Supporting Information For

Highly Diastereoselective Indium-Mediated Allylation of Chiral Hydrazones

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Experimental Section

Thin layer chromatography (TLC) was performed on silica gel Whatman-60F glass plates, and components were visualized by illumination with UV light or by staining with potassium permanganate solution. Chromatography was performed using silica E. Merck silica gel 60 (230-400 mesh). NMR spectra were recorded in CDCl₃ on a Varian Inova 500 MHz, 400 MHz, or Varian Mercury 300 MHz spectrometer. ¹³C NMR was recorded using broad band proton decoupling. Chemical shifts are reported in δ relative to TMS and coupling constants in Hz. Optical rotations were recorded on a JASCO-CIP-370 instrument. Elemental analyses were performed on a Perkin Elmer Series II CHNS/O Analyzer 2400. High-resolution mass spectra (HRMS) [Positive Ion FAB (FAB⁺) or Electrospray (ES)] were obtained at the Mass Spectrometry Laboratory, University of South Carolina, Columbia, SC. Melting points were determined without correction. Reactions were carried out under an inert atmosphere of nitrogen or argon. Solvents were dried using a nitrogen pressurized alumina column system from Solvtek.

General procedure for preparation of hydrazones: Hydrazones were prepared by a modified literature procedure.¹ To a solution of the appropriate 2-oxazolidinone in THF (0.05 M) was added *n*-BuLi (2.2 M in hexane, 1.1 eq) at -78 °C. After 50 min, *O*-(2,4-diphenylphosphinyl)-hydroxylamine² (1.2 eq) was added, the reaction was allowed to warm to room temperature and further stirred for 14 hours. The mixture was filtered and concentrated to afford the corresponding *N*-amino-2-oxazolidinone. Without purification, the *N*-amino-2-oxazolidinone was dissolved in toluene (0.5 M), and aldehyde (2 eq), magnesium sulfate (4 eq) and TsOH•H₂O (0.02 eq) were added. The mixture was stirred under reflux for 2 hours then concentrated and purified by flash chromatography (gradient from 5% to 10% Ethyl Acetate in hexanes).

¹ (a) Friestad, G. K.; Qin, J. *J. Am. Chem. Soc.* **2000**, *122*, 8329. (b) Shen, Y.; Friestad, G. K. *J. Org. Chem.* **2002**, *67*, 6236.

² Colvin, E. W.; Kirby, G. W.; Wilson, A. C. *Tetrahedron Lett.* **1982**, *23*, 3835.

(S)-3-(4-Methyl-benzylidene)amino-4-phenyl-2-oxazolidinone (1a).

Colorless solid (300 mg, 70%); m.p. 167-170 °C; $[\alpha]_D^{20} = -94.7$ ($c = 1.0$ in CHCl_3); IR (film): 3031, 1768, 1402, 1323, 1206, 1094 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.86$ (s, 1H), 7.47 (d, $J = 8.0$ Hz, 2H), 7.43-7.32 (m, 5H), 7.12 (d, $J = 8.0$ Hz, 2H), 5.31 (dd, $J = 9.0, 8.5$ Hz, 1H), 4.80 (dd, $J = 9.0, 9.0$ Hz, 1H), 4.21 (dd, $J = 9.0, 8.5$ Hz, 1H), 2.33 (s, 3H); ^{13}C NMR (125.5 MHz): $\delta = 154.9, 147.6, 140.9, 137.3, 131.3, 129.8, 129.4, 129.2, 127.7, 126.2, 69.8, 59.6, 21.7$; HRMS Calcd for $\text{C}_{17}\text{H}_{16}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 303.1104; Found: 303.1113.

(S)-3-(p-Methylbenzylidene)amino-4-phenylmethyl-2-oxazolidinone (1b).

Colorless solid (250 mg, 70% yield); m.p. 111-112 °C; $[\alpha]_D^{20} = -34.9$ ($c = 0.4$ in CHCl_3); IR (film): 3027, 2919, 1764, 1604, 1403, 1212, 1089, 816, 742, 702 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 8.87$ (s, 1H), 7.65-7.20 (m, 9H), 4.51-4.46 (m, 1H), 4.32 (dd, $J = 8.5, 8.0$ Hz, 1H), 4.16 (dd, $J = 9.0, 8.5$ Hz, 1H), 3.33 (dd, $J = 14, 3.5$ Hz, 1H), 2.93 (dd, $J = 14, 8.5$ Hz, 1H), 2.40 (s, 3H); ^{13}C NMR (125.5 MHz): $\delta = 154.1, 151.4, 141.0, 135.6, 131.9, 129.7, 129.6, 129.2, 127.6, 127.5, 65.9, 58.6, 37.9, 21.7$; HRMS Calcd for $\text{C}_{18}\text{H}_{18}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 317.1261; Found: 317.1280.

(S)-4-Isopropyl-3-(4-methyl-benzylidene)amino-2-oxazolidinone (1c).

Colorless solid (250 mg, 65% yield); m.p. 121-123 °C; $[\alpha]_D^{20} = -252.2$ ($c = 0.5$ in CHCl_3); IR (film): 3006, 2966, 2940, 1754, 1680, 1489, 1417, 1408, 1385, 1222, 1081, 1052, 977, 821 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 8.87$ (s, 1H), 7.61 (d, $J = 7.5$ Hz, 2H), 7.20 (d, $J = 7.5$ Hz, 2H), 4.37 (t, 1H), 4.21-4.17 (m, 2H), 2.38 (s, 3H), 2.33 (m, 1H), 0.99 (d, $J = 7.0$ Hz, 1H), 0.93 (d, $J = 7.0$ Hz, 1H); ^{13}C NMR (125.5 MHz): $\delta = 154.2, 151.3, 140.9, 132.0, 129.6, 127.6, 63.0, 61.9, 28.8, 21.7, 17.9, 15.3$; HRMS Calcd for $\text{C}_{14}\text{H}_{18}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 269.1261; Found: 269.1269.

(S)-3-(4-Methyl-benzylidene)amino-3,3a,8,8a-tetrahydro-indeno[1,2-d]-2-oxazolone (1d).

Colorless solid (250 mg, 73% yield); m.p. 152-154 °C; $[\alpha]_D^{20} = -475.2$ ($c = 1.2$ in CHCl_3); IR (film): 3031, 2919, 1764, 1610, 1398, 1362, 1202, 1103, 1039 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 9.02$ (s, 1H), 7.66 (d, $J = 8.5$ Hz, 2H), 7.62 (d, $J = 8.0$ Hz, 1H), 7.37-7.23 (m, 5H), 5.63 (d, $J = 7.5$ Hz, 1H), 5.39 (m, 1H), 3.46 (dd, $J = 17.5$,

6.5 2H), 2.40 (s, 3H); ^{13}C NMR (125.5 MHz): δ = 150.1, 148.9, 140.9, 140.4, 138.7, 130.0, 129.7, 128.7, 128.0, 127.6, 126.5, 126.4, 93.7, 65.8, 39.0, 21.8; HRMS Calcd for $\text{C}_{18}\text{H}_{16}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 315.1104; Found: 315.1092.

(S)-3-(Benzyldiene-amino)-4-isopropyl-2-oxazolidinone (3a).

Colorless solid (350 mg, 63% yield); m.p 93-95 °C; $[\alpha]_{\text{D}}^{20}$ = -109.6 (c = 1.0 in CHCl_3); IR(film): 2963, 2919, 1757, 1412, 1387, 1222, 1087 cm^{-1} ; ^1H NMR (500 MHz): δ = 8.92 (s, 1H), 7.73-7.71 (m, 2H), 7.41-7.39 (m, 3H), 4.38 (dd, J = 11.0, 7.5 Hz, 1H), 4.22-4.18 (m, 2H), 2.39-2.32 (m, 1H), 0.99 (d, J = 7.5 Hz 3H), 0.94 (d, J = 6.5 Hz 3H);

^{13}C NMR (125.5 MHz): δ = 154.4, 151.0, 134.8, 130.5, 128.9, 127.6, 63.1, 61.9, 28.8, 17.9, 15.3; HRMS Calcd for $\text{C}_{13}\text{H}_{16}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 255.1104; Found: 255.1098.

(S)-3-(Furan-2-ylmethylene)amino-4-isopropyl-2-oxazolidinone (3b).

Colorless solid (250 mg, 70% yield); m.p 89-91 °C; $[\alpha]_{\text{D}}^{20}$ = -239.0 (c = 1.0 in CHCl_3); IR(film): 2964, 2876, 1763, 1484, 1409, 1389, 1372, 1224, 1091, 1013, 934, 749 cm^{-1} ; ^1H NMR (500 MHz): δ = 8.96 (s, 1H), 7.52 (d, J = 1.5 Hz, 1H), 6.73 (d, J = 3.5 Hz, 1H), 6.49 (dd, J = 3.5, 2.0 Hz, 1H), 4.37 (dd, J = 10.5, 7.5 Hz, 1H), 4.20-4.16 (m, 2H), 2.36 (m, 1H), 0.96 (d, J = 7.0 Hz, 3H), 0.91 (d, J = 6.5 Hz, 3H);

^{13}C NMR (125.5 MHz): δ = 154.3, 149.9, 144.9, 141.2, 114.5, 112.1, 62.9, 62.2, 28.9, 17.8, 14.9; HRMS Calcd for $\text{C}_{11}\text{H}_{14}\text{N}_2\text{O}_3$ ($\text{M}+\text{Na}$) $^+$: 245.0897; Found: 245.0899.

(S)-4-Isopropyl-3-(naphthalen-2-ylmethylene)amino-2-oxazolidinone (3c).

Colorless solid (300 mg, 70% yield); m.p. 169-170 °C; $[\alpha]_{\text{D}}^{20}$ = -180.0 (c = 0.4 in CHCl_3); IR (film): 3027, 2919, 1771, 1754, 1407, 1391, 1223 cm^{-1} ; ^1H NMR (500 MHz): δ = 9.08 (s, 1H), 8.01-7.49 (m, 7H), 4.41 (m, 1H), 4.24 (m, 2H), 2.41 (m, 1H), 1.03 (d, J = 7.0 Hz, 3H), 0.97 (d, J = 7.0 Hz, 3H);

^{13}C NMR (125.5 MHz): δ = 159.6, 150.9, 134.6, 133.5, 132.5, 130.5, 129.6, 128.7, 128.1, 127.3, 126.8, 122.9, 63.1, 61.9, 28.8, 17.9, 15.3; HRMS Calcd for $\text{C}_{17}\text{H}_{18}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 305.1261; Found: 325.1281.

(S)-3-(2-Fluorobenzylidene)amino-4-isopropyl-2-oxazolidinone (3d).

Colorless solid (200 mg, 65%); m.p. 67-69 °C; $[\alpha]_{\text{D}}^{20}$ = -120.2 (c = 1.0 in CHCl_3); IR (film): 2963, 2875, 1767, 1754, 1454, 1407, 1225, 1087, 763, 777 cm^{-1} ; ^1H NMR (500 MHz): δ = 8.97 (s, 1H), 7.98-7.06 (m, 4H), 4.41-4.37 (m, 1H), 4.23 (m 2H), 2.37 (m, 1H), 1.00 (d, J = 6.5 Hz, 3H), 0.93 (d, J = 7 Hz, 3H); ^{13}C NMR (125.5 MHz): δ =

161.7 (d, $J_{\text{CF}} = 252.8$ Hz), 154.3, 143.2 (d, $J_{\text{CF}} = 5.1$ Hz), 132.0 (d, $J_{\text{CF}} = 8.4$ Hz), 126.8 (d, $J_{\text{CF}} = 3.4$ Hz), 124.5 (d, $J_{\text{CF}} = 3.4$ Hz), 122.5 (d, $J_{\text{CF}} = 8.4$ Hz), 116.0 (d, $J_{\text{CF}} = 22.0$ Hz), 63.1, 61.3, 28.3, 17.91, 15.2; HRMS Calcd for $\text{C}_{13}\text{H}_{15}\text{FN}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 273.1010; Found: 273.0991.

(S)-3-(2-Bromo-benzylidene)amino-4-isopropyl-2-oxazolidinone (3e).

Colorless solid (300 mg, 60%); m.p. 55-57 °C; $[\alpha]_{\text{D}}^{20} = -68.8$ ($c = 1.0$ in CHCl_3); IR (film): 2963, 2875, 1777, 1747, 1391, 1230 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 9.03$ (s, 1H), 8.02-7.21 (m, 4H), 4.40 (dd, $J = 10.5, 5.0$ Hz, 1H), 4.28-4.23 (m, 2H), 1.01 (d, $J = 7.0$ Hz, 3H), 0.94 (d, $J = 6.5$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 154.2, 148.2, 133.6, 133.3, 131.6, 127.8, 127.7, 124.9, 63.0, 61.0, 28.1, 18.0, 15.2$; HRMS Calcd for $\text{C}_{13}\text{H}_{15}\text{BrN}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 333.0209; Found: 333.0231.

(S)-4-Isopropyl-3-(4-nitro-benzylidene)amino-2-oxazolidinone (3f).

Colorless solid (250 mg, 67% yield); m.p 183-186 °C; $[\alpha]_{\text{D}}^{20} = -113.5$ ($c = 1.0$ in CHCl_3); IR (film): 2964, 2877, 1750, 1510, 1410, 1386, 1339, 1320, 1222, 1107 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 9.14$ (s, 1H), 8.25 (d, $J = 8.5$ Hz 2H), 7.86 (d, $J = 9.0$ Hz 2H), 4.43 (ddd, $J = 11.0, 7.5, 5.5$ Hz 1H), 4.25-4.20 (m, 2H), 2.37 (m, 1H), 1.02 (d, $J = 7.0$ Hz 3H), 0.95 (d, $J = 7.0$ Hz 3H); ^{13}C NMR (125.5 MHz): $\delta = 153.9, 148.8, 147.3, 140.9, 128.0, 124.2, 63.3, 62.1, 29.1, 17.8, 15.3$; HRMS Calcd for $\text{C}_{13}\text{H}_{15}\text{N}_3\text{O}_4$ ($\text{M}+\text{Na}$) $^+$: 300.0955; Found: 300.0969.

(S)-4-Isopropyl-3-(4-methoxy-benzylidene)amino-2-oxazolidinone (3g).

Colorless solid (270 mg, 67%); m.p 105-107 °C; $[\alpha]_{\text{D}}^{20} = -162.3$ ($c = 1.0$ in CHCl_3); IR(film): 2964, 2876, 1759, 1607, 1514, 1407, 1392, 1301, 1251, 1169, 1085 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 8.83$ (s, 1H), 7.66 (m, 2H), 6.92 (m, 2H), 4.36 (dd, $J = 11.0, 10.5$ Hz, 1H), 4.19-4.15 (m, 2H), 3.81 (s, 3H), 2.33 (m, 1H), 0.98 (d, $J = 7.0$ Hz, 3H), 0.93 (d, $J = 6.5$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 161.7, 154.7, 151.3, 129.2, 127.5, 114.3, 63.0, 62.0, 55.6, 28.8, 17.9, 15.3$; HRMS Calcd for $\text{C}_{14}\text{H}_{18}\text{N}_2\text{O}_3$ ($\text{M}+\text{Na}$) $^+$: 285.1210; Found: 285.1221.

(S)-4-Isopropyl-3-(3-phenyl-allylideneamino)-2-oxazolidinone (3h).

Colorless solid (350 mg, 64% yield). m.p. 125-128 °C; $[\alpha]_{\text{D}}^{20} = -225.2$ ($c = 0.7$ in CHCl_3); IR (film): 2963, 2875, 1763, 1404, 1391, 1212, 977 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 8.58$ (dd, $J = 6.5, 6.0$ Hz, 1H), 7.49-7.29 (m, 5H), 6.91-6.98 (m, 2H), 4.36 (dd, $J = 9.0, 8.5$ Hz, 1H), 4.24 (dd, $J = 9.0, 8.0$ Hz, 1H), 4.16 (dd, $J = 8.5, 3.5$ Hz,

1H), 2.33 (m, 1H), 0.98 (d, $J = 7.0$ Hz, 3H), 0.92 (d, $J = 7.0$, 3H); ^{13}C NMR (125.5 MHz): $\delta = 159.6$, 154.4, 140.4, 136.1, 129.3, 129.1, 127.3, 125.9, 62.8, 61.3, 28.2, 17.9, 14.9; HRMS Calcd for $\text{C}_{15}\text{H}_{18}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 281.1261; Found: 281.1278.

(S)-3-(Cyclohexylmethylene-amino)-4-isopropyl-2-oxazolidinone (3i).

Colorless solid (250 mg, 72% yield); m.p. 45-48°C; $[\alpha]_{\text{D}}^{20} = -59.8$ ($c = 1.3$ in CHCl_3); IR (film): 2928, 2853, 1752, 1449, 1392, 1372, 1211, 1080 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.91$ (d, $J = 6.0$ Hz, 1H), 4.29 (dd, $J = 8.5, 8.5$ Hz, 1H), 4.10 (dd, $J = 9.0, 6.0$ Hz, 1H), 4.05 (m, 1H), 2.34-2.28 (m, 1H), 2.20 (m, 1H), 1.83-1.65 (m, 5H), 1.35-1.67 (m, 5H), 1.35-1.89 (m, 6H), 0.93 (d, $J = 7.0$ Hz, 3H), 0.87 (d, $J = 7.0$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 160.8$, 155.1, 63.0, 61.4, 41.8, 30.4, 28.4, 26.1, 25.6, 18.0, 15.3; HRMS Calcd for $\text{C}_{13}\text{H}_{22}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 261.1574; Found: 261.1587.

(S)-3-Isobutylideneamino-4-isopropyl-2-oxazolidinone (3j).

Colorless liquid (230 mg, 65% yield); $[\alpha]_{\text{D}}^{20} = -60.7$ ($c = 1.0$ in CHCl_3); IR (film): 2964, 2874, 1755, 1484, 1467, 1393, 1371, 1211, 1120 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.97$ (d, $J = 5.5$ Hz, 1H), 4.30 (dd, $J = 9.0, 8.5$ Hz, 1H), .11 (dd, $J = 9.0, 9.0$ Hz, 1H), 4.05 (m, 1H), 2.58 (m, 1H), 2.21 (m, 1H), 1.13 (d, $J = 3.0$ Hz, 3H), 1.12 (d, $J = 3.5$ Hz, 3H), 0.94 (d, $J = 7.0$ Hz, 3H), 0.88 (d, $J = 7.0$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 161.7$, 155.1, 63.0, 61.5, 32.6, 28.5, 20.0, 18.0, 15.3; HRMS Calcd for $\text{C}_{10}\text{H}_{18}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 221.1261; Found: 221.1264.

(S)-4-Isopropyl-3-propylideneamino-2-oxazolidinone (3k).

Colorless liquid (300 mg, 65% yield); $[\alpha]_{\text{D}}^{20} = -67.0$ ($c = 0.7$ in CHCl_3); IR (film): 2967, 2937, 2877, 1755, 1463, 1339, 1212, 1090 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 8.03$ (t, $J = 5.0$ Hz, 1H), 4.29 (dd, $J = 10.0, 9.0$ Hz, 1H), 4.11 (dd, $J = 9.0, 8.5$ Hz, 1H), 4.05 (m, 1H), 2.35 (m, 2H), 2.21 (m, 1H), 1.11 (t, $J = 7.5$, 3H), 0.92 (d, $J = 7.0$ Hz, 3H), 0.87 (d, $J = 7.0$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 157.1$, 155.1, 62.9, 61.4, 28.3, 26.9, 17.9, 15.2, 10.8; HRMS Calcd for $\text{C}_9\text{H}_{16}\text{N}_2\text{O}_2$ (M) $^+$: 184.1212; Found: 184.1215.

General Procedure for allylation of hydrazones (Procedure A): A mixture of hydrazone (1 eq.), indium powder (2 eq.) and allyl iodide (3 eq.) in THF (0.1 M in hydrazone) were stirred at room temperature. After 3 hours the reaction mixture was concentrated and filtered through a small plug of silica gel (230-400 mesh) using 30% ethyl acetate/hexane as eluent to afford allylated products.

Indium triflate mediated allylation of hydrazones (Procedure B): A mixture of hydrazone (1 eq.), indium powder (2 eq.) and indium triflate (1.3 eq.) in THF (0.1 M in hydrazone) were stirred for 15 minutes at room temperature. Allyl iodide (3 eq.) was added. After 1 hour the reaction mixture was filtered through a small plug of silica gel using 30% ethyl acetate/hexane as eluent to afford allylated products.

(4S)-Phenyl-3-((S)-1-*p*-tolyl-but-3-enylamino)-oxazolidin-2-one (2a).

From **1a** (100 mg, 0.35 mmol) by General Procedure A was obtained **2a** (114 mg, 99%) as a colorless oil; $[\alpha]_D^{20} = -34.8$ ($c = 2.30$ in CHCl_3); IR (film): 3284, 3025, 2920, 1755, 1640, 1496, 917, 702 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.41\text{--}7.26$ (m, 3H), 7.21 (d, $J = 8.0$ Hz, 2H), 7.16 (d, $J = 8.0$ Hz, 2H), 7.13–7.11 (m, 1H), 7.01 (d, $J = 8.0$ Hz, 1H), 5.71 (dddd, $J = 17.0, 14.0, 10.0, 7.0$ Hz, 1H), 5.09–5.02 (m, 2H), 4.46 (t, $J = 7.0$ Hz, 1H), 4.29 (m, 2H), 4.12 (s, 1H), 4.04 (m, 1H), 2.38 (s, 3H), 2.30 (m, 2H); Characteristic peaks for the minor diastereomer: $\delta = 5.52$ (dddd, $J = 17.1, 14.1, 10.0, 6.6$ Hz), 4.98 (d, $J = 17.0$ Hz, 1H), 4.90 (d, $J = 10.5$ Hz, 1H), 4.73 (t, $J = 7.0$ Hz, 1H), 2.36 (s, 1H); ^{13}C NMR (125.5 MHz) $\delta = 157.9, 138.6, 137.7, 137.0, 134.5, 129.2, 128.1, 127.7, 127.4, 127.3, 118.2, 69.1, 62.1, 61.3, 40.3, 21.4$; Characteristic peaks for the minor diastereomer: $\delta = 158.5, 138.9, 137.8, 137.3, 134.6, 129.3, 129.0, 118.0, 68.9, 40.5, 21.3$; HRMS Calcd for $\text{C}_{20}\text{H}_{22}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 345.1574; Found: 345.1577.

(4S)-Benzyl-3-((S)-1-*p*-tolyl-but-3-enylamino)-oxazolidin-2-one (2b).

From **1b** (100 mg, 0.34 mmol) by General Procedure A was obtained **2b** (114 mg, >99%) as a colorless oil; $[\alpha]_D^{20} = -31.5$ ($c = 1.23$ in CHCl_3); IR (film): 3288, 3031, 2977, 2917, 1758, 1640, 1457, 914, 701 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.32$ (d, $J = 8.0$ Hz, 2H), 7.28–7.21 (m, 3H), 7.16 (d, $J = 8.0$ Hz, 2H), 6.99 (d, $J = 7.0$ Hz, 2H), 5.81 (m, 1H), 5.20 (dd, $J = 17.0$ Hz, 1.5 Hz, 1H), 5.12 (d, $J = 10.0$ Hz, 1H), 4.47 (s, 1H), 4.26 (brt, $J = 7.0$ Hz, 1H), 3.84–3.79 (m, 2H), 3.23 (dd, $J = 13.5$ Hz, 3.5 Hz, 1H), 3.18–3.11 (m, 1H), 3.51–2.42 (m, 3H), 2.36 (s, 3H); ^{13}C NMR (125.5 MHz) $\delta = 157.8, 139.1, 137.7, 136.2, 134.5, 129.37, 129.33, 128.9, 128.0, 127.1, 118.5, 65.9, 62.6, 58.4, 40.5, 36.9, 21.3$; HRMS Calcd for $\text{C}_{21}\text{H}_{24}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 359.1730; Found: 359.1734.

(4S)-Isopropyl-3-((S)-1-*p*-tolyl-but-3-enylamino)-oxazolidin-2-one (2c).

From **1c** (100 mg, 0.40 mmol) by General Procedure A was obtained **2c** (116 mg, 99%) as a colorless solid; m.p. 64-66 °C; $[\alpha]_D^{20} = -115.1$ ($c = 2.04$ in CHCl_3); IR (film): 3281, 3076, 2961, 2927, 2874, 1755, 1640, 1482, 1465, 918, 723 cm^{-1} ; ^1H NMR (500 MHz, CDCl_3): $\delta = 7.24$ (d, $J = 7.5$, 2H), 7.12 (d, $J = 7.5$ Hz, 2H), 5.77 (dddd, $J = 17$ Hz, 14 Hz, 10 Hz, 7 Hz 1H), 5.15 (brd, $J = 17.5$ Hz, 1H), 5.08 (brd, $J = 10.5$ Hz, 1H), 4.32 (s, 1H), 4.25 (brt, $J = 7.5$ Hz, 1H), 3.83-3.88 (m, 2H), 2.87 (ddd, $J = 8$ Hz, 5 Hz, 3.5 Hz, 1H), 2.40 (brt, $J = 7.0$ Hz, 2H), 2.33 (s, 3H), 2.21 (ds, $J = 6.5$, 3.0 Hz, 1H), 0.78 (d, $J = 7.0$ Hz, 3H), 0.73 (d, $J = 7.0$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 158.2$, 139.0, 137.5, 134.5, 129.2, 127.9, 118.3, 62.9, 62.3, 60.9, 40.5, 27.6, 21.3, 17.6, 15.2; HRMS Calcd for $\text{C}_{17}\text{H}_{24}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 311.1730; Found: 311.1733.

(4S,5R)-3-((S)-1-*p*-Tolyl-but-3-enylamino)-3,3a,8,8a-tetrahydro-indeno[1,2-*d*]oxazol-2-one (2d).

From **1d** (100 mg, 0.34 mmol) by General Procedure A was obtained **2d** (113 mg, 99%) as a colorless oil; $[\alpha]_D^{20} = +25.9$ ($c = 1.65$ in CHCl_3); IR (film): 3286, 3073, 3025, 2921, 1754, 1639, 1478, 1460, 916, 728 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.74$ (d, $J = 7.5$ Hz, 1H), 7.40 (d, $J = 8.5$ Hz, 2H), 7.33-7.26 (m, 2H), 7.23 (d, $J = 7.5$ Hz, 1H), 7.19 (d, $J = 8.5$ Hz, 2H), 5.80 (dddd, $J = 16.5$, 13.5, 10, 6 Hz), 5.16 (dd, $J = 17.5$ Hz, 1.5 Hz, 1H), 5.08 (brd, $J = 10.5$ Hz, 1H), 4.92 (dt, $J = 5.5$, 3.0 Hz, 1H), 4.29 (s, 1H), 2.40 (d, $J = 7$ Hz, 1H), 4.34 (brt, $J = 6.5$ Hz, 1H), 3.22-3.18 (m, 2H), 2.47-2.44 (m, 2H), 2.36 (s, 3H); ^{13}C NMR (125.5 MHz) $\delta = 157.4$, 140.2, 139.2, 138.8, 137.6, 134.5, 129.6, 129.3, 128.1, 127.4, 126.2, 125.5, 118.3, 65.1, 62.6, 40.6, 38.9, 21.3; HRMS Calcd for $\text{C}_{21}\text{H}_{22}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 357.1573; Found: 357.1584.

(S)-4-Isopropyl-3-((S)-1-phenyl-but-3-enylamino)-oxazolidin-2-one (4a):

From **3a** (100 mg, 0.34 mmol) by General Procedure A was obtained **4a** (117 mg, 99%) and By General Procedure B was obtained **4a** (112 mg, 95%) as a colorless oil; $[\alpha]_D^{20} = -119.2$ ($c = 1.27$ in CHCl_3); IR (film): 3280, 2961, 1754, 1640, 1483, 1407, 1220, 918, 702 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.37$ -7.26 (m, 5H), 5.78 (dddd, $J = 17.0$, 13.5, 10.0, 6.5 Hz, 1H), 5.16 (dd, $J = 17.0$ Hz, 1.5 Hz, 1H), 5.09 (brd, 10.0 Hz, 1H), 4.35 (s, 1H), 4.29 (brt, $J = 7.5$ Hz, 1H), 3.85 (d, $J = 6.5$ Hz, 2H), 2.83 (dt, $J = 6.5$ Hz, 3.5 Hz, 1H), 2.42 (brt, $J = 7.0$ Hz, 2H), 2.19-2.13 (m, 1H), 0.78 (d, $J = 6.5$ Hz, 3H), 0.72 (d, $J = 7.0$ Hz, 3H); ^{13}C NMR (125.5 MHz) $\delta = 158.2$, 142.1, 134.3, 128.5, 128.1, 127.9, 118.4, 62.8, 62.7, 61.0, 40.4, 27.6, 17.6, 15.2; HRMS Calcd for $\text{C}_{16}\text{H}_{22}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 297.1574; Found: 297.1583.

3-((S)-1-Furan-2-yl-but-3-enylamino)-(S)-4-isopropyl-oxazolidin-2-one (**4b**):

From **3b** (100 mg, 0.45 mmol) by General Procedure A was obtained **4b** (118 mg, 99%) and By General Procedure B was obtained **4b** (101mg, 85%) as a colorless oil; $[\alpha]_D^{20} = -70.57$ ($c = 1.56$ in CHCl_3); IR (film): 3281, 2961, 1754, 1641, 1482, 921, 808, 736 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.38$ (brs, 1H), 6.32-6.31 (m, 1H), 6.23 (d, $J = 3.5\text{ Hz}$, 1H), 5.76 (dddd, $J = 16.5\text{ Hz}, 14\text{ Hz}, 10\text{ Hz}, 7\text{ Hz}$, 1H), 5.16 (dd, $J = 17.0\text{ Hz}, 1.5\text{ Hz}$, 1H), 5.09 (brd, $J = 10\text{ Hz}$, 1H), 4.36 (dt, $J = 7.5\text{ Hz}, 2.5\text{ Hz}$, 1H), 4.27 (brd, $J = 2.5\text{ Hz}$, 1H), 4.00 (t, $J = 8.0\text{ Hz}$, 1H), 3.93-3.9 (m, 1H), 2.94-2.91 (m, 1H), 2.58-2.45 (m, 2H), 2.15-2.09 (m, 1H), 0.79-0.76 (m, 6H); ^{13}C NMR (125.5 MHz): $\delta = 158.09, 154.1, 142.3, 133.8, 118.5, 110.5, 108.5, 63.1, 60.9, 55.6, 37.0, 27.7, 17.7, 15.2$; HRMS Calcd for $\text{C}_{14}\text{H}_{20}\text{N}_2\text{O}_3$ ($\text{M}+\text{Na}$) $^+$: 287.1366; Found: 287.1358.

(S)-4-Isopropyl-3-((S)-1-naphthalen-2-yl-but-3-enylamino)-oxazolidin-2-one (**4c**):

From **3c** (100 mg, 0.35 mmol) by General Procedure A was obtained **4c** (109 mg, 95%) as a colorless oil; $[\alpha]_D^{20} = -140.6$ ($c = 2.35$ in CHCl_3); IR (film): 3280, 3024, 2960, 2916, 1753, 1640, 1482, 1407, 919, 749 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.84$ -7.77 (m, 4H), 7.58-7.46 (m, 3H), 5.81 (dddd, $J = 17, 14, 10, 7\text{ Hz}$, 1H), 5.19 (brd, $J = 17\text{ Hz}$, 1H), 5.10 (brd, $J = 10.5\text{ Hz}$, 1H), 4.49 (brt, $J = 7.0\text{ Hz}$, 1H), 4.44 (s, 1H), 3.82-3.74 (m, 2H), 2.84-2.81 (m, 1H), 2.50 (t, $J = 7\text{ Hz}$, 2H), 2.24-2.20 (m, 1H), 0.80 (d, $J = 7.0\text{ Hz}$, 3H), 0.70 (d, $J = 7.5\text{ Hz}$, 3H); ^{13}C NMR (125.5 MHz): $\delta = 158.2, 139.5, 134.2, 133.4, 133.3, 128.3, 128.0, 127.9, 127.5, 126.4, 126.1, 125.4, 118.6, 62.9, 60.9, 40.4, 27.7, 17.6, 15.3$; HRMS Calcd for $\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 347.1730; Found: 347.1708.

3-[(S)-1-(2-Fluoro-phenyl)-but-3-enylamino]-(S)-4-isopropyl-oxazolidin-2-one (**4d**):

From **3d** (100 mg, 0.40 mmol) by General Procedure A was obtained **4d** (113 mg, 97%) and By General Procedure B was obtained **4d** (105 mg, 90%) as a colorless oil; $[\alpha]_D^{20} = -97.1$ ($c = 1.78$ in CHCl_3); IR (film): 3280, 3077, 2962, 2931, 1755, 1641, 1487, 1406, 920, 699 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.50$ -7.47 (m, 1H), 7.26-7.22 (m, 1H), 7.12 (t, $J = 7.5\text{ Hz}$, 1H), 7.01 (t, $J = 9.0\text{ Hz}$, 1H), 5.80 (dddd, $J = 17.5, 14.5, 10.5, 7.0\text{ Hz}$, 1H), 5.14 (dd, $J = 17.5\text{ Hz}, 2.0\text{ Hz}$, 1H), 5.09 (brd, $J = 10.5\text{ Hz}$, 1H), 4.67-4.64 (m, 1H), 4.34 (s, 1H), 3.95-3.88 (m, 2H), 3.02-2.99 (m, 1H), 2.47 (t, $J = 7.0\text{ Hz}$, 2H), 2.23-2.16 (m, 1H), 0.79 (d, $J = 7.0\text{ Hz}$, 3H), 0.75 (d, $J = 7.0\text{ Hz}$, 3H); ^{13}C NMR (125.5 MHz) $\delta = 161.4$ (d, $J_{\text{CF}} = 245.0\text{ Hz}$), 158.3, 134.0, 129.2 (d, $J_{\text{CF}} = 8.4\text{ Hz}$), 129.1 (d, $J_{\text{CF}} = 5\text{ Hz}$), 128.8 (d, $J_{\text{CF}} = 11.8\text{ Hz}$), 124.2 (d, $J_{\text{CF}} = 3.4\text{ Hz}$), 118.6, 115.7 (d, $J_{\text{CF}} = 21.8\text{ Hz}$), 62.8, 61.1, 56.1, 39.1, 27.6, 17.7, 15.1; HRMS Calcd for $\text{C}_{16}\text{H}_{21}\text{FN}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 315.1479; Found: 316.1472.

3-[(S)-1-(2-Bromo-phenyl)-but-3-enylamino]-(S)-4-isopropyl-oxazolidin-2-one (**4e**):

From **3e** (100 mg, 0.32 mmol) by General Procedure A was obtained **4e** (108 mg, 95%) and By General Procedure B was obtained **4e** (109 mg, 96%) as a colorless oil; $[\alpha]_D^{20} = -83.3$ ($c = 2.21$ in CHCl_3); IR (film): 3278, 2961, 1754, 1640, 1467, 1405, 919, 758 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.60$ (d, $J = 8.0$ Hz, 1H), 7.53 (d, $J = 8.0$ Hz, 1H), 7.31 (t, $J = 7.5$, 1H), 7.12 (dt, $J = 8.0$ Hz, 4.5 Hz, 1H), 5.89-5.82 (m, 1H), 5.18 (d, $J = 17.0$ Hz, 1H), 5.13 (d, $J = 10.0$ Hz, 1H), 4.84 (dt, $J = 7.0$ Hz, 2.5 Hz, 1H), 4.38 (s, 1H), 3.97 (t, $J = 8.5$ Hz, 1H), 3.90 (dd, $J = 9.0$ Hz, 4.5 Hz, 1H), 3.01 (m, 1H), 2.47-2.45 (m, 1H), 2.37-2.34 (m, 1H), 2.23-2.21 (m, 1H), 0.79 (d, $J = 7.0$ Hz, 3H), 0.75 (d, $J = 7.0$ Hz, 3H), Characteristic peaks for the minor diastereomer; 0.86 (d, $J = 7.0$ Hz, 3H), 0.69 (d, $J = 7.0$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 158.3, 141.2, 133.9, 133.1, 129.2, 128.9, 127.5, 124.8, 118.8, 62.8, 61.2, 60.9, 39.5, 27.6, 17.7, 15.1$; HRMS Calcd for $\text{C}_{16}\text{H}_{21}\text{BrN}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 375.0679; Found: 375.0655.

(S)-4-Isopropyl-3-[(S)-1-(4-nitro-phenyl)-but-3-enylamino]-oxazolidin-2-one (**4f**):

From **3f** (100 mg, 0.36 mmol) by General Procedure A was obtained **4f** (58 mg, 50%) and By General Procedure B was obtained **4f** (109 mg, 95%) as a colorless solid; m.p. 133-135 $^{\circ}\text{C}$; $[\alpha]_D^{20} = -125.6$ ($c = 0.63$ in CHCl_3); IR (film): 3236, 1742, 1678, 1513, 1410, cm^{-1} ; ^1H NMR (500 MHz): $\delta = 8.20$ (d, $J = 8.5$ Hz, 2H), 7.55 (d, $J = 8.5$ Hz, 2H), 5.79-5.70 (m, 1H), 5.16-5.11 (m, 2H), 4.46 (brt, $J = 8.0$ Hz, 1H), 4.39 (s, 1H), 3.90 (d, $J = 6.5$ Hz, 2H), 2.98-2.95 (m, 1H), 2.44-2.39 (m, 2H), 2.23-2.19 (m, 1H), 0.81 (d, $J = 6.5$ Hz, 3H), 0.78 (d, $J = 7.0$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 158.3, 150.0, 147.8, 133.2, 128.8, 123.8, 119.4, 62.9, 62.5, 61.3, 40.5, 27.8, 17.7, 15.2$; HRMS Calcd for $\text{C}_{16}\text{H}_{21}\text{N}_3\text{O}_4$ ($\text{M}+\text{Na}$) $^+$: 342.1424; Found: 342.1440.

(S)-4-Isopropyl-3-[(S)-1-(4-methoxy-phenyl)-but-3-enylamino]-oxazolidin-2-one (**4g**):

From **3g** (100 mg, 0.38 mmol) by General Procedure A was obtained **4g** (111 mg, 96%) and By General Procedure B was obtained **4g** (110 mg, 95%) as a colorless liquid; $[\alpha]_D^{20} = -103.9$ ($c = 1.74$ in CHCl_3); IR (film): 3280, 2960, 1754, 1640, 1463, 918, 698 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.27$ (d, $J = 8.5$ Hz, 2H), 6.85 (d, $J = 8.5$ Hz, 2H), 5.75 (dddd, $J = 17.0, 14.0, 10.0, 7.0$ Hz), 5.14 (dd, $J = 17.0$ Hz, 1.5 Hz, 1H), 5.07 (brd, $J = 10.5$ Hz, 1H), 4.32 (brs, 1H), 4.24 (t, $J = 7.0$ Hz, 1H), 3.86-3.84 (m, 2H), 3.80 (s, 3H), 2.85-2.82 (m, 1H), 2.39 (brt, $J = 6.5$ Hz, 2H), 2.16-2.12 (m, 1H), 0.78 (d, $J = 6.5$ Hz, 3H), 0.72 (d, $J = 7.5$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 159.3, 158.1, 134.5, 134.0, 129.1, 118.3, 113.9, 62.9, 61.9, 61.0, 55.4, 40.4, 27.6, 17.7, 15.2$; HRMS Calcd for $\text{C}_{17}\text{H}_{24}\text{N}_2\text{O}_3$ ($\text{M}+\text{Na}$) $^+$: 327.1679; Found: 327.1660.

(S) 4-Isopropyl-3-((S)-1-styryl-but-3-enylamino)-oxazolidin-2-one (4h):

From **3h** (100 mg, 0.38 mmol) by General Procedure A was obtained **4h** (115 mg, 99%) and By General Procedure B was obtained **4h** (104 mg, 90%) as a colorless oil; $[\alpha]_D^{20} = -93.3$ ($c = 1.90$ in CHCl_3); IR (film): 3280, 3025, 2961, 1754, 1640, 1482, 1405, 917, 694 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.38\text{--}7.24$ (m, 5H), 6.54 (d, $J = 16.0$ Hz, 1H), 6.04 (dd, $J = 15.5$ Hz, 8.5 Hz, 1H), 5.84 (dddd, $J = 17.0$ 13.5, 10.0, 7.5 Hz, 1H), 5.18 (d, $J = 17.0$ Hz, 1H), 5.12 (d, $J = 10.0$ Hz, 1H), 4.15 (s, 1H), 4.09 (t, $J = 8.5$ Hz, 1H), 3.97 (dd, $J = 9.5$ Hz, 4.5 Hz, 1H), 3.09 (m, 1H), 3.62–3.59 (m, 1H), 2.33–2.29 (m, 2H), 2.26–2.20 (m, 1H), 0.87 (d, $J = 4.0$ Hz, 3H), 0.85 (d, $J = 4.0$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 158.3, 136.9, 134.1, 133.2, 130.4, 128.8, 127.9, 126.7, 126.6, 118.4, 63.0, 62.3, 61.4, 38.5, 28.0, 17.8, 15.5$; HRMS Calcd for $\text{C}_{18}\text{H}_{24}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 323.1730; Found: 323.1744.

3-((S)-1-Cyclohexyl-but-3-enylamino)-(S)-4-isopropyl-oxazolidin-2-one (4i):

From **3i** (100 mg, 0.42 mmol) by General Procedure A was obtained **4i** (116 mg, 99%) and By General Procedure B was obtained **4i** (108mg, 92%) as a colorless oil; $[\alpha]_D^{20} = -19.7$ ($c = 0.90$ in CHCl_3); IR (film): 3288, 3075, 2925, 2852, 1758, 1640, 1483, 916, 700 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 5.86$ (dddd, $J = 15.5$ Hz, 14.0 Hz, 9.0 Hz, 5.5 Hz, 1H), 5.16 (d, $J = 17.0$, 1H), 5.11 (d, $J = 10.0$ Hz, 1H), 4.24 (t, $J = 8.5$, 1H), 4.07 (dd, $J = 9.0$ Hz, 3.5 Hz, 1H), 3.90 d, $J = 3.0$ Hz, 1H), 3.63 (dt, $J = 7.0, 3.5$ Hz, 1H), 2.98–2.95 (m, 1H), 2.29–2.23 (m, 2H), 2.08–1.96 (m, 1H), 1.79–1.45 (m, 5H), 1.27–0.99 (m, 6H), 0.88 (d, $J = 7.0$ Hz, 3H), 0.82 (d, $J = 6.5$ Hz, 3H); ^{13}C NMR (125.5 MHz): $\delta = 158.4, 136.1, 117.7, 39.7, 33.4, 29.6, 27.7, 27.4, 27.0, 26.9, 17.9, 15.1$; HRMS Calcd for $\text{C}_{16}\text{H}_{28}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 303.2043; Found: 303.2049.

(S)-4-Isopropyl-3-((S)-1-isopropyl-but-3-enylamino)-oxazolidin-2-one (4j):

From **3j** (100 mg, 0.50 mmol) by General Procedure A was obtained **4j** (119 mg, 99%) and By General Procedure B was obtained **4j** (109 mg, 90%) as a colorless oil; $[\alpha]_D^{20} = -6.9$ ($c = 0.99$ in CHCl_3); IR (film): 3290, 3076, 2961, 2874, 1758, 1640, 1483, 1403, 914, 700 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 5.92\text{--}5.83$ (m, 1H) 5.17 (d, $J = 17.0$ Hz, 1H), 5.12 (d, $J = 10.5$ Hz, 1H), 4.22 (t, $J = 9.0$ Hz, 1H), 4.06 (dd, $J = 9.5$ Hz, 3.5 Hz, 1H), 3.93 (d, $J = 2.5$ Hz, 1H), 3.66 (dt, $J = 8.5, 3.5$ Hz, 1H), 3.04–3.00 (m, 1H), 2.32–2.24 (m, 1H), 2.24–2.19 (m, 1H), 1.97–1.92 (m, 1H), 1.88–1.84 (m, 1H), 0.95–0.82 (m, 12H); ^{13}C NMR (125.5 MHz): $\delta = 158.4, 136.0, 117.9, 62.7, 62.6, 62.1, 32.2, 28.7, 27.7, 18.9, 17.8, 16.3, 15.1$; HRMS Calcd for $\text{C}_{13}\text{H}_{24}\text{N}_2\text{O}_2$ (M) $^+$: 240.1832; Found: 240.1793.

3-((S)-1-Ethyl-but-3-enylamino)-(S)-4-isopropyl-oxazolidin-2-one (**4k**):

From **3k** (100 mg, 0.54 mmol) by General Procedure A was obtained **4k** (117 mg, 95%) and By General Procedure B was obtained **4k** (110 mg, 90%) as a colorless oil; $[\alpha]_D^{20} = -2.0$ ($c = 2.11$ in CHCl_3); IR (film): 3286, 3075, 2963, 2931, 2875, 1755, 1640, 1483, 1403, 913, 763, 698 cm^{-1} ; ^1H NMR (500 MHz): δ 5.86-5.77 (m, 1H), 5.11 (dd, $J = 17.0$ Hz, 1.5 Hz, 1H), 5.06 (d, $J = 10.0$ Hz, 1H) 4.21 (t, $J = 9.0$ Hz, 1H), 4.04 (dd, $J = 9.0$ Hz, 4.0 Hz, 1H), 3.88 (s, 1H), 3.66-3.63 (m, 1H), 3.05 (brs, 1H), 2.65-2.19 (m, 2H), 2.09-2.03 (m, 1H), 1.51-1.46 (m, 1H), 1.42-1.34 (m, 1H), 0.89-0.80 (m, 9H); ^{13}C NMR (125.5 MHz): $\delta = 158.6, 135.1, 117.4, 62.6, 62.3, 58.9, 36.4, 27.6, 25.0, 17.8, 15.1, 9.3$; HRMS Calcd for $\text{C}_{12}\text{H}_{22}\text{N}_2\text{O}_2$ ($\text{M}+\text{Na}$) $^+$: 249.1574; Found: 249.1585.

(S)-N-(1-phenyl-3-butenyl)benzamide (**4**):³

To a solution of **3a** (274 mg, 1.0 mmol) in THF (12 mL) at -78°C was added $n\text{-BuLi}$ (1.0 mL, 2.0 M in hexane, 2.0 mmol). After stirring for 1 h, benzoic anhydride (452 mg, 2.0 mmol) was added in one portion. The reaction mixture was allowed to warm to room temperature overnight, then partitioned between water and CH_2Cl_2 . The CH_2Cl_2 layer was washed with brine and dried over anhydrous Na_2SO_4 . The crude product was purified to a pure oil (294 mg, 78%) by flash chromatography. To the solution of this oil (294 mg, 0.77 mmol) in THF/HMPA (20:1, 12 mL) at -78°C was added a solution of SmI_2 (38 mL, 0.1 M in THF, 3.8 mmol). After 30 minute stirring in the dark, the reaction mixture was partitioned between water and CH_2Cl_2 . The CH_2Cl_2 layer was washed with brine and dried over anhydrous Na_2SO_4 . Purification by flash chromatography afforded the benzamide **5** (180 mg, 92%, 72% from **3a**) and the chiral oxazolidinone auxiliary was recovered (90 mg, 70% from **3a**). M.P. 112-113 $^\circ\text{C}$; $[\alpha]_D^{20} = -23.6$ ($c = 1.23$ in CHCl_3); IR (film) 3329, 3029, 1632, 754 cm^{-1} ; ^1H NMR (500 MHz): $\delta = 7.80\text{-}7.25$ (m, 10H), 6.42 (d, $J = 7.0$ Hz, 2H), 5.76 (dddd, $J = 17.1, 10.1, 6.7, 6.7$ Hz, 1H), 5.30 (ddd, $J = 7.1, 7.1, 7.1$ Hz, 1H), 5.16 (ddd, $J = 17.1, 3.2, 1.5$ Hz, 1H), 2.69 (dd, $J = 6.6, 6.6$ Hz, 2H); ^{13}C NMR (125 MHz, CDCl_3): $\delta = 166.9, 141.8, 134.8, 134.3, 131.5, 128.9, 128.8, 127.6, 127.1, 126.7, 118.6, 52.9, 40.8$.

³ Friestad, G. K.; Ding, H. *Angew. Chem. Int. Ed.* **2001**, *40*, 4491.

1a

Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp. 25.0 C / 298.1 K
 File: kr-2-78
 INOVA-500 "delta5"
 PULSE SEQUENCE
 Relax. delay 0.300 sec
 Pulse 45.0 degrees
 Acq. time 2.908 sec
 Width 6500.9 Hz
 8 repetitions
 OBSERVE H1, 499.6716919 MHz
 DATA PROCESSING
 Line broadening 0.3 Hz
 FI size 65536
 Total time 0 min, 25 sec

Kr-2-78

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: CDCl3
Temp. 25.0 C / 298.1 K
User: j-lh-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 46.0 degrees

Acq. time 0.579 sec

Width 27643.4 Hz

Resolution 0.0001 Hz

Observed F1, 4025167 MHz

Decouple CH1, 499.6741898 MHz

Power 40 dB

on during acquisition

off during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FI size 32768

Total time 1 hr, 13 min, 58 sec

bcm-1-118

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1

Solvent: cdcl3

Temp: 25.0 C / 298.1 K

INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 45.0 degrees

Acq. time 2.300 sec

Width 6500.9 Hz

8 repetitions

OBSERVE H1, 499.6716913 MHz

DATA PROCESSING

Line broadening 0.3 Hz

FT size 65536

Total time 0 min, 25 sec

bcm-1-118

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: CDCl₃

Temp: 25.0 C / 298.1 K

User: 1-14-87

INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse delay 0.000 sec

Acq. time 0.50 sec

Width 27643.4 Hz

750 repetitions

OBSERVE C13, 125.6425167 MHz

DECOUPLE H1, 499.6741898 MHz

Power 40 dB

on during acquisition

off during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FI size 32768

Total time 11 min, 5 sec

Kr-2-64

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pul

Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INOVA-500 ¹Hnmr500

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.908 sec
Width 6500.9 Hz

8 repetitions
F1 499.6716913 MHz
DATA PROCESSING
Time processing 0.3 Hz
F1 499.6716913 MHz
Total time 0 min, 25 sec

Kr-2-64

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: CDCl₃
Temp: 25.0 C / 298.1 K
USC13: 1-14-87
INOVA-500 ¹³C NMR 500"

Relax. delay 0.300 sec
Pulse 46.0 degrees

Acq. time 0.579 sec

Width 27643.4 Hz

Waltz16 100%

OBSERVE C13, 125.6425167 MHz

DECOUPLE H1, 499.6741888 MHz

Power 40 dB

on during acquisition

off during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FT size 32768

Total time 11 min, 5 sec

kr-2-91

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.908 sec
Width 6500.9 Hz
8 repetitions

OBSERVE F2, 499.6716913 MHZ
DATA PROCESSING 0.3 Hz
File size 65536
Total time 0 min, 25 sec

kr-83-rb
Pulse Sequence: s2pul

kr-2-79
 Sample directory: proton-test_02Mar2000
 File: PROTON

Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 INOVA-500 "vnmr500"

Relax. delay 0.300 sec
 Pulse 45.0 degrees
 Acq time 2.908 sec
 Width 6500.9 Hz

Single scan
 OBSERVE H1, 499.6716913 MHz
 DATA PROCESSING
 Line broadening 0.3 Hz
 FT size 65536
 Total time 0 min, 3 sec

KF-2-79
Sample directory: eb-chloroform_01Mar2000
File: CARBON
Pulse Sequence: s2pul

Kr-2-66
 Sample directory: proton=test_02Mar2000
 File: PROTON
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 INOVA-500 "vnmr500"
 Relax. delay 0.300 sec
 Pulse 45.000 sec
 Width 2.500 sec
 Width 6500.9 Hz
 8 repetitions
 OBSERVE H1, 499.6716913 MHz
 DATA PROCESSING
 Line broadening 0.3 Hz
 FT size 65536
 Total time 0 min 25 sec

Kr-2-66
 Sample directory: eb-chloroform_01Mar2000
 File: CARBON
 Pulse Sequence: s2pu1

Kr-1-260
 Sample directory: proton=test_02Mar2000
 File: PROTON
 Pulse Sequence: s2pu1
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 INOVA-500 ¹Hnmr500"
 Relax. delay 0.300 sec
 Pulse 45.0 degrees
 Acq. time 2.308 sec
 Width 6500.9 Hz
 SFO 500.136 MHz
 F2 500.136 MHz
 OBSERVE H1, 499.6716913 MHz
 DATA PROCESSING
 Line broadening 0.3 Hz
 FT size 65536
 Total time 0 min, 3 sec

kr-1-260
 Sample directory: eb-chloroform_01Mar2000
 File: CARBON
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Temp: 25.0 C / 298.1 K
 User: 1-14-87
 INOVA-500 "vnmr500"
 Relax. delay 0.300 sec
 Pulse delay 0.000 degrees
 Acq. time 0.579 sec
 Width 27643.4 Hz
 700 repetitions
 OBSERVE C13, 125.6425167 MHz
 DECOUPLE H1, 499.6741898 MHz
 Power 40 dB
 on during acquisition
 off during delay
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 1.0 Hz
 FT size 32768
 Total time 10 min, 21 sec

Kr-2-83

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pul

Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq time 2.998 sec
Width 6500.9 Hz
8 repetitions

OBSERVE H1, 499.6716913 MHz

DATA PROCESSING

Line broadening 0.3 Hz

FT size 65536

Total time 0 min, 25 sec

kr-2-83

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul1

Solvent: CDCl3
Temp. 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz
650 repetitions
OBSERVE C13, 125.6425167 MHz
DECOUPLE H1, 499.6741896 MHz
Power 40 dB
on during acquisition
off during delay
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FI size 32768
Total time 9 min, 37 sec

KF-2-74
 Sample directory: proton-test_02Mar2000
 File: PROTON

Pulse Sequence: s2pu1
 Solvent: cdcl3
 Temp. 25.0 C / 298.1 K
 INOVA-500 "vnmr500"

Relax. delay 0.300 sec
 Pulse 45.0 degrees
 Acq. time 2.908 sec
 Width 6500.9 Hz
 8 repetitions
 OBSERVE H1, 499.6716913 MHz
 DATA PROCESSING
 Line broadening 0.3 Hz
 FT size 65536
 Total time 0 min, 25 sec

KC-2-74

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: CDCl3
Temp. 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz
700 repetitions
OBSERVE C13, 125.6425167 MHZ
DECOUPLE H1, 499.6741898 MHZ
Power 40 dB
on during acquisition
off during delay
VAL T2-16 irradiated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 10 min, 21 sec

Kr-2-81
 Sample directory: proton-test_02Mar2000
 File: PROTON

Pulse Sequence: s2pu1
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 INOVA-500 "vnmr500"

Relax. delay 0.300 sec
 Pulse 45.0 degrees
 Acq. time 2.908 sec
 Width 6500.9 Hz
 Single scan
 OBSERVE H1, 499.6716913 MHz
 DATA PROCESSING
 Line broadening 0.3 Hz
 FT size 65536
 Total time 0 min, 3 sec

kr-2-81
 Sample directory: eb-chloroform_01Mar2000
 File: CARBON
 Pulse Sequence: s2pul

kr-2-82
Sample directory: proton-test_02Mar2000
File: PROT0N
Pulse Sequence: s2pul
Solvent: cdCl3
Temp. 25.0 C / 288.1 K
INQVA-500 "vnmr500"
Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.908 sec
Width 6500.9 Hz
8 repetitions
OBSERVE H1, 499.6716913 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 0 min, 25 sec

Kr-2-75
 Sample directory: proton-test_02Mar2000
 File: PROTON

Pulse Sequence: s2pul
 Solvent: CDCl3
 Temp. 25.0 C / 298.1 K
 INOVA-500 "vnmr500"

Relax. delay 0.300 sec
 Pulse 45.0 degrees
 Acq. time 2.908 sec
 Width 6500.9 Hz

Single scan
 OBSERVE H1, 499.6716913 MHz
 DATA PROCESSING
 Line broadening 0.3 Hz
 FT size 65536
 Total time 0 min, 3 sec

Kr-2-75

Sample directory: eb-chloroform_01Mar2000

File: CARBON

Pulse Sequence: 62pul

KF-2-67
 Sample directory: proton-test_02Mar2000
 File: PROT0N

Pulse Sequence: s2pu1
 Solvent: cdcl3
 Temp.: 25.0 C / 298.1 K
 INOVA-500 "vnmr500"

Relax. delay 0.300 sec
 Pulse 45.0 degrees
 Acq. time 2.908 sec
 Width 6500.9 Hz
 8 repetitions
 OBSERVE H1, 499.6716913 MHz
 DATA PROCESSING
 Line broadening 0.3 Hz
 FT size 65536
 Total time 0 min, 25 sec

Kr-2-67

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul
Solvent: CDCl3
Temp: 25.0 C / 298.1 K
User: 1-14-87
INNOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz
650 repetitions
OBSERVE C13, 125.6425167 MHz
DECOUPLE H1, 499.6741898 MHz
Power 40 dB
on during acquisition
off during delay
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
Fid 1232768
Total time 9 min, 37 sec

LN-2-68

Sample directory: proton-test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1

Solvent: cdcl3 298.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 45.0 degrees

Acq. time 2.908 sec

Width 6500.8 Hz

16 repetitions

OBSERVED FREQ 99.6716913 MHZ

DATA PROCESSING 0.3 Hz

File size 65536

Total time 0 min, 51 sec

122079

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: CDCl3

Temp. 25.0 C / 298.1 K

User: 1-14-87

INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 46.0 degrees

Acq. time 0.578 sec

Width 27643.4 Hz

512 repetitions

OBSERVE CH, 125.625167 MHz

DECOUPLE H1, 499.674198 MHz

Power 10.00 dB, 499.674198 MHz

on during acquisition

off during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FI size 32768

Total time 7 min, 34 sec

KF-2-95

Sample directory: proton-test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1

Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 45.0 degrees

Acq. time 2.906 sec

Width 6500.3 Hz

8 Spectitions

OBSERVE H1 499.6716913 MHZ

DATA PROCESSING

Line broadening 0.3 Hz

FI size 65536

Total time 0 min, 25 sec

bcm-I-240

Sample directory: proton=test_02Mar2000
File: PROT0N

Pulse Sequence: s2pul

Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INSTR: 500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.398 sec
Width 6500 Hz

Observation 499.6716913 MHz
OBSERVE H1 499.6716913 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 0 min, 51 sec

bcm-I-240

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pu1

Solvent: cdCl3
Temp. 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz

1024 repetitions
OBSERVE CH1, 6425167 MHZ
PULSE CH1, 499.6741888 MHZ

Power 40 dB,
on during acquisition
off during delay

WAIT-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FT size 32768

Total time 15 min, 9 sec

bcm-I-211

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.300 sec
Width 6500.9 Hz
16 repetitions

OBSERVE H1, 499.6716913 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 0 min, 51 sec

bcm-I-211

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: CDCl3
Temp. 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz

1024 repetitions
OBSERVE C13, 125.6425167 MHz
DECOUPLE H1, 499.6741898 MHz

Power 40 dB acquisition
on during acquisition
during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz
FT size 32768

Total time 15 min, 9 sec

bcm-I-214

Sample directory: proton-test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
INOVIA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 45.0 degrees

Acq. time 2.908 sec

Width 6500.9 Hz

16 repetitions

OBSERVE H1, 499.0716913 MHz

DATA PROCESSING

Line broadening 0.3 Hz

FT size 65536

Total time 0 min, 51 sec

bcm-1-214

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: CDCl₃

Temp. 25.0 C / 298.1 K

User: 1-14-87

INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 46.0 degrees

Acq. time 0.579 sec

Width 27643.4 Hz

1024 repetitions

OBSERVE C13, 125.6425167 MHz

DECOUPLE H1, 499.6741898 MHz

Power 40 dB

on during acquisition

off during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FT size 32768

Total time 15 min, 9 sec

bcm-I-227

Sample directory: proton-test_02Mar2000
File: PROTON

Pulse Sequence: s2pul

Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq time 2.908 sec
Width 6500.9 Hz
16 repetitions

OBSERVE H1, 499.6716913 MHz

DATA PROCESSING
Line broadening 0.3 Hz
FI size 65536
Total time 0 min, 51 sec

bcm-I-217

Sample directory: proton=test_02Mar2000

File: PROTON

Pulse Sequence: s2pu1

Solvent: cdc13

Temp. 25.0 C / 298.1 K

INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 45.0 degrees

Acq. time 2.908 sec

Width 6500.9 Hz

16 repetitions

OBSERVE H1, 499.6716913 MHz

DATA PROCESSING

Line broadening 0.3 Hz

FT size 65536

Total time 0 min, 51 sec

bcm-I-217

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: CDCl3

Temp: 25.0 C / 288.1 K

User: 1-14-87

INNOVA-500 "vnmf500"

Relax. delay 0.300 sec

Pulse 46.0 degrees

Acq. time 0.579 sec

Width 27643.4 Hz

1024 repetitions

OBSERVE C13, 125.6425167 MHz

DECOUPLE H1, 499.6741898 MHz

Power 40 dB

on during acquisition

off during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

Fl. size 32768

Total time 15 min, 9 sec

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1
Solvent: cdc13
Temp. 25.0 C / 298.1
INOVA-500 "vnmr500"

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Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.908 sec
Width 6500.9 Hz
16 repetitions
OBSERVE H1 499.671691
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 0 min, 51 sec

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bcm-II-008

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pu1

Solvent: cdc13
Temp: 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz
1024 repetitions

OBSERVE C13, 125.6425167 MHz
DECOUPLE H1, 499.6741898 MHz
Power 40 dB.
on during acquisition
off during delay
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 15 min, 9 sec

bcm-I-225
Sample directory: proton-test_02Mar2000
File: PROTON

Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INOVA-500 500 MHz

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.908 sec
Width 6500.9 Hz
16 repetitions
OBSERVED FREQ 99.6716913 MHz
DATA PROCESSING
Gain 1.000000
FT size 65536
Total time 0 min, 51 sec

bcm-I-225
Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: cdc13
Temp. 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 46.0 degrees

Acq. time 0.578 sec

Width 27643.4 Hz

512 repetitions

OBSERVE c13, 425.6425167 MHZ

DECOUPLE c13, 439.6741898 MHZ

Lowpass filter

off during acquisition

off during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FT size 32768

Total time 7 min, 34 sec

bcm-II-009

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1
Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 0.396 sec
Width 16.9 Hz
16 repetitions

OBSERVE H1, 499.6716913 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 0 min, 51 sec

bcm-II-009

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmf500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz
1024 Repetitions
OBSERVE C13, 125.6425167 MHz
DECOUPLE H1, 499.6741898 MHz
Powering down
during acquisition
off during delay
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 15 min, 9 sec

bcm-II-004

Sample directory: proton-test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1

Solvent: cdcl3
Temp: 25.0 C / 298.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 45.0 degrees

Acq. time 2.908 sec

Width 6500.9 Hz

16 repetitions

DATA ACQUISITION 99.6716913 MHZ

DATA PROCESSING 0.3 Hz

Line broadening 0.3 Hz

FT size 65536

Total time 0 min, 51 sec

bcm-II-004

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz
512 Repetitions
OBSERVE C13, 125.6425167 MHz
DECOUPLE H1, 499.6741898 MHz
Powering off during acquisition
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 7 min, 34 sec

Sample directory: proton=test_02Mar2000
File: PROTON

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
INQVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.908 sec
Width 6500.9 Hz
16 repetitions
Recovery 41.400 671691

16 repetitions
OBSERVE H1, 499.6716913 MHZ
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 0 min, 51 sec

bcm-1-289

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul

Solvent: cdcl3
Temp: 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 46.0 degrees

Acq. time 0.579 sec

Width 27843.4 Hz

512 repetitions

OBSERVE C13, 125.6425167 MHz

DECOUPLE H1, 499.6741898 MHz

Power 40 dB acquisition

on during acquisition

offset delay

offset delay

offset delay

offset delay

offset delay

offset delay

offset delay

offset delay

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bcm-I-280C

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 25.0 C / 288.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.000 sec
Acq. time 2.908 sec
Width 6500.9 Hz
16 repetitions

OBSERVE H1, 499.6716913 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 0 min, 51 sec

bcm-1-280C

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pu1

Solvent: cdcl3

Temp. 25.0 C / 298.1 K

User: 1-14-87

INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 46.0 degrees

Acq. time 0.579 sec

Width 27643.4 Hz

512 repetitions

OBSERVE C13, 125.6425167 MHz

DECOUPLE H1, 499.6741898 MHz

Power 40 dB acquisition

on during acquisition

off during delay

WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FT size 32768

Total time 7 min, 34 sec

bcm-I-294
 Sample directory: proton-test_02Mar2000
 File: PROTON
 Pulse Sequence: s2pu1

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.573 sec
Width 27643.4 Hz
1024 replications
OBSERVE C13, 429.6425167 MHz
DECEPTE H1, 499.6741898 MHz
Power 40 dB
on during acquisition
off during delay
WALTZ-16 modulated
DATA PROCESSING
Line processing 1.0 Hz
FT size 32768
Total time 15 min, 9 sec

bcm-1-286

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pu1

Solvent: cdcl3

Temp: 24.0 C / 297.1 K

INOVA-500 ^1H nmr500

Relax. delay 0.300 sec

Pulse 45.0 degrees

Acq. time 2.908 sec

Width 6500.9 Hz

Observed F1 99.6716913 MHz

DATA PROCESSING

Line broadening 0.3 Hz

FT size 65536

Total time 0 min, 51 sec

bcm-1-286

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pu1

Solvent: CDCl3
Temp. 24.0 C / 297.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz
1024 repetitions

OBSERVE C13, 125.6425167 MHz
DECOUPLE H1, 499.6741898 MHz
Power 40 dB
on during acquisition
off during delay
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 15 min, 9 sec

bcm-II-005

Sample directory: proton=test_02Mar2000

File: PROTON

Pulse Sequence: s2pul

Solvent: cdcl3

Temp: 25.0 C / 298.1 K

INOVA-500 "vnmr500"

Relax. delay 0.300 sec

Pulse 45.0 degrees

Acq. time 2.398 sec

Width 6500 Hz

Offset 0 Hz

Frequency 499.6716913 MHz

Observer H1

DATA PROCESSING

Line broadening 0.3 Hz

FT size 65536

Total time 0 min, 51 sec

bcm-II-005

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 288.1 K
User: 1-14-87
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 46.0 degrees
Acq. time 0.579 sec
Width 27643.4 Hz
SIZ repetitions
OBSERVE C13, 125.6425167 MHz
DECOUPLE H1, 499.6741898 MHz
Power 40 dB acquisition
off during delay
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 7 min, 34 sec

bcm-I-012

Sample directory: proton=test_02Mar2000
File: PROTON

Pulse Sequence: s2pul

Solvent: cdcl3
Temp: 24.0 C / 297.1 K
INOVA-500 "vnmr500"

Relax. delay 0.300 sec
Pulse 45.0 degrees
Acq. time 2.908 sec
Width 6500.9 Hz
16 repetitions

OBSERVE: H1, 499.6716913 MHz
DATA PROCESSING
Line broadening 0.3 Hz
F1 size 65536
Total time 0 min, 51 sec

bcm-I-012

Sample directory: eb-chloroform_01Mar2000
File: CARBON

Pulse Sequence: s2pu1