Supporting Information for:

Recyclable and reusable $PdCl_2(PPh_3)_2$/PEG-2000/H_2O system for the carbonylative Sonogashira coupling reaction of aryl iodides with alkynes

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The spectral data of alkynyl ketones 3a-3z:

1-(4-Methoxyphenyl)-3-phenylpropynone 3a.[1] White solid, mp 98-99 °C. IR (KBr): ν_{max}/cm^{-1} 2201, 1634, 1602, 1316, 1210, 1014, 762, 693. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.21 (d, J = 8.8 Hz, 2H), 7.69 (d, J = 8.0 Hz, 2H), 7.49-7.41 (m, 3H), 7.00 (d, J = 8.8 Hz, 2H), 3.91 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 176.7, 164.5, 133.0, 132.0, 130.6, 130.3, 128.7, 120.4, 113.9, 92.4, 87.2, 55.6.

1-(3-Methoxyphenyl)-3-phenylpropynone 3b.[2] Colorless oil. IR (film): ν_{max}/cm^{-1} 2205, 1643, 1597, 1583, 1216, 1017, 767, 693. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 7.88-7.86 (m, 1H), 7.72-7.67 (m, 3H), 7.53-7.40 (m, 4H), 7.19-7.17 (m, 1H), 3.90 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.8, 159.7, 138.2, 133.1, 130.8, 129.6, 128.7, 122.9, 120.9, 120.1, 112.7, 93.0, 86.9, 55.4.

1-(2-Methoxyphenyl)-3-phenylpropynone 3c.[2] Colorless oil. IR (film): ν_{max}/cm^{-1} 2199, 1619, 1595, 1487, 1311, 1201, 1027, 755, 689. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.09 (d, J = 8.0 Hz, 1H), 7.63 (d, J = 8.0 Hz, 2H), 7.54 (t, J = 8.0 Hz, 1H),

7.47-7.38 (m, 3H), 7.07-7.01 (m, 2H), 3.97 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 176.8, 159.9, 135.1, 133.0, 132.8, 130.5, 128.6, 126.7, 120.7, 120.3, 112.2, 91.7, 89.2, 56.0.

1-(4-Methylphenyl)-3-phenylpropynone 3d.[3] White solid, mp 86-87 °C. IR (KBr): ν_{max}/cm^{-1} 2198, 1636, 1604, 1288, 1211, 1013, 761, 690. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.12 (d, J = 7.6 Hz, 2H), 7.69 (d, J = 8.0 Hz, 2H), 7.49 (t, J = 6.8 Hz, 1H), 7.43 (t, J = 7.2 Hz, 2H), 7.32 (d, J = 8.0 Hz, 2H), 2.45 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.8, 145.3, 134.6, 133.0, 130.7, 129.7, 129.4, 128.7, 120.2, 92.6, 87.0, 21.9.

1-(3-Methylphenyl)-3-phenylpropynone 3e.[3] Colorless oil. IR (film): ν_{max}/cm^{-1} 2205, 1638, 1602, 1489, 1309, 1159, 1051, 758, 728. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.04 (d, J = 7.6 Hz, 1H), 8.02 (s, 1H), 7.69 (d, J = 7.6 Hz, 2H), 7.51-7.38 (m, 5H), 2.45 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 178.3, 138.5, 136.9, 135.0, 133.1, 130.8, 129.8, 128.7, 128.6, 127.2, 120.2, 92.9, 87.0, 21.4.

1,3-Diphenylpropynone 3f.[1] White solid, mp 43-44 °C. IR (KBr): ν_{max}/cm^{-1} 2203, 1636, 1603, 1288, 1013, 761. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.23 (d, J = 7.6 Hz, 2H), 7.70 (d, J = 7.2 Hz, 2H), 7.64 (t, J = 7.2 Hz, 1H), 7.55-7.41 (m, 5H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 178.1, 136.9, 134.2, 133.1, 130.9, 129.6, 128.7, 128.6, 120.1, 93.2, 86.9.

1-(2-Aminophenyl)-3-phenylpropynone 3g.[4] White solid, mp 63-64 °C. IR (KBr): ν_{max}/cm^{-1} 3442, 3325, 2204, 1627, 1586, 1540, 1477, 1306, 1262, 1211, 757, 687. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.18 (d, J = 8.0 Hz, 1H), 7.66 (d, J = 8.0 Hz, 2H), 7.48-7.29 (m, 4H), 6.73 (t, J = 7.6 Hz, 1H), 6.67 (d, J = 8.4 Hz, 1H), 6.39 (br, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 179.5, 150.8, 135.4, 134.5, 132.9, 130.4, 128.6, 120.5, 119.0, 116.9, 116.3, 92.4, 87.1.

1-(4-Chlorophenyl)-3-phenylpropynone 3h.[1] White solid, mp 106-107 °C. IR (KBr):

ν_{max}/cm^{-1} 2200, 1654, 1585, 1303, 1207, 1170, 1091, 752, 682. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.17 (d, J = 8.4 Hz, 2H), 7.70 (d, J = 7.6 Hz, 2H), 7.52-7.43 (m, 5H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 176.7, 140.7, 135.3, 133.1, 131.0, 130.9, 129.0, 128.8, 119.9, 93.7, 86.6.

1-(4-Methoxycarbonylphenyl)-3-phenylpropynone 3i. White solid, mp 107-108 °C. IR (KBr): ν_{max}/cm^{-1} 2205, 1726, 1637, 1574, 1442, 1282, 1105, 712. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.29 (d, J = 8.4 Hz, 2H), 8.19 (d, J = 8.4 Hz, 2H), 7.71 (d, J = 8.8 Hz, 2H), 7.53-7.43 (m, 3H), 3.98 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.2, 166.1, 139.8, 134.6, 133.2, 131.1, 129.8, 129.4, 128.8, 119.7, 94.2, 86.8, 52.6. Anal. Calcd. for $C_{17}H_{12}O_3$: C, 77.26; H, 4.58. Found: C, 77.04; H, 4.69.

1-(1-Naphthyl)-3-phenylpropynone 3j.[2] White solid, mp 94-95 °C. IR (KBr): ν_{max}/cm^{-1} 2195, 1632, 1620, 1509, 1488, 1289, 1102, 776, 763. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 9.26 (d, J = 8.8 Hz, 1H), 8.59 (d, J = 8.0 Hz, 1H), 7.98 (d, J = 8.0 Hz, 1H), 7.81 (d, J = 8.0 Hz, 1H), 7.63-7.59 (m, 3H), 7.54-7.47 (m, 2H), 7.41-7.30 (m, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 179.8, 135.3, 134.8, 133.9, 133.0, 132.8, 130.8, 129.1, 128.9, 128.8, 128.7, 126.9, 126.0, 124.6, 120.3, 91.8, 88.6.

3-Phenyl-1-(thiophen-2-yl)propynone 3k.[5] Brown solid, mp 54-55 °C. IR (KBr): ν_{max}/cm^{-1} 2199, 1614, 1489, 1410, 1359, 1308, 1230, 1082, 1053, 966, 758, 725. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.01 (d, J = 1.2 Hz, 1H), 7.73 (d, J = 4.8 Hz, 1H), 7.67 (d, J = 8.4 Hz, 2H), 7.51-7.40 (m, 3H), 7.19 (t, J = 4.2 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 169.8, 145.0, 135.2, 135.0, 133.1, 130.9, 128.7, 128.3, 120.0, 91.7, 86.5.

1-(4-Methoxyphenyl)non-2-yn-1-one 3l.[2] Colorless oil. IR (film): ν_{max}/cm^{-1} 2933, 2200, 1643, 1599, 1464, 1316, 1257, 1167, 1029, 845, 759. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.11 (d, J = 8.0 Hz, 2H), 6.95 (d, J = 8.0 Hz, 2H), 3.89 (s, 3H), 2.49 (t, J = 7.2 Hz, 2H), 1.69-1.63 (m, 2H), 1.49-1.32 (m, 6H), 0.91 (t, J = 6.0 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.0, 164.2, 131.9, 130.3, 113.7, 96.1, 79.6, 55.6,

31.2, 28.7, 27.8, 22.5, 19.2, 14.1.

1-(2-Methoxyphenyl)non-2-yn-1-one 3m. Colorless oil. IR (film): ν_{max}/cm^{-1} 2930, 2211, 1649, 1626, 1597, 1486, 1464, 1299, 1239, 1164, 1023, 755. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.05-8.03 (m, 1H), 7.54-7.50 (m, 1H), 7.04-6.98 (m, 2H), 3.92 (s, 3H), 2.46 (t, J = 7.0 Hz, 2H), 1.65-1.60 (m, 2H), 1.47-1.31 (m, 6H), 0.90 (t, J = 7.0 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.3, 159.7, 134.7, 133.1, 126.8, 120.1, 112.1, 95.5, 81.7, 55.9, 31.3, 28.7, 27.8, 22.5, 19.3, 14.1. Anal. Calcd. for $C_{16}H_{20}O_2$: C, 78.65; H, 8.25. Found: C, 78.38; H, 7.97.

1-(4-Methylphenyl)non-2-yn-1-one 3n.[2] Colorless oil. IR (film): ν_{max}/cm^{-1} 2931, 2199, 1645, 1605, 1465, 1309, 1268, 1176, 1107, 741. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.03 (d, J = 8.0 Hz, 2H), 7.27 (d, J = 8.0 Hz, 2H), 2.49 (t, J = 7.2 Hz, 2H), 2.43 (s, 3H), 1.69-1.64 (m, 2H), 1.51-1.33 (m, 6H), 0.91 (t, J = 6.8 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.9, 144.8, 134.7, 129.7, 129.2, 96.3, 79.8, 31.2, 28.6, 27.8, 22.5, 21.7, 19.2, 14.0.

1-(3-Methylphenyl)non-2-yn-1-one 3o. Colorless oil. IR (film): ν_{max}/cm^{-1} 2931, 2225, 1645, 1601, 1585, 1456, 1301, 1273, 1195, 731. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 7.95 (d, J = 6.8 Hz, 1H), 7.94 (s, 1H), 7.42-7.34 (m, 2H), 2.50 (t, J = 7.0 Hz, 2H), 2.42 (s, 3H), 1.71-1.64 (m, 2H), 1.51-1.32 (m, 6H), 0.91 (t, J = 7.0 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 178.5, 138.3, 137.0, 134.7, 129.9, 128.4, 127.0, 96.7, 79.8, 31.3, 28.7, 27.8, 22.5, 21.3, 19.3, 14.0. Anal. Calcd. for $C_{16}H_{20}O$: C, 84.16; H, 8.83. Found: C, 83.89; H, 8.62.

1-(4-Methoxyphenyl)hept-2-yn-1-one 3p.[4] Colorless oil. IR (film): ν_{max}/cm^{-1} 2959, 2201, 1639, 1599, 1508, 1317, 1259, 1167, 1029, 911, 845, 759. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.11 (d, J = 8.0 Hz, 2H), 6.95 (d, J = 8.0 Hz, 2H), 3.89 (s, 3H), 2.50 (t, J = 6.6 Hz, 2H), 1.68-1.64 (m, 2H), 1.54-1.48 (m, 2H), 0.96 (t, J = 6.8 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.1, 164.3, 132.0, 130.3, 113.7, 96.0, 79.6, 55.6, 29.9, 22.1, 18.9, 13.6.

1-(2-Methoxyphenyl)hept-2-yn-1-one 3q.[4] Colorless oil. IR (film): ν_{max}/cm^{-1} 2959, 2211, 1645, 1597, 1486, 1299, 1239, 1164, 1022, 910, 756. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.02-7.99 (m, 1H), 7.52-7.48 (m, 1H), 7.03-6.97 (m, 2H), 3.91 (s, 3H), 2.46 (t, J = 7.0 Hz, 2H), 1.66-1.59 (m, 2H), 1.53-1.44 (m, 2H), 0.95 (t, J = 7.4 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.2, 159.6, 134.6, 132.9, 126.9, 120.2, 112.1, 95.3, 81.8, 55.8, 29.9, 22.0, 19.0, 13.5.

1-Phenylhept-2-yn-1-one 3r.[4] Colorless oil. IR (film): ν_{max}/cm^{-1} 2959, 2201, 1643, 1597, 1449, 1313, 1267, 1175, 911, 702. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.14 (d, J = 8.0 Hz, 2H), 7.60 (t, J = 7.2 Hz, 1H), 7.50-7.45 (m, 2H), 2.51 (t, J = 6.8 Hz, 2H), 1.69-1.61 (m, 2H), 1.54-1.48 (m, 2H), 0.97 (t, J = 7.2 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 178.3, 136.9, 133.9, 129.6, 128.5, 96.9, 79.7, 29.9, 22.1, 18.9, 13.6.

1-(4-Methoxyphenyl)-4,4-dimethylpent-2-yn-1-one 3s.[4] Colorless oil. IR (film): ν_{max}/cm^{-1} 2972, 2210, 1640, 1599, 1509, 1302, 1259, 1165, 1028, 884, 845, 758. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.08 (d, J = 8.0 Hz, 2H), 6.94 (d, J = 8.0 Hz, 2H), 3.87 (s, 3H), 1.38 (s, 9H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.0, 164.1, 131.8, 130.3, 113.6, 103.0, 77.9, 55.5, 30.1, 27.9.

1-(2-Methoxyphenyl)-4,4-dimethylpent-2-yn-1-one 3t. Colorless oil. IR (film): ν_{max}/cm^{-1} 2971, 2213, 1651, 1624, 1597, 1486, 1301, 1254, 1224, 1022, 883, 756. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 7.96-7.93 (m, 1H), 7.50-7.46 (m, 1H), 7.01-6.96 (m, 2H), 3.89 (s, 3H), 1.33 (s, 9H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.3, 159.6, 134.7, 132.5, 126.9, 120.1, 112.1, 102.2, 80.4, 55.7, 30.2, 27.9. Anal. Calcd. for $C_{14}H_{16}O_2$: C, 77.75; H, 7.46. Found: C, 77.49; H, 7.64.

1-(4-Methoxyphenyl)-3-cyclopropylpropynone 3u. Colorless oil. IR (film): ν_{max}/cm^{-1} 2921, 2209, 1636, 1599, 1465, 1257, 1027, 915, 844, 757. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.07 (d, J = 8.0 Hz, 2H), 6.93 (d, J = 8.0 Hz, 2H), 3.87 (s, 3H),

1.54-1.49 (m, 1H), 1.04-1.00 (m, 4H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 176.7, 164.2, 131.8, 130.4, 113.7, 100.1, 75.4, 55.6, 9.8, 0.0. Anal. Calcd. for $C_{13}H_{12}O_2$: C, 77.98; H, 6.04. Found: C, 77.73; H, 5.84.

1-(2-Methoxyphenyl)-3-cyclopropylpropynone 3v. Colorless oil. IR (film): ν_{max}/cm^{-1} 2941, 2208, 1643, 1621, 1596, 1485, 1253, 1022, 915, 756. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 7.99-7.97 (m, 1H), 7.52-7.48 (m, 1H), 7.03-6.96 (m, 2H), 3.91 (s, 3H), 1.50-1.47 (m, 1H), 1.01-0.97 (m, 4H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 176.8, 159.5, 134.6, 132.7, 126.8, 120.2, 112.1, 99.7, 77.7, 55.8, 9.8, 0.1. Anal. Calcd. for $C_{13}H_{12}O_2$: C, 77.98; H, 6.04. Found: C, 77.76; H, 5.79.

4-Methoxy-1-(p-tolyl)but-2-yn-1-one 3w. Colorless oil. IR (film): ν_{max}/cm^{-1} 2928, 2227, 1645, 1605, 1450, 1310, 1266, 1178, 1105, 740. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.04 (d, J = 8.4 Hz, 2H), 7.29 (d, J = 8.4 Hz, 2H), 4.39 (s, 2H), 3.50 (s, 3H), 2.44 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.2, 145.5, 134.1, 129.8, 129.4, 89.4, 84.4, 59.8, 58.2, 21.9. Anal. Calcd. for $C_{12}H_{12}O_2$: C, 76.57; H, 6.43. Found: C, 76.34; H, 6.64.

1-(4-Methylphenyl)-3-(trimethylsilyl)propynone 3x. Colorless oil. IR (film): ν_{max}/cm^{-1} 2962, 2154, 1644, 1605, 1259, 1175, 1036, 1016, 848, 741. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.04 (d, J = 8.4 Hz, 2H), 7.28 (t, J = 8.4 Hz, 2H), 2.44 (s, 3H), 0.32 (s, 9H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 178.1, 146.0, 134.9, 130.5, 130.0, 101.6, 100.6, 22.5, 0.0. Anal. Calcd. for $C_{13}H_{16}OSi$: C, 72.20; H, 7.46. Found: C, 72.32; H, 7.29.

1-(4-Methoxyphenyl)-3-(p-tolyl)propynone 3y. White solid, mp 107-108 °C. IR (KBr): ν_{max}/cm^{-1} 2191, 1619, 1588, 1264, 1162, 1067, 953, 812. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.18 (d, J = 8.0 Hz, 2H), 7.56 (d, J = 8.0 Hz, 2H), 7.21 (d, J = 8.0 Hz, 2H), 6.97 (d, J = 8.0 Hz, 2H), 3.88 (s, 3H), 2.39 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 176.8, 164.4, 141.4, 133.0, 132.0, 130.4, 129.5, 117.2, 113.9, 93.0, 86.8,

55.6, 21.8. Anal. Calcd. for $C_{17}H_{14}O_2$: C, 81.58; H, 5.64. Found: C, 81.34; H, 5.76.

1-(2-Methoxyphenyl)-3-(p-tolyl)propynone 3z. Colorless oil. IR (film): ν_{max}/cm^{-1} 2193, 1623, 1595, 1263, 1168, 1079, 924, 756. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.10 (d, J = 8.0 Hz, 1H), 7.56-7.52 (m, 3H), 7.20 (d, J = 8.0 Hz, 2H), 7.07-7.00 (m, 2H), 3.96 (s, 3H), 2.38 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 176.9, 159.8, 141.2, 135.0, 133.0, 132.7, 129.4, 126.8, 120.3, 117.6, 112.2, 92.3, 89.1, 55.9, 21.8. Anal. Calcd. for $C_{17}H_{14}O_2$: C, 81.58; H, 5.64. Found: C, 81.29; H, 5.51.

The spectral data of flavones 4a-4c:

2-*n*-Butylchromone 4a.[6] Colorless oil. IR (film): ν_{max}/cm^{-1} 2959, 1651, 1574, 1465, 1384, 1121, 956, 849, 759. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.18 (d, J = 8.0 Hz, 1H), 7.64 (t, J = 8.0 Hz, 1H), 7.43 (d, J = 8.0 Hz, 1H), 7.38 (t, J = 7.6 Hz, 1H), 6.19 (s, 1H), 2.63 (t, J = 7.6 Hz, 2H), 1.77-1.69 (m, 2H), 1.49-1.39 (m, 2H), 0.97 (t, J = 7.4 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 178.4, 169.9, 156.5, 133.4, 125.7, 124.9, 123.7, 117.8, 109.8, 34.0, 28.9, 22.1, 13.7.

2-*t*-Butylchromone 4b.[7] White solid, mp 75-76 °C. IR (KBr): ν_{max}/cm^{-1} 2925, 1652, 1576, 1466, 1362, 1134, 939, 852, 758. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.18 (d, J = 8.0 Hz, 1H), 7.67-7.64 (m, 1H), 7.46 (d, J = 8.0 Hz, 1H), 7.39-7.36 (m, 1H), 6.29 (s, 1H), 1.40 (s, 9H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 178.7, 175.9, 156.4, 133.3, 125.4, 124.7, 123.4, 117.7, 106.6, 36.3, 27.7.

Chromone 4c.[8] White solid, mp 58-59 °C. IR (KBr): ν_{max}/cm^{-1} 2926, 1667, 1620, 1465, 1344, 1126, 1036, 863, 773. ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm): 8.20 (d, J = 8.0 Hz, 1H), 7.85 (d, J = 8.0 Hz, 1H), 7.68-7.65 (m, 1H), 7.46-7.38 (m, 2H), 6.34 (d, J = 8.0 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) δ (ppm): 177.4, 156.3, 155.2, 133.6, 125.5, 125.0, 124.6, 118.0, 112.8.

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