

Supporting Information

Graphene Oxide-supported *N*-heterocyclic Carbene-palladium as a Novel Catalyst for the Suzuki-Miyaura Reaction

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Table and contents

1. ¹H NMR (CDCl₃) characterization data of the Suzuki-Miyaura coupling products

Biphenyl (Table 2, Entry 1). White solid, m.p. = 70-71°C. ¹H NMR (400 MHz, CDCl₃): δ=7.64 (d, 4H, *J* = 7.30 Hz), δ=7.49 (t, 4H, *J* = 7.30 Hz), δ=7.41 (d, 2H, *J* = 6.96 Hz) ppm.

Biphenyl (Table 2, Entry 2). White solid, m.p. = 69-71°C.
¹H NMR (400 MHz, CDCl₃): δ=7.60 (d, 4H, *J* = 7.33 Hz, ArH), δ=7.47 (t, 4H, *J* = 7.23 Hz, ArH),
δ=7.38 (d, 2H, *J* = 6.72 Hz, ArH) ppm.

4-Hydroxybiphenyl (Table 2, Entry 3). White solid, m.p. = 162-164°C.
¹H NMR (400 MHz, CDCl₃): δ=7.54 (d, 2H, *J* = 7.3 Hz, ArH), δ=7.48 (d, 2H, *J* = 8.5 Hz, ArH),
δ=7.41 (t, 2H, *J* = 7.44 Hz, ArH), δ=7.30 (t, 1H, *J* = 7.36 Hz, ArH), δ=6.91 (d, 2H, *J* = 8.4 Hz,
ArH), δ=4.91 (s, 1H, -OH) ppm.

4-Methoxybiphenyl (Table 2, Entry 4). White solid, m.p. = 88-90°C.
¹H NMR (400 MHz, CDCl₃): δ=7.52-7.56 (m, 4H, ArH), δ=7.42 (t, 2H, *J* = 7.37 Hz, ArH),
δ=7.32 (t, 1H, *J* = 7.31 Hz, ArH), δ=6.98 (d, 2H, *J* = 8.70 Hz, ArH), δ=3.85 (s, 3H, -OCH₃) ppm.

4-Methylbiphenyl (Table 2, Entry 5). White power, m.p. = 51-52°C.

¹H NMR (400 MHz, CDCl₃): δ=7.57 (d, 2H, *J* = 7.28 Hz, ArH), δ=7.49 (d, 2H, *J* = 7.96 Hz,

ArH), δ =7.42 (t, 2H, J = 7.32 Hz, ArH), δ =7.33-7.29 (m, 1H, ArH), δ =7.25-7.23 (m, 2H), δ =2.38 (s, 3H, -CH₃) ppm.

2-Methylbiphenyl (Table 2, Entry 6). Colorless oil.

¹H NMR (400 MHz, CDCl₃): δ =7.43-7.38 (m, 2H, ArH), δ =7.34-7.31 (m, 3H, ArH), δ =7.26-7.23 (m, 4H, ArH), δ =2.27 (s, 3H, -CH₃) ppm.

4-Nitrobiphenyl (Table 2, Entry 7). Pale yellow power, m.p. = 112-114°C.

¹H NMR (400 MHz, CDCl₃): δ =8.30 (d, 2H, J = 8.76 Hz, ArH), δ =7.74 (d, 2H, J = 8.77 Hz, ArH), δ =7.63 (d, 2H, J = 7.12 Hz, ArH), δ =7.52-7.43 (m, 3H, ArH) ppm.

1-(Biphenyl-4-yl)ethanone (Table 2, Entry 8). White solid, m.p. = 118-120°C.

¹H NMR (400 MHz, CDCl₃): δ =8.04 (d, 2H, J = 8.25 Hz), δ =7.69 (d, 2H, J = 8.24 Hz, ArH), δ =7.63 (d, 2H, J = 7.31 Hz, ArH), δ =7.50-7.46 (m, 2H, ArH), δ =7.42-7.39 (m, 1H), δ =2.65 (s, 3H, -CH₃) ppm.

4-Biphenylcarboaldehyde (Table 2, Entry 9). White solid, m.p. = 55-57°C.

¹H NMR (400 MHz, CDCl₃): δ =10.1 (s, 1H, -COH), δ =7.95 (d, 2H, J = 7.8 Hz, ArH), δ =7.75 (d, 2H, J = 7.72 Hz, ArH), δ =7.63 (d, 2H, J = 7.28 Hz, ArH), δ =7.48 (d, 2H, J = 7.06 Hz, ArH), δ =7.42 (d, 1H, J = 7.02 Hz, ArH) ppm.

1-Phenylnaphthalene (Table 2, Entry 10). Pale yellow oil.

¹H NMR (400 MHz, CDCl₃): δ =7.89 (d, 2H, J = 7.60 Hz), δ =7.85 (d, 1H, J = 8.13 Hz), δ =7.52-7.46 (m, 6H), δ =7.42 (d, 3H, J = 5.56 Hz) ppm.

2-Methylbiphenyl (Table 2, Entry 11). Colorless oil.

¹H NMR (400 MHz, CDCl₃): δ =7.47-7.41 (m, 2H, ArH), δ =7.36-7.29 (m, 3H, ArH), δ =7.24-7.21 (m, 4H, ArH), δ =2.32 (s, 3H, -CH₃) ppm.

3-Methylbiphenyl (Table 2, Entry 12). Colorless oil.

¹H NMR (400 MHz, CDCl₃): δ =7.58 (d, 2H, J = 7.67 Hz, ArH), δ =7.45-7.38 (m, 4H, ArH), δ =7.35-7.31 (m, 2H, ArH), δ =7.16 (d, 1H, J = 7.02 Hz, ArH), δ =2.42 (s, 3H, -CH₃) ppm.

4-Fluorobiphenyl (Table 2, Entry 13). White solid.

¹H NMR (400 MHz, CDCl₃): δ =7.55-7.53 (m, 4H, ArH), δ =7.45-7.42 (m, 2H, ArH), δ =7.36-7.33 (m, 1H, ArH), δ =7.15-7.11 (m, 2H, ArH) ppm.

Biphenyl (Table 2, Entry 14). White solid, m.p. = 70-71°C.

¹H NMR (400 MHz, CDCl₃): δ =7.59 (d, 4H, J = 7.26 Hz, ArH), δ =7.50 (t, 4H, J = 7.27 Hz, ArH),

δ =7.33 (d, 2H, J = 6.81 Hz, ArH) ppm.

4-Methylbiphenyl (Table 2, Entry 15). White powder, m.p. = 52-53°C.

^1H NMR (400 MHz, CDCl_3): δ =7.62 (d, 2H, J = 7.39 Hz, ArH), δ =7.41 (d, 2H, J = 8.07 Hz, ArH), δ =7.37 (t, 2H, J = 7.44 Hz, ArH), δ =7.29-7.25 (m, 1H, ArH), δ =7.21-7.16 (m, 2H, ArH), δ =2.38 (s, 3H, -CH₃) ppm.