

CuCl-Mediated Intramolecular Oxidative Coupling of Aryl- and Alkenyltrimethylstannane Functions

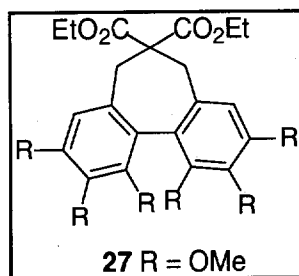
Edward Piers,* James G.K. Yee, and Patricia L. Gladstone

*Department of Chemistry, University of British Columbia, 2036 Main Mall, Vancouver,
British Columbia, Canada V6T 1Z1*

SUPPORTING INFORMATION

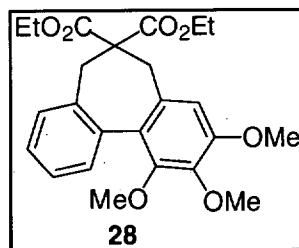
Spectroscopic and Analytical Data

Hexamethoxy diester **27**



Mp 141-142 °C; IR (KBr): 1726, 1599, 1111 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ : 1.26 (t, 6 H, $J = 7.1$ Hz), 2.73 (d, 2 H, $J = 14.0$ Hz), 3.08 (d, 2 H, $J = 14.0$ Hz), 3.64 (s, 6 H), 3.84 (s, 6 H), 3.87 (s, 6 H), 4.11-4.26 (m, 4 H), 6.56 (s, 2 H); ^{13}C NMR (75.5 MHz, CDCl_3) δ : 14.2, 36.9, 55.9, 60.7, 60.9, 61.5, 63.9, 108.4, 122.2, 131.3, 141.2, 151.4, 152.4, 170.5. Exact mass calcd for $\text{C}_{27}\text{H}_{34}\text{O}_{10}$: 518.2152. Found: 518.2150. Anal. calcd. for $\text{C}_{27}\text{H}_{34}\text{O}_{10}$: C 62.54, H 6.61. Found: C 62.20, H 6.59.

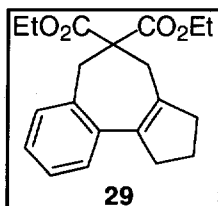
Trimethoxy diester **28**



Mp 94-96 °C; IR (KBr): 1729, 1599 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ : 1.26 (t, 3 H, $J = 7.1$ Hz), 1.28 (t, 3 H, $J = 7.1$ Hz), 2.72 (d, 1 H, $J = 13.7$ Hz), 2.85 (d, 1 H, $J = 13.7$ Hz), 3.09 (d, 1 H, $J = 13.7$ Hz), 3.18 (d, 1 H, $J = 13.7$ Hz), 3.57 (s, 3 H), 3.86 (s, 3 H), 3.89 (s, 3 H), 4.15-4.27 (m, 4 H), 6.61 (s, 1 H), 7.19-7.31 (m, 3 H), 7.49 (dd, 1 H, $J = 1.0, 7.5$ Hz);

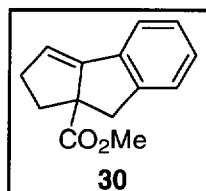
^{13}C NMR (75.5 MHz, CDCl_3) δ : 14.1, 14.2, 36.7, 37.0, 55.9, 60.8, 61.0, 61.5, 61.6, 64.4, 108.2, 125.8, 126.7, 127.0, 129.8, 130.1, 131.5, 135.5, 135.9, 141.6, 150.8, 152.3, 170.3, 170.7. Exact mass calcd. for $\text{C}_{24}\text{H}_{28}\text{O}_7$: 428.1835. Found: 428.1831. Anal. calcd. for $\text{C}_{24}\text{H}_{28}\text{O}_7$: C 67.28, H 6.59. Found: C 67.03, H 6.86.

Diester 29



Mp 72-73 °C; IR (KBr): 1736, 1641, 1251, 762 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ : 1.14 (t, 6 H, $J = 7.1$ Hz), 1.89-1.98 (m, 2 H), 2.60 (br t, 2 H, $J = 7.6$ Hz), 2.70 (s, 2 H), 2.77-2.82 (m, 2 H), 3.24 (s, 2 H), 4.00-4.11 (m, 4 H), 7.01-7.11 (m, 1 H), 7.18-7.20 (m, 3 H); ^{13}C NMR (75.5 MHz, CDCl_3) δ : 14.0, 22.1, 35.8, 36.8, 39.5, 40.0, 60.7, 61.3, 125.9, 126.3, 126.8, 131.2, 134.7, 135.3, 137.1, 137.9, 171.2. Exact mass calcd. for $\text{C}_{20}\text{H}_{24}\text{O}_4$: 328.1675. Found: 328.1664. Anal. calcd. for $\text{C}_{20}\text{H}_{24}\text{O}_4$: C 73.15, H 7.37. Found: C 73.07, H 7.46.

Ester 30



IR (CH_2Cl_2 cast): 1727, 1462, 1275, 1167, 1057, 751 cm^{-1} ; ^1H NMR (400 MHz) δ : 1.95-2.02 (m, 1 H), 2.52 (dd, 1 H, $J = 12.3, 6.0$ Hz), 2.66-2.72 (m, 1 H), 2.97-3.08 (m, 1 H), 3.10 (AB quartet, 2 H, $J = 15.5$ Hz), 3.58 (s, 3 H), 5.94 (dd, 1 H, $J = 3.4, 1.9$ Hz), 7.15-7.23 (m, 3 H), 7.38 (t, 1 H, $J = 4.5$ Hz); ^{13}C NMR (50.3 MHz) δ : 37.6, 37.7, 41.0, 52.1, 65.6, 121.6, 121.8, 125.4, 126.8, 127.9, 135.5, 148.0, 151.5, 176.2. Exact mass calcd. for $\text{C}_{14}\text{H}_{14}\text{O}_2$: 214.0994. Found: 214.0995. Anal. calcd. for $\text{C}_{14}\text{H}_{14}\text{O}_2$: C 78.48, H 6.59. Found: C 78.20, H 6.75.