Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary data for "Preparation of magnetically recyclable superparamagnetic silica support Pd catalyst through boronic acid linker and it applications in Suzuki reactions"

1. The HPLC chromatograms

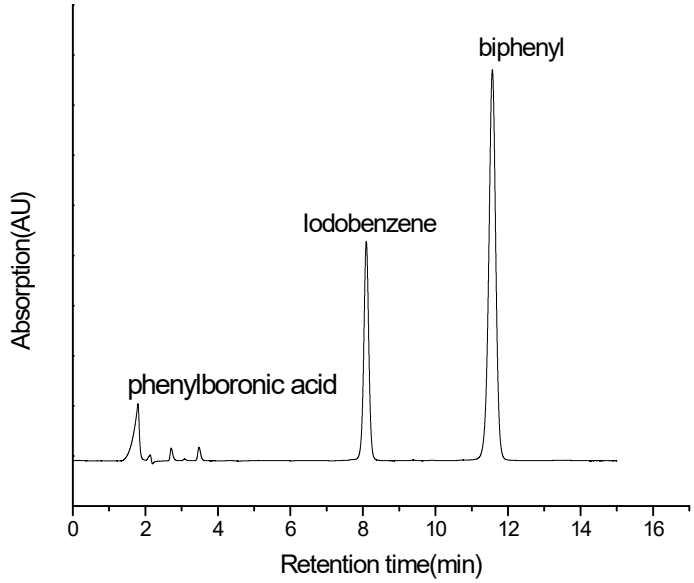


Figure S1 The typical HPLC chromatogram of biphenyl obtained from Suzuki reaction of iodobenzen

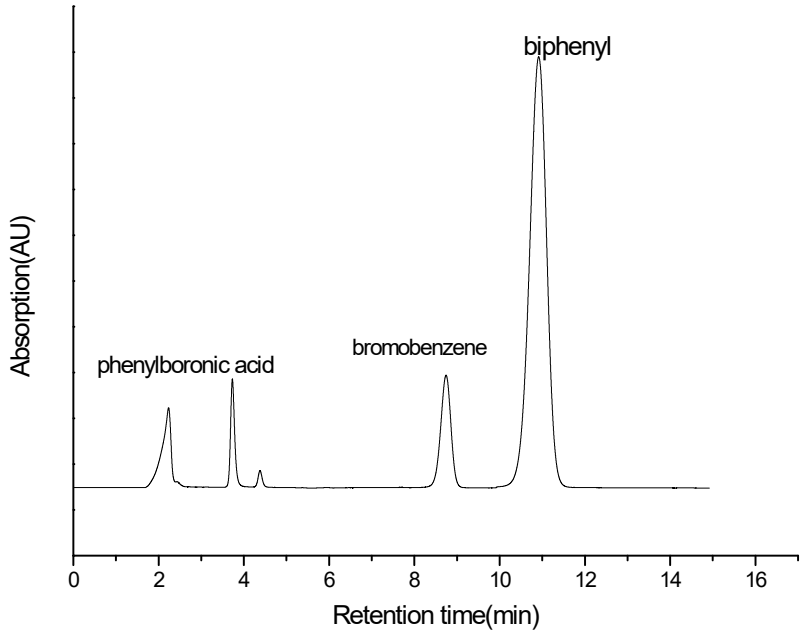


Figure S2 The typical HPLC chromatogram of biphenyl obtained from Suzuki reaction of bromobenzene

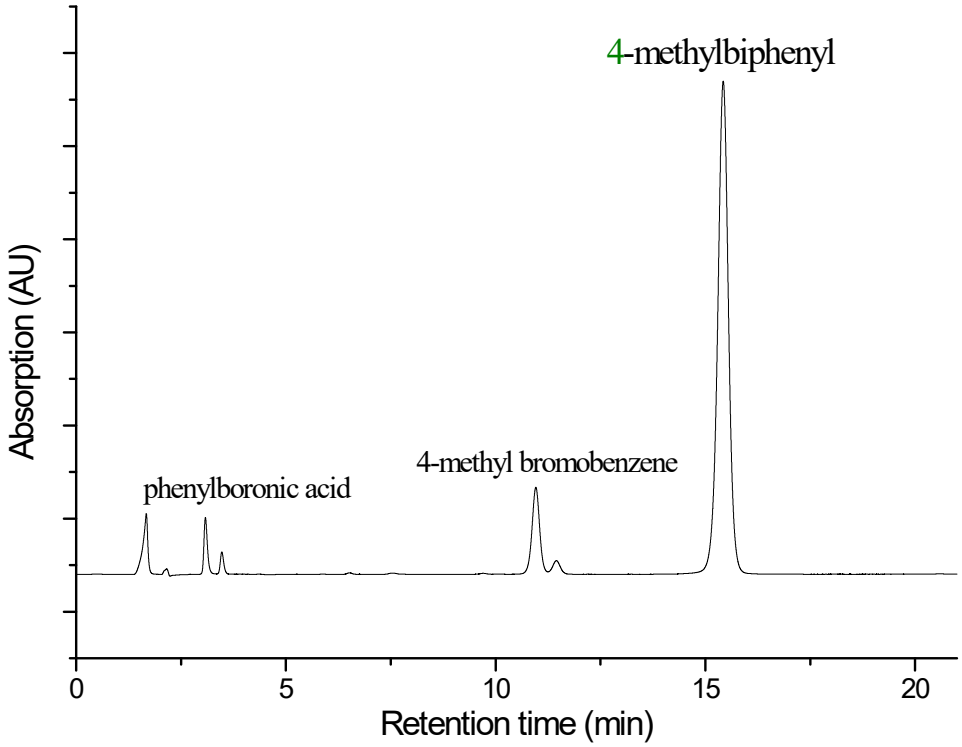


Figure S3 The typical HPLC chromatogram of 4-methylbiphenyl obtained from Suzuki reaction

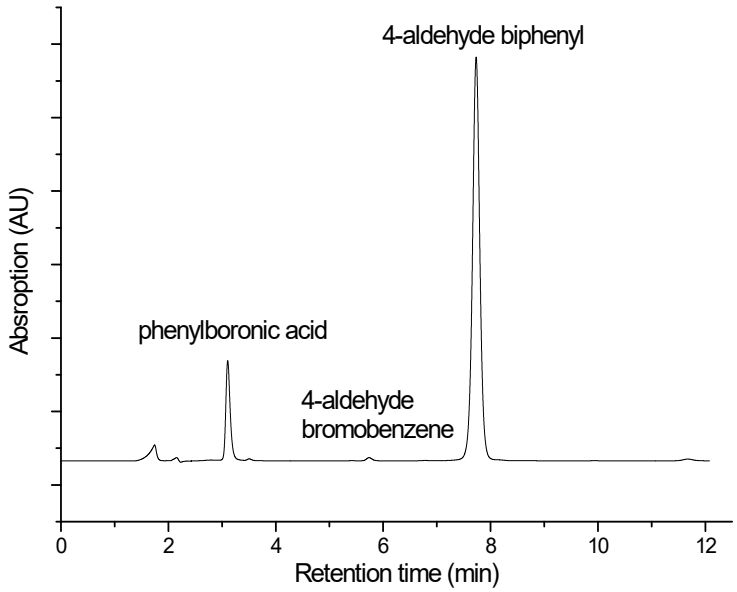


Figure S4 The typical HPLC chromatogram of 4-aldehyde biphenyl obtained from Suzuki reaction

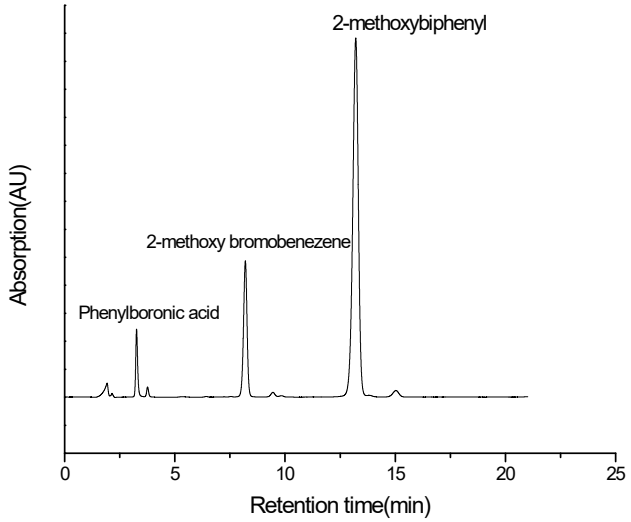


Figure S5 The typical HPLC chromatogram of 2-methoxy biphenyl obtained from Suzuki reaction

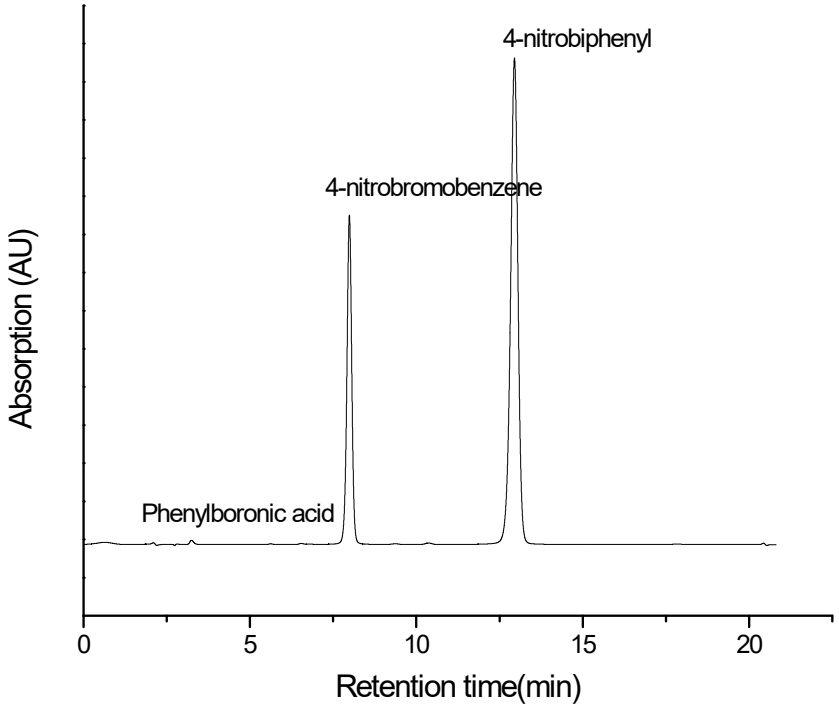


Figure S6 The typical HPLC chromatogram of 4-nitrile biphenyl obtained from Suzuki reaction

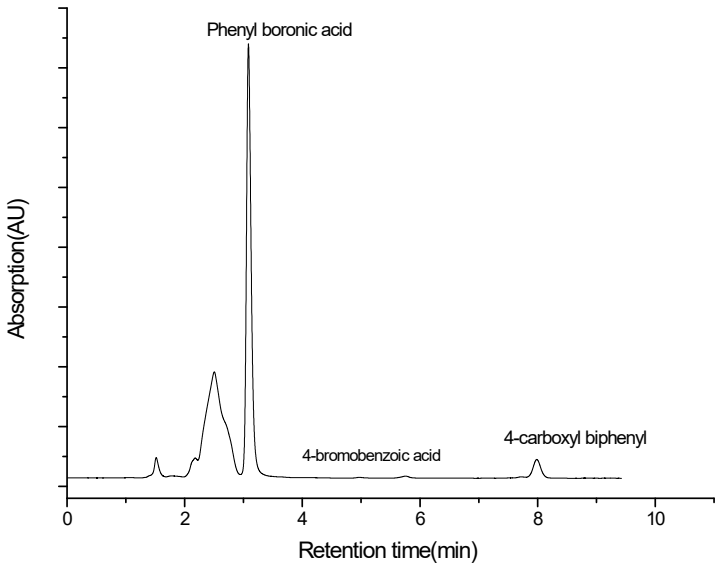


Figure S7 The typical HPLC chromatogram of 4-carboxyl biphenyl obtained from Suzuki reaction

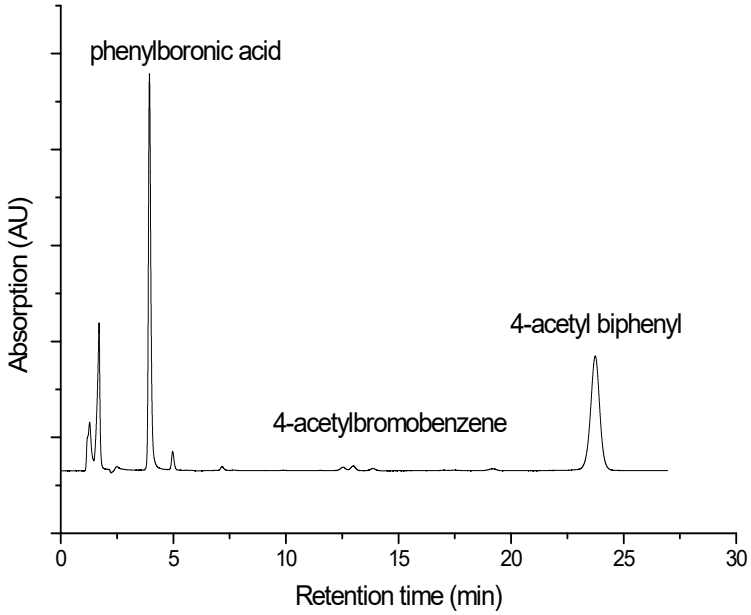


Figure S8 The typical HPLC chromatogram of 4-acetyl biphenyl obtained from Suzuki reaction

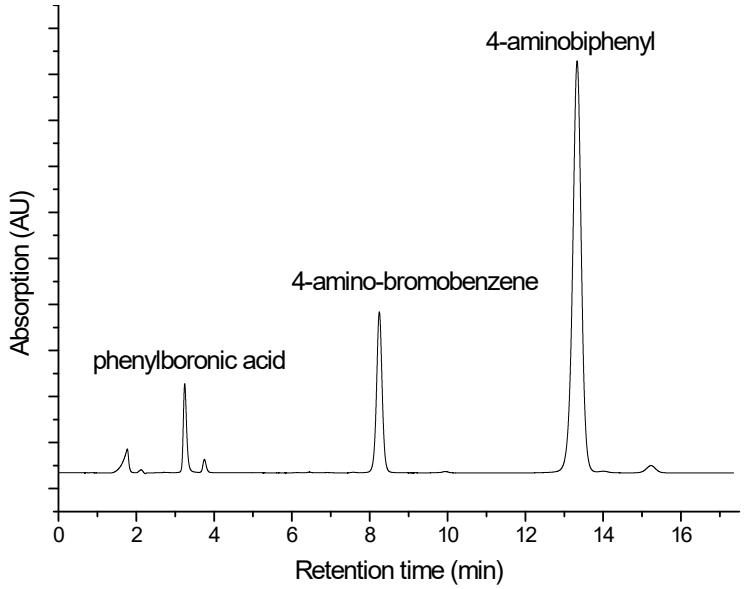


Figure S9 The typical HPLC chromatogram of 4-aminobiphenyl obtained from Suzuki reaction

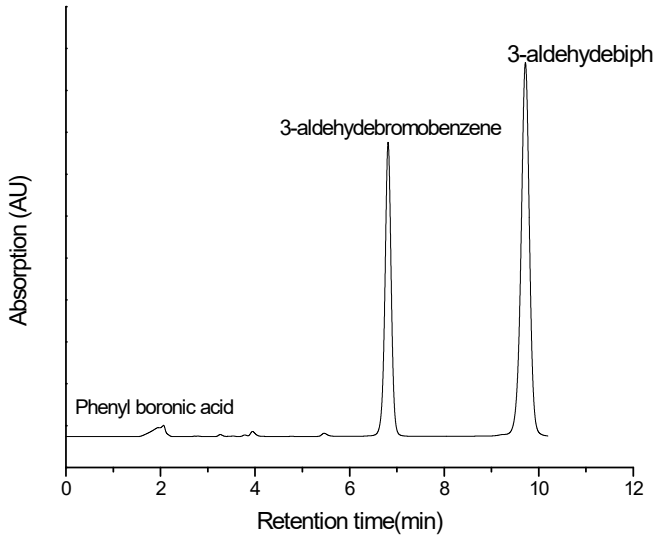


Figure S10 The typical HPLC chromatogram of 3-aldehyde biphenyl obtained from Suzuki reaction

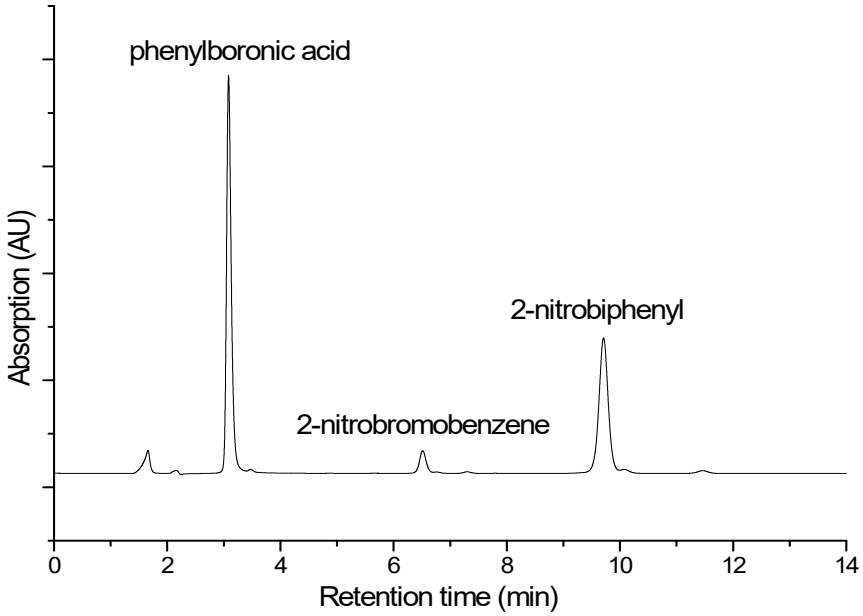


Figure S11 The typical HPLC chromatogram of 2-nitrobiphenyl obtained from Suzuki reaction

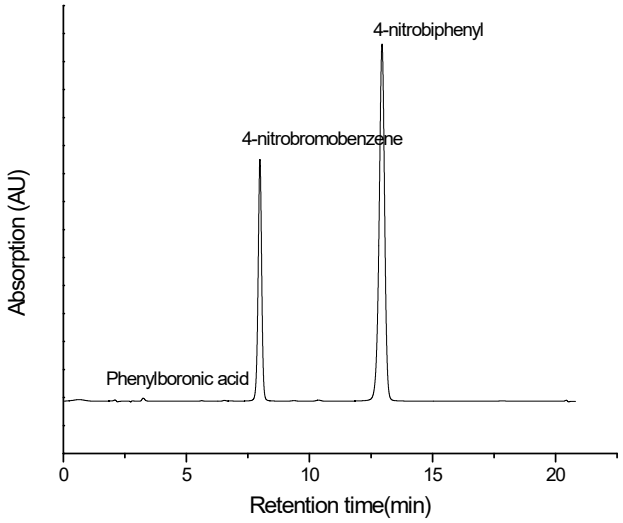


Figure S12 The typical HPLC chromatogram of 4-nitriobiphenyl obtained from Suzuki reaction

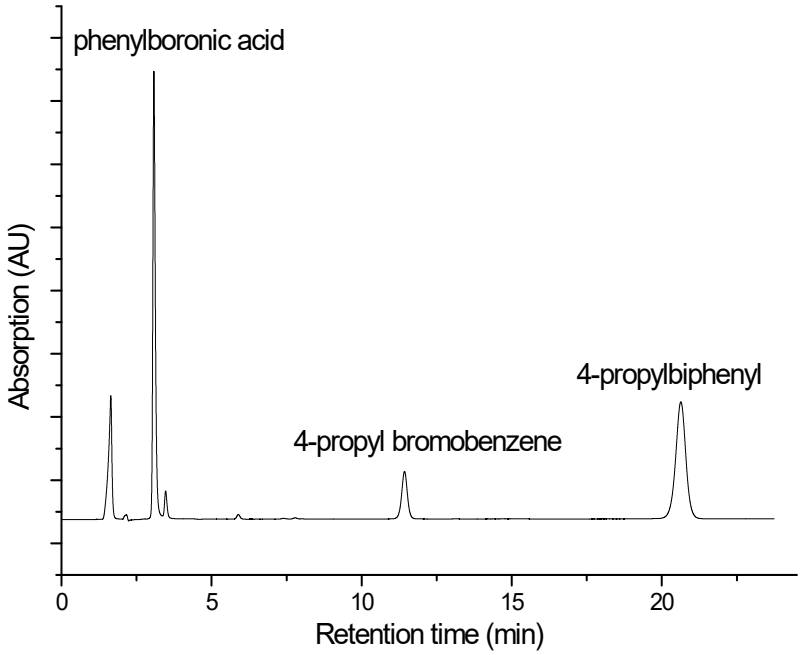


Figure S13 The typical HPLC chromatogram of 4-propylbiphenyl obtained from Suzuki reaction

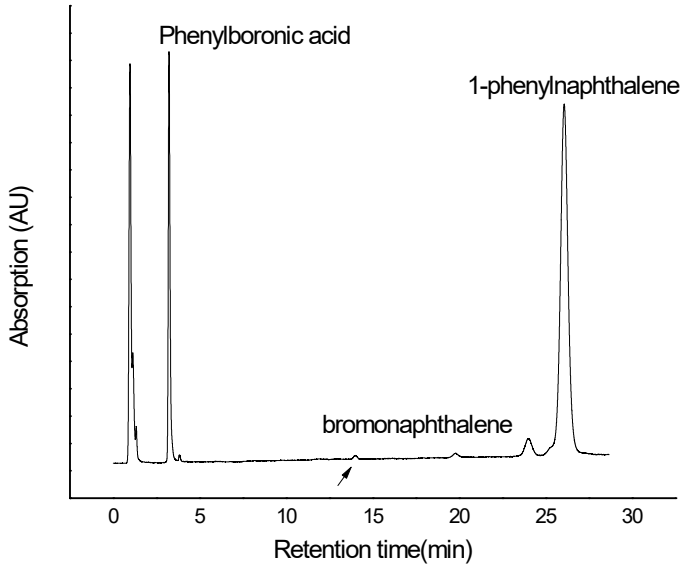
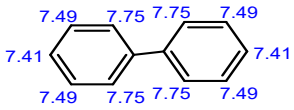


Figure S14 The typical HPLC chromatogram of 1-phenylnaphthalene obtained from Suzuki reaction

2. ^{1}H NMR spectra of 14 Suzuki reaction products

Firstly, all of Suzuki reaction products were purified by C18 SPE column and examined by HPLC. Then, the purified products were characterized by NMR one by one. Their ^{1}H NMR spectra were as follows:



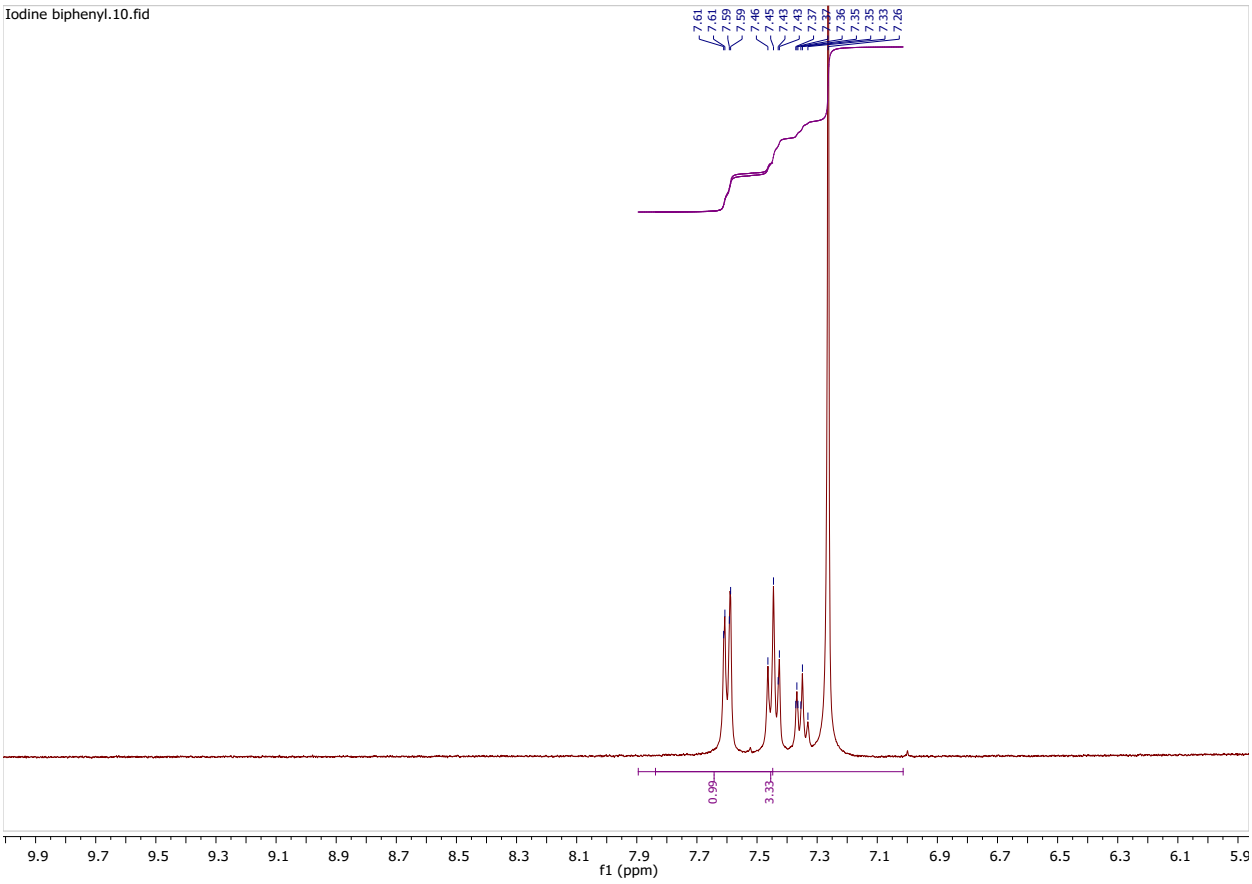


Figure S15 ^{1}H NMR spectrum of biphenyl obtained from Suzuki reaction of iodobenzen

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.26 (s, 3H), 7.00 (s, 3H), 7.60 (dd, *J* = 7.6, 1.7 Hz, 3H).

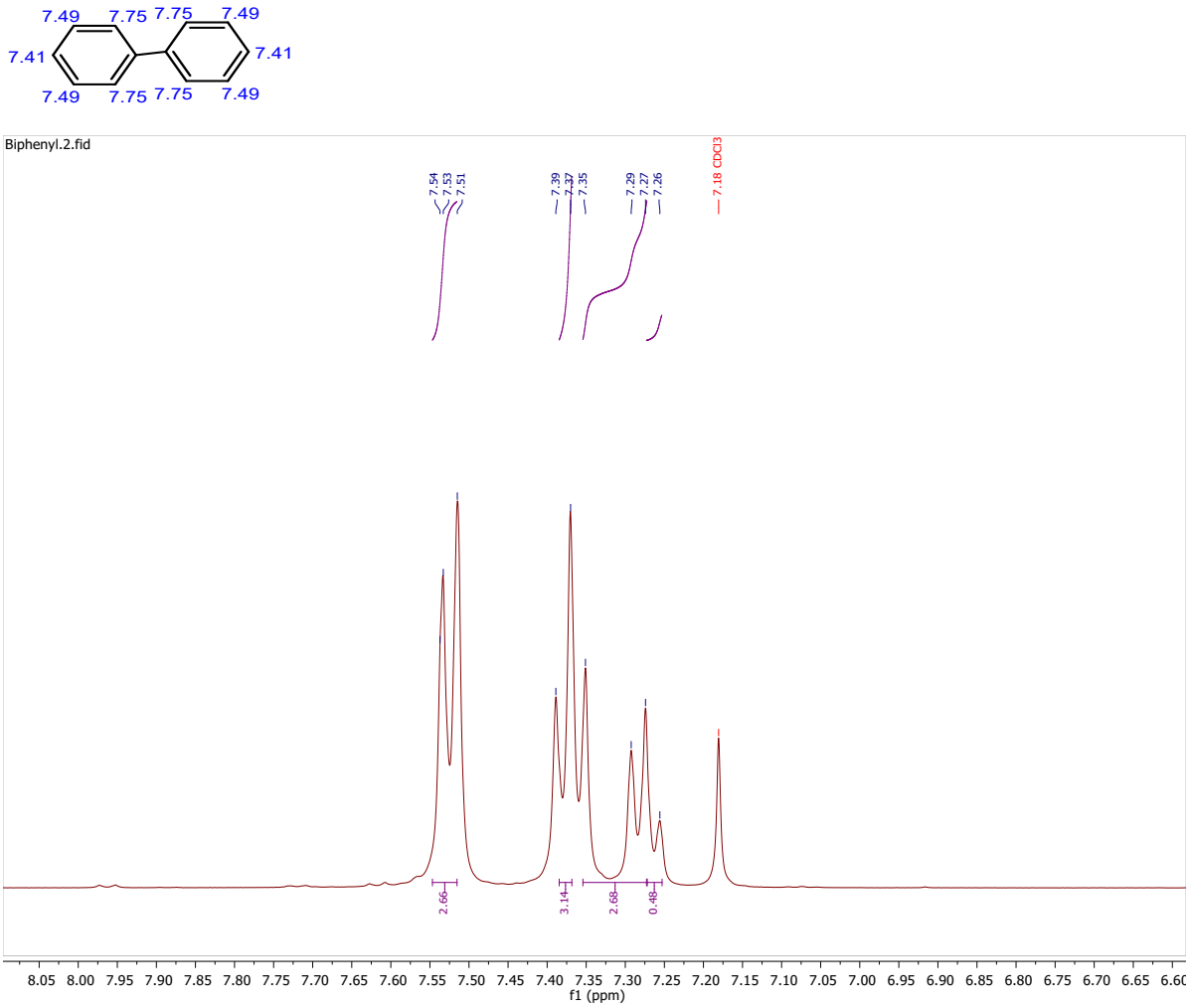


Figure S16 ^{1}H NMR spectrum of biphenyl obtained from Suzuki reaction of bromobenzene

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.53 (d, *J* = 1.7 Hz, 3H), 7.37 (s, 3H), 7.28 (d, *J* = 7.3 Hz, 3H), 7.26 (s, 0H), 5.10 (s, 0H), 4.82 (s, 0H), 4.75 (s, 1H), 1.18 (s, 1H).

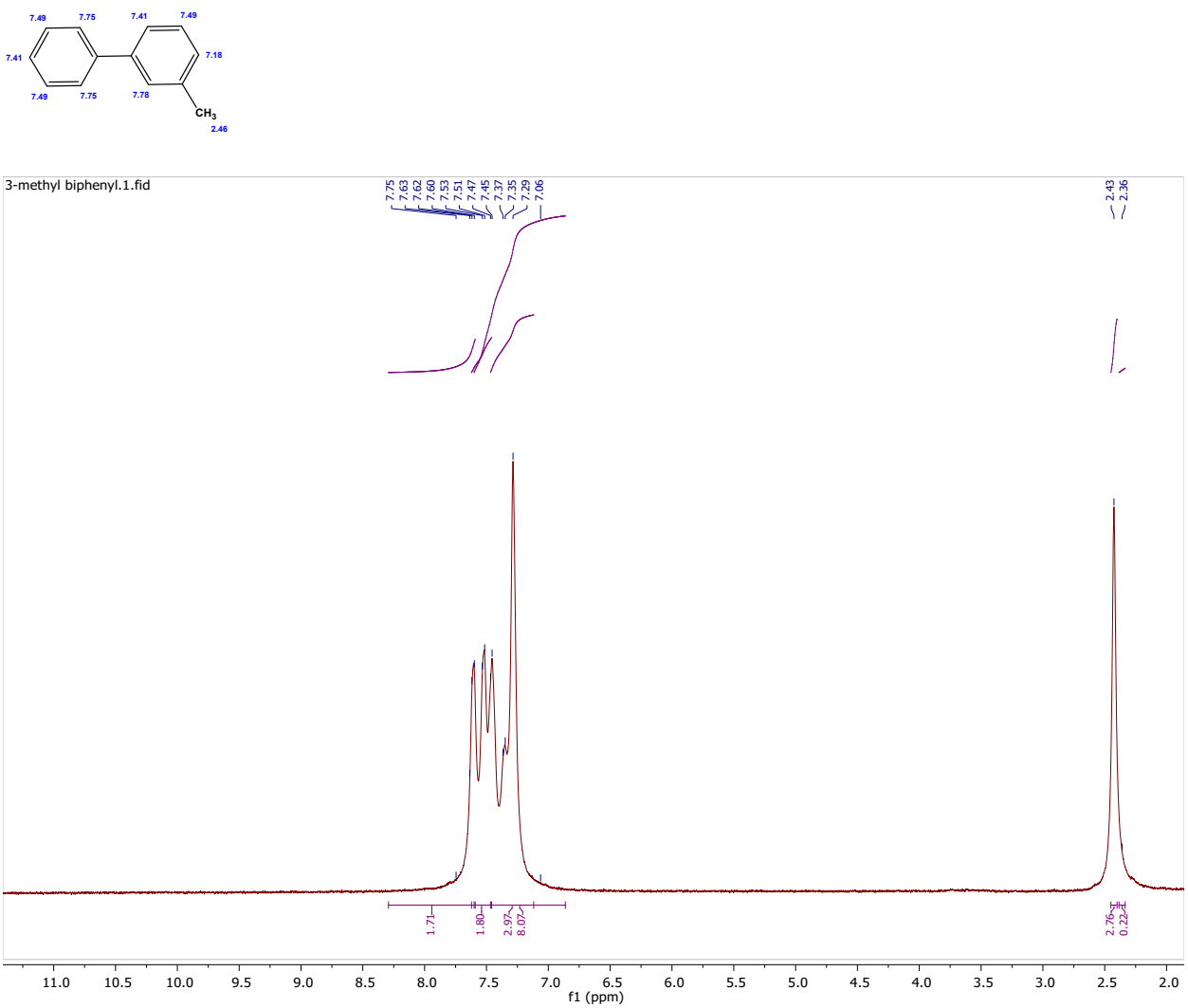


Figure S17 ^{1}H NMR spectrum of 3-methyl biphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.62 (s, 2H), 7.53 (d, *J* = 52.4 Hz, 2H), 7.62 – 7.46 (m, 2H), 7.40 (d, *J* = 42.5 Hz, 2H), 2.43 (s, 3H), 1.28 (s, 1H)

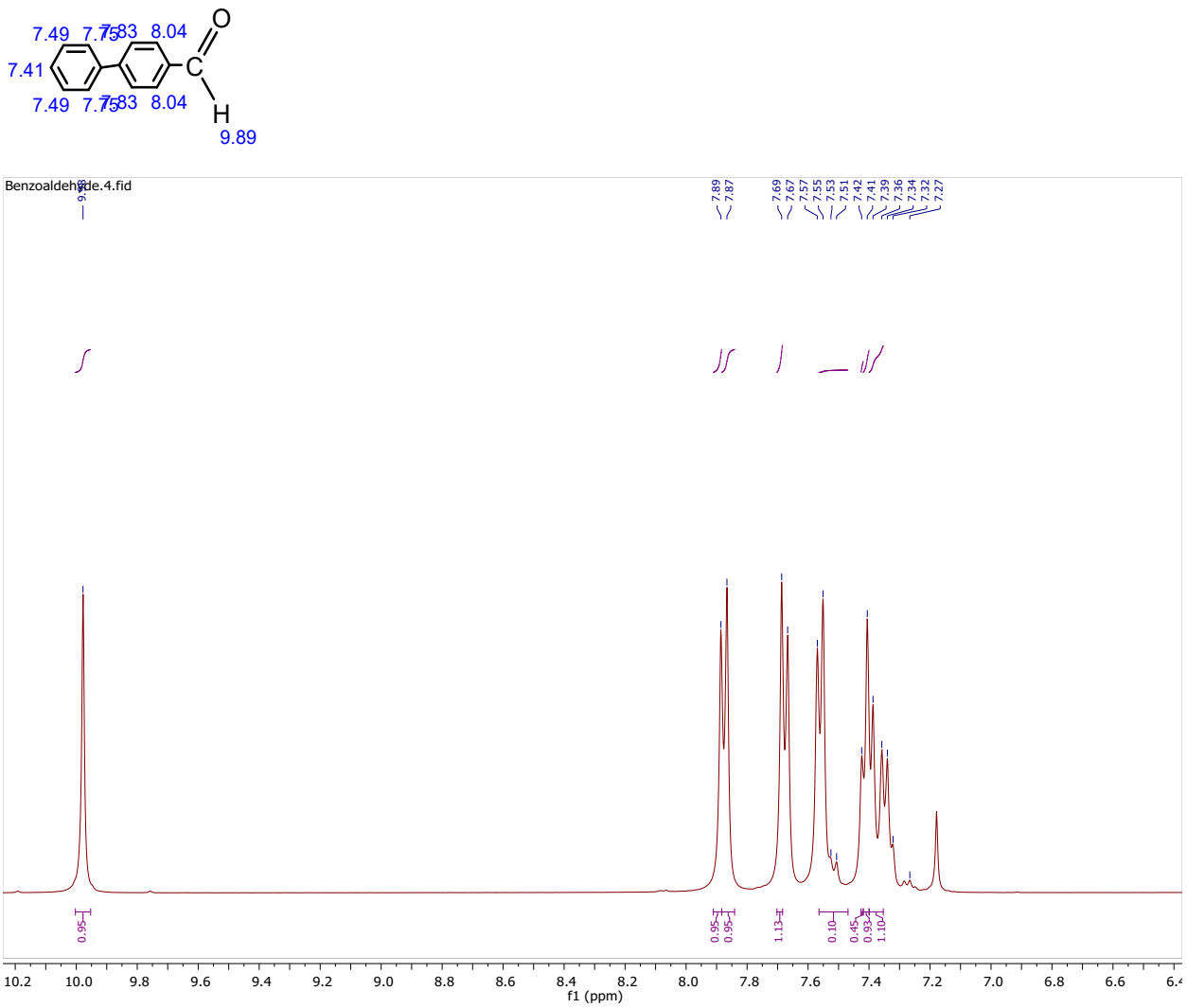


Figure S18 ^{1}H NMR spectrum of 4-aldehyde biphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.89 (s, 1H), 7.87 (s, 1H), 7.69 (s, 1H), 7.42 (s, 0H), 7.41 (s, 1H), 7.37 (d, *J* = 11.5 Hz, 1H), 9.98 (s, 1H), 7.51 (s, 0H), 4.97 (s, 1H), 4.74 (q, *J* = 6.1 Hz, 2H), 4.60 (s, 1H).

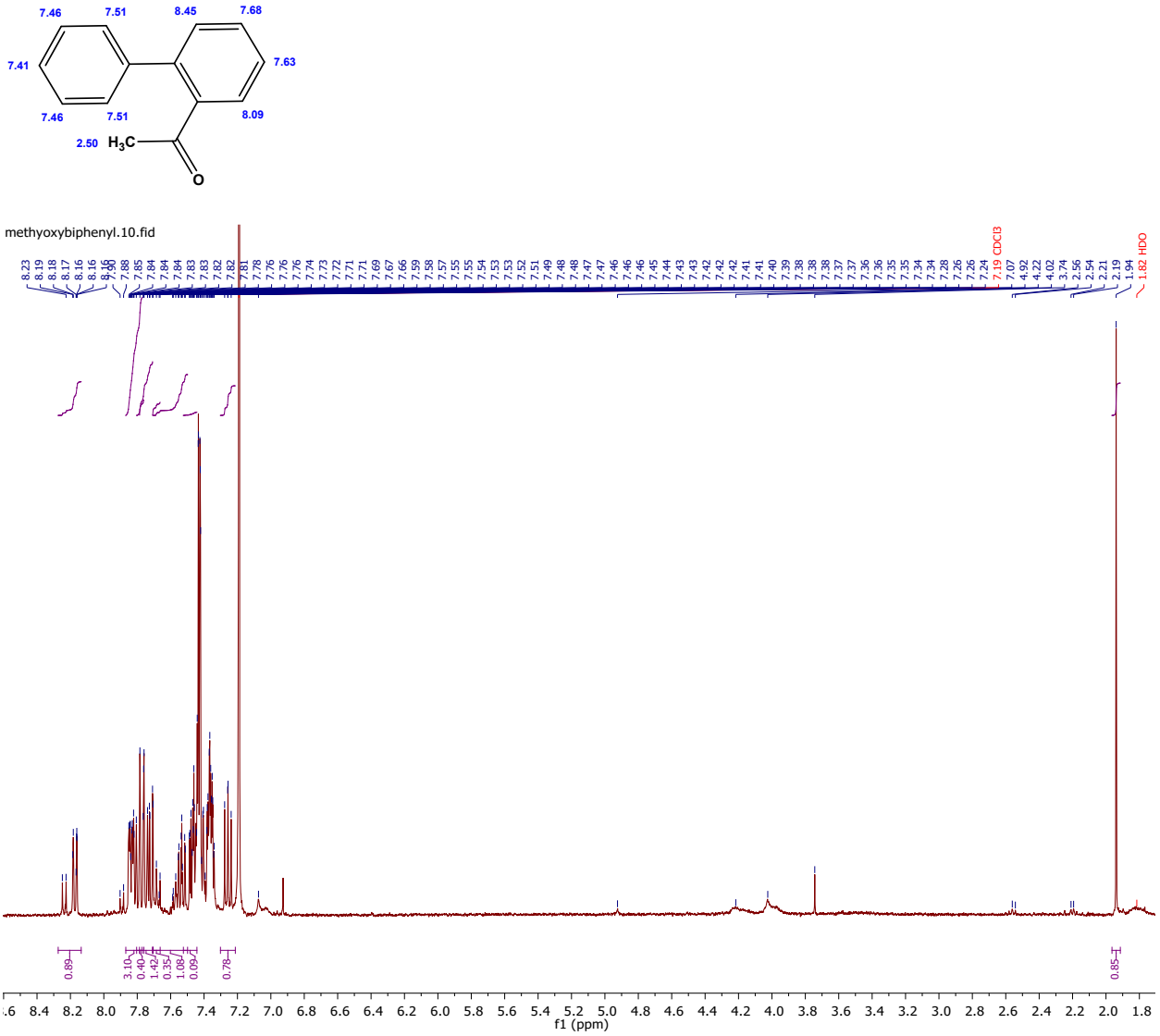


Figure S19 ^{1}H NMR spectrum of 2-methyoxybiphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 8.27 – 8.14 (m, 1H), 7.87 – 7.77 (m, 3H), 7.76 (d, *J* = 1.0 Hz, 0H), 7.79 – 7.71 (m, 1H), 7.71 – 7.66 (m, 0H), 7.59 (d, *J* = 11.9 Hz, 0H), 7.70 – 7.50 (m, 1H), 7.45 (s, 0H), 7.26 (dd, *J* = 8.2, 7.4 Hz, 1H), 1.94 (s, 1H), 1.48 (s, 4H), 1.32 (s, 3H), 1.18 (s, 1H), 0.89 (s, 1H).

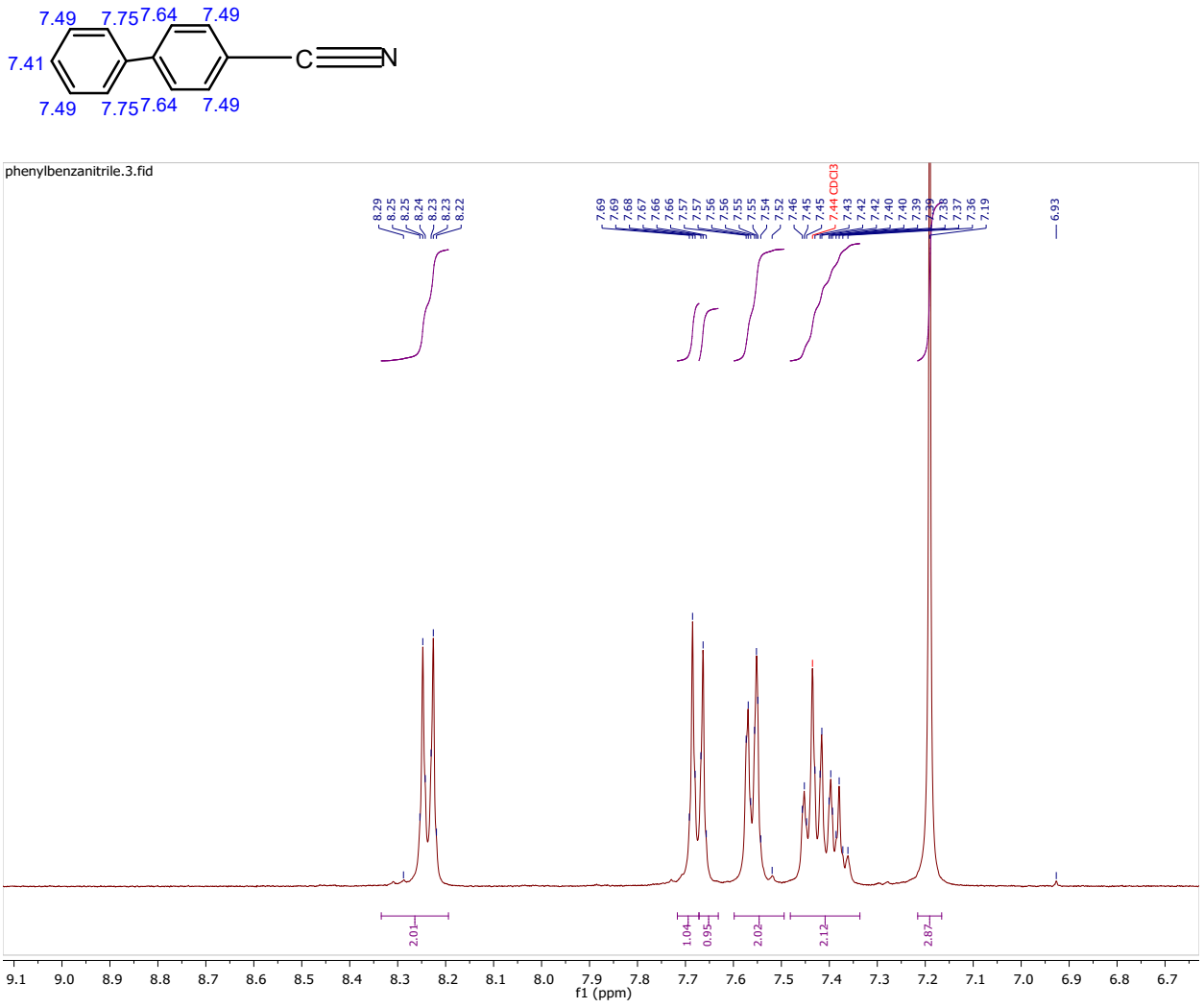


Figure S20 ^{1}H NMR spectrum of 4-nitrile biphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 8.33 – 8.19 (m, 2H), 7.68 (d, *J* = 2.1 Hz, 1H), 7.67 (d, *J* = 1.8 Hz, 1H), 7.56 (dt, *J* = 6.0, 1.4 Hz, 2H), 7.48 – 7.34 (m, 2H), 7.19 (s, 3H), 1.18 (s, 0H), 0.77 (s, 0H).

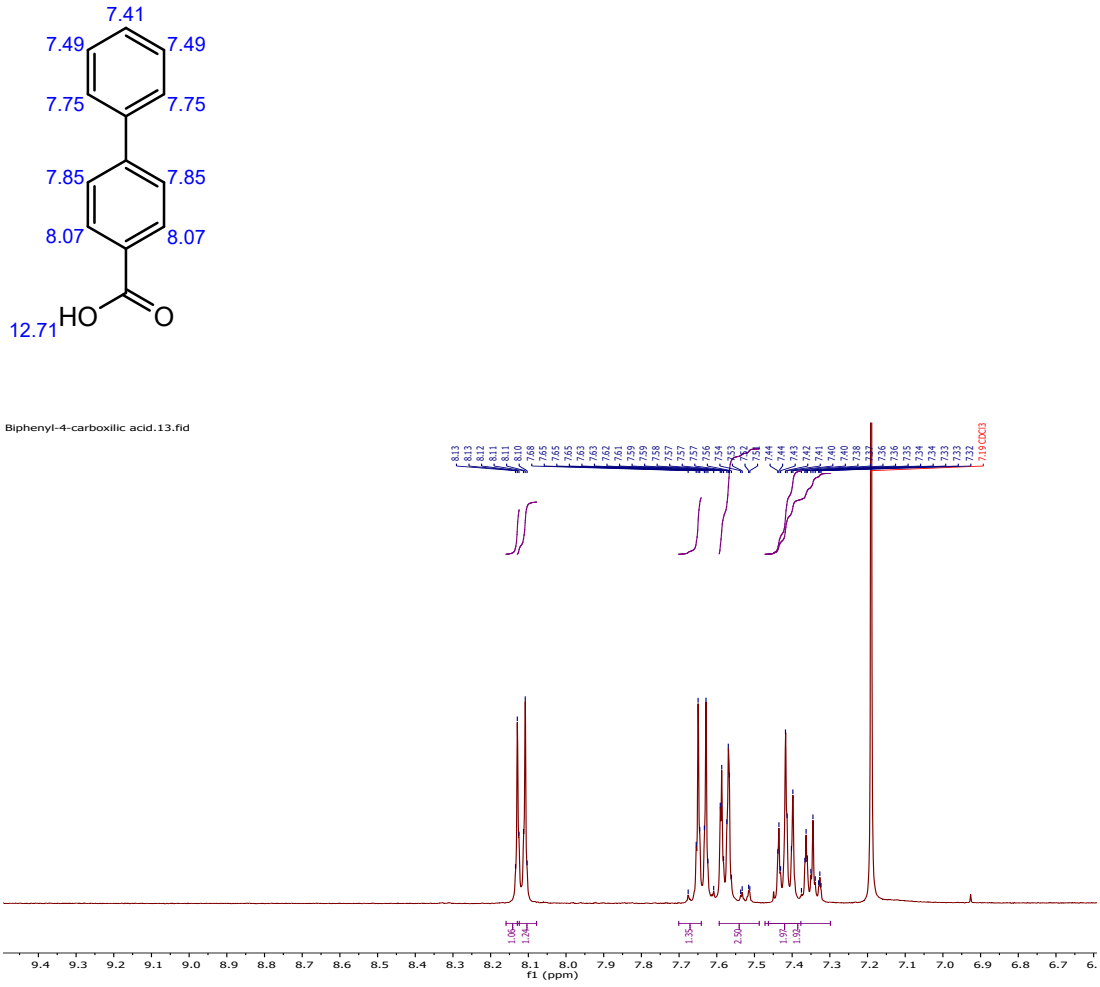


Figure S21 ^{1}H NMR spectrum of 4-carboxyl biphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 8.13 (d, *J* = 1.8 Hz, 1H), 8.11 (d, *J* = 1.8 Hz, 1H), 7.65 (d, *J* = 1.7 Hz, 1H), 7.59 – 7.49 (m, 3H), 7.46 – 7.38 (m, 2H), 7.47 – 7.30 (m, 2H), 4.14 (s, 1H), 2.02 (s, 0H), 1.94 (s, 0H), 1.18 (s, 0H), 0.99 (s, 0H).

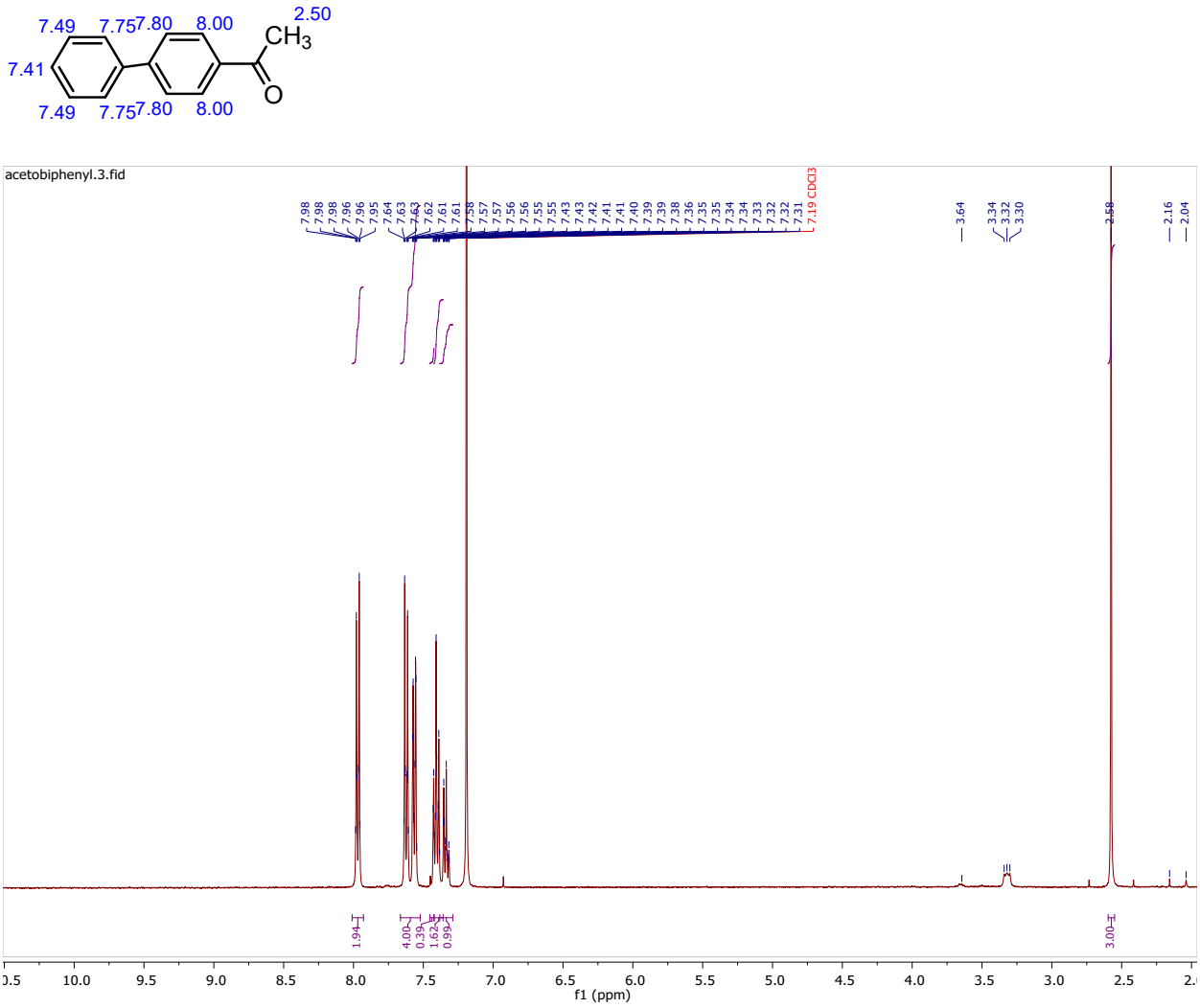


Figure S22 ^{1}H NMR spectrum of 4-acetybiphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 8.01 – 7.93 (m, 2H), 7.66 – 7.52 (m, 4H), 7.43 (d, *J* = 1.2 Hz, 0H), 7.42 – 7.36 (m, 2H), 7.38 – 7.29 (m, 1H), 2.58 (s, 3H), 1.51 – 1.34 (m, 2H), 0.95 (t, *J* = 7.2 Hz, 1H).

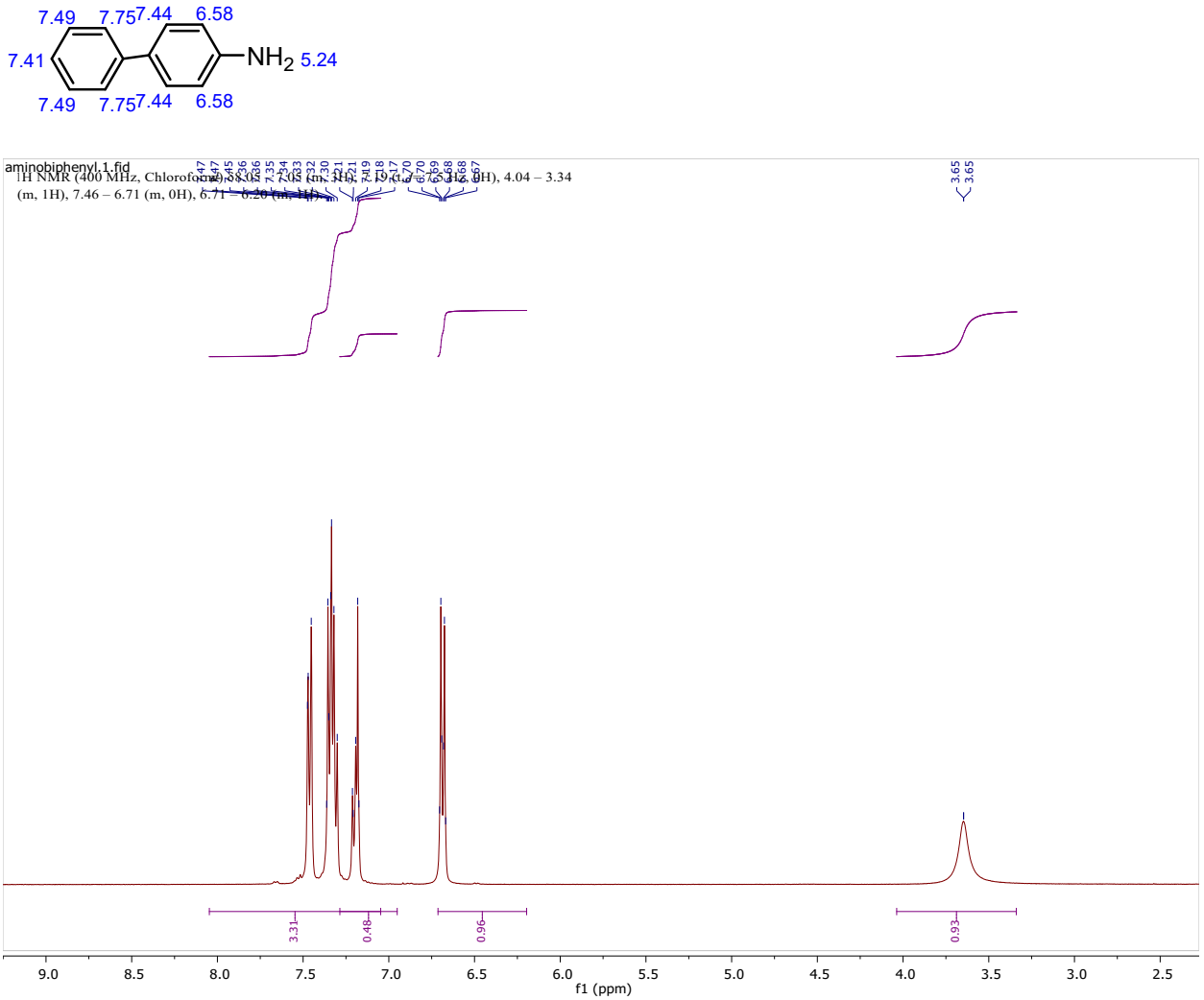


Figure S23 ^{1}H NMR spectrum of 4-aminobiphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 8.05 – 7.05 (m, 3H), 7.19 (t, *J* = 7.5 Hz, 3H), 4.04 – 3.34 (m, 1H), 7.46 – 6.71 (m, 3H), 6.71 – 6.20 (m, 1H).

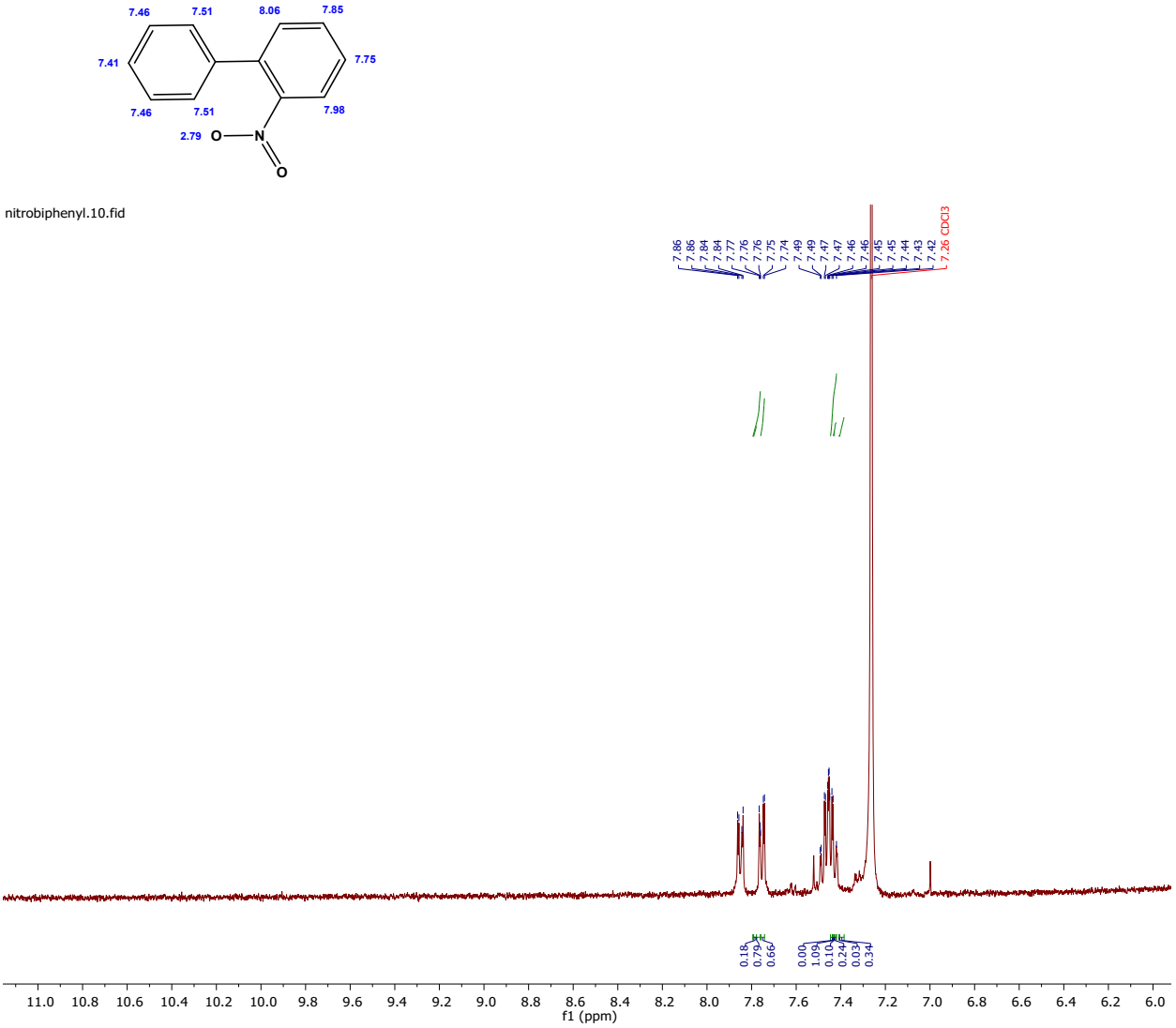


Figure S25 ^{1}H NMR spectrum of 2-nitro biphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.76 (d, *J* = 1.6 Hz, 1H), 7.74 (d, *J* = 2.0 Hz, 1H), 7.45 – 7.42 (m, 1H), 4.67 (s, 2H), 2.01 (s, 3H), 1.25 (s, 2H), 0.88 (s, 1H), 0.07 (s, 1H).

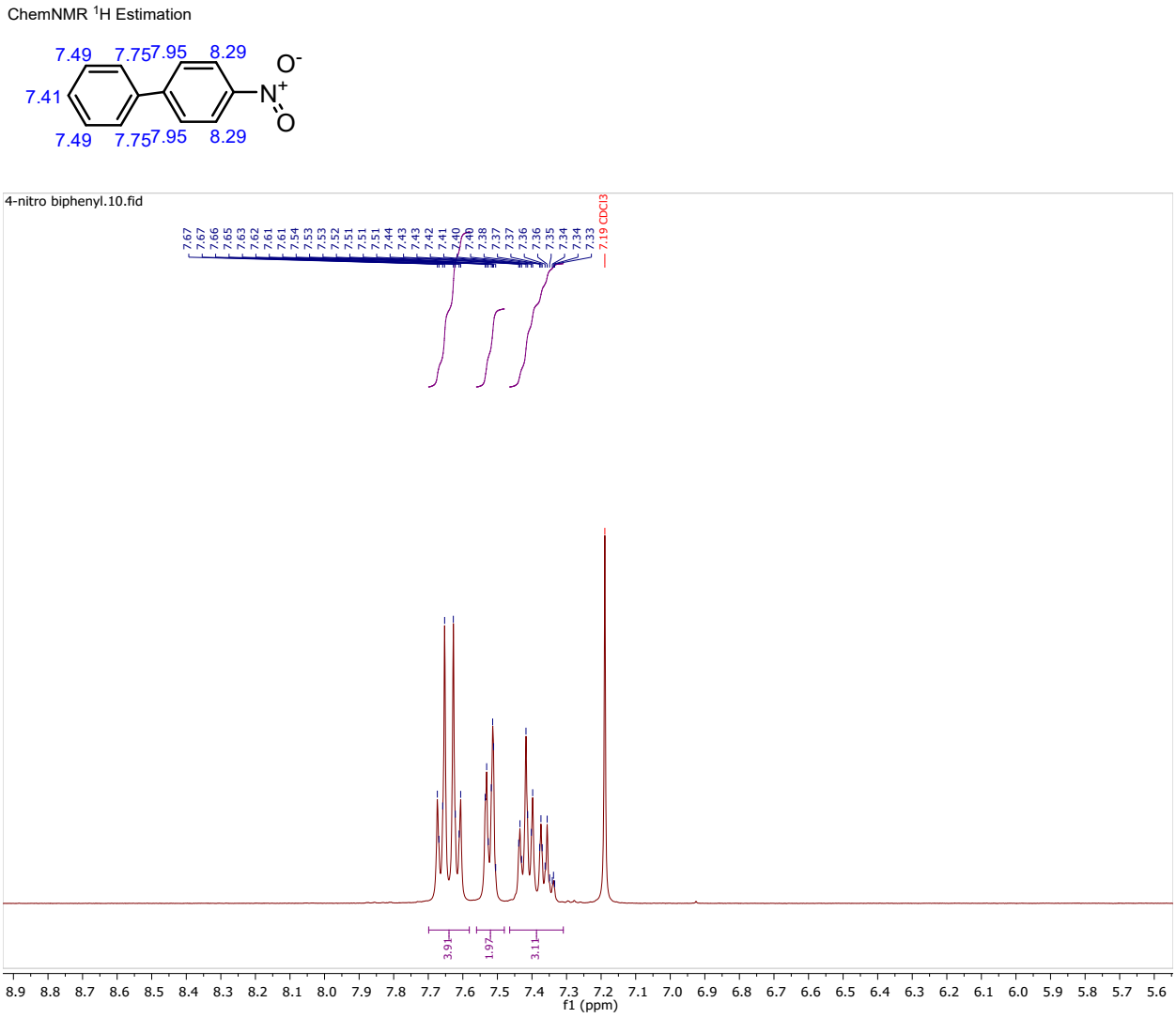


Figure S26 ^{1}H NMR spectrum of 4-nitro biphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.64 (q, *J* = 8.5 Hz, 4H), 7.52 (dt, *J* = 6.2, 1.4 Hz, 2H), 7.46 – 7.31 (m, 3H), 1.18 (s, 0H).

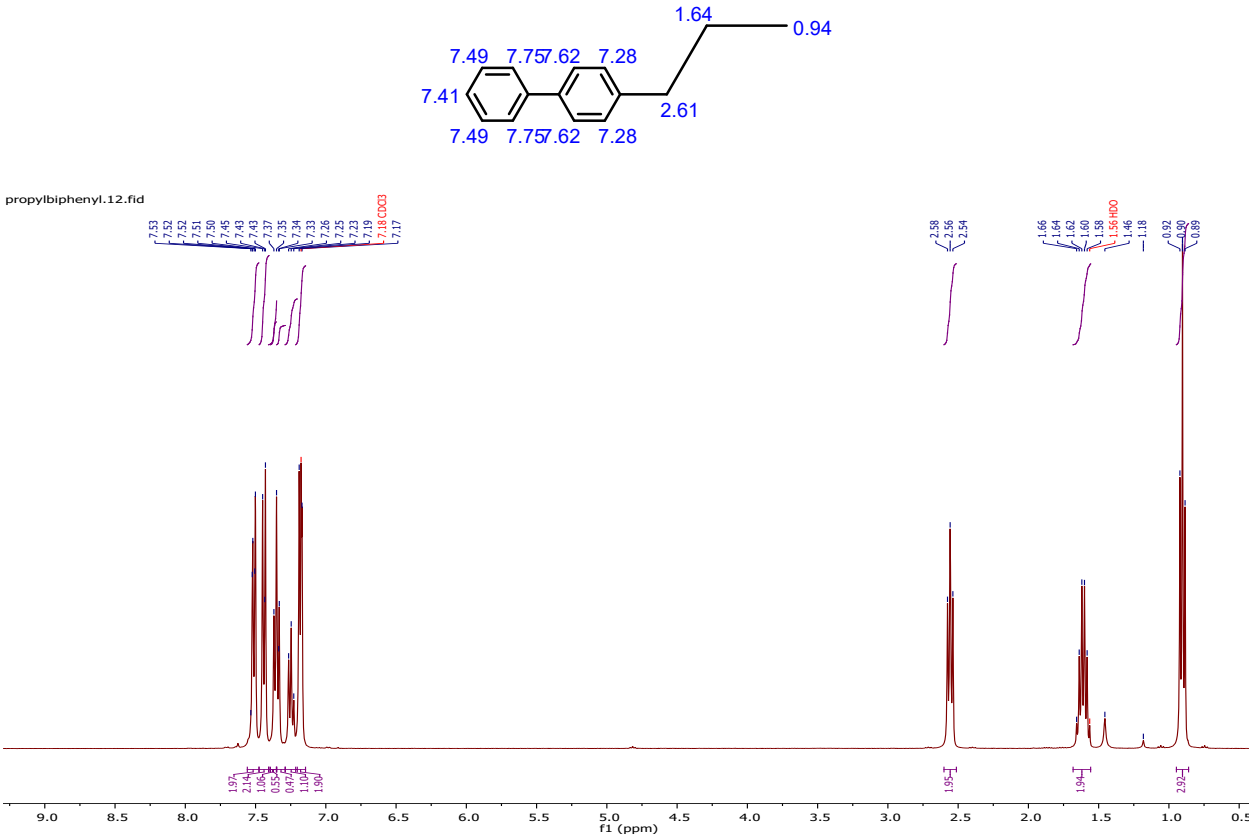


Figure S27 ^{1}H NMR spectrum of 4-propylbiphenyl

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.51 (dd, *J* = 7.3, 1.7 Hz, 2H), 7.44 (d, *J* = 8.0 Hz, 2H), 7.37 (s, 1H), 7.35 (s, 1H), 7.33 (d, *J* = 1.6 Hz, 0H), 7.25 (t, *J* = 7.3 Hz, 1H), 7.18 (d, *J* = 8.1 Hz, 2H), 2.56 (t, *J* = 7.7 Hz, 2H), 1.62 (p, *J* = 7.5 Hz, 2H), 0.90 (t, *J* = 7.3 Hz, 3H).

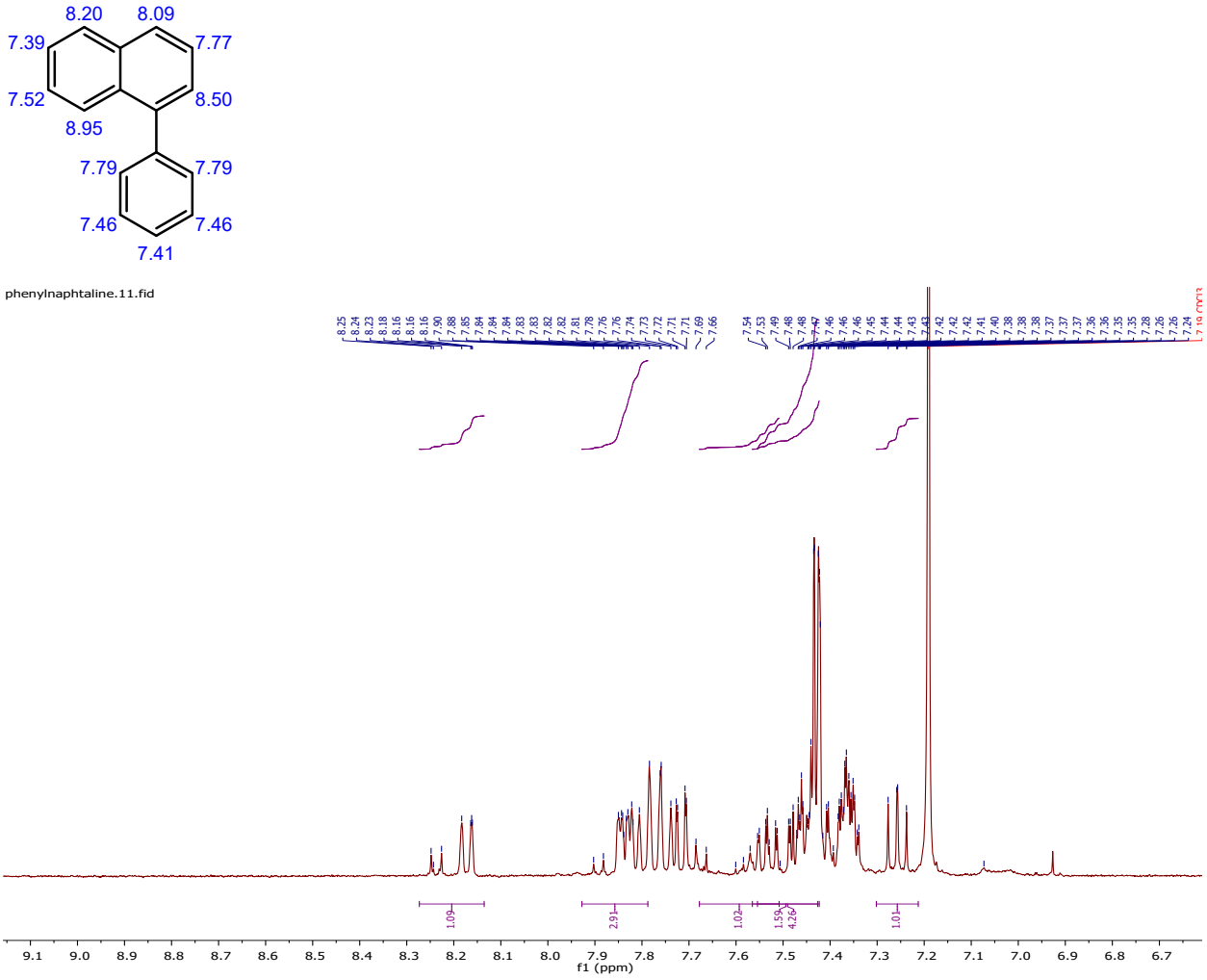
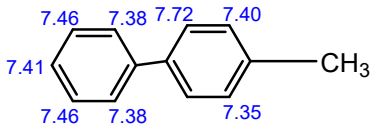
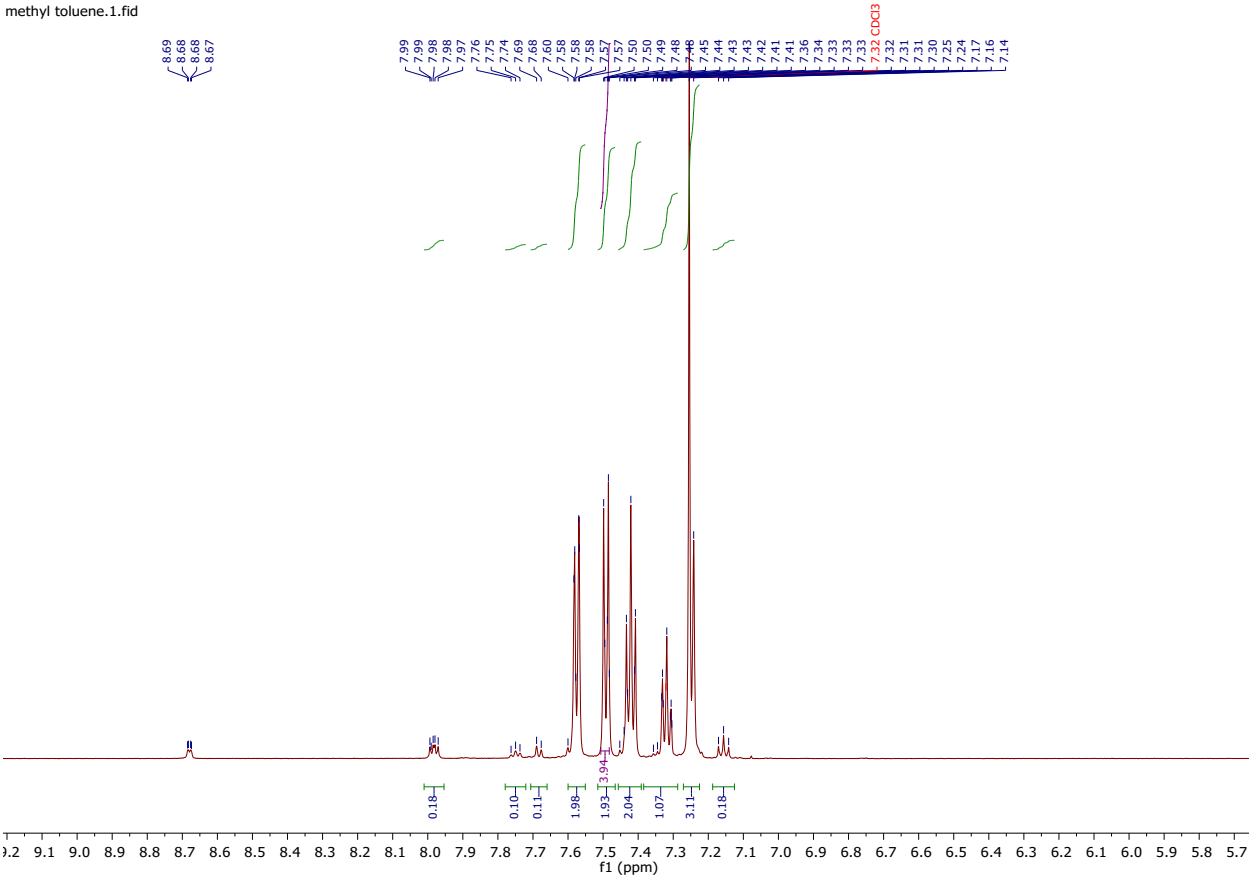


Figure S28 ^{1}H NMR spectrum of 4-phenylnaphatline

^{1}H NMR (400 MHz, Chloroform-*d*) δ 8.27 – 8.14 (m, 1H), 7.93 – 7.79 (m, 3H), 7.68 – 7.51 (m, 1H), 7.55 – 7.43 (m, 4H), 7.44 (d, *J* = 9.9 Hz, 2H), 7.26 (dd, *J* = 8.2, 7.4 Hz, 1H), 1.94 (s, 1H), 1.32 (s, 2H), 1.18 (s, 1H).





^{1}H NMR spectrum of 4-methylbiphenyl (phenyl toluene)

^{1}H NMR (600 MHz, Chloroform-*d*) δ 7.92 – 7.63 (m, 0H), 7.58 (t, *J* = 1.6 Hz, 2H), 7.57 (d, *J* = 1.2 Hz, 2H), 7.53 (s, 0H), 7.50 (d, *J* = 1.9 Hz, 2H), 7.49 (d, *J* = 1.8 Hz, 2H), 7.48 (s, 0H), 7.42 (t, *J* = 7.7 Hz, 4H).