Supporting Information

Ligand-Free Palladium-Catalyzed Cyanation of Aryl Halides

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General Considerations: All reactions were carried out in a nitrogen atmosphere. All starting materials (with the exception of **1**), reagents and solvents were obtained from commercial sources and were used without purification. Assay yields were determined using HPLC in comparison to reference standards. All known compounds (entries 2-12) were identified by NMR (¹H, ¹³C) and were identical to published values (Aldrich Library of NMR Spectra; 2nd Edition, 1983) .

Compound **2**: Sample was purified *via* recrystallization from toluene/heptane. ¹H NMR (400.13 MHz, CDCl₃): δ 7.57 (td, *J* = 7.2, 1.6 Hz, 1H), 7.48 (m, 1H), 7.44 (t, *J* = 7.2 Hz, 1H), 7.41 (td, *J* = 7.2, 1.6 Hz, 1H), 7.19 (m, 2H), 6.95 (m, 2H), 3.93 (t, *J* = 7.6 Hz), 3.38 (dd, *J* = 14.0, 7.5 Hz, 1H), 2.87 (dd, *J* = 14.0, 7.5 Hz, 1H), 2.06 (s, 3H). ¹³C NMR (100.61 MHz): 206.1, 139.4, 136.9, 132.6, 132.3, 132.1, 131.7, 131.2, 130.2, 129.7, 128.5, 118.2, 113.1, 60.5, 37.8, 29.8. Anal. Calcd. For C₁₇H₁₄ClNO: C, 71.96; H, 4.97; N, 4.94. Found: C, 71.86; H, 4.99; N, 4.85. mp: 71-72 °C.

Actual Pd(OAc)₂ Charges from Table 1: (Unoptimized in the 0.1-0.5 mole % range):

Entry	Mole% Pd(OAc) ₂
1	0.5
2	0.15
3	0.1
4	0.15
5	0.5
6	0.15
7	0.3
8	0.1
9	0.1
10	0.5
11	0.2
12	0.1