SUPPORTING INFORMATION

Enantioselective Conjugate Addition of Silylketene Acetals to β -Enamidomalonates.

Synthesis of β -Amino Acid Derivatives

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General experimental details: Tetrahydrofuran (THF) was distilled from benzophenone/ketyl prior to use. Methylene chloride (CH_2Cl_2) was distilled from calcium hydride. Simple organic compounds were purchased from Aldrich Chemical Company and used as received. Merck provided *cis*-(1*S*, 2*R*)-1-amino-2-indanol and its enantiomer. All glassware was oven dried, assembled hot, and cooled under a stream of dry nitrogen before use. Reactions with air sensitive materials were carried out by standard syringe techniques. All reactions were run under an atmosphere of N_2 .

Chromatography and Instrumentation: Thin layer chromatographic analyses (TLC) were performed on silica gel Whatmann-60F glass plates and components were visualized by illumination with UV light or by staining with phosphomolybdic acid. Flash chromatography was performed using E. Merck silica gel 60 (230-400 mesh). HPLC analyses were conducted on either an ISCO or Waters system. The ISCO system was composed of a 2360 pump, a 2350 gradient programmer, and a variable wavelength UV detector. The Waters system utilized two series 515 pumps, and a series 2487 dual wavelength detector. The entire HPLC system was

operated with the Waters Millenium³² software from a Dell personal computer. ¹H NMR was recorded on either a 500 or a 400 MHz Varian Inova spectrometer or a 300 MHz Varian Gemini. Earlier spectra were recorded on either a JEOL GSX-400 MHz or JEOL GSX-270 MHz spectrometer. Chemical shifts are reported in parts per million (ppm) downfield from TMS, using residual chloroform (7.27 ppm) as an internal standard. Data are reported as follows: chemical shift, multiplicity (s = singlet, bs = broad singlet, d = doublet, t = triplet, q = quartet, dd = doublet of doublets, ddd = doublet of doublet of doublet, dt = doublet of triplet, m = multiplet) coupling constant (s) and integration. ¹³C NMR was recorded on a 500 (125) MHz Varian Inova or a 300 (75) MHz Varian Gemini spectrometer. Earlier spectra were recorded on a JEOL GSX-400 (100 MHz) or JEOL GSX-270 (67.5 MHz) spectrometer using broad-band proton decoupling. Chemical shifts are reported in parts per million (ppm) downfield from TMS, using the middle resonance of CDCl₃ (77.0 ppm) as an internal standard. Rotations were recorded on a JASCO-DIP-370 digital instrument. Elemental analyses were performed on a Perkin Elmer Series II CHNS/O Analyzer 2400. Melting points were determined using a Thomas-Hoover capillary melting point apparatus and were reported without correction.

Preparation of Starting Materials and Ligands

Acceptors 5, 14a and 14b

A solution of benzamide (7.26 g, 60 mmol) in THF (100 mL) was added *n*-BuLi (60 mmol, 24 mL x 2.5 M in hexane) at –78 °C under N₂. After 10 min, a solution of dimethyl methoxymethylenemalonate (purchased from Aldrich Chemical Company) (10.4 g, 60 mmol) in THF (100 mL)

was added at –78 °C. The reaction mixture was stirred for 2 h at –78 °C, then poured onto 30 mL

1M HCl and ice, and extracted with diethyl ether. The organic phase was washed with 1M HCl (30 mL x 2), water and brine, dried over Na₂SO₄. After removal of the solvents, the residue was recrystallized from EtOAc to give dimethyl benzoylaminomethylenemalonate (12.4 g, 78%). mp. 148-150 °C. ¹H-NMR (500 MHz, CDCl₃) δ 3.82 (s, 3H), 3.91 (s, 3H), 7.53-7.56 (m 2H), 7.63-7.65 (m, 1H), 7.78-7.80 (m, 2H), 8.82 (d, *J* = 12.1 Hz, 1H). ¹³C-NMR (125 MHz, CDCl₃) δ 52.3, 52.6, 102.0, 128.3, 129.4, 131.5, 133.9, 147.9, 164.7, 164.8, 168.9. Anal. Calcd for C₁₃H₁₃NO₅: C, 59.31, H, 4.98, N, 5.32. Found: C, 59.30, H, 5.04, N, 5.31. The resonance for the NH proton is too broad and not indicated in the ¹H NMR spectrum analysis.

mp. 68-70 °C. ¹H-NMR (500 MHz, CDCl₃) δ 1.29 (s, 9H), 3.77 (s, 3H), 3.85 (s, 3H), 8.59 (d, *J* = 12.0 Hz, 1H). ¹³C-NMR (125 MHz, CDCl₃) δ 27.2, 39.9, 52.2, 52.5, 101.3, 147.9, 164.9, 168.5, 177.2. Anal. Calcd for C₁₁H₁₇NO₅: C, 54.31, H, 7.04, N, 5.76. Found: C,

54.48, H, 6.86, N, 5.56. The resonance for the NH proton is too broad and not indicated in the ¹H NMR spectrum analysis.

mp. 32-33 °C. ¹H-NMR (500 MHz, CDCl₃) δ 3.82 (s, 3H), 3.90 (s, 3H), 8.39 (d, *J* = 11.3 Hz, 1H). ¹³C-NMR (125 MHz, CDCl₃) δ 52.7, 53.1, 107.4, 115.3, 143.4, 155.8, 163.7, 168.5. Anal. Calcd for C₈H₈F₃NO₅: C, 37.66, H, 3.16, N, 5.49. Found: C, 37.36, H,

3.16, N, 5.34. The resonance for the NH proton is too broad and not indicated in the ¹H NMR spectrum analysis.

Synthesis of Ligands

Ligands **8**,¹ **10**, **11**, **12**, and **13** have been reported in the literature² and **10** is available commercially.

Synthesis of **9**.

A suspension of diphenylmethylenemalononitrile³ (2.30 g, 10 mmol), (1*S*,2*R*)-aminoindanol (3.30 g, 22 mmol) and zinc chloride (2.70 g, 20 mmol) in dry chlorobenzene (50 mL) was heated at reflux for 100 h. The solvent was removed, and the residue was dissolved in dichloromethane. The organic layer was washed with

1M HCl, saturated NaHCO₃, brine, and dried over Na₂SO₄. The solvents were evaporated, the residue was purified by chromatography on silica gel (MeOH/CH₂Cl₂:1/40) to give **9** (2.14 g, 43%). mp 229-230 °C; [α]_D²⁵ -353.5 (*c* 1.13, CH₂Cl₂). ¹H-NMR (400 MHz, CDCl₃) δ 2.60 (d, *J* = 17.8 Hz, 2H), 3.16 (dd, *J* = 17.8, 8.0 Hz, 2H), 5.23 (m, 2H), 5.67 (d, *J* = 8.0 Hz, 2H), 6.80-6.86 (m, 8H), 7.10-7.39 (m, 10H). ¹³C-NMR (100 MHz, CDCl₃) δ 39.4, 77.2, 83.1, 116.9, 125.2, 125.9, 127.6, 127.8, 128.5, 128.6, 129.5, 140.3, 140.5, 141.2, 155.3, 163.4. Anal. Calcd for C₃₄H₂₆N₂O₂: C, 82.57, H, 5.30, N, 5.66. Found: C, 82.07, H, 5.59, N, 5.63.

General procedure for the asymmetric Michael addition [This was adapted from the work of Evans and co-workers].⁴ A mixture of **8** (10.7 mg, 0.03 mmol) and Cu(OTf)₂ (10.8 mg, 0.03 mmol) in dichloromethane (0.8 mL) was stirred at rt for 1h to give a clear green solution. A solution of the substrate (0.3 mmol) in toluene (2.4 mL) was added to the above solution at the temperature given in the tables, followed by hexafluoroisopropanol (100 mg, 0.6 mmol) and ketene silyl acetal (0.66 mmol).⁵ The reaction was monitored by TLC. After completion, water (2

mL) was added and the mixture was extracted with dichloromethane, washed with brine and dried. The solvent was evaporated and the residue was purified by chromatography to give pure product. The enantiomeric purity was determined by HPLC.

mp. 115-116 °C. $[\alpha]_D^{25} +53.9$ (*c* 0.67, CH₂Cl₂) (76% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel OD + OD with hexane/2-PrOH, 85/15 v/v, 0.8 mL/min, t_R = 26.4 min, t_S = 33.2 min)). ¹H-NMR (500 MHz, CDCl₃) δ 1.44 (s, 9H), 2.81

(dd, *J* = 15.5, 7.4 Hz, 1H), 3.03 (dd, *J* = 15.5, 6.2 Hz, 1H), 3.73 (s, 3H), 3.80 (s, 3H), 3.97 (d, *J* = 4.7 Hz, 1H), 5.12-5.17 (m, 1H), 7.35 (d, *J* = 9.4 Hz, 1H), 7.41-7.45 (m, 2H), 7.48-7.51 (m, 1H), 7.74-7.76 (m, 2H). ¹³C-NMR (125 MHz, CDCl₃) δ 29.9, 46.6, 46.7, 49.0, 53.1, 53.3, 53.6, 127.2, 128.8, 131.9, 134.2, 166.8, 168.0, 169.0, 197.7. Anal. Calcd for C₁₉H₂₅NO₆S: C, 57.71, H, 6.37, N, 3.54. Found: C, 57.33, H, 6.14, N, 3.50.

$[\alpha]_D^{25} -6.3$ (*c* 0.84, CH₂Cl₂) (30% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel OD with hexane/2-PrOH, 85/15 v/v, 0.5 mL/min, t_S = 16.2 min, t_R = 20.9 min)). ¹H-NMR (500 MHz, CDCl₃) δ

1.26 (s, 3H), 1.32 (s, 3H), 3.68 (s, 3H), 3.69 (s, 3H), 3.75 (s, 3H), 3.85 (d, *J* = 2.7 Hz, 1H), 5.00 (dd, *J* = 10.0, 2.7 Hz, 1H), 7.42-7.46 (m, 2H), 7.48-7.51 (m, 1H), 7.81-7.82 (m, 2H), 7.96 (d, *J* = 10.0 Hz, 1H). ¹³C-NMR (125 MHz, CDCl₃) δ 23.4, 24.0, 46.8, 51.1, 52.5, 52.9, 53.4, 55.3, 127.3, 128.9, 131.8, 134.5, 167.2, 168.3, 169.7, 176.0. Anal. Calcd for C₁₈H₂₃NO₇: C, 59.17, H, 6.34, N, 3.83. Found: C, 59.05, H, 6.40, N, 3.66.

mp. 143-145 °C. $[\alpha]_D^{25} +25.6$ (*c* 1.02, CH₂Cl₂) (64% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel OD with hexane/2-PrOH, 85/15 v/v, 1.0 mL/min, t_R = 23.6 min, t_S = 31.6 min)). ¹H-NMR (500 MHz, CDCl₃) δ 3.27 (dd, *J* = 17.5, 7.7 Hz,

1H), 3.61 (dd, *J* = 17.5, 4.8 Hz, 1H), 3.65 (s, 3H), 3.71 (s, 3H), 4.16 (d, *J* = 5.0 Hz, 1H), 5.19-5.24 (m, 1H), 7.34-7.44 (m, 2H), 7.47-7.53 (m, 1H), 7.68-7.70 (m, 2H), 7.91 (d, *J* = 7.7 Hz, 1H). ¹³C-NMR (125 MHz, CDCl₃) δ 40.8, 46.3, 53.1, 53.2, 53.4, 127.3, 128.4, 128.8, 129.0, 132.0, 133.9, 134.2, 136.5, 167.0, 168.4, 169.4, 198.2. Anal. Calcd for C₂₁H₂₁NO₆: C, 65.79, H, 5.52, N, 3.65. Found: C, 65.89, H, 5.57, N, 3.56.

mp. 119-121 °C. $[\alpha]_D^{25} +12.0$ (*c* 0.55, CH₂Cl₂) (40% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel OD with hexane/2-PrOH, 85/15 v/v, 0.7 mL/min, t_R = 15.1 min, t_S = 18.1 min)). ¹H-NMR (500 MHz, CDCl₃) δ 1.10 (s, 9H), 2.84 (dd, *J* = 18.1, 7.7 Hz, 1H), 3.16 (dd, *J* = 18.1, 4.5 Hz, 1H), 3.71 (s, 3H),

3.75 (s, 3H), 4.09 (d, *J* = 5.4 Hz, 1H), 5.06-5.12 (m, 1H), 7.40-7.50 (m, 4H), 7.72-7.74 (m, 2H). ¹³C-NMR (125 MHz, CDCl₃) δ 26.4, 38.9, 44.7, 46.0, 53.0, 53.1, 53.2, 127.2, 128.8, 131.9, 134.3, 166.9, 168.4, 169.4, 214.6. Anal. Calcd for C₁₉H₂₅NO₆: C, 62.80, H, 6.93, N, 3.85. Found: C, 62.60, H, 6.71, N, 3.91.

mp. 54-56 °C. $[\alpha]_D^{25} +30.6$ (*c* 1.04, CH₂Cl₂) (83% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel AS with hexane/2-PrOH, 98/2 v/v, 1.0 mL/min, $t_S = 11.1$ min, $t_R =$

15.0 min)). ¹H-NMR (500 MHz, CDCl₃) δ 1.15 (s, 9H), 1.44 (s, 9H), 2.71 (dd, *J* = 15.1, 7.0 Hz, 1H), 2.88 (dd, *J* = 15.1, 6.7 Hz, 1H), 3.71 (s, 3H), 3.77 (s, 3H), 3.87 (d, *J* = 5.0 Hz, 1H), 4.86-4.92 (m, 1H), 6.78 (d, *J* = 9.1 Hz, 1H). ¹³C-NMR (125 MHz, CDCl₃) δ 27.6, 29.9, 38.9, 46.1, 46.6, 48.8, 52.9, 53.1, 53.5, 168.1, 169.0, 177.9, 197.8. Anal. Calcd for C₁₇H₂₉NO₆S: C, 54.38, H, 7.78, N, 3.73. Found: C, 54.14, H, 7.52, N, 3.58.

$[\alpha]_D^{25} -4.6$ (*c* 1.03, CH₂Cl₂) (13% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel OD with hexane/2-PrOH, 95/5 v/v, 1.0 mL/min, $t_S = 8.3$ min, $t_R = 13.2$ min)). ¹H-NMR (500 MHz, CDCl₃) δ 1.16 (s, 3H), 1.17 (s, 9H), 1.22 (s, 3H), 3.64

(s, 3H), 3.66 (s, 3H), 3.71 (s, 3H), 3.74 (d, *J* = 2.7 Hz, 1H), 4.71 (dd, *J* = 10.1, 2.7 Hz, 1H), 7.40 (d, *J* = 10.1 Hz, 1H). ¹³C-NMR (125 MHz, CDCl₃) δ 23.4, 23.8, 27.6, 39.1, 46.6, 50.9, 52.3, 52.7, 53.1, 54.6, 168.4, 169.5, 175.9, 178.1. Anal. Calcd for C₁₆H₂₇NO₇: C, 55.64, H, 7.88, N, 4.06. Found: C, 55.82 H, 7.49, N, 3.94.

$[\alpha]_D^{25} +10.2$ (*c* 0.41, CH₂Cl₂) (73% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel OD with hexane/2-PrOH, 95/5 v/v, 1.0 mL/min, $t_R = 25.9$ min, $t_S = 30.6$ min)). ¹H-NMR (500 MHz,

CDCl₃) δ 1.12 (s, 9H), 3.20 (dd, J = 17.1, 7.7 Hz, 1H), 3.49 (dd, J = 17.1, 5.0 Hz, 1H), 3.68 (s, 3H), 3.73 (s, 3H), 4.07 (d, J = 5.2 Hz, 1H), 4.97-5.02 (m, 1H), 6.98 (d, J = 8.9 Hz, 1H), 7.43-7.46 (m, 2H), 7.54-7.57 (m, 1H), 7.92-7.95 (m, 2H). ¹³C-NMR (125 MHz, CDCl₃) δ 27.6, 38.9, 40.8, 45.8, 52.9, 53.0, 53.4, 128.4, 129.0, 133.8, 136.6, 168.3, 169.3, 178.2, 198.2. Anal. Calcd for C₁₉H₂₅NO₆: C, 62.80, H, 6.93, N, 3.85. Found: C, 63.11, H, 6.76, N, 3.63.

mp. 41-43°C. $[\alpha]_D^{25}$ +17.9 (*c* 1.0, CH₂Cl₂) (50% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel AD with hexane/2-PrOH, 90/10 v/v, 1.0 mL/min, t_R = 11.7 min, t_S = 18.6 min)). ¹H-NMR (500 MHz, CDCl₃) δ 1.42 (s, 9H), 2.75 (dd,

J = 15.8, 6.8 Hz, 1H), 2.90 (dd, J = 15.8, 6.6 Hz, 1H), 3.73 (s, 3H), 3.78 (s, 3H), 3.82 (d, J = 4.7 Hz, 1H), 4.91-4.97 (m, 1H), 7.54 (d, J = 9.0 Hz, 1H). ¹³C-NMR (125 MHz, CDCl₃) δ 29.8, 45.9, 46.5, 49.4, 53.0, 53.3, 53.4, 115.8, 156.8, 167.2, 168.5, 196.9. Anal. Calcd for C₁₄H₂₉F₃NO₆S: C, 43.41, H, 5.20, N, 3.62. Found: C, 43.51, H, 5.00, N, 3.55.

mp. 101-103°C. $[\alpha]_D^{25}$ +25.6 (*c* 1.0, CH₂Cl₂) (67% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel AS with hexane/2-PrOH, 95/5 v/v, 0.8 mL/min, t_S = 27.7 min, t_R = 32.4 min)). ¹H-NMR (500 MHz, CDCl₃) δ 3.33 (dd, J = 18.0, 7.5 Hz,

1H), 3.58 (dd, J = 18.0, 4.9 Hz, 1H), 3.75 (s, 3H), 3.78 (s, 3H), 4.11 (d, J = 5.0 Hz, 1H), 5.11-5.16 (m, 1H), 7.47-7.50 (m, 2H), 7.59-7.63 (m, 1H), 7.75 (d, J = 9.0 Hz, 1H), 7.93-7.95 (m, 2H). ¹³C-NMR (125 MHz, CDCl₃) δ 40.1, 46.0, 52.9, 53.3, 53.4, 115.8, 128.4, 129.1, 134.3, 136.1,

157.4, 167.6, 168.8, 197.1. Anal. Calcd for C₁₄H₂₉F₃NO₆S: C, 51.20, H, 4.30, N, 3.73. Found: C, 51.29, H, 3.87, N, 3.64.

mp. 68-70 °C. $[\alpha]_D^{25} +23.4$ (*c* 0.95, CHCl₃) (64% ee estimated on the basis of HPLC using a chiral column (Daicel Chiralcel AD with hexane/2-PrOH, 95/5 v/v, 1.0 mL/min, $t_R = 11.1$ min, $t_S = 13.7$ min)) (lit.⁴ $[\alpha]_D^{25} +35.1$ (*c* 1.0, CHCl₃ based on 93% ee). ¹H-NMR

(500 MHz, CDCl₃) δ 1.32 (s, 9H), 2.89 (dd, *J* = 15.0, 9.4 Hz, 1H), 2.94 (dd, *J* = 15.0, 5.0 Hz, 1H), 3.49 (s, 3H), 3.76 (s, 3H), 3.78 (d, *J* = 10.1 Hz, 1H), 3.93-3.98 (m, 1H), 7.20-7.28 (m, 5H). ¹³C-NMR (125 MHz, CDCl₃) δ 29.8, 42.2, 48.0, 48.4, 52.7, 53.0, 57.2, 127.6, 128.4, 128.6, 139.5, 168.1, 168.6, 197.9.

Absolute configuration of the Michael addition product: A solution of Michael addition product (200 mg) in DMSO (5 mL) and water (0.2 mL) was stirred at 150 °C for 20 h. After removal of the solvents, the residue was purified by chromatography to give the glutarate ester (65%). This ester was treated with bromine in THF/H₂O (1:1) until the bromine color persisted. The mixture was added sat. Na₂SO₃, HCl (2M) was added until pH<2, extracted with diethyl ether, dried and the solvents were evaporated to give glutaric acid monoester (92%). A solution of glutaric acid monoester in CH₂Cl₂ (2 mL) was added to a solution of 1-hydroxypyridine-2(1H)-thione (1.05 eq) and Dicyclohexylcarbodiimide (1.05 eq) in CH₂Cl₂ (1.5 mL) at rt under N₂. The reaction mixture was shielded from light with aluminum foil and stirred for 8 h, then the mixture was stirred at -78 °C for 1.5 h. Dicyclohexylurea was filtered off and washed with cold CH₂Cl₂, the solvent was evaporated to give Barton ester, which was dissolved in benzene (5 mL).

The solution was heated to reflux, a solution of Bu_3SnH (3 eq) and AIBN (10 mg) in benzene (3 mL) was added dropwise over 30 min. The reaction mixture was refluxed for 2.5 h, then cooled to rt. After removal of the solvent, the residue was purified by chromatography to give (*R*)-methyl 3-(benzoylamino)butanoate.

$[\alpha]_{\text{D}}^{25} +8.4$ (c 0.75, CH_2Cl_2) (60% ee estimated on the basis of HPLC analysis on Michael addition product). ^1H -NMR (500 MHz, CDCl_3) δ 1.44 (s, 9H), 2.70 (dd, J = 16.5, 6.4 Hz, 1H), 2.80 (dd, J = 16.5, 5.0 Hz, 1H), 2.82 (dd, J = 15.5, 6.4 Hz, 1H), 2.98 (dd, J = 15.5, 5.7 Hz, 1H), 3.70 (s, 3H), 4.78-4.82 (m, 1H), 7.22 (d, J = 8.7 Hz, 1H), 7.41-7.44 (m, 2H), 7.48-7.51 (m, 1H), 7.76-7.79 (m, 2H). ^{13}C -NMR (125 MHz, CDCl_3) δ 29.9, 37.5, 44.4, 47.2, 48.9, 52.1, 127.2, 128.8, 131.8, 134.4, 166.7, 172.1, 198.8. Anal. Calcd for $\text{C}_{17}\text{H}_{23}\text{NO}_4\text{S}$: C, 60.51, H, 6.87, N, 4.15. Found: C, 60.40, H, 6.84, N, 4.23.

mp. 126-128 °C. $[\alpha]_{\text{D}}^{25} -0.6$ (c 1.06, EtOH) (60% ee estimated on the basis of HPLC analysis on Michael addition product ^1H -NMR (500 MHz, CDCl_3) δ 2.70 (dd, J = 16.0, 6.0 Hz, 1H), 2.71 (dd, J = 16.5, 6.5 Hz, 1H), 2.80 (dd, J = 16.0, 5.5 Hz, 1H), 2.82 (dd, J = 16.5, 5.5 Hz, 1H), 3.64 (s, 3H), 4.75-4.79 (m, 1H), 7.29 (d, J = 9.2 Hz, 1H), 7.34-7.37 (m, 2H), 7.42-7.45 (m, 1H), 7.69-7.70 (m, 2H). ^{13}C -NMR (125 MHz, CDCl_3) δ 37.5, 37.7, 43.5, 52.3, 127.3, 28.9, 132.1, 134.0, 167.3, 172.3, 175.4. Anal. Calcd for $\text{C}_{13}\text{H}_{15}\text{NO}_5$: C, 58.86, H, 5.70, N, 5.28. Found: C, 58.67, H, 5.85, 5.08.

mp. 106-108 °C (lit.⁶ 108-109 °C). $[\alpha]_D^{25} +25.2$ (*c* 0.25, CHCl₃) (60% ee estimated on the basis of HPLC analysis on Michael addition product).(lit.⁷ $[\alpha]_D -42.3$ (*c* 0.3, CHCl₃) of (*S*)-enantiomer). ¹H-NMR (500 MHz, CDCl₃) δ 1.35 (d, *J* = 6.7 Hz, 3H), 2.61(dd, *J* = 16.0, 4.7 Hz, 1H), 2.69 (dd, *J* = 16.0, 5.2 Hz, 1H), 3.73 (s, 3H), 4.55-4.61 (m, 1H), 6.94 (d, *J* = 6.6 Hz, 1H), 7.42-7.46 (m, 2H), 7.49-7.52 (m, 1H), 7.78-7.80 (m, 2H). ¹³C-NMR (125 MHz, CDCl₃) δ 20.3, 39.8, 42.5, 52.0, 127.2, 128.8, 131.7, 134.8, 166.7, 172.8.

References and Footnotes

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