**Indium(I)Iodide-Promoted Cleavage of Diphenyl Diselenides
and Disulfides and Subsequent Palladium(0)-Catalyzed
Condensation with Vinylic Bromides. A Simple One-Pot
Synthesis of Vinylic Selenides and Sulfides**

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Supporting Information

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Spectroscopic (IR, ^1H NMR and ^{13}C NMR) Data of Products in Entries 11-16, 19, 20 in
Table 1

Entry 11: Yellowish oil; IR(neat): 1595, 1577, 1477, 1450, 1436, 1421 cm^{-1} ; ^1H NMR (300 MHz, CDCl_3): δ 4.55 (d, J = 7.2 Hz, 2H), 5.23-5.40 (m, 2H), 5.9-6.08 (m, 1H), 6.83-6.9 (m, 2H), 7.16-7.21 (m, 1H), 7.23-7.31 (m, 5H), 7.35-7.38 (m, 1H), 7.52-7.55 (m, 2H); ^{13}C NMR (75 MHz, CDCl_3): δ 68.9, 111.8, 117.3, 119.8, 120.2, 126.1, 126.8, 126.9, 128.5, 129.0 (2C), 130.3, 130.4, 132.0 (2C), 133.0, 135.2. Anal. Calcd for $\text{C}_{17}\text{H}_{16}\text{OSe}$: C, 64.76; H, 5.12. Found: C, 64.49; H, 4.94.

Entry 12: Yellow solid (m.p. 66-68 $^\circ\text{C}$); IR(neat): 1593, 1573, 1512, 1465, 1423, 1404 cm^{-1} ; ^1H NMR (300 MHz, CDCl_3): δ 3.9 (s, 3H), 4.6 (d, J = 7.1 Hz, 2H), 5.29-5.44 (m, 2H), 6.00-6.12 (m, 1H), 6.68-6.88 (m, 6H), 7.02 (d, J = 15.5 Hz, 1H), 7.26-7.32 (m, 2H), 7.51-7.54 (m, 1H); ^{13}C NMR (75 MHz, CDCl_3): δ 55.8, 69.7, 108.9, 113.2, 116.4, 118.0, 119.2, 127.1, 129.2 (2C), 130.4, 130.5, 132.1 (2C), 133.0, 135.7, 147.9, 149.4. Anal. Calcd for $\text{C}_{18}\text{H}_{18}\text{O}_2\text{Se}$: C, 62.61; H, 5.25. Found : C, 62.35; H, 5.01.

Entry 13: Yellowish oil; IR(neat): 1575, 1506, 1475, 1436 cm^{-1} ; ^1H NMR (300 MHz): δ 7.15 (d, J = 15.5 Hz, 1H), 7.20-7.38 (m, 4H), 7.39-7.61 (m, 6H), 7.76-7.89 (m, 2H), 8.06-8.14 (m, 1H); ^{13}C NMR (75 MHz, CDCl_3): δ 122.3, 123.6 (2C), 123.7, 125.5, 125.8, 126.1, 127.4, 128.0 (2C), 128.5, 129.3 (2C), 130.3, 132.2, 132.5, 133.6, 134.7. Anal. Calcd for $\text{C}_{18}\text{H}_{14}\text{Se}$: C, 69.90; H, 4.56. Found : C, 69.62; H, 4.36.

Entry 14: Colorless oil; IR(neat): 1580, 1508, 1473, 1440 cm^{-1} ; ^1H NMR (300 MHz, CDCl_3): δ 6.95 (d, J = 15.2 Hz, 1H), 7.27-7.38 (m, 3H), 7.43-7.60 (m, 7H), 7.77-8.07 (m, 3H); ^{13}C NMR (75 MHz, CDCl_3): δ 116.0, 123.4, 123.5 (2C), 125.4, 125.7 (2C), 126.9, 127.9, 128.4, 128.7, 128.9, 129.0 (2C), 129.7, 132.2, 133.1, 134.0. Anal. Calcd for $\text{C}_{18}\text{H}_{14}\text{S}$: C, 82.40; H, 5.38. Found: C, 82.21; H, 5.09.

Entry 15: yellowish oil(E/Z = 58:42); IR(neat): 1589, 1575, 1558, 1475, 1437 cm^{-1} ; ^1H NMR (300 MHz, CDCl_3): δ 6.70 (d, J = 15.7 Hz, 1H), 6.86 (d, J = 7.62 Hz, 1H), 7.12-7.35 (m, 13H), 7.43-7.45 (m, 2H), 7.53-7.61 (m, 5H); ^{13}C NMR (75 MHz, CDCl_3):

δ 122.0, 122.6, 124.4, 126.5, 127.5, 127.6 (2C), 127.7, 128.3, 128.6 (2C), 129.0 (2C), 129.1, 129.2, 129.3, 129.7, 129.9, 130.1, 130.7, 131.0, 131.3, 132.1, 132.6, 132.9 (2C), 139.0. Anal. Calcd for $C_{14}H_{11}SeBr$: C, 49.73; H, 3.28. Found: C, 49.51; H, 2.98.

Entry 16: Colorless oil (*E/Z*:73:27); IR(neat): 1581, 1558, 1473, 1438, 1419 cm^{-1} ; 1H NMR (300 MHz, $CDCl_3$): δ 6.45 (d, $J = 10.8$ Hz, 1H), 6.54 (d, $J = 10.8$ Hz, 1H), 6.55 (d, $J = 15.3$ Hz, 1H), 6.89 (d, $J = 15.3$ Hz, 1H), 7.11-7.50 (m, 18H); ^{13}C NMR (75 MHz, $CDCl_3$): δ 116.1, 122.8, 124.5, 125.3, 126.0, 127.1, 127.2, 127.3, 127.4, 127.5, 128.1, 128.6 (2C), 126.8, 129.0, 129.2, 129.3 (2C), 129.7, 129.9, 130.1, 130.2 (2C), 130.4, 130.5 (2C), 131.4, 138.4. Anal. Calcd for $C_{14}H_{11}BrS$: C, 57.74; H, 3.81. Found: C, 57.48; H, 3.58.

Entry 19: Yellowish oil, obtained as a diastereoisomer (*E/Z*) = 86:14; IR(neat) : 1577, 1473, 1435, 1311 cm^{-1} ; 1H NMR (300 MHz, $CDCl_3$): δ 6.69 (d, $J = 9.9$ Hz, 1H), 6.87-7.30 (m, 12H), 7.50-7.60 (m, 8H); ^{13}C NMR (75 MHz, $CDCl_3$): δ 118.1, 121.5, 123.5 (2C), 124.4, 125.0, 125.7 (2C), 126.9, 127.3, 127.3, 127.5, 127.5, 127.6, 128.5, 129.0, 129.2 (2C), 131.3, 132.3 (2C), 132.4, 141.9. Anal. Calcd for $C_{12}H_{10}SSe$: C, 54.34; H, 3.80. Found: C, 54.05; H, 3.59.

Entry 20: Yellowish oil; obtained as a diastereoisomeric mixture (*E/Z* = 88:12); IR(neat): 1581, 1477, 1438, 1246 cm^{-1} ; 1H NMR (300 MHz, $CDCl_3$): δ 6.37 (d, $J = 10.29$, 1H), 6.66-7.50 (m, 19H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 121.3, 122.3, 122.8, 124.2, 125.1 (2C), 125.3 (2C), 126.0, 126.7, 126.8, 127.0, 127.3, 127.8, 128.9, 129.0 (2C), 129.6 (2C), 129.7, 135.1, 137.0, 140.0, 141.0. Anal. Calcd for $C_{12}H_{10}S_2$: C, 66.01; H, 4.62. Found: C, 65.80; H, 4.39.

KCC-99-13C (SR)

KCC12-13C (SKD)