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3-Cyclopentyl-1-phenylpropan-1-one: ^1H NMR (CDCl_3) δ 1.0-1.2 (m, 2 H), 1.4-1.7 (m, 4 H), 1.7-1.9 (m, 5 H), 2.9-3.0 (m, 2 H), 7.4-7.5 (m, 2 H), 7.5-7.6 (m, 1 H), 7.9-8.0 (m, 2 H); ^{13}C NMR (CDCl_3) δ 25.1, 30.6, 32.6, 37.9, 39.8, 128.0, 128.4, 132.8, 137.0, 200.6; FT-IR (neat, cm^{-1}) 1685; HRMS m/z (M^+) calcd. 202.1358, found 202.1361.

4b: ^1H NMR (CDCl_3) δ 1.3-2.0 (m, 8 H), 2.7 (m, 1 H), 6.85 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.03 (dd, 1 H, $J = 8.0, 15.6$ Hz), 7.4-7.6 (m, 3 H), 7.9 (m, 2 H); ^{13}C NMR (CDCl_3) δ 25.3, 32.5, 43.3, 123.7, 128.3, 128.31, 132.4, 137.9, 154.0, 190.8; FT-IR (neat, cm^{-1}) 1666, 1619; HRMS m/z (M^+) calcd. 200.1201, found 200.1201.

1b: ^1H NMR (CDCl_3) δ 1.5-2.0 (m, 7 H), 2.4 (m, 1 H), 3.37 (s, 3 H), 5.78 (d, 1 H, $J = 10.0$ Hz), 5.98 (d, 1 H, $J = 10.0$ Hz), 7.2-7.4 (m, 3 H), 7.5 (m, 2 H); ^{13}C NMR (CDCl_3) δ 24.4, 24.6, 35.5, 36.4, 51.3, 88.0, 99.9, 126.1, 126.5, 128.4, 128.5, 133.1, 138.0; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 247.1334, found 247.1331.

4c: mp 34-38 $^\circ\text{C}$; ^1H NMR (CDCl_3) δ 1.1-1.5 (m, 4 H), 1.6-2.0 (m, 4 H), 2.2 (m, 1 H), 6.82 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.01 (dd, 1 H, $J = 6.8, 15.6$ Hz), 7.4-7.6 (m, 3 H), 7.9 (m, 2 H); ^{13}C NMR (CDCl_3) δ 25.7, 25.9, 31.8, 41.0, 123.2, 126.8, 128.3, 128.4, 132.4, 154.8, 191.0; FT-IR (neat, cm^{-1}) 1666, 1614; HRMS m/z (M^+) calcd. 214.1358, found 214.1360.

1c: ^1H NMR (CDCl_3) δ 1.5-1.9 (m, 9 H), 2.1 (m, 1 H), 3.39 (s, 3 H), 5.8 (d, 1 H, $J = 10.0$ Hz), 6.0 (d, 1 H, $J = 10.0$ Hz), 7.3-7.4 (m, 3 H), 7.5 (m, 2 H); ^{13}C NMR (CDCl_3) δ 21.4, 21.6, 25.3, 32.6, 33.8, 51.5, 77.8, 99.9, 126.1, 126.4, 128.4, 128.5, 133.8, 138.1; Anal. ($\text{C}_{16}\text{H}_{20}\text{O}_3$) C, H.

4d: ^1H NMR (CDCl_3) δ 1.3-1.9 (m, 12 H), 2.4 (m, 1 H), 6.8 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.05 (dd, 1 H, $J = 7.6, 15.6$ Hz), 7.3-7.6 (m, 3 H), 7.9 (m, 2 H); ^{13}C NMR (CDCl_3) δ

26.2, 28.3, 33.5, 42.9, 122.8, 128.4, 128.41, 132.4, 138.1, 155.6, 191.3; FT-IR (neat, cm^{-1}) 1672, 1619; HRMS m/z (M^+) calcd. 228.1514, found 228.1515.

1d: ^1H NMR (CDCl_3) δ 1.4-1.9 (m, 11 H), 2.4 (m, 1 H), 3.38 (s, 3 H), 5.72 (d, 1 H, $J = 10.0$ Hz), 6.07 (d, 1 H, $J = 10.0$ Hz), 7.3-7.4 (m, 3 H), 7.5 (m, 2 H); ^{13}C NMR (CDCl_3) δ 22.3, 22.34, 30.2, 30.4, 34.9, 36.1, 51.5, 82.1, 99.8, 124.4, 126.4, 128.4, 128.5, 134.6, 138.2; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 275.1647, found 275.1640.

4e: ^1H NMR (CDCl_3) δ 1.8-2.3 (m, 6 H), 3.2 (m, 2 H), 3.83 (s, 3 H), 6.8 (dd, 1 H, $J = 1.2, 15.2$ Hz), 6.92 (d, 2 H, $J = 8.8$ Hz), 7.11 (dd, 1 H, $J = 7.2, 15.2$ Hz), 7.93 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 18.5, 27.8, 38.1, 55.2, 113.5, 122.9, 130.5, 130.7, 151.8, 163.0, 188.9; FT-IR (neat, cm^{-1}) 1660, 1614, 1602; HRMS m/z (M^+) calcd. 216.1150, found 216.1154.

1e: ^1H NMR (CDCl_3) δ 1.8 (m, 1 H), 2.0 (m, 1 H), 2.2 (m, 3 H), 2.6 (m, 1 H), 3.36 (s, 3 H), 3.80 (s, 3), 5.75 (d, 1 H, $J = 10.0$ Hz), 6.21 (d, 1 H, $J = 10.0$ Hz), 6.88 (d, 2 H, $J = 8.8$ Hz), 7.37 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 13.1, 31.9, 32.8, 51.2, 55.3, 80.0, 99.9, 113.8, 126.0, 127.9, 129.8, 131.1, 159.7; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 263.1283, found 263.1289.

4f: mp 48-50 $^\circ\text{C}$; ^1H NMR (CDCl_3) δ 1.1-1.9 (m, 10 H), 2.2 (m, 1 H), 3.86 (s, 3 H), 6.83 (dd, 1 H, $J = 1.2, 15.2$ Hz), 6.93 (d, 2 H, $J = 9.2$ Hz), 6.99 (dd, 1 H, $J = 6.8, 15.2$ Hz), 7.94 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 25.7, 25.9, 31.8, 40.9, 55.4, 113.6, 122.8, 130.7, 153.7, 163.1, 189.4; FT-IR (neat, cm^{-1}) 1660, 1614, 1602; HRMS m/z (M^+) calcd. 244.1463, found 244.1469.

1f: ^1H NMR (CDCl_3) δ 1.4 (m, 2 H), 1.4-1.9 (m, 7 H), 2.1 (m, 1 H), 3.39 (s, 3 H), 3.79 (s, 3), 5.77 (d, 1 H, $J = 10.0$ Hz), 6.0 (d, 1 H, $J = 10.0$ Hz), 6.88 (d, 2 H, $J = 8.8$ Hz), 7.42 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 21.4, 21.6, 25.3, 32.6, 33.8, 51.5, 77.7, 99.8, 113.7, 126.1, 127.8, 130.0, 133.6, 159.6; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 291.1596, found 291.1596.

4g: ^1H NMR (CDCl_3) δ 1.4-1.9 (m, 12 H), 2.4 (m, 1 H), 3.84 (s, 3 H), 6.82 (dd, 1 H, $J = 1.2, 15.2$ Hz), 6.92 (d, 2 H, $J = 9.2$ Hz), 7.02 (dd, 1 H, $J = 7.6, 15.2$ Hz), 7.94 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 26.1, 28.2, 33.5, 42.8, 55.3, 113.5, 122.2, 130.6, 130.8, 154.3, 163.0, 189.3; FT-IR (neat, cm^{-1}) 1660, 1614, 1602; HRMS m/z (M^+) calcd. 258.1620, found 258.1621.

1g: ^1H NMR (CDCl_3) δ 1.3-1.9 (m, 11 H), 2.4 (m, 1 H), 3.37 (s, 3 H), 3.80 (s, 3), 5.71 (d, 1 H, $J = 10.0$ Hz), 6.05 (d, 1 H, $J = 10.0$ Hz), 6.88 (d, 2 H, $J = 8.8$ Hz), 7.41 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 22.26, 22.33, 30.2, 30.4, 34.9, 36.1, 51.5, 55.2, 82.0, 99.8, 113.7, 124.4, 127.8, 130.2, 134.3, 159.6; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 305.1753, found 305.1749.

4h: ^1H NMR (CDCl_3) δ 1.4-1.9 (m, 12 H), 2.4 (m, 1 H), 3.92 (s, 3 H), 3.93 (s, 6 H), 6.76 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.04 (dd, 1 H, $J = 7.6, 15.6$ Hz), 7.19 (s, 2 H); ^{13}C NMR (CDCl_3) δ 26.2, 28.2, 33.6, 42.9, 56.2, 60.8, 105.9, 122.3, 133.3, 142.0, 152.9, 155.4, 190.0; FT-IR (neat, cm^{-1}) 1660, 1614, 1584; HRMS m/z (M^+) calcd. 318.1831, found 318.1827.

1h: ^1H NMR (CDCl_3) δ 1.4-1.9 (m, 11 H), 2.4 (m, 1 H), 3.41 (s, 3 H), 3.84 (s, 3 H), 3.86 (s, 6 H), 5.74 (d, 1 H, $J = 10.0$ Hz), 6.11 (d, 1 H, $J = 10.0$ Hz), 6.74 (s, 2 H); ^{13}C NMR (CDCl_3) δ 22.2, 22.3, 30.2, 30.4, 34.9, 36.0, 51.7, 56.1, 56.2, 60.7, 82.1, 99.8, 103.5, 124.0, 133.8, 134.8, 153.1; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 365.1964, found 365.1965.

4i: ^1H NMR (CDCl_3) δ 1.4-2.0 (m, 12 H), 2.4 (m, 1 H), 6.76 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.07 (dd, 1 H, $J = 7.6, 15.6$ Hz), 7.3 (m, 2 H), 8.0 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 26.2, 28.3, 33.5, 43.0, 120.3, 120.5, 122.3, 128.7, 130.4, 136.3, 156.3, 189.7; FT-IR (neat, cm^{-1}) 1666, 1614; HRMS m/z (M^+) calcd. 312.1337, found 312.1346.

1i: ^1H NMR (CDCl_3) δ 1.4-1.9 (m, 11 H), 2.4 (m, 1 H), 3.40 (s, 3 H), 5.68 (d, 1 H, $J = 10.0$ Hz), 6.12 (d, 1 H, $J = 10.0$ Hz), 7.2 (d, 2 H, $J = 8.8$ Hz), 7.5 (d, 2 H, $J = 8.8$ Hz); ^{13}C

NMR (CDCl₃) δ 22.28, 22.34, 30.2, 30.4, 34.9, 36.0, 51.8, 82.2, 99.5, 120.8, 123.7, 128.2, 135.3, 137.1; Anal. (C₁₈H₂₁O₄F₃) C, H.

4j: ¹H NMR (CDCl₃) δ 1.4-2.0 (m, 12 H), 2.4 (m, 1 H), 6.76 (dd, 1 H, J = 1.2, 15.6 Hz), 7.05 (dd, 1 H, J = 7.6, 15.6 Hz), 7.4 (d, 2 H J = 8.8 Hz), 7.9 (d, 2 H, J = 8.8 Hz); ¹³C NMR (CDCl₃) δ 26.2, 28.3, 33.5, 42.9, 122.3, 128.7, 129.8, 136.4, 138.8, 156.1, 189.9; FT-IR (neat, cm⁻¹) 1666, 1614, 1590; HRMS m/z (M⁺) calcd. 262.1124, found 262.1130.

1j: ¹H NMR (CDCl₃) δ 1.3-1.9 (m, 11 H), 2.4 (m, 1 H), 3.38 (s, 3 H), 5.67 (d, 1 H, J = 10.0 Hz), 6.10 (d, 1 H, J = 10.0 Hz), 7.3 (d, 2 H, J = 8.8 Hz), 7.4 (d, 2 H, J = 8.8 Hz); ¹³C NMR (CDCl₃) δ 22.25, 22.32, 30.2, 30.4, 34.9, 36.0, 51.7, 82.1, 99.5, 123.8, 128.0, 128.6, 134.5, 135.2, 136.9; Anal. (C₁₇H₂₁O₃Cl) C, H.

4k: ¹H NMR (CDCl₃) δ 1.4-2.0 (m, 12 H), 2.4 (m, 1 H), 6.78 (dd, 1 H, J = 1.2, 15.6 Hz), 7.05 (dd, 1 H, J = 7.6, 15.6 Hz), 7.11 (m, 2 H), 8.0 (m, 2 H); ¹³C NMR (CDCl₃) δ 26.1, 28.2, 33.4, 42.8, 115.2, 115.5, 122.2, 130.8, 130.9, 134.26, 134.29, 155.6, 164.0, 166.5, 189.3; FT-IR (neat, cm⁻¹) 1666, 1613, 1602; HRMS m/z (M⁺) calcd. 246.1420, found 246.1420.

1k: ¹H NMR (CDCl₃) δ 1.3-1.9 (m, 11 H), 2.4 (m, 1 H), 3.39 (s, 3 H), 5.68 (d, 1 H, J = 10.0 Hz), 6.10 (d, 1 H, J = 10.0 Hz), 7.0 (m, 2 H), 7.5 (m, 2 H); ¹³C NMR (CDCl₃) δ 22.26, 22.33, 30.2, 30.4, 34.9, 36.0, 51.7, 82.1, 99.6, 115.2, 115.4, 124.0, 128.4, 128.5, 134.15, 134.18, 135.0, 161.5, 163.9; Anal. (C₁₇H₂₁O₃F) C, H.

4l: ¹H NMR (CDCl₃) δ 1.4-1.9 (m, 12 H), 2.4 (m, 1 H), 2.52 (s, 3 H), 6.79 (dd, 1 H, J = 1.2, 15.6 Hz), 7.04 (dd, 1 H, J = 7.6, 15.6 Hz), 7.27 (d, 2 H, J = 8.8 Hz), 7.86 (d, 2 H, J = 8.8 Hz); ¹³C NMR (CDCl₃) δ 14.8, 26.2, 28.3, 33.6, 42.9, 122.4, 124.9, 128.9, 134.3, 145.1, 155.2, 190.1; FT-IR (neat, cm⁻¹) 1666, 1614, 1590; HRMS m/z (M⁺) calcd. 274.1391, found 274.1389.

1l: ^1H NMR (CDCl_3) δ 1.3-1.9 (m, 11 H), 2.4 (m, 1 H), 2.47 (s, 3 H), 3.37 (s, 3 H), 5.69 (d, 1 H, $J = 10.0$ Hz), 6.07 (d, 1 H, $J = 10.0$ Hz), 7.2 (d, 2 H, $J = 8.4$ Hz), 7.4 (d, 2 H, $J = 8.4$ Hz); ^{13}C NMR (CDCl_3) δ 15.5, 22.2, 22.3, 30.2, 30.4, 34.9, 36.0, 51.5, 82.0, 99.7, 124.1, 126.1, 126.9, 134.7, 134.9, 139.2; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 321.1524, found 321.1519.

1m: ^1H NMR (CDCl_3) δ 1.3-1.9 (m, 11 H), 2.3 (m, 1 H), 3.04 (s, 3 H), 3.42 (s, 3 H), 5.66 (d, 1 H, $J = 10.0$ Hz), 6.18 (d, 1 H, $J = 10.0$ Hz), 7.7 (d, 2 H, $J = 8.8$ Hz), 7.9 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 22.2, 22.3, 30.2, 20.4, 34.9, 35.9, 44.4, 52.1, 82.4, 99.5, 123.0, 127.5, 127.7, 136.2, 140.6, 144.6; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 353.1423, found 353.1414.

4n: ^1H NMR (CDCl_3) δ 1.25 (t, 3 H, $J = 7.6$ Hz), 1.4-1.9 (m, 12 H), 2.4 (m, 1 H), 2.69 (q, 2 H, $J = 7.6$ Hz), 6.81 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.03 (dd, 1 H, $J = 7.6, 15.6$ Hz), 7.27 (d, 2 H, $J = 8.4$ Hz), 7.86 (d, 2 H, $J = 8.4$ Hz); ^{13}C NMR (CDCl_3) δ 15.2, 26.1, 28.2, 28.9, 33.5, 42.8, 122.7, 127.8, 128.6, 135.7, 149.3, 154.9, 190.7; FT-IR (neat, cm^{-1}) 1666, 1614; HRMS m/z (M^+) calcd. 256.1827, found 256.1824.

1n: ^1H NMR (CDCl_3) δ 1.22 (t, 3 H, $J = 7.6$ Hz), 1.3-1.9 (m, 11 H), 2.4 (m, 1 H), 2.65 (q, 2 H, $J = 7.6$ Hz), 3.37 (s, 3 H), 5.72 (d, 1 H, $J = 10.0$ Hz), 6.04 (d, 1 H, $J = 10.0$ Hz), 7.19 (d, 2 H, $J = 8.4$ Hz), 7.40 (d, 2 H, $J = 8.4$ Hz); ^{13}C NMR (CDCl_3) δ 15.4, 22.25, 22.32, 28.5, 30.2, 30.4, 34.9, 36.1, 51.4, 82.0, 99.8, 124.5, 126.4, 127.9, 134.3, 135.4, 144.6; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 303.1960, found 303.1959.

4o: mp 82-84 $^\circ\text{C}$; ^1H NMR (CDCl_3) δ 1.1-1.4 (m, 6 H), 1.6-1.9 (m, 4 H), 2.2 (m, 1 H), 2.51 (s, 3 H), 6.81 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.00 (dd, 1 H, $J = 7.6, 15.6$ Hz), 7.23 (d, 2 H, $J = 8.4$ Hz), 7.83 (d, 2 H, $J = 8.4$ Hz); ^{13}C NMR (CDCl_3) δ 14.7, 25.7, 25.9, 31.8, 40.9,

122.8, 124.8, 128.8, 134.2, 145.1, 154.3, 189.8; FT-IR (neat, cm^{-1}) 1660, 1614, 1590; HRMS m/z (M^+) calcd. 260.1235, found 260.1236.

1o: ^1H NMR (CDCl_3) δ 1.3-1.9 (m, 9 H), 2.1 (m, 1 H), 2.47 (s, 3 H), 3.38 (s, 3 H), 5.65 (d, 1 H, $J = 10.0$ Hz), 6.01 (d, 1 H, $J = 10.0$ Hz), 7.23 (d, 2 H, $J = 8.8$ Hz), 7.41 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 15.5, 21.4, 21.6, 25.3, 32.6, 33.8, 51.6, 77.8, 99.8, 125.9, 126.2, 127.0, 133.9, 134.7, 139.2; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 307.1368, found 307.1366.

1p: ^1H NMR (CDCl_3) δ 1.3-1.9 (m, 9 H), 2.1 (m, 1 H), 3.05 (s, 3 H), 3.44 (s, 3 H), 5.74 (d, 1 H, $J = 10.0$ Hz), 6.13 (d, 1 H, $J = 10.0$ Hz), 7.73 (d, 2 H, $J = 8.8$ Hz), 7.94 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 21.3, 21.5, 25.2, 32.6, 33.7, 44.4, 52.2, 78.1, 99.6, 124.8, 127.5, 127.7, 135.5, 140.6, 144.5; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 339.1266, found 339.1257.

4q: ^1H NMR (CDCl_3) δ 1.1-2.0 (m, 10 H), 2.3 (m, 1 H), 6.77 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.04 (dd, 1 H, $J = 7.6, 15.6$ Hz), 8.0 (d, 2 H, $J = 8.8$ Hz), 8.3 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 25.6, 25.7, 31.7, 41.1, 123.0, 123.6, 127.7, 129.3, 142.9, 157.1, 189.7; FT-IR (neat, cm^{-1}) 1672, 1619, 1602, 1525; HRMS m/z (M^+) calcd. 259.1208, found 259.1205.

Cyclohexyl 4'-nitrophenyl peroxy hemi-ketal: ^1H NMR (CDCl_3) δ 1.2-1.9 (m, 9 H), 2.1 (m, 1 H), 3.9 (s, b, 1 H), 5.87 (d, 1 H, $J = 10.0$ Hz), 6.13 (d, 1 H, $J = 10.0$ Hz), 7.78 (d, 2 H, $J = 8.8$ Hz), 8.21 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 21.2, 21.5, 25.2, 32.2, 33.9, 78.7, 96.6, 123.4, 126.3, 127.8, 135.2, 144.2, 148.2.

1q: ^1H NMR (CDCl_3) δ 1.2-1.9 (m, 9 H), 2.1 (m, 1 H), 3.44 (s, 3 H), 5.73 (d, 1 H, $J = 10.0$ Hz), 6.14 (d, 1 H, $J = 10.0$ Hz), 7.70 (d, 2 H, $J = 9.2$ Hz), 8.21 (d, 2 H, $J = 9.2$ Hz); ^{13}C NMR (CDCl_3) δ 21.3, 21.5, 25.2, 32.6, 33.7, 52.2, 78.1, 99.6, 123.6, 124.7, 127.7, 135.7, 145.4, 147.9; Anal. ($\text{C}_{16}\text{H}_{19}\text{NO}_5$) C, H.

4r: ^1H NMR (CDCl_3) δ 1.1-1.5 (m, 4 H), 1.6-2.0 (m, 6 H), 2.3 (m, 1 H), 6.78 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.02 (dd, 1 H, $J = 7.6, 15.6$ Hz), 7.42 (d, 2 H, $J = 8.8$ Hz), 7.86 (d, 2 H,

$J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 25.7, 25.9, 31.7, 41.0, 122.8, 128.7, 129.8, 136.3, 138.8, 155.3, 189.8; FT-IR (neat, cm^{-1}) 1666, 1619, 1590; HRMS m/z (M^+) calcd. 248.0968, found 248.0963.

1r: ^1H NMR (CDCl_3) δ 1.3-1.9 (m, 9 H), 2.1 (m, 1 H), 3.39 (s, 3 H), 5.73 (d, 1 H, $J = 10.0$ Hz), 6.04 (d, 1 H, $J = 10.0$ Hz), 7.33 (d, 2 H, $J = 8.8$ Hz), 7.44 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 21.4, 21.6, 25.3, 32.6, 33.8, 51.7, 77.9, 99.7, 125.6, 128.0, 128.6, 134.4, 134.5, 136.8; Anal. ($\text{C}_{16}\text{H}_{19}\text{O}_3\text{Cl}$) C, H.

4s: ^1H NMR (CDCl_3) δ 1.0-1.5 (m, 4 H), 1.6-1.9 (m, 6 H), 2.2 (m, 1 H), 6.80 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.02 (dd, 1 H, $J = 7.6, 15.6$ Hz), 7.1 (m, 2 H), 7.9 (m, 2 H); ^{13}C NMR (CDCl_3) δ 25.7, 25.9, 31.8, 41.0, 115.4, 115.6, 122.8, 130.95, 131.04, 134.33, 134.36, 155.0, 164.1, 166.6, 189.5; FT-IR (neat, cm^{-1}) 1672, 1619, 1596; HRMS m/z (M^+) calcd. 232.1263, found 232.1259.

1s: ^1H NMR (CDCl_3) δ 1.3-1.9 (m, 9 H), 2.1 (m, 1 H), 3.40 (s, 3 H), 5.75 (d, 1 H, $J = 10.0$ Hz), 6.04 (d, 1 H, $J = 10.0$ Hz), 7.0 (m, 2 H), 7.44 (m, 2 H); ^{13}C NMR (CDCl_3) δ 21.3, 21.6, 25.3, 32.6, 33.8, 51.7, 77.8, 99.7, 115.2, 115.4, 125.7, 128.41, 128.49, 134.01, 134.04, 134.24, 161.5, 163.9; Anal. ($\text{C}_{16}\text{H}_{19}\text{O}_3\text{F}$) C, H.

4t: ^1H NMR (CDCl_3) δ 1.1-2.0 (m, 10 H), 2.3 (m, 1 H), 6.79 (dd, 1 H, $J = 1.2, 15.6$ Hz), 7.03 (dd, 1 H, $J = 7.6, 15.6$ Hz), 7.7 (m, 2 H), 8.0 (m, 2 H); ^{13}C NMR (CDCl_3) δ 25.68, 25.74, 25.77, 25.89, 29.5, 31.7, 41.1, 95.2, 123.1, 125.40, 125.43, 125.47, 125.50, 127.2, 128.7, 156.3, 190.4; FT-IR (neat, cm^{-1}) 1701 (br), 1619 (br), 1326; HRMS m/z (M^+) calcd. 282.1232, found 282.1238.

1t: ^1H NMR (CDCl_3) δ 1.2-1.8 (m, 9 H), 2.1 (m, 1 H), 3.41 (s, 3 H), 5.75 (d, 1 H, $J = 10.0$ Hz), 6.08 (d, 1 H, $J = 10.0$ Hz), 7.63 (s, 4 H); ^{13}C NMR (CDCl_3) δ 21.4, 21.6, 25.3, 32.7, 33.8, 51.9, 78.0, 99.7, 125.36, 125.43, 125.47, 127.0, 134.9; LRMS m/z ($\text{M}+\text{H}^+$) calcd. 329.1, found 329.2.

5: ^1H NMR (CDCl_3) δ 1.31 (s, 3 H), 1.53 (s, 3 H), 3.80 (s, 1 H), 5.88 (d, 1 H, $J = 10.0$ Hz), 6.01 (d, 1 H, $J = 10.0$ Hz), 7.35 (m, 3 H), 7.60 (m, 2 H); ^{13}C NMR (CDCl_3) δ 24.2, 24.7, 77.3, 96.8, 126.4, 126.8, 128.2, 129.1, 134.4, 137.5; FT-IR (neat, cm^{-1}) 3580 (br); HRMS m/z ($\text{M}+\text{H}^+$) calcd. 207.1021, found 207.1025.

6: ^1H NMR (CDCl_3) δ 1.20 (d, 3 H, $J = 6.0$ Hz), 1.24 (d, 3 H, $J = 6.0$ Hz), 1.3-1.8 (m, 11 H), 2.2 (m, 1 H), 4.1 (m, 1 H), 5.70 (d, 1 H, $J = 10.0$ Hz), 6.09 (d, 1 H, $J = 10.0$ Hz), 7.3 (d, 2 H, $J = 8.8$ Hz), 7.5 (d, 2 H, $J = 8.8$ Hz); ^{13}C NMR (CDCl_3) δ 22.33, 22.39, 23.9, 24.3, 30.28, 30.44, 35.1, 35.1, 67.8, 82.1, 99.8, 124.3, 128.1, 128.3, 128.7, 129.3, 134.3, 135.1, 138.5; HRMS m/z ($\text{M}+\text{H}^+$) calcd. 337.1570, found 337.1571.