁺ 190.1232, found 190.1233.

(E)-N-Phenylhept-2-enamide

3ac, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 83 mg, yield 82%.

\(^1\)H NMR (250 MHz, Chloroform-d) δ 7.81 (s, 1H), 7.50 (d, J = 8.0 Hz, 2H), 7.24 – 7.17 (m, 2H), 7.05 – 6.95 (m, 1H), 6.88 (dt, J = 15.2, 7.0 Hz, 1H), 5.90 (dt, J = 15.3, 1.5 Hz, 1H), 2.19 – 2.02 (m, 2H), 1.38 – 1.17 (m, 4H), 0.87 – 0.75 (m, 3H).

\(^13\)C NMR (63 MHz, CDCl₃) δ 164.49, 146.40, 138.20, 128.87, 124.14, 123.97, 120.10, 31.78, 30.31, 22.21, 13.80.

HRMS-(ESI): calcd. for C₁₃H₁₇NO[²H]⁺ 204.1388, found 204.1390.

(E)-N-Phenylundec-2-enamide

3ad, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 100 mg, yield 77%.

\(^1\)H NMR (250 MHz, Chloroform-d) δ 7.90 (s, 1H), 7.51 (d, J = 8.0 Hz, 2H), 7.23 – 7.16 (m, 2H), 7.04 – 6.95 (m, 1H), 6.88 (dt, J = 15.2, 7.0 Hz, 1H), 5.99 (dt, J = 15.2, 1.5 Hz, 1H), 2.15 – 2.02 (m, 2H), 1.34 (t, J = 7.2 Hz, 2H), 1.19 (s, 10H), 0.84 – 0.78 (m, 3H).

\(^13\)C NMR (63 MHz, CDCl₃) δ 164.55, 146.42, 138.23, 128.86, 124.12, 123.98, 120.13, 32.13, 31.84, 29.37, 29.20, 28.26, 22.63, 14.07.

**(E)-3-Cyclohexyl-N-phenylacrylamide**

3ae, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 86 mg, yield 75%.

\(^1\)H NMR (250 MHz, Chloroform-d) \(\delta\) 8.27 (d, \(J = 9.8\) Hz, 1H), 7.61 – 7.47 (m, 2H), 7.21 – 7.13 (m, 2H), 7.03 – 6.92 (m, 1H), 6.81 (dd, \(J = 15.4, 6.8\) Hz, 1H), 5.89 (dt, \(J = 15.4, 1.2\) Hz, 1H), 2.06 – 1.92 (m, 1H), 1.68 – 1.58 (m, 4H), 1.29 – 0.85 (m, 6H).

\(^13\)C NMR (63 MHz, CDCl\(_3\)) \(\delta\) 165.05, 151.19, 138.36, 128.81, 124.08, 121.77, 120.27, 40.29, 31.87, 25.93, 25.73.

HRMS (ESI): calcd. for C\(_{15}\)H\(_{19}\)NO[H]+ 230.1545, found 230.1549.

**(E)-3-Cyclopropyl-N-phenylacrylamide**

3af, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 61 mg, yield 65%.

\(^1\)H NMR (250 MHz, Chloroform-d) \(\delta\) 8.02 (s, 1H), 7.58 – 7.44 (m, 2H), 7.24 – 7.15 (m, 2H), 7.03 – 6.94 (m, 1H), 6.33 (dd, \(J = 15.0, 10.0\) Hz, 1H), 6.00 (d, \(J = 15.0\) Hz, 1H), 1.41 (dddd, \(J = 12.6, 9.3, 6.3, 4.0\) Hz, 1H), 0.86 – 0.74 (m, 2H), 0.53 – 0.43 (m, 2H).

\(^13\)C NMR (63 MHz, CDCl\(_3\)) \(\delta\) 164.60, 151.10, 138.35, 128.84, 124.03, 121.00, 120.22, 14.27, 8.47.

HRMS (ESI): calcd. for C\(_{12}\)H\(_{13}\)NO[H]+ 188.1075, found 188.1080.

**(E)-4,4-Dimethyl-N-phenylpent-2-enamide**

3ag, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 72 mg, yield 71%.

\(^1\)H NMR (250 MHz, DMSO-d\(_6\)) \(\delta\) 10.00 (s, 1H), 7.82 – 7.60 (m, 2H), 7.38 – 7.27 (m, 2H), 7.14 – 6.97 (m, 1H), 6.84 (d, \(J = 15.5\) Hz, 1H), 6.07 (d, \(J = 15.5\) Hz, 1H), 1.11 (s, 9H).

\(^13\)C NMR (63 MHz, DMSO) \(\delta\) 163.80, 154.21, 139.32, 128.65, 123.09, 119.99, 119.16, 33.15, 28.66.

HRMS (ESI): calcd. for C\(_{13}\)H\(_{17}\)NO[H]+ 204.1388, found 204.1394.

**(E)-3-(Cyclohex-1-en-1-yl)-N-phenylacrylamide**

3ah, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 78 mg, yield 69%.

\(^1\)H NMR (250 MHz, Chloroform-d) \(\delta\) 7.83 (s, 1H), 7.58 – 7.49 (m, 2H), 7.21 (ddd, \(J = 7.6, 6.6, 2.2\) Hz, 3H), 7.03 – 6.96 (m, 1H), 6.05 – 5.94 (m, 1H), 5.92 – 5.74 (m, 1H), 2.14 – 1.99 (m, 4H), 1.55 (tdq, \(J = 7.3, 3.4, 2.2, 1.7\) Hz, 4H).

\(^13\)C NMR (63 MHz, CDCl\(_3\)) \(\delta\) 165.20, 145.63, 138.36, 138.16, 134.63, 128.89, 124.06, 120.03, 117.28, 24.30, 22.11, 22.04.

HRMS (ESI): calcd. for C\(_{15}\)H\(_{17}\)NO[H]+ 228.1388, found 228.1390.

**N-Phenylcinnamamide**

3ai, eluting with n-heptane and ethyl acetate 5:1 (V/V), light yellow solid, 63 mg, yield 56%.

\(^1\)H NMR (250 MHz, DMSO-d\(_6\)) \(\delta\) 10.20 (s, 1H), 7.79 – 7.68 (m, 2H), 7.65 – 7.56 (m, 3H), 7.49 – 7.39 (m, 3H), 7.36 – 7.29 (m, 2H), 7.11 – 7.01 (m, 1H), 6.85 (d, \(J = 15.7\) Hz, 1H).

\(^13\)C NMR (63 MHz, DMSO) \(\delta\) 163.47, 145.63, 138.36, 138.16, 134.63, 128.89, 124.06, 120.03, 117.28, 26.38, 24.29, 22.11, 22.04.

HRMS (ESI): calcd. for C\(_{18}\)H\(_{17}\)NO[H]+ 228.1388, found 228.1390.
HRMS (ESI): calcd. for C_{15}H_{13}NO^+[H]^+ 224.1075, found 224.1080.

(E)-N-Phenyl-3-(p-tolyl)acrylamide

\[
\begin{align*}
\text{3aj, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 63 mg, yield 53\%}.
\end{align*}
\]

{\textsuperscript{1}H NMR (250 MHz, DMSO-\textit{d}_6) \delta 10.14 (s, 1H), 7.78 – 7.64 (m, 2H), 7.51 (d, \textit{J} = 8.1 Hz, 3H), 7.37 – 7.22 (m, 4H), 7.09 – 7.01 (m, 1H), 6.79 (d, \textit{J} = 15.7 Hz, 1H), 2.33 (s, 3H).}

HRMS (ESI): calcd. for C_{15}H_{13}NO^+[H]^+ 238.1231, found 238.1235.

(E)-3-(3-Fluorophenyl)-N-phenylacrylamide

\[
\begin{align*}
\text{3ak, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 69 mg, yield 57\%.}
\end{align*}
\]

{\textsuperscript{1}H NMR (250 MHz, DMSO-\textit{d}_6) \delta 10.23 (s, 1H), 7.80 – 7.67 (m, 2H), 7.67 – 7.55 (m, 1H), 7.51 – 7.41 (m, 3H), 7.38 – 7.28 (m, 2H), 7.06 (dt, \textit{J} = 7.7, 6.9, 1.2 Hz, 1H), 6.89 (d, \textit{J} = 15.7 Hz, 1H).}

13C NMR (63 MHz, DMSO) \delta 163.68, 162.42 (d, \textit{J} = 244.4 Hz), 139.12, 138.72 (d, \textit{J} = 2.5 Hz), 137.32 (d, \textit{J} = 8.2 Hz), 130.86 (d, \textit{J} = 8.8 Hz), 128.73, 123.88, 123.72 (d, \textit{J} = 2.5 Hz), 123.40, 119.26, 116.30 (d, \textit{J} = 20.8 Hz), 114.05 (d, \textit{J} = 22.1 Hz).}

HRMS (ESI): calcd. for C_{15}H_{12}FNO^+[H]^+ 242.0981, found 242.0986.

(E)-3-(4-Chlorophenyl)-N-phenylacrylamide

\[
\begin{align*}
\text{3al, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 69 mg, yield 54\%.}
\end{align*}
\]

{\textsuperscript{1}H NMR (250 MHz, DMSO-\textit{d}_6) \delta 10.21 (s, 1H), 7.80 – 7.67 (m, 2H), 7.67 – 7.55 (m, 1H), 7.51 – 7.40 (m, 3H), 7.36 – 7.29 (m, 2H), 7.06 (ddt, \textit{J} = 7.7, 6.9, 1.2 Hz, 1H), 6.85 (d, \textit{J} = 15.7 Hz, 1H).}

13C NMR (63 MHz, DMSO) \delta 163.28, 139.16, 138.69, 134.14, 133.66, 129.31, 128.97, 128.72, 123.35, 123.11, 119.24.}

HRMS (ESI): calcd. for C_{15}H_{12}ClNO^+[H]^+ 258.0685, found 258.0689.

(E)-3-(4-Bromophenyl)-N-phenylacrylamide

\[
\begin{align*}
\text{3am, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 84 mg, yield 56\%.}
\end{align*}
\]

{\textsuperscript{1}H NMR (250 MHz, DMSO-\textit{d}_6) \delta 10.22 (s, 1H), 7.76 – 7.69 (m, 2H), 7.65 – 7.54 (m, 5H), 7.37 – 7.29 (m, 2H), 7.10 – 7.02 (m, 1H), 6.87 (d, \textit{J} = 15.7 Hz, 1H).}

13C NMR (63 MHz, DMSO) \delta 163.28, 139.16, 138.78, 134.00, 131.89, 129.55, 128.72, 123.36, 123.18, 122.88, 119.25.}

HRMS (ESI): calcd. for C_{15}H_{12}BrNO^+[H]^+ 302.0180, found 302.0176.

(E)-N-Butyl-6-chlorohex-2-enamide

\[
\begin{align*}
\text{3am, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 84 mg, yield 56\%.}
\end{align*}
\]

{\textsuperscript{1}H NMR (250 MHz, DMSO-\textit{d}_6) \delta 10.22 (s, 1H), 7.76 – 7.69 (m, 2H), 7.65 – 7.54 (m, 5H), 7.37 – 7.29 (m, 2H), 7.10 – 7.02 (m, 1H), 6.87 (d, \textit{J} = 15.7 Hz, 1H).}

13C NMR (63 MHz, DMSO) \delta 163.28, 139.16, 138.78, 134.00, 131.89, 129.55, 128.72, 123.36, 123.18, 122.88, 119.25.}

HRMS (ESI): calcd. for C_{15}H_{12}BrNO^+[H]^+ 302.0180, found 302.0176.
3jn, eluting with n-heptane and ethyl acetate 5:1 (V/V), colorless oil, 62 mg, yield 61%.

$^1$H NMR (250 MHz, Chloroform-d) δ 6.82–6.60 (m, 1H), 5.79 (dt, $J$ = 15.2, 1.5 Hz, 2H), 3.48 (td, $J$ = 6.4, 0.9 Hz, 2H), 3.29–3.20 (m, 2H), 2.28 (ddt, $J$ = 8.8, 7.4, 6.8, 1.4 Hz, 2H), 1.93–1.78 (m, 2H), 1.49–1.38 (m, 2H), 1.35–1.24 (m, 2H), 0.89–0.82 (m, 3H).

$^{13}$C NMR (63 MHz, CDCl$_3$) δ 165.67, 142.03, 124.98, 44.02, 39.25, 31.64, 30.92, 28.90, 20.05, 13.69.

HRMS (ESI): calcd. for C$_{10}$H$_{18}$ClNO$^+$ 204.1155, found 204.1158.

(E)-N-Butyl-3-cyclohexylacrylamide

3je, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 87 mg, yield 83%.

$^1$H NMR (250 MHz, Chloroform-d) δ 6.82–6.60 (m, 1H), 5.79 (dt, $J$ = 15.2, 1.5 Hz, 2H), 3.48 (td, $J$ = 6.4, 0.9 Hz, 2H), 3.29–3.20 (m, 2H), 2.28 (ddt, $J$ = 8.8, 7.4, 6.8, 1.4 Hz, 2H), 1.93–1.78 (m, 2H), 1.49–1.38 (m, 2H), 1.35–1.24 (m, 2H), 0.89–0.82 (m, 3H).

$^{13}$C NMR (63 MHz, CDCl$_3$) δ 165.67, 142.03, 124.98, 44.02, 39.25, 31.64, 30.92, 28.90, 20.05, 13.69.

HRMS (ESI): calcd. for C$_{10}$H$_{18}$ClNO$^+$ 204.1155, found 204.1158.

(E)-N-Butyl-3-cyclopropylacrylamide

3jf, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 74 mg, yield 88%.

$^1$H NMR (250 MHz, Chloroform-d) δ 6.82–6.60 (m, 1H), 5.79 (dt, $J$ = 15.2, 1.5 Hz, 2H), 3.48 (td, $J$ = 6.4, 0.9 Hz, 2H), 3.29–3.20 (m, 2H), 2.28 (ddt, $J$ = 8.8, 7.4, 6.8, 1.4 Hz, 2H), 1.93–1.78 (m, 2H), 1.49–1.38 (m, 2H), 1.35–1.24 (m, 2H), 0.89–0.82 (m, 3H).

$^{13}$C NMR (63 MHz, CDCl$_3$) δ 165.67, 142.03, 124.98, 44.02, 39.25, 31.64, 30.92, 28.90, 20.05, 13.69.

HRMS (ESI): calcd. for C$_{10}$H$_{18}$ClNO$^+$ 204.1155, found 204.1158.

(E)-N-Butyl-3-(cyclohex-1-en-1-yl)acrylamide

3jh, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 85 mg, yield 82%.

$^1$H NMR (250 MHz, Chloroform-d) δ 6.82–6.60 (m, 1H), 5.79 (dt, $J$ = 15.2, 1.5 Hz, 2H), 3.48 (td, $J$ = 6.4, 0.9 Hz, 2H), 3.29–3.20 (m, 2H), 2.28 (ddt, $J$ = 8.8, 7.4, 6.8, 1.4 Hz, 2H), 1.93–1.78 (m, 2H), 1.49–1.38 (m, 2H), 1.35–1.24 (m, 2H), 0.89–0.82 (m, 3H).

$^{13}$C NMR (63 MHz, CDCl$_3$) δ 165.67, 142.03, 124.98, 44.02, 39.25, 31.64, 30.92, 28.90, 20.05, 13.69.

HRMS (ESI): calcd. for C$_{10}$H$_{18}$ClNO$^+$ 204.1155, found 204.1158.

N-Butylcinnamamide

3ji, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 53 mg, yield 52%.

$^1$H NMR (250 MHz, Chloroform-d) δ 6.75–6.44 (m, 1H), 5.74 (td, $J$ = 5.3, 2.8, 1.3 Hz, 1H), 5.74 (dd, $J$ = 15.4, 1.0 Hz, 1H), 3.34–3.18 (m, 2H), 2.16–1.97 (m, 4H), 1.64–1.49 (m, 4H), 1.48–1.37 (m, 2H), 1.33–1.22 (m, 2H), 0.87–0.80 (m, 3H).

$^{13}$C NMR (63 MHz, CDCl$_3$) δ 166.89, 143.69, 136.58, 134.59, 117.42, 39.31, 31.73, 26.22, 24.29, 22.12, 22.09, 20.09, 13.69.

HRMS (ESI): calcd. for C$_{13}$H$_{20}$NO$^+$ 208.1701, found 208.1702.

(E)-N-Butyl-3-cyclopropylacrylamide
(E)-N-Butyl-3-(4-chlorophenyl)acrylamide

\[
\begin{align*}
\text{HN} & \quad \text{O} \\
\text{Cl} & \quad \text{H}
\end{align*}
\]

3jl, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 60 mg, yield 51%.

\(^1\)H NMR (250 MHz, Chloroform-\text{d}) δ 7.47 (d, \(J = 15.6\) Hz, 1H), 7.39 – 7.26 (m, 2H), 7.25 – 7.12 (m, 2H), 6.38 (d, \(J = 15.6\) Hz, 1H), 6.26 (s, 1H), 3.30 (td, \(J = 6.9, 5.8\) Hz, 2H), 1.58 – 1.39 (m, 2H), 1.39 – 1.23 (m, 2H), 0.84 (td, \(J = 7.2, 0.6\) Hz, 3H).

\(^{13}\)C NMR (63 MHz, CDCl\text{3}) δ 165.76, 139.17, 135.30, 133.41, 128.97, 128.82, 121.65, 39.54, 31.68, 20.10, 13.71.

HRMS-(ESI): calcd. for C\text{13}H\text{16}ClNO\text{[H]}\text{+} 238.0998, found 238.1002.

(E)-N-Butyl-3-(\(\rho\)-tolyl)acrylamide

\[
\begin{align*}
\text{HN} & \quad \text{O} \\
\text{Cl} & \quad \text{H}
\end{align*}
\]

3jj, eluting with n-heptane and ethyl acetate 5:1 (V/V), white solid, 67 mg, yield 62%.

\(^1\)H NMR (250 MHz, Chloroform-\text{d}) δ 7.58 (d, \(J = 15.6\) Hz, 1H), 7.44 – 7.28 (m, 2H), 7.18 – 6.88 (m, 2H), 6.41 (t, \(J = 15.4\) Hz, 2H), 3.37 (td, \(J = 7.1, 5.8\) Hz, 2H), 2.32 (s, 3H), 1.61 – 1.47 (m, 2H), 1.45 – 1.28 (m, 2H), 0.91 (t, \(J = 7.2\) Hz, 3H).

\(^{13}\)C NMR (63 MHz, CDCl\text{3}) δ 166.31, 140.45, 139.66, 132.19, 129.43, 127.67, 120.08, 39.49, 31.75, 21.32, 20.13, 13.74.

HRMS-(ESI): calcd. for C\text{14}H\text{19}NO\text{[H]}\text{+} 218.1545, found 218.1544.
3ag
3ah
3je