Supporting Information

Chan-Lam Coupling Reaction of Sulfamoyl Azides with Arylboronic Acids for Synthesis of Unsymmetrical N-Arylsulfamides

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I. Materials and Methods

Unless otherwise indicated, all chemical reagents were purchased from commercial suppliers and were used without further purification. All reactions were carried out in oven-dried glassware equipped with a magnetic stir bar. Reactions were monitored by thin layer chromatography (TLC) with 0.25-mm pre-coated silica gel plates (Kieselgel 60F254). Products were detected by UV light, by staining with p-anisaldehyde solution composed of acetic acid, sulfuric acid, and MeOH, or by staining with a KMnO4 solution composed of potassium carbonate, sodium hydroxide, and water. Flash column chromatography was performed on silica gel (70-230 mesh). Yields refer to chromatographically and spectroscopically pure compounds unless otherwise noted. 1H and 13C spectra were recorded on a 300 MHz NMR spectrometer. Chemical shifts are reported as δ values relative to internal SiMe4 or chloroform (δ 0.00 for 1H and δ 77.0 for 13C). IR spectra were measured as neat oils or solids on a FT-IR spectrometer. HRMS data were obtained by electron ionization with a double-focusing high-resolution magnetic sector mass analyzer.
Ⅱ. Experimental Section

General procedure

A sealed tube was charged with an arylboronic acid (2.0 mmol), CuCl (10 mol %) and the corresponding an organo azide (1.0 mmol). MeOH (1.0 mL) was then added to the flask. The reaction mixture was stirred at room temperature in an open flask. After completion of the reaction, the reaction mixture was filtered through Celite and was washed with EtOAc. The filtrate was collected and concentrated under reduced pressure. The crude product was purified by flash column chromatography on silica gel to obtain the desired product.

**Compound 3a.** General procedure was used employing phenylboronic acid (0.108 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 45 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3a (0.111 g, 0.402 mmol, 91%) as a white solid. m.p: 76-78 °C; Rf 0.16 (hexanes/ethyl acetate = 5:1); IR (neat) 3270, 2361, 1967, 1601, 1412, 1342, 1222, 1152, 825 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.35-7.25 (m, 5H), 7.22-7.12 (m, 5H), 7.05 (s, 1H), 4.31 (s, 2H), 2.71 (s, 3H); ¹³C NMR (75 MHz, CDCl₃) δ 137.1, 135.6, 129.3, 128.6, 128.2, 127.8, 124.6, 120.3, 54.5, 34.5; HRMS-El: m/z 276.0935 [(M)+; calcd for C₁₄H₁₆N₂O₂S+ 276.0932].

**Compound 3b.** General procedure was used employing p-tolylboronic acid (0.120 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 45 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3b (0.105 g, 0.362 mmol, 82%) as a white solid. m.p: 100-102 °C; Rf 0.19 (hexanes/ethyl acetate = 5:1); IR (neat) 3393, 2360, 1967, 1634, 1512, 1454, 1226, 1152, 984, 726 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.32-7.26 (m, 3H), 7.22-7.18 (m, 2H), 7.15-7.07 (m, 4H), 6.45 (s, 1H), 4.29 (s, 2H), 2.70 (s, 3H), 2.34 (s, 3H); ¹³C NMR
 Compound 3c. General procedure was used employing 3,5-dimethylphenylboronic acid (0.132 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 45 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3c (0.121 g, 0.398 mmol, 90%) as a white solid. m.p: 66-68 °C; Rf 0.22 (hexanes/ethyl acetate = 5:1); IR (neat) 3270, 2921, 2361, 1603, 1398, 11150, 1044, 987, 728, 583 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.36 (s, 1H), 7.27-7.18 (m, 5H), 6.84 (s, 2H), 6.76 (s, 1H), 4.32 (s, 2H), 2.69 (s, 3H), 2.27 (s, 6H); ¹³C NMR (75 MHz, CDCl₃) δ 138.9, 136.9, 135.8, 128.5, 128.2, 127.7, 126.1, 117.8, 54.4, 34.5, 21.2; HRMS-EI: m/z 304.1248 [(M)+; calcd for C₁₆H₂₂N₂O₃S+: 304.1245].

 Compound 3d. General procedure was used employing 4-methoxyphenylboronic acid (0.134 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 45 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3d (0.122 g, 0.398 mmol, 90%) as a white solid. m.p: 54-56 °C; Rf 0.10 (hexanes/ethyl acetate = 5:1); IR (neat) 3511, 2959, 2360, 1967, 1510, 1455, 1395, 1152, 937, 729 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.31-7.23 (m, 3H), 7.21-7.18 (m, 2H), 7.17-7.15 (m, 2H), 6.92 (s, 1H), 6.88-6.83 (m, 2H), 4.25 (s, 2H), 3.79 (s, 3H), 2.68 (s, 3H); ¹³C NMR (75 MHz, CDCl₃) δ 157.3, 135.8, 129.7, 128.5, 128.1, 127.7, 124.1, 114.4, 55.4, 54.5, 34.6; HRMS-EI: m/z 306.1039 [(M)+; calcd for C₁₅H₁₈N₂O₃S+: 306.1038].
chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3e (0.134 g, 0.437 mmol, 99%) as a white solid. m.p: 72-74 °C; Rf 0.19 (hexanes/ethyl acetate = 5:1); IR (neat) 3545, 3270, 2361, 1967, 1606, 1498, 1400, 973, 729 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.31-7.25 (m, 3H), 7.24-7.23 (m, 1H), 7.22-7.20 (m, 2H), 7.18 (s, 1H), 6.82-6.76 (m, 2H), 6.68 (dt, J = 0.8 Hz and J = 8.4 Hz, 1H), 4.32 (s, 2H), 3.77 (s, 3H), 2.71 (s, 3H); ¹³C NMR (75 MHz, CDCl₃) δ 160.4, 138.4, 135.6, 130.1, 128.6, 128.2, 127.8, 112.3, 110.1, 105.9, 55.3, 54.5, 34.6; HRMS-ELI: m/z 306.1036 [(M)+]; calcd for C₁₅H₁₈N₂O₃S⁺: 306.1038.

**Compound 3f.** General procedure was used employing 2-methoxyphenylboronic acid (0.134 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 3 h. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3f (0.041 g, 0.133 mmol, 30%) as a yellow solid. m.p: 60-64 °C; Rf 0.22 (hexanes/ethyl acetate = 5:1); IR (neat) 3394, 2361, 1967, 1601, 1343, 1253, 1112, 821, 752 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.54 (dd, J = 1.6 Hz and J = 8.0 Hz, 1H), 7.31-7.24 (m, 3H), 7.18-7.15 (m, 2H), 7.10 (td, J = 1.6 Hz and J = 15.7 Hz, 1H), 6.99-6.93 (m, 1H), 6.96 (s, 1H), 6.89 (dd, J = 1.3 Hz and J = 8.1 Hz, 1H), 4.26 (s, 2H), 3.86 (s, 3H), 2.67 (s, 3H); ¹³C NMR (75 MHz, CDCl₃) δ 148.8, 135.8, 128.5, 128.2, 127.7, 126.6, 124.6, 121.1, 120.0, 110.5, 55.7, 54.6, 34.5; HRMS-ELI: m/z 306.1036 [(M)+]; calcd for C₁₅H₁₈N₂O₃S⁺: 306.1038.

**Compound 3g.** General procedure was used employing 2-naphthylboronic acid (0.152 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 40 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3g (0.128 g, 0.393 mmol, 89%) as a white solid. m.p: 113-116 °C; Rf 0.12 (hexanes/ethyl acetate = 5:1); IR (neat) 3749, 2361, 1967, 1422, 1266, 1156, 897, 742, 518 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.81-7.74 (m, 3H), 7.62 (d, J = 2.4 Hz, 1H), 7.51-7.40 (m, 2H), 7.34 (dd, J = 2.5 Hz and J = 8.8 Hz, 1H), 7.32 (s, 1H), 7.25-7.16 (m, 5H), 4.35 (s, 2H), 2.73 (s, 3H); ¹³C NMR (75 MHz, CDCl₃) δ 135.6, 134.6, 133.7, 130.7, 129.4, 128.6, 128.2, 127.9, 127.7, 127.4, 126.7, 125.3, 120.2, 116.9, 54.6, 34.7; HRMS-ELI: m/z 326.1091 [(M)+]; calcd for C₁₈H₁₈N₂O₃S⁺: 326.1089.
Compound 3h. General procedure was used employing 3,4-methylenedioxyphenylboronic acid (0.147 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 55 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3h (0.113 g, 0.354 mmol, 80%) as a white solid. m.p: 102-104 °C; Rf 0.14 (hexanes/ethyl acetate = 5:1); IR (neat) 3434, 2361, 2227, 1967, 1649, 1488, 1350, 1037, 729 cm⁻¹; 'H NMR (300 MHz, CDCl₃) δ 7.31-7.25 (m, 3H), 7.24-7.18 (m, 2H), 6.90 (s, 1H), 6.83 (d, J = 2.1 Hz, 1H), 6.73 (d, J = 8.2 Hz, 1H), 6.65 (dd, J = 2.2 Hz and J = 8.2 Hz, 1H), 5.96 (s, 2H), 4.28 (s, 2H), 2.70 (s, 3H); 'C NMR (75 MHz, CDCl₃) δ 148.1, 145.4, 135.8, 130.9, 128.6, 128.2, 127.8, 115.7, 108.3, 104.5, 101.5, 54.6, 34.7; HRMS-EL: m/z 320.0834 [(M)+; calcd for C₁₅H₁₆N₂O₄S⁺: 320.0831].

Compound 3i. General procedure was used employing 4-vinylphenylboronic acid (0.131 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 70 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3i (0.118 g, 0.389 mmol, 88%) as a white solid. m.p: 84-86 °C; Rf 0.16 (hexanes/ethyl acetate = 5:1); IR (neat) 3441, 3270, 2360, 2223, 1967, 1649, 1230, 1154, 990, 728 cm⁻¹; 'H NMR (300 MHz, CDCl₃) δ 7.36 (d, J = 8.5 Hz, 2H), 7.30-7.26 (m, 2H), 7.25-7.24 (m, 1H), 7.20-7.14 (m, 4H), 7.10 (s, 1H), 6.73-6.63 (m, 1H), 5.70 (dd, J = 0.7 Hz and J = 17.5 Hz, 1H), 5.22 (dd, J = 0.7 Hz and J = 11.0 Hz, 1H), 4.31 (s, 2H), 2.71 (s, 3H); 'C NMR (75 MHz, CDCl₃) δ 136.6, 135.8, 135.6, 134.0, 128.6, 128.2, 127.8, 127.1, 120.2, 113.4, 54.5, 34.6; HRMS-EL: m/z 302.1086 [(M)+; calcd for C₁₆H₁₈N₂O₂S⁺: 302.1089].

Compound 3j. General procedure was used employing 4-bromophenylboronic acid (0.177 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 12 h. Flash column
chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3j (0.126 g, 0.354 mmol, 80%) as a white solid. m.p: 106-108 °C; Rf 0.23 (hexanes/ethyl acetate = 5:1); IR (neat) 3439, 2361, 1967, 1490, 1333, 1276, 903, 821, 749 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.43-7.39 (m, 2H), 7.38 (s, 1H), 7.31-7.24 (m, 3H), 7.18-7.15 (m, 2H), 7.10-7.05 (m, 2H), 4.30 (s, 2H), 2.70 (s, 3H); ¹³C NMR (75 MHz, CDCl₃) δ 136.3, 135.3, 132.3, 128.7, 128.2, 128.0, 121.7, 117.5, 54.5, 34.6; HRMS-EI: m/z 354.0035 [(M⁺); calcd for C₁₄H₁₅BrN₂O₂S⁺: 354.0038].

**Compound 3k.** General procedure was used employing 4-chlorophenylboronic acid (0.138 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 12 h. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3k (0.097 g, 0.314 mmol, 71%) as a white solid. m.p: 108-110 °C; Rf 0.20 (hexanes/ethyl acetate = 5:1); IR (neat) 3437, 3261, 2361, 1967, 1648, 1491, 1338, 1153, 985, 746 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.32 (s, 1H), 7.31-7.25 (m, 5H), 7.18-7.11 (m, 4H), 4.30 (s, 2H), 2.70 (s, 3H); ¹³C NMR (75 MHz, CDCl₃) δ 136.3, 135.3, 132.3, 128.7, 128.2, 128.0, 121.7, 117.5, 54.5, 34.6; HRMS-EI: m/z 310.0540 [(M⁺); calcd for C₁₄H₁₅ClN₂O₂S⁺: 310.0543].

**Compound 3l.** General procedure was used employing 4-fluorophenylboronic acid (0.124 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 3 h. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3l (0.118 g, 0.402 mmol, 91%) as a yellow solid. m.p: 90-92 °C; Rf 0.31 (hexanes/ethyl acetate = 5:1); IR (neat) 3438, 3269, 2361, 1967, 1650, 1508, 1390, 1151, 905, 775 cm⁻¹; ¹H NMR (300 MHz, CDCl₃) δ 7.32-7.20 (m, 5H), 7.19-7.18 (m, 1H), 7.17 (s, 1H), 7.16-7.14 (m, 1H), 7.05-6.96 (m, 2H), 4.28 (s, 2H), 2.70 (s, 3H); ¹³C NMR (75 MHz, CDCl₃) δ 161.7, 158.5, 135.5, 133.0, 128.6, 128.2, 127.9, 123.1, 123.0, 116.2, 115.9, 54.5, 34.6; HRMS-EI: m/z 294.0839 [(M⁺); calcd for C₁₄H₁₃FN₂O₂S⁺: 294.0838].
Compound 3m. General procedure was used employing 4-methoxycarbonylphenylboronic acid (0.196 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 3 h. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3m (0.133 g, 0.354 mmol, 80%) as a white solid. m.p: 108-110 °C; Rf 0.20 (hexanes/ethyl acetate = 5:1); IR (neat) 3398, 3270, 2361, 1967, 1709, 1511, 1297, 926, 770 cm\(^{-1}\); \(^1\)H NMR (300 MHz, CDCl\(_3\)) \(\delta\) 7.95 (d, \(J = 8.8\) Hz, 2H), 7.89 (s, 1H), 7.29-7.24 (m, 5H), 7.21-7.20 (m, 2H), 4.34 (s, 2H), 2.72 (s, 3H), 1.60 (s, 9H); \(^13\)C NMR (75 MHz, CDCl\(_3\)) \(\delta\) 165.3, 141.2, 135.3, 130.9, 128.6, 128.2, 127.9, 127.2, 118.0, 81.0, 54.5, 34.5, 28.1; HRMS-EI: \(m/z\) 376.1456 [(M)\(^+\)]; calcd for C\(_{19}\)H\(_{24}\)N\(_2\)O\(_4\)S\(^+\): 376.1457.

Compound 3n. General procedure was used employing 3-thiophenephenylboronic acid (0.113 g, 0.884 mmol) and sulfamoyl azide (0.100 g, 0.442 mmol). The reaction was completed in 12 h. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 3n (0.102 g, 0.362 mmol, 82%) as a yellow solid. m.p: 50-53 °C; Rf 0.20 (hexanes/ethyl acetate = 5:1); IR (neat) 3503, 3271, 2361, 1967, 1547, 1455, 1369, 1152, 971, 771 cm\(^{-1}\); \(^1\)H NMR (300 MHz, CDCl\(_3\)) \(\delta\) 7.33-7.24 (m, 4H), 7.22-7.19 (m, 1H), 7.18-7.17 (m, 1H), 7.08 (s, 1H), 6.97 (d, \(J = 4.2\) Hz, 2H), 4.28 (s, 2H), 2.70 (s, 3H); \(^13\)C NMR (75 MHz, CDCl\(_3\)) \(\delta\) 135.7, 134.9, 128.6, 128.2, 127.9, 127.2, 118.0, 54.6, 34.7; HRMS-EI: \(m/z\) 282.0497 [(M)\(^+\)]; calcd for C\(_{12}\)H\(_{14}\)N\(_2\)O\(_2\)S\(_2\)\(^+\): 282.0497.

Compound 4a. General procedure was used employing phenylboronic acid (0.109 g, 0.892 mmol) and indoline-1-sulfonyl azide (0.100 g, 0.446 mmol). The reaction was completed in 50 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 4a (0.104 g, 0.380 mmol, 85%) as a white-pink solid. m.p: 110-112 °C; Rf 0.23 (hexanes/ethyl acetate = 5:1); IR (neat) 3271, 2361, 1967, 1649, 1479, 1351, 1243, 1104, 977, 752 cm\(^{-1}\); \(^1\)H NMR (300 MHz, CDCl\(_3\)) \(\delta\) 7.41 (d, \(J =\) S8
8.0 Hz, 1H), 7.24-7.11 (m, 5H), 7.05-7.00 (m, 3H), 6.69 (s, 1H), 3.89 (t, J = 8.4 Hz, 2H), 2.85 (t, J = 8.5 Hz, 2H); 13C NMR (75 MHz, CDCl3) δ 141.8, 136.2, 131.4, 129.2, 127.7, 125.5, 125.1, 123.4, 121.9, 114.0, 51.4, 27.9; HRMS-EL: m/z 274.0778 [(M)⁺; calcd for C14H14N2O2S⁺: 274.0776].

Compound 4b. General procedure was used employing phenylboronic acid (0.108 g, 0.884 mmol) and 1-[(azidosulfonyl)(methyl)amino]-4-methylbenzene (0.100 g, 0.442 mmol). The reaction was completed in 85 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 4b (0.106 g, 0.384 mmol, 87%) as a white solid. m.p: 104-106 °C; Rf 0.26 (hexanes/ethyl acetate = 5:1); IR (neat) 3431, 3270, 2361, 2223, 1967, 1649, 1497, 1349, 1069, 878 cm⁻¹; 1H NMR (300 MHz, CDCl3) δ 7.33-7.24 (m, 2H), 7.15-7.12 (m, 3H), 7.10-7.08 (m, 4H), 6.96 (s, 1H), 3.21 (s, 3H); 13C NMR (75 MHz, CDCl3) δ 139.0, 137.6, 137.3, 129.8, 129.2, 126.9, 124.3, 119.6, 39.8, 21.0; HRMS-EL: m/z 276.0934 [(M)⁺; calcd for C14H16N2O2S⁺: 276.0932].

Compound 4c. General procedure was used employing phenylboronic acid (0.101 g, 0.825 mmol) and 1-[(azidosulfonyl)(methyl)amino]-4-methoxybenzene (0.100 g, 0.413 mmol). The reaction was completed in 1 h. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 4c (0.113 g, 0.388 mmol, 94%) as a white solid. m.p: 70-72 °C; Rf 0.14 (hexanes/ethyl acetate = 5:1); IR (neat) 3460, 3271, 2969, 2360, 1603, 1509, 1248, 1145, 926, 755 cm⁻¹; 1H NMR (300 MHz, CDCl3) δ 7.33-7.25 (m, 2H), 7.16-7.07 (m, 5H), 7.03 (s, 1H), 6.81-6.75 (m, 2H), 3.75 (s, 3H), 3.20 (s, 3H); 13C NMR (75 MHz, CDCl3) δ 158.8, 137.4, 134.2, 129.2, 128.6, 124.1, 119.4, 114.3, 55.4, 40.0; HRMS-EL: m/z 292.0884 [(M)⁺; calcd for C14H16N2O3S⁺: 292.0882].

Compound 4d. General procedure was used employing phenylboronic acid (0.081 g, 0.666 mmol) and
4-[2-((azidosulfonyl)(methyl)amino)ethyl]-1,2-dimethoxybenzene (0.100 g, 0.333 mmol). The reaction was completed in 75 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 4d (0.113 g, 0.323 mmol, 97%) as a white solid. m.p: 110-112 °C; Rf 0.03 (hexanes/ethyl acetate = 5:1); IR (neat) 3398, 3270, 2361, 1967, 1624, 1517, 1342, 1150, 1029, 576 cm⁻¹; H NMR (300 MHz, CDCl₃) δ 7.31-7.28 (m, 2H), 7.13-7.08 (m, 3H), 6.82 (s, 1H), 6.78-6.75 (m, 1H), 6.69-6.67 (m, 2H), 3.84 (s, 1H), 3.83 (s, 1H), 3.44-3.39 (m, 2H), 2.82 (s, 3H), 2.78-2.73 (m, 2H); C NMR (75 MHz, CDCl₃) δ 148.8, 147.6, 137.2, 130.7, 129.2, 124.3, 120.6, 119.9, 111.9, 111.2, 55.8, 55.7, 52.5, 35.3, 34.0; HRMS-ESI: m/z 350.1301 [(M)+]; calcd for C₁₇H₂₂N₂O₄S: 350.1300.

**Compound 4e.** General procedure was used employing phenylboronic acid (0.122 g, 1.004 mmol) and phenoxyphenylsulfonyl azide (0.100 g, 0.502 mmol). The reaction was completed in 30 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 4e (0.084 g, 0.336 mmol, 67%) as a white solid. Rf 0.31 (hexanes/ethyl acetate = 5:1); H NMR (300 MHz, CDCl₃) δ 7.39-7.26 (m, 5H), 7.24-7.12 (m, 5H), 6.92 (s, 1H); C NMR (75 MHz, CDCl₃) δ 149.8, 147.6, 137.2, 130.7, 129.2, 124.3, 120.6, 119.9, 111.9, 111.2, 55.8, 55.7, 52.5, 35.3, 34.0; Data are consistent with those reported in the literature.¹

**Compound 4f.** General procedure was used employing phenylboronic acid (0.106 g, 0.872 mmol) and 4-methoxyphenoxyphenylsulfonyl azide (0.100 g, 0.436 mmol). The reaction was completed in 35 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 4f (0.092 g, 0.331 mmol, 76%) as a white oil. Rf 0.22 (hexanes/ethyl acetate = 5:1); H NMR (300 MHz, CDCl₃) δ 7.40-7.34 (m, 2H), 7.25-7.16 (m, 3H), 7.07-7.01 (m, 2H), 6.82-6.77 (m, 2H), 6.70 (s, 1H), 3.75 (s, 3H); C NMR (75 MHz, CDCl₃) δ 158.3, 143.3, 136.1, 129.6, 125.0, 123.1, 119.6; Data are consistent with those reported in the literature.²

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¹ (a) B. Yang, Z. Sun, C. Liu, Y. Cui, Z. Guo, Y. Ren, Z. Lu, S. Knapp, Tetrahedron Lett., 2014, 49, 6658; (b) V. Subbarayan, L.-M. Jin, C. Xin, X. P. Zhang, Tetrahedron Lett., 2015, 56, 3431.
² T. Yang, H. Cui, C. Zhang, Li. Zhang, C.-Y. Su, ChemCatChem., 2013, 5, 3131.
**Compound 4g.** General procedure was used employing phenylboronic acid (0.088 g, 0.720 mmol) and 4-bromophenoxysulfonyl azide (0.100 g, 0.340 mmol). The reaction was completed in 40 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 4g (0.076 g, 0.231 mmol, 68%) as a white solid. Rf 0.41 (hexanes/ethyl acetate = 5:1); $^1$H NMR (300 MHz, CDCl$_3$) δ 7.41-7.37 (m, 2H), 7.36-7.35 (m, 2H), 7.25-7.18 (m, 3H), 7.04-6.98 (m, 2H), 6.81 (s, 1H); $^{13}$C NMR (75 MHz, CDCl$_3$) δ 148.8, 135.6, 132.9, 129.7, 125.5, 123.8, 120.8, 119.8; Data are consistent with those reported in the literature.$^1$

**Compound 4h.** General procedure was used employing phenylboronic acid (0.104 g, 0.856 mmol) and 4-chlorophenoxysulfonyl azide (0.100 g, 0.428 mmol). The reaction was completed in 40 min. Flash column chromatography on silica gel using hexanes/ethyl acetate (20:1) provided pure 4h (0.080 g, 0.282 mmol, 66%) as a white solid. Rf 0.38 (hexanes/ethyl acetate = 5:1); $^1$H NMR (300 MHz, CDCl$_3$) δ 7.43-7.40 (m, 2H), 7.39-7.30 (m, 2H), 7.25-7.20 (m, 3H), 7.12-7.08 (m, 2H), 6.70 (s, 1H); $^{13}$C NMR (75 MHz, CDCl$_3$) δ 148.3, 135.7, 133.0, 129.9, 129.7, 125.5, 123.4, 119.8; Data are consistent with those reported in the literature.$^1$
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| Parameter | Value |
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- **MOLC**: 0
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**FT - Processing parameters**

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F2 - Acquisition Parameters
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F2 - Processing parameters
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