SUPPORTING INFORMATION

A Novel Synthetic Route to Chiral γ -Lactams from α -Amino Acids via Rh-Catalyzed Intramolecular C-H Insertion

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1. Preparation of Phenylthioacetamide from (L)-Phenylalanine.

Thionyl chloride (3.65 mL, 50 mmol) was added dropwise to a solution of (L)-phenylalanine (7.6 g, 46 mmol) in methanol (60 mL) at 0 °C, and the mixture was heated under reflux for 1 h. The solvent was evaporated off to give (L)-phenylalanine methyl ester hydrochloride as white solid. Diisopropylcarbodiimide (8 mL, 51 mmol) was slowly added to a mixture of (L)-phenylalanine methyl ester hydrochloride (46 mmol), phenylthioacetic acid (8.5 g, 51 mmol), cat. amount of DMAP, and imidazole (4.1 g, 60 mmol) in DMF (46 mL, C = 1.0 M) at 0 °C. The reaction mixture was stirred briefly at 0 °C and then at r.t. for 12 h. After filtration of the precipitate, the filtrate was washed twice with water, and dried over Na₂SO₄. After evaporation of solvent, the resulting residue was recrystallized with hexanes-EtOAc to afford the desired product (15 g, 97%) as white solid: ¹H NMR (250 MHz, CDCl₃) δ 7.31 - 7.18 (m, 10 H, Ph), 4.85 (m, 1 H), 3.68 (s, 3 H), 3.61 (s, 2 H), 3.06 (d, 2 H, J = 5.9 Hz); ¹³C NMR (63 MHz, CDCl₃) δ 171.4, 167.7, 135.5, 134.5, 129.2, 129.1, 128.6, 128.3, 127.1, 126.7, 53.3, 52.3, 37.7, 37.4; IR (thin film, cm⁻¹) 1744, 1676, 1512, 1265.

2. Procedure for Reduction of Phenylthioacetamide methyl ester

To a solution of phenylthioacetamide methyl ester (10 g, 30 mmol) in THF-MeOH (150 mL, C = 0.2 M, 1 : 1 vol. ratio), was slowly added NaBH₄ (3.4 g, 90 mmol) followed by LiCl (3.7 g, 90 mmol) at 0 °C. The resulting mixture was stirred for 1 h at r.t., and the solvent was evaporated. The residue was partitioned with EtOAc and brine. The organic layers were dried over Na₂SO₄ and concentrated. The crude product was recrystallized with hexanes-EtOAc to afford primary alcohol **4** (8.6 g, 95%) as white solid: ¹H NMR (250 MHz, CDCl₃) δ 7.31 - 7.10 (m, 10 H, Ph), 7.03 (br d, 1 H, NH), 4.14 (m, 1 H), 3.66 and 3.56 (ABq, 2 H, J = 17.1 Hz), 3.53 (m, 2 H), 2.82 (ABX, 1 H, J_{AB} = 13.9, J_{AX} = 7.4 Hz), 2.76 (ABX, 1 H, J_{AB} = 13.9, J_{BX} = 7.8 Hz), 2.14 (t, 1 H, J = 5.7 Hz, OH); ¹³C NMR (63 MHz, CDCl₃) δ 168.3, 137.1, 135.0, 129.3, 129.1, 128.6, 128.1, 126.7, 64.1, 53.1, 37.5, 36.8; IR (thin film, cm⁻¹) 3290, 1661, 1540, 1265.

3. Procedure for the Formation of Acetonide

The mixture of primary alcohol (6 g, 20 mmol), 2,2-dimethoxypropane (4.8 mL, 40 mmol), and cat. amount of *p*-toluenesulfonic acid in benzene (70 mL, C = 0.3 M) was heated under reflux for 1 hr, and then slowly distilled over 1 hr. The reaction mixture was poured into sat'd NaHCO₃, and extracted with EtOAc. The combined organic layers were washed with brine, dried over Na₂SO₄, filtered, and concentrated to give crude product as an oil, which was chromatographed to afford the acetonide compound (4.8 g, 70%): ¹H NMR (250 MHz, CDCl₃) δ 7.52 - 7.11 (m, 10 H, Ph), 4.04 (m, 1 H), 3.79 (m, 2 H), 3.48 and 3.40 (ABq, 2 H, *J* = 13.7 Hz), 2.93 (ABX, 1 H, *J*_{AB} = 13.8, *J*_{AX} = 5.5 Hz), 2.86 (ABX, 1 H, *J*_{AB} = 13.8, *J*_{BX} = 9.4 Hz), 2.05 (s, 3 H), 1.47 (s, 3 H); ¹³C NMR (63 MHz, CDCl₃) δ 165.3, 137.2, 134.7, 131.1, 129.2, 129.0, 127.3, 127.1, 95.8, 66.9, 59.4, 40.7, 38.9, 26.9, 22.7; IR (thin film, cm⁻¹) 1652, 1496, 1265.

4. Procedure for Oxidation of Phenylthioacetamide to α-(Phenylsulfonyl)acetamide.

To a solution of phenylthioacetamide (3.7 g, 10.8 mmol) in dry CH₂Cl₂ (54 mL, C = 0.2 M) was slowly added *m*-CPBA (6.7 g, 27 mmol) at 0 °C. The reaction mixture was stirred for 1 hr at room temperature. The reaction mixture was poured into 1 N NaOH, and extracted with CH₂Cl₂. The organic layers were washed with brine, dried over Na₂SO₄, filtered, and concentrated. The residue was column chromatographed to give α-(phenylsulfonyl)acetamide: ¹H NMR (250 MHz, CDCl₃) δ 7.84 - 7.50 (m, 5 H, PhSO₂), 7.36 - 7.17 (m, 5 H, PhCH₂), 4.39 (m, 1 H), 4.00 (ABX, 1 H, *J*_{AB} = 8.9, *J*_{AX} = 4.8 Hz), 3.88 (ABX, 1 H, *J*_{AB} = 8.9, *J*_{BX} = 0 Hz), 3.81 and 3.41 (ABq, 2 H, *J* = 13.8 Hz), 2.93 (m, 2 H), 1.71 (s, 3 H), 1.51 (s, 3 H); ¹³C NMR (63 MHz, CDCl₃) δ 158.3, 138.7, 137.0, 134.2, 129.4, 129.2, 129.0, 128.4, 127.3, 96.1, 67.5, 61.7, 60.0, 40.8, 26.6, 22.5; IR (thin film, cm⁻¹) 1738, 1373, 1245, 1046. Anal. Calcd. for C₂₀H₂₃NO₄S: C, 64.32; H, 6.21; N, 3.75; O, 17.14; S, 8.59. Found: C, 64.10; H, 6.20; N, 3.69; S, 8.54.

5. General Procedure for Diazotransfer Reaction of α-(Phenylsulfonyl)acetamides.

To a mixture of a α-(phenylsulfonyl)acetamide (5.0 mmol), and *p*-acetamidobenzenesulfonyl azide (1.3 g, 5.5 mmol) in dry CH₃CN (25 mL, C = 0.2 M), was slowly added DBU (1.64 mL, 11 mmol) at 0 °C. The resulting mixture was stirred for 1 hr at 0 °C, and the solvent was evaporated. The residue was diluted with Et₂O, and the mixture was washed successively with 1 N NaOH, water, and brine. The yellow organic layers were dried over Na₂SO₄, filtered, and concentrated. The residue was chromatographed to give α-diazo-α-(phenylsulfonyl)acetamide.

2-Benzenesulfonyl-2-diazo-1-(2,2-dimethyl-4-benzyl-oxazolidin-3-yl)-ethanone (5): ¹H NMR (250 MHz, CDCl₃) δ 7.96 - 7.51 (m, 5 H, PhSO₂), 7.35 - 7.17 (m, 5 H, PhCH₂), 4.39 (m, 1 H), 3.85 (d, 2 H, *J* = 3.6 Hz), 3.08 (ABX, 1 H, *J*_{AB} = 13.5, *J*_{AX} = 5.2 Hz), 2.82 (ABX, 1 H, *J*_{AB} = 13.5, *J*_{BX} = 9.3 Hz), 1.69 (s, 3 H), 1.34 (s, 3 H); ¹³C NMR (63 MHz, CDCl₃) δ 153.9, 141.9, 136.5, 133.9, 129.4, 129.2, 128.8, 127.5, 127.1, 96.7, 74.8, 67.1, 58.7, 40.0, 26.9, 23.4; IR (thin film, cm⁻¹) 2086, 1734, 1641, 1371, 1265, 1047.

2-Benzenesulfonyl-2-diazo-1-(2,2-dimethyl-4-ethyl-oxazolidin-3-yl)-ethanone (14): ^1H NMR (250 MHz, CDCl_3) δ 8.03 - 7.53 (m, 5 H, phenyl), 4.01 (ABX , 1 H, $J_{\text{AB}} = 8.9$, $J_{\text{AX}} = 6.1$ Hz), 3.83 (ABX , 1 H, $J_{\text{AB}} = 8.9$, $J_{\text{BX}} = 2.8$ Hz), 3.75 (m, 1 H), 1.70 (m, 2 H) 1.64 (s, 3 H), 1.42 (s, 3 H), 0.91 (t, 3 H, $J = 7.4$ Hz); ^{13}C NMR (63 MHz, CDCl_3) δ 153.8, 142.0, 133.8, 129.1, 127.8, 96.6, 74.3, 67.3, 58.6, 26.9, 26.2, 23.6, 10.1; IR (thin film, cm^{-1}) 2101, 1624, 1393, 1148.

2-Benzenesulfonyl-2-diazo-1-(2,2-dimethyl-4-propyl-oxazolidin-3-yl)-ethanone (16): ^1H NMR (250 MHz, CDCl_3) δ 8.02 - 7.53 (m, 5 H, phenyl), 4.0 (m, 1 H), 3.83 (m, 2 H), 1.64 (m, 2 H) 1.61 (s, 3 H), 1.41 (s, 3 H), 1.31 (m, 2 H), 0.96 (t, 3 H, $J = 7.2$ Hz); ^{13}C NMR (63 MHz, CDCl_3) δ 153.6, 141.9, 133.7, 129.0, 127.7, 96.4, 74.1, 67.6, 57.2, 36.1, 26.2, 23.5, 19.1, 13.8; IR (thin film, cm^{-1}) 2089, 1638, 1388, 1153, 1085.

2-Benzenesulfonyl-2-diazo-1-(2,2-dimethyl-4-isobutyl-oxazolidin-3-yl)-ethanone (18): ^1H NMR (250 MHz, CDCl_3) δ 8.00 - 7.52 (m, 5 H, phenyl), 4.03 (ABX , 1 H, $J_{\text{AB}} = 8.5$, $J_{\text{AX}} = 5.7$ Hz), 3.81 (ABX , 1 H, $J_{\text{AB}} = 8.5$, $J_{\text{BX}} = 2.2$ Hz), 3.95 (m, 1 H), 1.62 (s, 3 H), 1.41 (s, 3 H), 0.97 (d, 3 H, $J = 4.0$ Hz), 0.95 (d, 3 H, $J = 5.1$ Hz); ^{13}C NMR (63 MHz, CDCl_3) δ 153.5, 141.9, 133.8, 129.0, 127.6, 96.1, 73.6, 67.8, 56.2, 43.1, 26.3, 25.5, 23.6, 21.3; IR (thin film, cm^{-1}) 2092, 1645, 1388, 1266, 1155, 1084.

2-Benzenesulfonyl-2-diazo-1-(2,2-dimethyl-4-phenethyl-oxazolidin-3-yl)-ethanone (20): ^1H NMR (250 MHz, CDCl_3) δ 8.02 - 7.52 (m, 5 H, PhSO_2), 7.36 - 7.18 (m, 5 H, PhCH_2), 4.02 (ABX , 1 H, $J_{\text{AB}} = 8.8$, $J_{\text{AX}} = 5.9$ Hz), 3.88 (ABX , 1 H, $J_{\text{AB}} = 8.8$, $J_{\text{BX}} = 0$ Hz), 3.82 (m, 1 H), 2.74 - 2.50 (m, 2 H), 2.02 (m, 2 H), 1.63 (s, 3 H), 1.41 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 153.7, 142.0, 139.9, 133.8, 129.1, 128.8, 128.3, 127.8, 126.5, 96.5, 74.0, 67.5, 56.8, 35.8, 32.3, 26.4, 23.7; IR (thin film, cm^{-1}) 2102, 1617, 1374, 1308, 1142, 1083.

[3-(Diazo-benzenesulfonylacetyl)-2,2-dimethyl-oxazolidine-4-yl]-propionic methyl ester (22):

^1H NMR (250 MHz, CDCl_3) δ 8.0 - 7.54 (m, 5 H, phenyl), 4.08 (m, 1 H), 4.00 (ABX , 1 H, $J_{\text{AB}} = 8.8$, $J_{\text{AX}} = 5.6$ Hz), 3.82 (ABX , 1 H, $J_{\text{AB}} = 8.8$, $J_{\text{BX}} = 0$ Hz), 3.73 (s, 3 H), 2.36 (m, 2 H), 1.99 (m, 2 H), 1.64 (s, 3 H), 1.39 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 172.4, 153.9, 141.8, 133.8, 129.1, 127.6, 96.4, 74.3, 67.3, 56.5, 51.9, 30.0, 29.0, 26.6, 23.4; IR (thin film, cm^{-1}) 2096, 1730, 1630, 1391, 1317, 1147, 1080.

2-Benzenesulfonyl-2-diazo-1-[2,2-dimethyl-4-(4-methoxyphenyl)-oxazolidin-3-yl]-ethanone (24): ^1H NMR (250 MHz, CDCl_3) δ 7.98 - 7.57 (m, 5 H, PhSO_2), 7.13 (d, 2 H, $J = 8.5$ Hz), 6.88 (d, 1 H, $J = 8.5$ Hz), 4.27 (m, 1 H), 3.87 (d, 2 H, $J = 3.2$ Hz), 3.80 (s, 3 H), 3.03 (ABX , 1 H, $J_{\text{AB}} = 13.6$, $J_{\text{AX}} = 5.7$ Hz), 2.79 (ABX , 1 H, $J_{\text{AB}} = 13.6$, $J_{\text{BX}} = 9.2$ Hz), 1.69 (s, 3 H), 1.36 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 158.6, 154.0, 141.8, 133.9, 130.5, 129.3, 128.4, 127.5, 114.3, 96.7, 74.8, 67.2, 59.1, 55.2, 39.3, 26.9, 23.4; IR (thin film, cm^{-1}) 2087, 1623, 1512, 1363, 1244, 1150, 1083.

2-Benzenesulfonyl-2-diazo-1-[2,2-dimethyl-4-(*t*-butyldimethyl-silanyloxymethyl)-oxazolidin-3-yl]-ethanone(26): ^1H NMR (250 MHz, CDCl_3) δ 8.0 - 7.53 (m, 5 H, phenyl), 3.98 (m, 3 H), 3.62 (m, 2 H), 1.58 (s, 3 H), 1.41 (s, 3 H), 0.86 (s, 9 H), 0.059 (s, 6 H); ^{13}C NMR (63 MHz, CDCl_3) δ 154.1, 142.1, 133.7, 129.0, 127.8, 96.8, 74.6, 65.9, 62.7, 58.2, 26.5, 25.7, 23.5, 18.2, -5.58; IR (thin film, cm^{-1}) 2092, 1634, 1448, 1378, 1261, 1155, 1087.

2-Benzenesulfonyl-2-diazo-1-[2,2,5-trimethyl-4-(*t*-butyldimethyl-silanyloxymethyl)-oxazolidin-3-yl]-ethanone (28): ^1H NMR (250 MHz, CDCl_3) δ 8.0 - 7.53 (m, 5 H, phenyl), 4.24 (dq, 1 H, $J = 6.3$, 6.3 Hz), 3.92 (ABX , 1 H, $J_{\text{AB}} = 10.9$, $J_{\text{AX}} = 5.6$ Hz), 3.74 (ABX , 1 H, $J_{\text{AB}} = 10.9$, $J_{\text{BX}} = 2.7$ Hz), 3.55 (m, 1 H), 1.56 (s, 3 H), 1.42 (s, 3 H), 1.36 (d, 3 H, $J = 6.1$ Hz), 0.89 (s, 9 H), 0.092 (s, 3 H), 0.082 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) 154.9, 141.9, 133.8, 129.1, 127.5, 96.4, 75.5, 73.7, 64.6, 61.0, 60.2, 25.7, 25.6, 24.5, 20.9, 19.1, 18.2, 14.1, -5.68, -5.79; IR (thin film, cm^{-1}) 2090, 1646, 1344, 1253, 1154, 1086.

2-Benzenesulfonyl-2-diazo-1-(2,2,4-trimethyl-oxazolidin-3-yl)-ethanone (30): ^1H NMR (250 MHz, CDCl_3) δ 8.0 - 7.51 (m, 5 H, phenyl), 4.06 (ABX, 1 H, $J_{AB} = 8.5$, $J_{AX} = 5.9$ Hz), 3.95 (m, 1 H), 3.68 (ABX, 1 H, $J_{AB} = 8.5$, $J_{BX} = 3.0$ Hz), 1.60 (s, 3 H), 1.40 (s, 3 H), 1.26 (d, 3 H, $J = 6.1$ Hz); ^{13}C NMR (63 MHz, CDCl_3) ; 153.7, 142.0, 133.8, 129.1, 127.7, 96.7, 74.2, 69.9, 52.8, 26.2, 23.8, 20.1; IR (thin film, cm^{-1}) 2097, 1641, 1257, 1156.

2-Benzenesulfonyl-2-diazo-1-(2,2-methyl-4-isopropyl-oxazolidin-3-yl)-ethanone (32): ^1H NMR (250 MHz, CDCl_3) δ 8.0 - 7.51 (m, 5 H, phenyl), 3.95 - 3.79 (m, 3 H), 2.10 (m, 1 H), 1.64 (s, 3 H), 1.40 (s, 3 H), 0.95 (d, 3 H, $J = 7.0$ Hz), 0.90 (d, 3 H, $J = 6.7$ Hz); ^{13}C NMR (63 MHz, CDCl_3) ; 154.5, 142.0, 133.8, 129.2, 127.6, 96.6, 74.8, 64.9, 62.3, 30.0, 25.9, 23.6, 19.1, 16.8; IR (thin film, cm^{-1}) 2097, 1641, 1268, 1048.

2-Benzenesulfonyl-2-diazo-1-(2,2-methyl-4-sec-butyl-oxazolidin-3-yl)-ethanone (34): ^1H NMR (250 MHz, CDCl_3) δ 8.01 - 7.26 (m, 5 H, phenyl), 3.98 - 3.82 (m, 3 H), 1.85 (m, 1 H), 1.61 (s, 3 H), 1.41 (s, 3 H), 1.4 - 1.0 (m, 2 H), 0.95 (t, 2 H, $J = 7.2$ Hz), 0.85 (d, 3 H, $J = 6.8$ Hz); ^{13}C NMR (63 MHz, CDCl_3) ; 154.4, 141.9, 133.8, 129.1, 127.6, 96.6, 74.5, 64.5, 61.0, 36.3, 26.2, 25.3, 23.9, 13.3, 12.1; IR (thin film, cm^{-1}) 2097, 1641, 1257, 1156.

Scheme S1. Preparation of α -diazo- α -(phenylsulfonyl)acetamide **22**

1) $\text{HBF}_4 \cdot \text{OEt}_2$, MeOH, Na_2SO_4 ; 2) CbzCl , NaHCO_3 , H_2O , 30 min; 3) ClCO_2Et , *N*-methyl morpholine, THF; NaBH_4 , MeOH; 4) TBSCl , TEA, cat. DMAP, CH_2Cl_2 , r.t.; 5) H_2 , Pd/C, EtOH; 6) $\text{PhSCH}_2\text{CO}_2\text{H}$, DCC, TEA, CH_2Cl_2 , r.t. 12 h.; 7) TBAF, THF, 0 $^\circ\text{C}$; 8) $\text{Me}_2\text{C}(\text{OMe})_2$, *p*-TsOH, benzene, reflux; 9) *m*-CPBA, CH_2Cl_2 , r.t. 1 h.; 10) *p*-ABSA, DBU, CH_3CN , 0 $^\circ\text{C}$, 1 h.

Scheme S2. Preparation of α -diazo- α -(phenylsulfonyl)acetamides **26** and **28**

1) SOCl_2 , MeOH, reflux, 1 h.; 2) $\text{PhSCH}_2\text{CO}_2\text{H}$, DCC, TEA, CH_2Cl_2 , r.t. 12 h.; 3) $\text{Me}_2\text{C}(\text{OMe})_2$, *p*-TsOH, benzene, reflux; 4) NaBH_4 , LiCl, THF-MeOH (1 : 1), r.t. 5 h.; 5) TBSCl , imidazole, DMF, r.t. 12 h.; 6) *m*-CPBA, CH_2Cl_2 , r.t. 1 h.; 7) *p*-ABSA, DBU, CH_3CN , 0 $^\circ\text{C}$, 1 h.

6. General Procedure for C-H insertion reaction of α -diazo- α -(phenylsulfonyl)acetamides

$\text{Rh}_2(\text{OAc})_4$ (11 mg, 2.5 mol%) was added to a solution of an α -diazo- α -(phenylsulfonyl)acetamide (1 mmol) in dry CH_2Cl_2 (20 mL, $C = 0.05$ M). The mixture was refluxed for 12 h under N_2 , cooled to r.t., and concentrated. The residue was chromatographed to give γ -lactam.

6-Benzenesulfonyl-3,3-dimethyl-7-phenyl-tetrahydro-pyrrolo[1,2-c]oxazol-5-one (6): ^1H NMR (250 MHz, CDCl_3) δ 7.93 - 7.49 (m, 5 H, PhSO_2), 7.35 - 7.23 (m, 5 H, PhCH_2), 4.50 (d, 1 H, $J = 9.1$ Hz),

4.14 - 4.05. (m, 2 H), 3.88 (dd, 1 H, $J = 6.2, 9.1$ Hz), 3.68 (dd, 1 H, $J = 7.9, 8.0$ Hz), 1.65 (s, 3 H), 1.45 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 161.7, 138.9, 137.8, 134.1, 129.7, 129.2, 128.8, 128.0, 127.4, 93.0, 69.0, 65.9, 43.4, 26.8, 23.5; IR (thin film, cm^{-1}) 1734, 1373, 1266, 1246, 1046. Anal. Calcd. for $\text{C}_{20}\text{H}_{21}\text{NO}_4\text{S}$: C, 64.67; H, 5.70; N, 3.77; O, 17.23; S, 8.63. Found: C, 64.36; H, 5.78; N, 3.79; S, 8.50.

6-Benzenesulfonyl-3,3,7-trimethyl-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (15): ^1H NMR (250 MHz, CDCl_3) δ 8.01 - 7.54 (5 H, m, phenyl), 4.12 (ABX , 1 H, $J_{\text{AB}} = 8.5$, $J_{\text{AX}} = 5.4$ Hz), 4.00 (d, 1 H, $J = 9.9$ Hz), 3.73 (m, 1 H), 3.48 (ABX , 1 H, $J_{\text{AB}} = 8.5$, $J_{\text{BX}} = 8.6$ Hz), 2.81 (m, 1 H), 2.15 (m, 1 H), 1.51 (s, 3 H), 1.42 (d, 3 H, $J = 6.7$ Hz), 1.38 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 161.7, 137.8, 134.1, 129.8, 128.8, 92.4, 76.2, 68.8, 64.9, 34.1, 26.4, 23.5, 18.7; IR (thin film, cm^{-1}) 1696, 1419, 1367, 1304, 1142, 1080, 1023. Anal. Calcd. for $\text{C}_{15}\text{H}_{19}\text{NO}_4\text{S}$: C, 58.23; H, 6.19; N, 4.53; O, 20.69; S, 10.36. Found: C, 58.27; H, 6.13; N, 4.58; S, 10.20.

6-Benzenesulfonyl-3,3-dimethyl-7-ethyl-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (17): ^1H NMR (250 MHz, CDCl_3) δ 8.01 - 7.54 (5 H, m, phenyl), 4.10 (ABX , 1 H, $J_{\text{AB}} = 8.6$, $J_{\text{AX}} = 5.7$ Hz), 4.05 (d, 1 H, $J = 9.6$ Hz), 3.77 (m, 1 H), 3.52 (ABX , 1 H, $J_{\text{AB}} = 8.6$, $J_{\text{BX}} = 9.0$ Hz), 2.68 (m, 1 H), 2.2 (m, 1 H), 1.54 (s, 3 H), 1.40 (s, 3 H), 0.97 (t, 3 H, $J = 7.4$ Hz); ^{13}C NMR (63 MHz, CDCl_3) δ 161.6, 137.7, 134.0, 129.7, 128.7, 91.9, 74.7, 69.4, 63.6, 40.2, 26.4, 26.3, 23.3, 11.6; IR (thin film, cm^{-1}) 1698, 1416, 1306, 1142, 1082, 1028. Anal. Calcd. for $\text{C}_{16}\text{H}_{21}\text{NO}_4\text{S}$: C, 59.42; H, 6.54; N, 4.33; O, 19.79; S, 9.92. Found: C, 59.60; H, 6.61; N, 4.30; S, 9.65.

6-Benzenesulfonyl-3,3-dimethyl-7-isopropyl-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (19): ^1H NMR (250 MHz, CDCl_3) δ 8.03 - 7.58 (5 H, m, phenyl), 4.16 (d, 1 H, $J = 8.2$ Hz), 4.07 (ABX , 1 H, $J_{\text{AB}} = 8.0$, $J_{\text{AX}} = 5.5$ Hz), 3.87 (m, 1 H), 3.59 (ABX , 1 H, $J_{\text{AB}} = 8.0$, $J_{\text{BX}} = 9.3$ Hz), 2.79 (m, 1 H), 2.22 (m, 1 H), 1.62 (s, 3 H), 1.45 (s, 3 H), 1.05 (d, 3 H, $J = 6.7$ Hz), 1.04 (d, 3 H, $J = 6.9$ Hz); ^{13}C NMR (63 MHz, CDCl_3) δ 162.4, 137.9, 134.1, 129.7, 128.8, 92.4, 72.7, 69.6, 59.9, 42.3, 29.1, 26.9, 23.4, 20.6, 17.5; IR (thin film, cm^{-1}) 1706, 1407, 1309, 1266, 1150, 1085. Anal. Calcd. for $\text{C}_{17}\text{H}_{23}\text{NO}_4\text{S}$: C, 60.51; H, 6.87; N, 4.15; O, 18.97; S, 9.50. Found: C, 60.56; H, 6.85; N, 4.10; S, 9.55.

6-Benzenesulfonyl-3,3-dimethyl-7-benzyl-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (21): ^1H NMR (250 MHz, CDCl_3) δ 8.08 - 7.50 (m, 5 H, PhSO_2), 7.37 - 7.21 (m, 5 H, PhCH_2), 4.22 (d, 1 H, $J = 10.2$ Hz), 3.78 (m, 1 H), 3.55 (ABX , 1 H, $J_{\text{AB}} = 13.1$, $J_{\text{AX}} = 4.0$ Hz), 3.18 (ABX , 1 H, $J_{\text{AB}} = 8.7$, $J_{\text{AX}} = 5.5$ Hz), 3.05 (ABX , 1 H, $J_{\text{AB}} = 8.7$, $J_{\text{BX}} = 9.0$ Hz), 2.70 (ABX , 1 H, $J_{\text{AB}} = 13.1$, $J_{\text{BX}} = 11.6$ Hz), 1.45 (s, 3 H), 1.35 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 161.2, 137.8, 134.2, 129.8, 129.0, 128.9, 128.7, 127.2, 91.9, 74.3, 68.9, 63.1, 41.8, 38.9, 26.3, 23.4; IR (thin film, cm^{-1}) 1694, 1316, 1308, 1145, 1083, 1025. Anal. Calcd. for $\text{C}_{21}\text{H}_{23}\text{NO}_4\text{S}$: C, 65.43; H, 6.01; N, 3.63; O, 16.60; S, 8.32. Found: C, 64.63; H, 6.04; N, 3.72; S, 8.19.

(6-Benzenesulfonyl-3,3-dimethyl-5-oxo-tetrahydro-pyrrolo[1,2-*c*]oxazol-7-yl)-acetic acid methyl ester (23): ^1H NMR (250 MHz, CDCl_3) δ 8.03 - 7.26 (5 H, m, phenyl), 4.21 (ABX , 1 H, $J_{\text{AB}} = 8.7$, $J_{\text{AX}} = 6.0$ Hz), 4.18 (d, 1 H, $J = 10.0$ Hz), 3.81 (m, 1 H), 3.72 (s, 3 H), 3.58 (ABX , 1 H, $J_{\text{AB}} = 8.7$, $J_{\text{BX}} = 9.2$ Hz), 3.23 (ABX , 1 H, $J_{\text{AB}} = 17.2$, $J_{\text{AX}} = 3.3$ Hz), 3.09 (m, 1 H), 2.67 (ABX , 1 H, $J_{\text{AB}} = 17.2$, $J_{\text{BX}} = 10.5$ Hz), 1.49 (s, 3 H), 1.39 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 171.6, 160.9, 137.1, 134.3, 129.9, 128.8, 92.1, 73.5, 69.9, 63.8, 52.0, 36.7, 35.3, 26.4, 23.3; IR (thin film, cm^{-1}) 1734, 1705, 1281, 1143, 1080, 1036. Anal. Calcd. for $\text{C}_{17}\text{H}_{21}\text{NO}_6\text{S}$: C, 55.57; H, 5.76; N, 3.81; O, 26.13; S, 8.73. Found: C, 55.56; H, 5.74; N, 3.78; S, 8.78.

6-Benzenesulfonyl-3,3-dimethyl-*p*-methoxyphenyl-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (25): ^1H NMR (250 MHz, CDCl_3) δ 7.95 - 7.50 (m, 5 H, PhSO_2), 7.19 (d, 2 H, $J = 8.6$ Hz), 6.89 (d, 1 H, $J = 8.6$ Hz), 4.46 (d, 1 H, $J = 8.6$ Hz), 4.16 - 4.07 (m, 2 H), 3.86 (m, 1 H), 3.81 (s, 3 H), 3.70 (m, 1 H), 1.66 (s, 3 H), 1.46 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 161.7, 159.2, 137.7, 134.1, 130.7, 129.7, 128.8, 128.5,

114.6, 92.9, 69.0, 65.9, 55.3, 42.8, 26.7, 23.5; IR (thin film, cm^{-1}) 1711, 1365, 1217. Anal. Calcd. for $\text{C}_{21}\text{H}_{23}\text{NO}_5\text{S}$: C, 62.82; H, 5.77; N, 3.49; O, 19.93; S, 7.99. Found: C, 62.70; H, 5.71; N, 3.55; S, 7.86.

6-Benzenesulfonyl-3,3-dimethyl-7-(*t*-butyldimethyl-silanyloxymethyl)-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (27): ^1H NMR (360 MHz, CDCl_3) δ 8.01 - 7.55 (m, 5 H, phenyl), 4.83 (dd, 1 H, $J = 4.8, 6.7$ Hz), 4.26 (d, 1 H $J = 6.7$ Hz), 4.17 (ABX, 1 H, $J_{\text{AB}} = 8.5, J_{\text{AX}} = 5.6$ Hz), 3.97 (m, 1 H), 3.60 (ABX, 1 H, $J_{\text{AB}} = 8.5, J_{\text{BX}} = 8.7$ Hz), 1.57 (s, 3 H), 1.41 (s, 3 H), 0.91 (s, 9 H), 0.24 (s, 3 H), 0.17 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 160.7, 138.1, 134.1, 129.6, 128.8, 92.7, 77.8, 69.3, 67.6, 66.8, 26.6, 25.6, 23.4, 17.9, -4.85, -5.15; IR (thin film, cm^{-1}) 1713, 1447, 1371, 1265, 1153, 1082. Anal. Calcd. for $\text{C}_{20}\text{H}_{31}\text{NO}_5\text{SSi}$: C, 56.44; H, 7.34; N, 3.29; O, 18.80; S, 7.53; Si, 6.60. Found: C, 55.79; H, 7.19; N, 3.53; S, 7.00.

6-Benzenesulfonyl-1,3,3-trimethyl-7-(*t*-butyldimethyl-silanyloxymethyl)-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (29): ^1H NMR (360 MHz, CDCl_3) δ 7.97 - 7.54 (m, 5 H, phenyl), 4.85 (dd, 1 H, $J = 3.5, 4.8$ Hz), 4.12 (d, 1 H $J = 4.8$ Hz), 3.82 (m, 1 H), 3.51 (dd, 1 H, $J = 3.5, 9.3$ Hz), 1.59 (s, 3 H), 1.43 (s, 3 H), 1.35 (d, 3 H, $J = 6.0$ Hz), 0.91 (s, 9 H), 0.27 (s, 3 H), 0.23 (s, 3 H); ^{13}C NMR (63 MHz, CDCl_3) δ 161.5, 137.9, 134.2, 129.6, 128.8, 92.5, 79.2, 74.4, 73.8, 67.0, 27.5, 25.6, 23.6, 17.9, 16.8, -4.51, -5.17; IR (thin film, cm^{-1}) 1718, 1310, 1250, 1151, 1083.

6-Benzenesulfonyl-3,3-dimethyl-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (31): ^1H NMR (250 MHz, CDCl_3) δ 8.0 - 7.34 (m, 5 H, phenyl), 3.42 - 4.02 (m, 3 H), 3.39 (m, 1 H), 2.89 - 2.17 (m, 2 H), 1.56 and 1.53 (s, 3 H), 1.38 (s, 3 H); IR (thin film, cm^{-1}) 1700, 1405, 1310, 1265, 1150, 1085, 1039. Anal. Calcd. for $\text{C}_{14}\text{H}_{17}\text{NO}_4\text{S}$: C, 56.93; H, 5.80; N, 4.74; O, 21.67; S, 10.86. Found: C, 56.78; H, 5.88; N, 4.87; S, 10.67.

6-Benzenesulfonyl-3,3,7,7-tetramethyl-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (33): ^1H NMR (250 MHz, CDCl_3) δ 8.06 - 7.49 (m, 5 H, phenyl), 4.49 and 3.78 (m, 3 H), 4.07 and 3.54 (s, 1 H), 1.60 and 1.59 (s, 3 H), 1.50 (s, 3 H), 1.43 and 1.42 (s, 3 H), 1.32 and 1.11 (s, 3 H); IR (thin film, cm^{-1}) 1701, 1448, 1393, 1147, 1058, 1214, 1085, 1036. Anal. Calcd. for $\text{C}_{16}\text{H}_{21}\text{NO}_4\text{S}$: C, 59.42; H, 6.54; N, 4.33; O, 19.79; S, 9.92. Found: C, 58.22; H, 6.45; N, 4.26; S, 9.48.

6-Benzenesulfonyl-3,3,7-trimethyl-7-ethyl-tetrahydro-pyrrolo[1,2-*c*]oxazol-5-one (35): ^1H NMR (250 MHz, CDCl_3) δ 8.10 - 7.53 (m, 5 H, phenyl), 4.56 and 3.80 (m, 3 H), 4.12 and 3.61 (s, 1 H), 2.30 (m, 1 H), 1.63 and 1.52 (s, 3 H), 1.47 (s, 3 H), 1.37 and 1.11 (s, 3 H), 0.94 and 0.91 (t, 3 H, $J = 7.5$ Hz); IR (thin film, cm^{-1}) 1706, 1422, 1369, 1265, 1150, 1084. Anal. Calcd. for $\text{C}_{17}\text{H}_{23}\text{NO}_4\text{S}$: C, 60.51; H, 6.87; N, 4.15; O, 18.97; S, 9.50. Found: C, 60.30; H, 6.89; N, 4.33; S, 9.04.

7. Desulfonylation of γ -lactam 35

Pulverized 10% sodium amalgam (168 mg) was added to a solution of γ -lactam **35** (62 mg, 0.18 mmol) and anhydrous disodium hydrogen phosphate (104 mg, 0.72 mmol) in 2 mL of dry methanol at 0 °C. The mixture was stirred for 30 min., poured into water, and extracted with Et_2O . The organic layers were dried over Na_2SO_4 , filtered, and concentrated. The residue was chromatographed to give the desired desulfonated γ -lactam in 83% yield as a single isomer: ^1H NMR (250 MHz, CDCl_3) δ 3.94 (ABX, 1 H, $J_{\text{AB}} = 8.7, J_{\text{AX}} = 6.2$ Hz), 3.85 (dd, 1 H, $J = 6.2, 8.7$ Hz), 3.68 (ABX, 1 H, $J_{\text{AB}} = 8.7, J_{\text{BX}} = 8.7$ Hz), 2.87 and 1.94 (ABq, 2 H, $J = 16$ Hz), 1.62 (s, 3 H), 1.44 (s, 3 H), 0.99 (s, 3 H), 0.84 (t, 3 H, $J = 7.4$ Hz); ^{13}C NMR (63 MHz, CDCl_3) δ 170.0, 90.3, 68.6, 63.8, 51.4, 40.6, 32.8, 26.0, 23.4, 19.0, 9.5; IR (thin film, cm^{-1}) 1700.

8. Crystal data and structure refinement for γ -lactam 6

Empirical formula	C ₂₀ H ₂₁ N O ₄ S
Formula weight	371.44
Temperature	173(2) K
Wavelength	0.71073 Å
Crystal system, space group	Monoclinic, P2(1)/n
Unit cell dimensions	a = 8.9681(9) Å alpha = 90 deg. b = 10.4896(11) Å beta = 101.243(2) deg. c = 9.9621(11) Å gamma = 90 deg.
Volume	919.17(17) Å ³
Z, Calculated density	2, 1.342 Mg/m ³
Absorption coefficient	0.201 mm ⁻¹
F(000)	392
Crystal size	.15 x .2 x .2 mm
Theta range for data collection	2.38 to 28.90 deg.
Limiting indices	-11<=h<=11, -13<=k<=12, -9<=l<=13
Reflections collected / unique	6115 / 4031 [R(int) = 0.0302]
Completeness to theta = 28.80	89.3 %
Absorption correction	None
Refinement method	Full-matrix least-squares on F ²
Data / restraints / parameters	4031 / 1 / 236
Goodness-of-fit on F ²	0.946
Final R indices [I>2sigma(I)]	R1 = 0.0531, wR2 = 0.1158
R indices (all data)	R1 = 0.0613, wR2 = 0.1193
Absolute structure parameter	0.02(10)
Largest diff. peak and hole	0.464 and -0.360 e.Å ⁻³

Table 1. Atomic coordinates ($\times 10^4$) and equivalent isotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for γ -lactam 6. $U(\text{eq})$ is defined as one third of the trace of the orthogonalized U_{ij} tensor.

	x	y	z	U (eq)
S (1)	9959 (1)	8642 (1)	-169 (1)	21 (1)
O (1)	10298 (3)	7466 (2)	-787 (2)	29 (1)
O (4)	4192 (3)	10994 (2)	-795 (2)	37 (1)
C (7)	11214 (3)	8809 (3)	1425 (3)	23 (1)
C (1)	8127 (3)	8501 (3)	305 (3)	19 (1)
O (3)	6920 (2)	8006 (2)	-2079 (2)	28 (1)
C (18)	7632 (4)	8458 (3)	3350 (3)	32 (1)
C (10)	13174 (4)	9047 (3)	3891 (3)	33 (1)
C (6)	6892 (3)	8556 (3)	-1012 (3)	21 (1)
C (5)	4595 (4)	10025 (3)	-1676 (3)	28 (1)
O (2)	9963 (2)	9812 (2)	-925 (2)	26 (1)
C (2)	7777 (3)	9647 (3)	1178 (3)	22 (1)
C (14)	9086 (4)	10381 (3)	3520 (3)	28 (1)
N (1)	5779 (3)	9305 (2)	-724 (3)	24 (1)
C (13)	8182 (3)	9481 (3)	2719 (3)	23 (1)
C (9)	13018 (4)	10037 (3)	2967 (3)	31 (1)
C (16)	8894 (4)	9212 (4)	5558 (4)	42 (1)
C (12)	11357 (3)	7794 (3)	2346 (3)	27 (1)
C (8)	12017 (4)	9936 (3)	1729 (3)	26 (1)
C (4)	5470 (4)	11196 (4)	320 (4)	35 (1)
C (15)	9444 (4)	10237 (4)	4938 (4)	37 (1)
C (19)	3212 (4)	9231 (4)	-2186 (4)	39 (1)
C (20)	5265 (4)	10597 (3)	-2816 (3)	35 (1)
C (11)	12333 (4)	7926 (3)	3591 (3)	32 (1)
C (3)	6059 (4)	9860 (3)	646 (3)	26 (1)
C (17)	7981 (4)	8323 (4)	4768 (3)	41 (1)

Table 2. Bond lengths [Å] and angles [deg] for γ -lactam 6.

S (1)–O (1)	1.437 (2)
S (1)–O (2)	1.440 (2)
S (1)–C (7)	1.767 (3)
S (1)–C (1)	1.802 (3)
O (4)–C (5)	1.435 (4)
O (4)–C (4)	1.447 (4)
C (7)–C (8)	1.387 (4)
C (7)–C (12)	1.395 (4)
C (1)–C (6)	1.544 (4)
C (1)–C (2)	1.552 (4)
O (3)–C (6)	1.214 (3)
C (18)–C (13)	1.382 (4)
C (18)–C (17)	1.393 (4)
C (10)–C (9)	1.377 (5)
C (10)–C (11)	1.397 (5)
C (6)–N (1)	1.344 (4)
C (5)–N (1)	1.485 (4)
C (5)–C (19)	1.498 (5)
C (5)–C (20)	1.508 (5)
C (2)–C (13)	1.518 (4)
C (2)–C (3)	1.544 (4)
C (14)–C (13)	1.390 (4)

C (14)-C (15)	1.394 (5)
N (1)-C (3)	1.460 (4)
C (9)-C (8)	1.381 (4)
C (16)-C (15)	1.379 (5)
C (16)-C (17)	1.381 (5)
C (12)-C (11)	1.378 (4)
C (4)-C (3)	1.510 (5)
O (1)-S (1)-O (2)	119.00 (12)
O (1)-S (1)-C (7)	108.62 (14)
O (2)-S (1)-C (7)	108.66 (14)
O (1)-S (1)-C (1)	108.72 (14)
O (2)-S (1)-C (1)	107.62 (14)
C (7)-S (1)-C (1)	103.06 (13)
C (5)-O (4)-C (4)	108.5 (2)
C (8)-C (7)-C (12)	122.0 (3)
C (8)-C (7)-S (1)	119.5 (2)
C (12)-C (7)-S (1)	118.5 (2)
C (6)-C (1)-C (2)	104.9 (2)
C (6)-C (1)-S (1)	108.31 (18)
C (2)-C (1)-S (1)	112.2 (2)
C (13)-C (18)-C (17)	120.7 (3)
C (9)-C (10)-C (11)	120.7 (3)
O (3)-C (6)-N (1)	127.4 (3)
O (3)-C (6)-C (1)	126.3 (3)
N (1)-C (6)-C (1)	106.3 (2)
O (4)-C (5)-N (1)	101.7 (2)
O (4)-C (5)-C (19)	108.1 (3)
N (1)-C (5)-C (19)	112.1 (3)
O (4)-C (5)-C (20)	111.3 (3)
N (1)-C (5)-C (20)	110.0 (3)
C (19)-C (5)-C (20)	113.0 (3)
C (13)-C (2)-C (3)	113.0 (2)
C (13)-C (2)-C (1)	116.3 (2)
C (3)-C (2)-C (1)	102.5 (2)
C (13)-C (14)-C (15)	120.1 (3)
C (6)-N (1)-C (3)	115.6 (2)
C (6)-N (1)-C (5)	129.0 (2)
C (3)-N (1)-C (5)	111.5 (3)
C (18)-C (13)-C (14)	119.1 (3)
C (18)-C (13)-C (2)	120.8 (3)
C (14)-C (13)-C (2)	120.1 (3)
C (10)-C (9)-C (8)	120.2 (3)
C (15)-C (16)-C (17)	119.7 (3)
C (11)-C (12)-C (7)	118.4 (3)
C (9)-C (8)-C (7)	118.7 (3)
O (4)-C (4)-C (3)	102.8 (3)
C (16)-C (15)-C (14)	120.5 (3)
C (12)-C (11)-C (10)	119.9 (3)
N (1)-C (3)-C (4)	100.3 (3)
N (1)-C (3)-C (2)	104.0 (2)
C (4)-C (3)-C (2)	119.5 (3)
C (16)-C (17)-C (18)	120.0 (3)

Symmetry transformations used to generate equivalent atoms:

Table 3. Anisotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for γ -lactam 6

The anisotropic displacement factor exponent takes the form:

$$-2\pi^2 [h^2 a^{*2} U_{11} + \dots + 2hka^*b^* U_{12}]$$

	U11	U22	U33	U23	U13	U12
S (1)	22 (1)	23 (1)	20 (1)	-1 (1)	6 (1)	2 (1)
O (1)	31 (1)	29 (1)	28 (1)	-5 (1)	9 (1)	2 (1)
O (4)	37 (1)	42 (2)	30 (1)	-2 (1)	1 (1)	17 (1)
C (7)	20 (1)	26 (2)	23 (2)	2 (1)	6 (1)	5 (1)
C (1)	21 (1)	17 (2)	20 (1)	-2 (1)	5 (1)	0 (1)
O (3)	32 (1)	29 (1)	23 (1)	-7 (1)	3 (1)	1 (1)
C (18)	36 (2)	37 (2)	23 (2)	0 (2)	5 (1)	-5 (2)
C (10)	33 (2)	42 (2)	23 (2)	-4 (1)	1 (1)	1 (2)
C (6)	22 (1)	20 (1)	22 (1)	2 (2)	5 (1)	-4 (1)
C (5)	27 (2)	33 (2)	25 (2)	2 (1)	4 (1)	6 (1)
O (2)	31 (1)	29 (1)	19 (1)	2 (1)	7 (1)	1 (1)
C (2)	26 (2)	19 (2)	20 (2)	-2 (1)	7 (1)	0 (1)
C (14)	28 (2)	29 (2)	27 (2)	-6 (1)	5 (1)	1 (1)
N (1)	24 (1)	28 (1)	21 (1)	-2 (1)	4 (1)	1 (1)
C (13)	21 (1)	28 (2)	20 (2)	-2 (1)	6 (1)	5 (1)
C (9)	31 (2)	31 (2)	32 (2)	-6 (2)	5 (2)	-6 (1)
C (16)	44 (2)	63 (3)	18 (2)	1 (2)	5 (2)	7 (2)
C (12)	28 (2)	23 (2)	29 (2)	1 (1)	5 (1)	0 (1)
C (8)	28 (2)	26 (2)	24 (2)	-2 (1)	8 (1)	0 (1)
C (4)	37 (2)	38 (2)	29 (2)	-10 (2)	3 (2)	13 (2)
C (15)	38 (2)	46 (2)	25 (2)	-12 (2)	3 (2)	2 (2)
C (19)	26 (2)	51 (2)	38 (2)	5 (2)	1 (2)	-1 (2)
C (20)	36 (2)	37 (2)	31 (2)	9 (2)	5 (2)	1 (2)
C (11)	37 (2)	31 (2)	29 (2)	6 (2)	4 (2)	3 (2)
C (3)	27 (2)	34 (2)	19 (2)	-1 (1)	8 (1)	4 (1)
C (17)	48 (2)	51 (3)	25 (2)	9 (2)	12 (2)	-2 (2)

Table 4. Hydrogen coordinates ($\times 10^4$) and isotropic displacement parameters

($\text{\AA}^2 \times 10^3$) for γ -lactam 6.

	x	y	z	U (eq)
H (1)	8057	7682	803	23
H (18)	7009	7841	2811	38
H (10)	13862	9126	4743	40
H (2)	8334	10409	926	26
H (14)	9459	11096	3101	33
H (9)	13600	10792	3182	37
H (16)	9142	9117	6524	50
H (12)	10796	7030	2121	32
H (8)	11882	10624	1097	31

H (4A)	5141	11590	1117	42
H (4B)	6251	11743	33	42
H (15)	10072	10849	5480	44
H (191)	3339	8581	-2757	47
H (192)	2322	9637	-2712	47
H (193)	2914	8745	-1591	47
H (202)	6030	11199	-2488	42
H (201)	5906	9970	-3204	42
H (203)	4618	11153	-3379	42
H (11)	12434	7256	4243	39
H (3)	5448	9412	1242	31
H (17)	7591	7619	5192	49

Figure 1. Ortep view of (C20 H21 N O4 S) (**6**) with atom numbering.