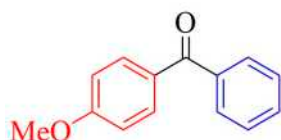


Supplementary Materials: Palladium Nanoparticles Supported on Graphene Oxide as Catalysts for the Synthesis of Diarylketones

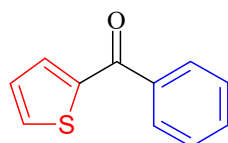
Anna Trzeciak*, Przemyslaw Wojcik, Radoslaw Lisiecki, Yuriy Gerasymchuk, Wieslaw Strek, Janina Legendziewicz

¹H-NMR and MS characteristics of diarylketones



(4-methoxyphenyl)(phenyl)methanone: (white solid)

¹H-NMR (500 MHz, CDCl₃): δ = 7.81 (d, $J_{H,H}$ = 8.9 Hz, 2H), 7.73 (m, 2H), 7.54 (t, $J_{H,H}$ = 7.4 Hz, 1H), 7.45 (t, $J_{H,H}$ = 7.4 Hz, 2H), 6.94 (d, $J_{H,H}$ = 8.9 Hz, 2H), 3.86 (s, 3H). ¹³C-NMR (125 MHz, CDCl₃): δ = 195.7, 163.4, 138.5, 132.7, 132.1, 130.4, 129.9, 128.4, 113.7, 55.7. GC-MS: m/z = 51 (25%), 64 (18%), 77 (89%), 105 (36%), 135 (100%), 212 ([M⁺] = 82%).



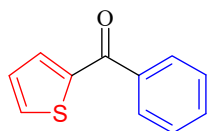
(2-methoxyphenyl)(phenyl)methanone: (yellow oil)

¹H-NMR (500 MHz, CDCl₃): δ = 7.79 (m, 2H), 7.52 (m, 1H), 7.45 (ddd, $J_{H,H}$ = 9.2, 1.7 Hz, 1H), 7.40 (t, $J_{H,H}$ = 7.8 Hz, 2H), 7.34 (dd, $J_{H,H}$ = 7.4, 1.7 Hz, 1H), 7.02 (td, $J_{H,H}$ = 7.5, 0.8 Hz, 1H), 6.97 (d, $J_{H,H}$ = 8.4 Hz, 1H), 3.69 (s, 3H). ¹³C-NMR (125 MHz, CDCl₃): δ = 196.6, 157.5, 138.0, 133.1, 132.0, 130.0, 129.8, 129.1, 128.4, 120.7, 111.7, 55.8. GC-MS: m/z = 51 (36%), 64 (21%), 77 (82%), 105 (96%), 135 (100%), 181 (18%), 212 ([M⁺] = 82%).



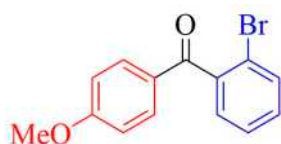
naphthalen-1-yl(phenyl)methanone: (pale yellow oil)

¹H-NMR (500 MHz, CDCl₃): δ = 8.10 (d, $J_{H,H}$ = 8.2 Hz, 1H), 7.99 (d, $J_{H,H}$ = 8.2 Hz, 1H), 7.91 (d, $J_{H,H}$ = 8.2 Hz, 1H), 7.86 (d, $J_{H,H}$ = 8.2 Hz, 2H), 7.60-7.56 (m, 2H), 7.537.47 (m, 3H), 7.44 (t, $J_{H,H}$ = 7.8 Hz, 2H). ¹³C-NMR (125 MHz, CDCl₃): δ = 198.2, 138.5, 136.5, 133.9, 133.4, 131.4, 131.1, 130.6, 128.6, 127.9, 127.4, 126.6, 125.9, 124.5. GC-MS: m/z = 51 (25%), 77 (75%), 105 (71%), 127 (79%), 155 (100%), 232 ([M⁺] = 97%).



phenyl(thiophen-2-yl)methanone: (pale orange oil)

$^1\text{H-NMR}$ (500 MHz, CDCl_3): δ = 7.85 (m, 2H), 7.70 (dd, $J_{\text{H,H}} = 4.9, 1.1\text{Hz}$, 1H), 7.63 (dd, $J_{\text{H,H}} = 3.8, 1.1\text{Hz}$, 1H), 7.56 (m, 1H), 7.48 (t, $J_{\text{H,H}} = 7.6\text{Hz}$, 2H), 7.14 (dd, $J_{\text{H,H}} = 4.9, 3.8\text{Hz}$, 1H). $^{13}\text{C-NMR}$ (125 MHz, CDCl_3): δ = 188.4, 143.9, 138.4, 135.0, 134.4, 132.5, 129.4, 128.6, 128.2. GC-MS: $m/z = 39$ (21%), 51 (21%), 77 (43%), 111 (100%), 188 ($[\text{M}^+] = 61\%$).



(2-bromophenyl)(4-methoxyphenyl)methanone: (orange oil)

$^1\text{H-NMR}$ (500MHz, CDCl_3): δ = 7.76 (d, $J_{\text{H,H}} = 9.0\text{Hz}$, 2H), 7.61 (m, 1H), 7.38 (m, 1H), 7.31 (m, 1H), 6.91 (d, $J_{\text{H,H}} = 9.0\text{Hz}$, 2H), 3.85 (s, 3H). $^{13}\text{C-NMR}$ (125 MHz, CDCl_3): δ = 194.6, 164.3, 141.3, 133.3, 132.8, 131.0, 129.3, 128.9, 127.4, 119.6, 114.1, 55.7. GC-MS: $m/z = 77$ (18%), 92 (11%), 135 (100%), 290 and 292 ($[\text{M}^+] = 18\%$).



(4-methoxyphenyl)(4-methylnaphthalen-1-yl)methanone (orange oil)

$^1\text{H-NMR}$ (500MHz, CDCl_3): δ = 8.06 (m, 2H), 7.84 (d, $J_{\text{H,H}} = 8.9\text{Hz}$, 2H), 7.54 (dt, $J_{\text{H,H}} = 8.5, 1.2\text{Hz}$, 1H), 7.47 (dt, $J_{\text{H,H}} = 8.5, 1.2\text{Hz}$, 1H), 7.44 (d, $J_{\text{H,H}} = 7.2\text{Hz}$, 1H), 7.34 (d, $J_{\text{H,H}} = 7.2\text{Hz}$, 1H), 3.85 (s, 3H), 2.75 (s, 3H). $^{13}\text{C-NMR}$ (125 MHz, CDCl_3): δ = 197.1, 163.9, 137.8, 135.5, 133.0, 131.5, 131.2, 127.2, 126.8, 126.5, 126.4, 126.3, 125.4, 113.8, 55.7, 20.0. GC-MS: $m/z = 77$ (30%), 115 (32%), 135 (100%), 169 (40%), 245 (36%), 261 (32%), 276 ($[\text{M}^+] = 80\%$).

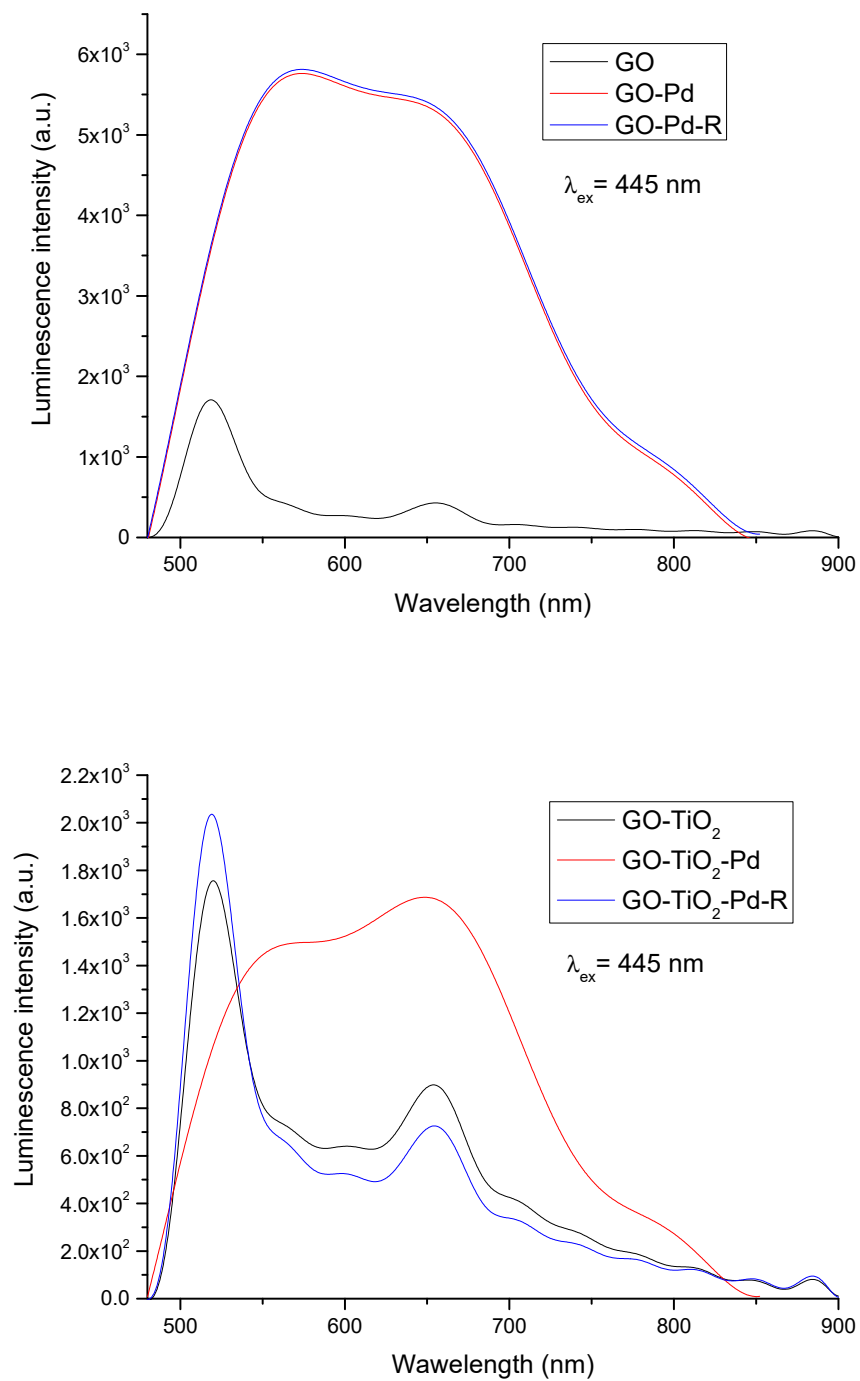


Figure S1. Emission spectra of Pd/GO and Pd/GO-TiO₂ at $\lambda_{\text{ex}} = 445$ nm.