Electronic Supplementary Material (ESI) for Organic Chemistry Frontiers.

Supporting Information

Arylations with Nitroarenes for One-Pot Syntheses of Triaryl-methanols and Tetraarylmethanes

Jie Li,[1,2] Dong Zou,[1,3] Bo Wang,[4] Ayşegül İşcan,[4] Huimin Jin,[1,2] Lingfeng Chen,[1] Fan Zhou,[1,2] Patrick J Walsh,[*,4] and Guang Liang[*,1]

[1] School of Pharmaceutical Sciences, Hangzhou Medical College, Hangzhou, Zhejiang 311399, China.

E-mail: cuiliang1234@163.com

[2] Department of Pharmacy, School of Medicine, Zhejiang University City College, No. 48, Huzhou Road, Hangzhou 310015, P. R. China.

[3] Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, China.

[4] Roy and Diana Vagelos Laboratories, Department of Chemistry, University of Pennsylvania, 231 South 34th Street, Philadelphia, Pennsylvania 19104-6323, USA

E-mail: pwalsh@sas.upenn.edu

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General Information

All reactions were conducted under an atmosphere of dry nitrogen with oven-dried glassware or vacuum line techniques. All anhydrous solvents were purchased from Sigma-Aldrich and directly used without further purification. Unless otherwise stated, reagents were commercially available and used as purchased without further purification. Chemicals were purchased from Sigma-Aldrich, TCI China, Acros, Alfa Aesar or J&K.

Progress of reactions was monitored by thin-layer chromatography using TLC plates and visualized by short-wave ultraviolet light. Flash chromatography was performed with Qingdao Haiyang flash silica gel (200–300 mesh). The NMR spectra were obtained using a Bruker AVANCE III 500 MHz spectrometer with TMS as the internal standard. The infrared spectra were obtained with KBr plates by using an FTIR650 FT-IR Spectrometer. High resolution mass spectrometry (HRMS) data were obtained on an Agilent Q-TOF 1290 LC/6224 MS system using electrospray ionization (ESI) in positive or negative mode. Melting points were determined on a Thermal Values analytical microscope and were uncorrected.

Preparation of nitroarenes: nitroarenes were prepared according to the literature precdure.[1] Compounds **1a**, **1b**, **1c**, **1d**, **1e**, **1f**, **1g**, **1h**, **1i**, **1j**, **1m**, **1n**, **1o**, **1P** and **1q** were commercially available.

Preparation of diarylmethanes: diarylmethanes were prepared according to the literature procedures.[2] Compounds **2a**, **2c**, **2d**, **2e**, **2f**, **2g**, **2i**, **2j**, **2k**, **2l**, and **2m** were commercially available.

Preparation of triarylmethanes: triarylmethanes were prepared according to the literature procedures.[3] Compounds **5a**, **5c**, **5e**, and **5h** were commercially available.

Synthesis of triarylmethanols and tetraarylmethanes

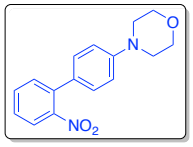
General Procedure A

An oven-dried 10 mL vial equipped with a stir bar was charged with $KN(SiMe_3)_2$ (60 mg, 0.3 mmol) under an air atmosphere. THF (1 mL) was added to the vial followed by addition of nitrobenzene (10.2 μL, 0.1 mmol) and 4-benzylpyridine (15.9 μL, 0.1 mmol) by syringe at room temperature and the color of the reaction mixture turned to dark brown. Note that solid nitroarenes or 4-benzylpyridine were added to the reaction vial prior to $KN(SiMe_3)_2$, followed by addition of the solvent. After stirring for 12 h at room temperature the reaction mixture was quenched with three drops of H_2O, passed through a short pad of silica gel and eluted with ethyl acetate (1 mL × 3). The combined organic solution was concentrated under reduced pressure. The crude material was loaded onto a silica gel column and puri-

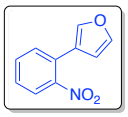
fied by flash chromatography.

General Procedure B

An oven-dried 10 mL vial equipped with a stir bar was charged with 4-benzhydrylpyridine (24.5 mg, 0.1 mmol) under a nitrogen atmosphere in a glovebox. THF (1 mL) was added to the vial followed by addition of 2-nitro-1,1'-biphenyl (27.7 μL, 0.2 mmol) and $KN(SiMe_3)_2$ (1.0 mol/L in THF, 0.3 mL, 0.3 mmol) by syringe at room temperature. The color of the reaction mixture turned to purplish red. The vial was capped with a drying tube, removed from the glovebox, and stirred for 12 h at room temperature. The reaction mixture was quenched with three drops of H_2O, passed through a short pad of silica gel and eluted with ethyl acetate (1 mL × 3). The combined organic solution was concentrated under reduced pressure. The crude material was loaded onto a silica gel column and purified by flash chromatography.

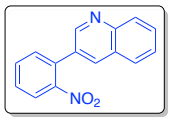


4-(2'-Nitro-[1,1'-biphenyl]-4-yl)morpholine (1l). The reaction was performed following the reported produce[1] with (4-morpholinophenyl)boronic acid (3.11 g, 15 mmol), 1-bromo-2-nitrobenzene (2.02 g, 10 mmol), K_2CO_3 (2.76 g, 20 mmol), and $Pd(PPh_3)_4$ (577.5 mg, 0.5 mmol) dissolved in DMF and H_2O (DMF : H_2O = 50:10, 0.25 M) and heated at 80 °C for 5 h under nitrogen. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (1.19 g, 42% yield) as a yellow solid. mp = 68−70 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.78 (dd, J = 8.0, 1.3 Hz, 1H), 7.59 – 7.56 (m, 1H), 7.44 – 7.40 (m, 2H), 7.26 – 7.23 (m, 2H), 6.96 – 6.93 (m, 2H), 3.88 – 3.87 (m, 4H), 3.23 – 3.21 (m, 4H); $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 151.1, 149.5, 136.0, 132.2, 131.9, 128.9, 128.3, 127.6, 124.2, 115.5, 67.0, 48.8; IR (KBr): 3043, 1610, 1574, 1529, 1478, 1368, 1233, 1069, 853 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{16}H_{17}N_2O_3$ 285.1234; found 285.1231.

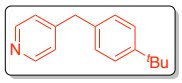


3-(2-Nitrophenyl)furan (1k). The reaction was performed following the reported produce[1] with furan-3-ylboronic acid (1.68 g, 15 mmol), 1-bromo-2-nitrobenzene (2.02 g, 10 mmol), K_2CO_3 (2.76 g, 20 mmol), and $Pd(PPh_3)_4$ (577.5 mg, 0.5mmol) dissolved in DMF and H_2O (DMF : H_2O = 50:10, 0.25 M) at 80 °C for 5 h under nitrogen. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (945.2 mg, 50% yield) as orange oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.77 (dd, J = 8.0, 1.3 Hz, 1H), 7.62 (dd, J = 1.5, 0.9 Hz, 1H), 7.49 – 7.42 (m, 1H), 7.50 – 7.42 (m, 3H), 6.48 (dd, J = 1.9, 0.9 Hz, 1H); $^{13}C\{^1H\}$ NMR

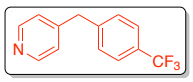
(125 MHz, $CDCl_3$): δ 149.2, 143.6, 140.5, 132.3, 131.4, 128.2, 127.0, 124.0, 121.7, 110.7; IR (thin film): 3070, 1615, 1568, 1525, 1472, 1359, 1262, 924, 747 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{10}H_8NO_3$ 190.0499; found 190.0493.



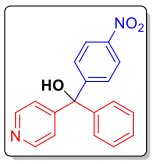
3-(2-Nitrophenyl)quinoline (1p). The reaction was performed following the reported produce[1] with quinolin-3-ylboronic acid (2.59 g, 15 mmol), 1-bromo-2-nitrobenzene (2.02 g, 10 mmol), K_2CO_3 (2.76 g, 20 mmol), and $Pd(PPh_3)_4$ (577.5 mg, 0.5mmol) dissolved in DMF and H_2O (DMF : H_2O = 50:10, 0.25 M) at 80 °C for 5 h under nitrogen. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (1.13 g, 45% yield) as a yellow solid. ^1H NMR (500 MHz, $CDCl_3$): δ 8.88 (d, J = 2.3 Hz, 1H), 8.22 (d, J = 8.5 Hz, 1H), 8.16 (dd, J = 2.3, 0.8 Hz, 1H), 8.07 (dd, J = 8.2, 1.3 Hz, 1H), 7.87 (dd, J = 8.2, 1.4 Hz, 1H), 7.82 – 7.78 (m, 1H), 7.75 – 7.72 (m, 1H), 7.65 – 7.60 (m, 2H), 7.53 (dd, J = 7.6, 1.4 Hz, 1H). The NMR spectral data match the previously published data.[1]



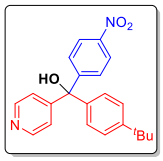
4-(4-(*tert*-Butyl)benzyl)pyridine (2b). The reaction was performed following the reported produce[2] with 1-(*tert*-butyl)-4-(chloromethyl)benzene (1.82 g, 10 mmol), pyridin-4-ylboronic acid (1.48 g, 12 mmol), $Pd(PPh_3)_4$ (230 mg, 0.2 mmol), and Na_2CO_3 (2.12 g, 20 mmol) dissolved in a mixture of DME (40 mL) and H_2O (20 mL) at 100 °C for 4 h under nitrogen. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (1.33 g, 59% yield) as pale yellow liquid. ^1H NMR (500 MHz, $CDCl_3$): δ 8.50 – 8.49 (m, 2H), 7.35 – 7.32 (m, 2H), 7.15 – 7.14 (m, 2H), 7.12 – 7.09 (m, 2H), 3.95 (s, 2H), 1.31 (s, 9H). The NMR spectral data match the previously published data.[4]



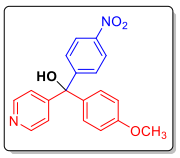
4-(4-(trifluoromethyl)benzyl)pyridine (2h). The reaction was performed following the reported produce[2] with 1-(chloromethyl)-4-(trifluoromethyl)benzene (1.95 g, 10 mmol), pyridin-4-ylboronic acid (1.48 g, 12 mmol), $Pd(PPh_3)_4$ (230 mg, 0.2 mmol), and Na_2CO_3 (2.12 g, 20 mmol) dissolved in a mixture of DME (40 mL) and H_2O (20 mL) at 100 °C for 4 h under nitrogen. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (1.38 g, 58% yield) as yellow liquid. ^1H NMR (500 MHz, $CDCl_3$): δ 8.53 – 8.52 (m, 2H), 7.57 (d, J = 8.0 Hz, 2H), 7.29 (d, J = 8.0 Hz, 2H), 7.13 – 7.11 (m, 2H), 4.04 (s, 2H). The NMR spectral data match the previously published data.[5]



(4-Nitrophenyl)(phenyl)(pyridin-4-yl)methanol (3aa). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 μL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 μL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (25.1 mg, 82% yield) as a white solid. mp = 183−185 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.52 (dd, J = 4.5, 1.6 Hz, 2H), 8.20 – 8.17 (m, 2H), 7.50 – 7.47 (m, 2H), 7.36 – 7.32 (m, 2H), 7.31 – 7.28 (m, 1H), 7.22 (dd, J = 4.5, 1.7 Hz, 2H), 7.19 – 7.17 (m, 2H), 7.07 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 154.8, 153.6, 149.5, 146.5, 145.3, 129.0, 128.2, 127.7, 127.6, 123.2, 122.6, 79.8; IR (thin film): 3436, 1597, 1520, 1414, 1351, 1209, 1052, 848 cm^{-1}; HRMS (ESI) m/z: [M + H]$^+$ calcd for $C_{18}H_{15}N_2O_3$ 307.1077; found 307.1089.

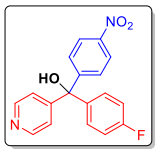


(4-(*tert*-Butyl)phenyl)(4-nitrophenyl)(pyridin-4-yl)methanol (3ab). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 μL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(4-(*tert*-butyl)benzyl)pyridine **2b** (22.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (30.8 mg, 85% yield) as a yellow solid. mp = 186–187 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.51 (dd, J = 4.6, 1.6 Hz, 2H), 8.19 – 8.16 (m, 2H), 7.52 – 7.49 (m, 2H), 7.37 – 7.34 (m, 2H), 7.23 (dd, J = 4.6, 1.6 Hz, 2H), 7.10 – 7.08 (m, 2H), 6.97 (s, 1H), 1.24 (s, 9H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 154.9, 153.8, 149.9, 149.5, 146.5, 142.4, 128.9, 127.4, 124.9, 123.1, 122.5, 79.6, 34.2, 31.1; IR (thin film): 3450, 3078, 2967, 2865, 1602, 1519, 1426, 1349, 1310, 1058, 849 cm^{-1}; HRMS (ESI) m/z: [M + H]$^+$ calcd for $C_{22}H_{23}N_2O_3$ 363.1703; found 363.1728.

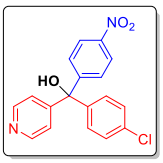


(4-Methoxyphenyl)(4-nitrophenyl)(pyridin-4-yl)methanol (3ac). The reaction was performed the following General Procedure A with nitrobenzene **1a** (10.2 μL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(4-methoxybenzyl)pyridine **2c** (19.9 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (28.2 mg, 84% yield) as a yellow solid. mp = 157–158 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.51 (dd, J = 4.6, 1.6 Hz, 2H), 8.19 – 8.16 (m, 2H), 7.50 – 7.47 (m, 2H), 7.21 (dd, J = 4.5, 1.6 Hz, 2H), 7.07 – 7.04 (m, 2H), 6.95 (s, 1H), 6.89 – 6.87 (m, 2H), 3.71 (s, 3H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ

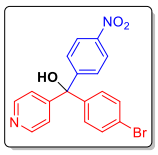
158.5, 155.1, 154.0, 149.5, 146.5, 137.4, 129.0, 128.9, 123.1, 122.5, 113.4, 79.5, 55.2; IR (thin film): 3442, 2925, 2852, 1605, 1512, 1447, 1347, 1252, 1181, 1055, 833 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{19}H_{17}N_2O_4$ 337.1183; found 337.1191.



(4-Fluorophenyl)(4-nitrophenyl)(pyridin-4-yl)methanol (3ad). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 µL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(4-fluorobenzyl)pyridine **2d** (18.7 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (25.6 mg, 79% yield) as a yellow oil. ^1H NMR (500 MHz, DMSO-d_6): δ 8.56 – 8.55 (m, 2H), 8.23 – 8.20 (m, 2H), 7.53 – 7.50 (m, 2H), 7.26 – 7.17 (m, 6H), 7.15 (s, 1H); $^{13}C\{^1H\}$ NMR (125 MHz, DMSO-d_6): δ 161.4 (d, $J^1_{C\text{-}F}$ = 244.5 Hz), 154.6, 153.4, 149.6, 146.6, 129.8 (d, $J^3_{C\text{-}F}$ = 8.3 Hz), 129.7 (d, $J^4_{C\text{-}F}$ = 6.0 Hz), 141.6, 123.2, 122.5, 114.9 (d, $J^2_{C\text{-}F}$ = 21.4 Hz), 79.4; IR (thin film): 3442, 1600, 1530, 1478, 1417, 1348, 1046, 811 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{18}H_{14}FN_2O_3$ 325.0983; found 325.0993.

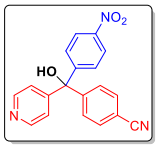


(4-Chlorophenyl)(4-nitrophenyl)(pyridin-4-yl)methanol (3ae). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 µL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(4-chlorobenzyl)pyridine **2e** (20.3 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (27.9 mg, 82% yield) as a yellow solid. mp = 184–186 °C. ^1H NMR (500 MHz, DMSO-d_6): δ 8.51 (dd, J = 4.5, 1.6 Hz, 2H), 8.19 – 8.16 (m, 2H), 7.49 – 7.46 (m, 2H), 7.41 – 7.38 (m, 2H), 7.21 (dd, J = 4.5, 1.7 Hz, 2H), 7.19 – 7.17 (m, 2H), 7.16 (s, 1H); $^{13}C\{^1H\}$ NMR (125 MHz, DMSO-d_6): δ 154.4, 153.1, 149.6, 146.6, 144.3, 132.4, 129.6, 128.9, 128.2, 123.3, 122.5, 79.5; IR (thin film): 3435, 1604, 1520, 1486, 1353, 1091, 1059, 819 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{18}H_{14}ClN_2O_3$ 341.0687; found 341.0693.

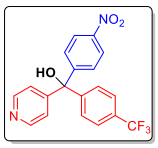


(4-Bromophenyl)(4-nitrophenyl)(pyridin-4-yl)methanol (3af). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 µL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(4-bromobenzyl)pyridine **2f** (24.7 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (31.5 mg, 82% yield) as a yellow oil. ^1H NMR (500 MHz, DMSO-d_6): δ 8.55 (dd, J = 4.5, 1.6 Hz, 2H), 8.22 –

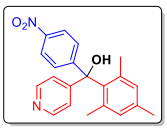
8.19 (m, 2H), 7.57 – 7.54 (m, 2H), 7.52 – 7.49 (m, 2H), 7.24 (dd, J = 4.5, 1.7 Hz, 2H), 7.17 (s, 1H), 7.16 – 7.14 (m, 2H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 154.3, 153.0, 149.6, 146.6, 144.7, 131.1, 129.9, 128.9, 123.2, 122.4, 121.0, 79.5; IR (thin film): 3415, 1623, 1601, 1521, 1486, 1349, 1010, 813 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{18}H_{14}BrN_2O_3$ 385.0182; found 385.0178.



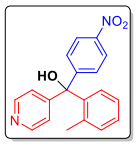
4-(Hydroxy(4-nitrophenyl)(pyridin-4-yl)methyl)benzonitrile (3ag). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 µL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(pyridin-4-ylmethyl)benzonitrile **2g** (19.4 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 5:1) to give the product (24.5 mg, 74% yield) as a yellow solid. mp = 140–141 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.55 (dd, J = 4.5, 1.6 Hz, 2H), 8.22 – 8.19 (m, 2H), 7.85 – 7.82 (m, 2H), 7.51 – 7.48 (m, 2H), 7.43 – 7.41 (m, 2H), 7.35 (s, 1H), 7.23 (dd, J = 4.5, 1.7 Hz, 2H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 153.8, 152.5, 150.5, 149.7, 146.8, 132.2, 129.0, 128.6, 123.4, 122.5, 118.6, 110.5, 79.6; IR (thin film): 3436, 2229, 1600, 1561, 1520, 1412, 1350, 1054 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{19}H_{14}N_3O_3$ 332.1030; found 332.1025.



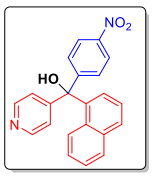
(4-Nitrophenyl)(pyridin-4-yl)(4-(trifluoromethyl)phenyl)methanol (3ah). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 µL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(4-(trifluoromethyl)benzyl)pyridine **2h** (23.7 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (29.2 mg, 78% yield) as a yellow oil. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.52 (dd, J = 4.6, 1.5 Hz, 2H), 8.19 – 8.16 (m, 2H), 7.70 (d, J = 8.3 Hz, 2H), 7.50 – 7.47 (m, 2H), 7.42 (d, J = 8.2 Hz, 2H), 7.28 (s, 1H), 7.22 (dd, J = 4.5, 1.7 Hz, 2H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 154.0, 152.8, 149.8, 149.7, 146.7, 129.0, 128.5, 128.2 (q, $J^2_{C(Ar)\text{-}F}$ = 31.8 Hz), 125.2 (q, $J^3_{C(Ar)\text{-}F}$ = 3.6 Hz), 124.2 (q, $J^1_{C\text{-}F}$ = 272.0 Hz), 123.4, 122.5, 79.6; IR (thin film): 3448, 1618, 1596, 1518, 1411, 1325, 1165, 1026 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{19}H_{14}F_3N_2O_3$ 375.0951; found 375.0970.



Mesityl(4-nitrophenyl)(pyridin-4-yl)methanol (3ai). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 μL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(2,4,6-trimethylbenzyl)pyridine **2i** (21.1 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (24.0 mg, 69% yield) as a red oil. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.46 (dd, J = 4.5, 1.6 Hz, 2H), 8.17 – 8.12 (m, 2H), 7.23 (d, J = 8.5 Hz, 2H), 6.97 (d, J = 5.7 Hz, 2H), 6.85 (s, 2H), 6.11 (s, 1H), 2.18 (s, 3H), 1.88 (s, 6H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 150.2, 149.9, 149.0, 146.0, 137.1, 136.5, 134.6, 130.3, 130.2, 124.2, 123.7, 49.6, 21.6, 20.4; IR (thin film): 3448, 2923, 2852, 1592, 1520, 1465, 1347, 1293, 1110 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{21}H_{21}N_2O_3$ 349.1547; found 349.1552.

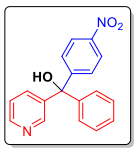


(4-Nitrophenyl)(pyridin-4-yl)(*o*-tolyl)methanol (3aj). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 μL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(2-methylbenzyl)pyridine **2j** (18.3 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (26.2 mg, 82% yield) as a white solid. mp = 228–230 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.53 (dd, J = 4.6, 1.6 Hz, 2H), 8.21 – 8.19 (m, 2H), 7.50 – 7.47 (m, 2H), 7.25 – 7.22 (m, 1H), 7.21 (dd, J = 4.6, 1.6 Hz, 3H), 7.12 (s, 1H), 7.08 – 7.05 (m, 1H), 6.56 – 6.54 (m, 1H), 2.00 (s, 3H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 154.8, 153.6, 149.6, 146.4, 142.9, 137.9, 132.7, 128.7, 128.5, 128.2, 125.1, 123.3, 122.4, 80.8, 21.7; IR (thin film): 3439, 2918, 2850, 1605, 1522, 1444, 1352, 1192, 1005 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{19}H_{17}N_2O_3$ 321.1234; found 321.1238.

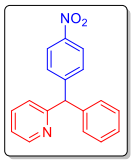


Naphthalen-1-yl(4-nitrophenyl)(pyridin-4-yl)methanol (3ak). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 μL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(naphthalen-1-ylmethyl)pyridine **2k** (21.9 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (28.5 mg, 80% yield) as a yellow solid. mp = 226–228 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.54 (d, J = 6.0 Hz, 2H), 8.20 (d, J = 9.1 Hz, 2H), 8.04 (d, J = 8.8 Hz, 1H), 7.93 (d, J = 8.2 Hz, 2H), 7.55 (s, 1H), 7.53 – 7.50 (m, 2H), 7.44 – 7.41 (m, 1H), 7.36 (dd, J = 8.1, 7.4 Hz, 1H), 7.29 – 7.25 (m, 1H), 7.24 (dd, J = 4.6, 1.6 Hz, 2H), 6.73 (dd, J = 7.3, 1.0 Hz, 1H); ^{13}C{^{1}H} NMR (125 MHz,

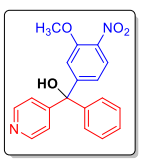
DMSO-d_6): δ 155.1, 153.8, 149.7, 146.5, 140.3, 134.7, 130.8, 129.5, 128.7, 128.6, 128.2, 127.4, 125.5, 125.4, 124.4, 123.4, 122.4, 81.1; IR (thin film): 3449, 3076, 1603, 1591, 1518, 1443, 1409, 1343, 1189, 776 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{22}H_{17}N_2O_3$ 357.1234; found 357.1257.



(4-Nitrophenyl)(phenyl)(pyridin-3-yl)methanol (3al). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 µL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 3-benzylpyridine **2l** (16.9 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (26.0 mg, 85% yield) as a white solid. mp = 144–145 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.32 – 8.29 (m, 2H), 8.15 – 8.12 (m, 2H), 7.60 – 7.58 (m, 1H), 7.51 – 7.48 (m, 2H), 7.32 – 7.30 (m, 3H), 7.21 – 7.17 (m, 3H), 5.08 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 153.2, 148.9, 148.3, 147.2, 145.1, 141.9, 135.9, 128.74, 128.68, 128.4, 127.8, 123.4, 123.2, 80.3; IR (thin film): 3429, 1621, 1589, 1518, 1474, 1349, 1027, 701 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{18}H_{15}N_2O_3$ 307.1077; found 307.1088.

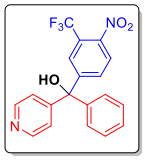


(4-Nitrophenyl)(phenyl)(pyridin-2-yl)methanol (3am). The reaction was performed following the General Procedure A with nitrobenzene **1a** (10.2 µL, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 2-benzylpyridine **2m** (16.9 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (25.4 mg, 83% yield) as a yellow oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.59 (d, J = 4.1 Hz, 1H), 8.13 (d, J = 8.6 Hz, 2H), 7.64 – 7.61 (m, 1H), 7.34 – 7.29 (m, 4H), 7.24 (d, J = 5.0 Hz, 1H), 7.18 – 7.14 (m, 3H), 7.09 (d, J = 7.8 Hz, 1H), 5.73 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 161.7, 150.6, 149.9, 146.5, 141.4, 136.9, 130.4, 129.3, 128.9, 127.3, 124.0, 123.7, 122.1, 59.1; IR (thin film): 3052, 1625, 1591, 1488, 1476, 1370, 1342, 736 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{18}H_{15}N_2O_2$ 291.1128; found 291.1140.

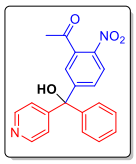


(3-Methoxy-4-nitrophenyl)(phenyl)(pyridin-4-yl)methanol (3ba). The reaction was performed following the General Procedure A with 1-methoxy-2-nitrobenzene **1b** (15.3 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (22.8 mg, 68% yield) as a yellow solid. mp = 167–168 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ

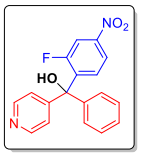
8.50 (dd, J = 4.5, 1.6 Hz, 2H), 7.79 (d, J = 8.5 Hz, 1H), 7.34 – 7.26 (m, 4H), 7.22 (dd, J = 4.5, 1.6 Hz, 2H), 7.19 – 7.17 (m, 2H), 7.02 (s, 1H), 6.78 (dd, J = 8.5, 1.7 Hz, 1H), 3.77 (s, 3H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 154.8, 153.2, 151.8, 149.5, 145.3, 137.9, 128.1, 127.7, 127.6, 124.7, 122.6, 120.1, 112.9, 79.9, 56.5; IR (thin film): 3439, 2924, 1600, 1538, 1491, 1458, 1410, 1369, 1267, 1030 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{19}H_{17}N_2O_4$ 337.1183; found 337.1198.



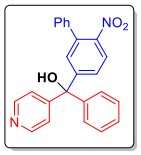
(4-Nitro-3-(trifluoromethyl)phenyl)(phenyl)(pyridin-4-yl)methanol (3ca). The reaction was performed following the General Procedure A with 1-nitro-2-(trifluoromethyl)benzene **1c** (19.1 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (30.7 mg, 82% yield) as a yellow oil. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.47 (dd, J = 4.5, 1.6 Hz, 2H), 8.04 (d, J = 8.5 Hz, 1H), 7.82 (d, J = 1.8 Hz, 1H), 7.57 (dd, J = 8.5, 1.9 Hz, 1H), 7.30 – 7.27 (m, 2H), 7.26 – 7.23 (m, 1H), 7.20 (s, 1H), 7.18 (dd, J = 4.5, 1.7 Hz, 2H), 7.14 – 7.12 (m, 2H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 154.1, 152.1, 149.7, 146.2, 144.7, 133.6, 128.4, 127.9, 127.6, 126.4 (q, $J^3_{C(Ar)-F}$ = 5.3 Hz), 125.6, 122.5, 122.1 (q, J^1_{C-F} = 273.2 Hz), 121.2 (q, $J^2_{C(Ar)-F}$ = 33.2 Hz), 79.6; IR (thin film): 3394, 1601, 1520, 1412, 1350, 1327, 1165, 1125, 853 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{19}H_{14}F_3N_2O_3$ 375.0951; found 375.0946.



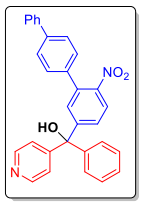
1-(5-(Hydroxy(phenyl)(pyridin-4-yl)methyl)-2-nitrophenyl)ethan-1-one (3da). The reaction was performed following the General Procedure A with 1-(2-nitrophenyl)ethan-1-one **1d** (16.5 mg, 0.1 mmol), $LiN(SiMe_3)_2$ (50.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (22.6 mg, 65% yield) as a red oil. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.52 (dd, J = 4.5, 1.6 Hz, 2H), 8.05 (d, J = 8.6 Hz, 1H), 7.60 (d, J = 2.0 Hz, 1H), 7.48 (dd, J = 8.6, 2.0 Hz, 1H), 7.36 – 7.29 (m, 3H), 7.24 (dd, J = 4.5, 1.6 Hz, 2H), 7.20 – 7.18 (m, 2H), 7.13 (d, J = 6.6 Hz, 1H), 2.46 (s, 3H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 199.8, 154.4, 152.9, 149.6, 145.0, 144.6, 136.2, 130.5, 128.3, 127.8, 127.7, 126.6, 124.2, 122.6, 79.7, 29.8; IR (thin film): 3431, 2924, 2853, 1708, 1597, 1526, 1492, 1349, 703 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{20}H_{17}N_2O_4$ 349.1183; found 349.1200.



(2-Fluoro-4-nitrophenyl)(phenyl)(pyridin-4-yl)methanol (3ea). The reaction was performed following the General Procedure A with 1-fluoro-3-nitrobenzene **1e** (14.1 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 μL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (24.3 mg, 75% yield) as a yellow solid. mp = 132−134 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.51 (dd, J = 4.6, 1.6 Hz, 2H), 8.10 (dd, J = 8.7, 2.3 Hz, 1H), 8.01 (dd, J = 10.9, 2.3 Hz, 1H), 7.69 (t, J = 8.3 Hz, 1H), 7.34 – 7.29 (m, 3H), 7.23 – 7.22 (m, 4H), 7.10 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 158.7 (d, $J^1_{C\text{-}F}$ = 242.5 Hz), 153.6, 149.6, 148.1 (d, $J^3_{C\text{-}F}$ = 9.0 Hz), 143.7, 140.5 (d, $J^2_{C\text{-}F}$ = 11.7 Hz), 130.2 (d, $J^3_{C\text{-}F}$ = 3.5 Hz), 128.2, 127.8, 127.2, 122.2, 119.4 (d, $J^4_{C\text{-}F}$ = 3.2 Hz), 112.1 (d, $J^2_{C\text{-}F}$ = 28.2 Hz), 78.1; IR (thin film): 3443, 1585, 1521, 1444, 1368, 1314, 1056 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{18}H_{14}FN_2O_3$ 325.0983; found 325.0999.

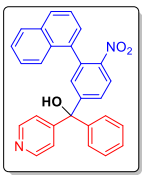


(6-Nitro-[1,1'-biphenyl]-3-yl)(phenyl)(pyridin-4-yl)methanol (3fa). The reaction was performed following the General Procedure A with 2-nitro-1,1'-biphenyl **1f** (19.9 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 μL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (32.5 mg, 85% yield) as a yellow solid. mp = 199−200 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.48 (dd, J = 4.7, 1.4 Hz, 2H), 7.90 (dd, J = 7.8, 1.1 Hz, 1H), 7.37 – 7.32 (m, 5H), 7.31 – 7.28 (m, 2H), 7.25 – 7.23 (m, 3H), 7.21 – 7.19 (m, 4H), 7.04 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 154.8, 151.3, 149.6, 147.6, 145.3, 137.0, 134.8, 130.8, 128.9, 128.4, 128.2, 128.1, 127.74, 127.67, 127.6, 124.1, 122.6, 79.8; IR (thin film): 3449, 1654, 1598, 1533, 1446, 1358, 1047, 1002, 701 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{24}H_{19}N_2O_3$ 383.1390; found 383.1404.

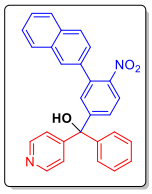


(6-Nitro-[1,1':4',1''-terphenyl]-3-yl)(phenyl)(pyridin-4-yl)methanol (3ga). The reaction was performed following the General Procedure A with 2-nitro-1,1':4',1''-terphenyl **1g** (27.5 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 μL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (38.5 mg, 84% yield) as a yellow solid. mp = 258−260 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.52 (dd, J = 4.5, 1.6 Hz, 2H), 7.96 (d, J = 8.5 Hz, 1H), 7.70 – 7.65 (m, 4H), 7.45 – 7.38 (m, 4H),

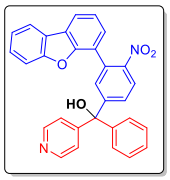
7.36 – 7.32 (m, 5H), 7.29 (dd, J = 4.6, 1.7 Hz, 3H), 7.25 – 7.23 (m, 2H), 7.06 (d, J = 4.7 Hz, 1H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 154.8, 151.3, 149.6, 147.5, 145.3, 140.1, 139.3, 136.0, 134.4, 130.7, 129.1, 128.4, 128.21, 128.15, 127.8, 127.7, 127.1, 126.8, 124.2, 122.6, 79.7. one resonance was not observed due to coincidental overlap; IR (thin film): 3450, 1601, 1531, 1474, 1362, 1047, 702 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{30}H_{23}N_2O_3$ 459.1703 found 459.1709.



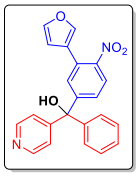
(3-(Naphthalen-1-yl)-4-nitrophenyl)(phenyl)(pyridin-4-yl)methanol (3ha). The reaction was performed following the General Procedure A with 1-(2-nitrophenyl)naphthalene **1h** (24.9 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (38.0 mg, 88% yield) as a yellow solid. mp = 252−253 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.42 – 8.41 (m, 2H), 8.02 (dd, J = 8.6, 0.8 Hz, 1H), 7.84 (t, J = 9.0 Hz, 2H), 7.42 – 7.38 (m, 3H), 7.35 – 7.31 (m, 1H), 7.27 – 7.19 (m, 7H), 7.17 – 7.14 (m, 3H), 7.00 (d, J = 2.0 Hz, 1H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 155.1, 151.73, 151.68, 149.7, 148.3, 145.40, 145.35, 135.2, 133.8, 133.2, 132.2, 130.9, 128.8, 128.7, 128.4, 127.9, 127.8, 127.1, 126.5, 126.4, 125.7, 124.4, 122.8, 80.0; IR (thin film): 3441, 1599, 1530, 1491, 1358, 1045, 776 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{28}H_{21}N_2O_3$ 433.1547; found 433.1567.



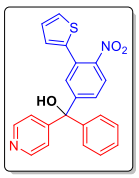
(3-(Naphthalen-2-yl)-4-nitrophenyl)(phenyl)(pyridin-4-yl)methanol (3ia). The reaction was performed following the General Procedure A with 2-(2-nitrophenyl)naphthalene **1i** (24.9 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (36.7 mg, 85% yield) as a yellow solid. mp = 234−235 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.49 (dd, J = 4.5, 1.6 Hz, 2H), 7.97 (d, J = 8.6 Hz, 1H), 7.90 – 7.87 (m, 3H), 7.80 (d, J = 1.5 Hz, 1H), 7.50 – 7.47 (m, 3H), 7.38 – 7.30 (m, 4H), 7.27 – 7.21 (m, 5H), 7.08 (s, 1H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 154.8, 151.4, 149.6, 147.6, 145.3, 135.0, 134.7, 132.8, 132.4, 131.0, 128.4, 128.3, 128.2, 128.1, 127.71, 127.66, 127.65, 126.82, 126.77, 126.66, 125.8, 124.3, 122.6, 79.8; IR (thin film): 3451, 1595, 1532, 1449, 1362, 1046, 821 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{28}H_{21}N_2O_3$ 433.1547; found 433.1559.



(3-(Dibenzo[*b*,*d*]furan-4-yl)-4-nitrophenyl)(phenyl)(pyridin-4-yl)methanol (3ja). The reaction was performed following the General Procedure A with 4-(2-nitrophenyl)dibenzo[*b*,d]furan **1j** (28.9 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (42.5 mg, 90% yield) as a yellow solid. mp = 238−240 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.51 (dd, J = 4.5, 1.6 Hz, 2H), 8.14 – 8.08 (m, 3H), 7.56 (d, J = 2.0 Hz, 1H), 7.52 – 7.48 (m, 2H), 7.45 – 7.41 (m, 3H), 7.35 – 7.29 (m, 5H), 7.25 (dd, J = 12.2, 4.9 Hz, 3H), 7.10 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 155.2, 154.7, 152.3, 152.1, 149.6, 147.5, 145.2, 131.6, 129.7, 128.9, 128.2, 128.0, 127.7, 127.6, 127.0, 124.7, 123.8, 123.6, 123.5, 123.3, 122.6, 121.7, 121.6, 121.4, 111.7, 79.8; IR (thin film): 3439, 1600, 1530, 1448, 1355, 1194, 751 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{30}H_{21}N_2O_4$ 473.1496; found 473.1500.

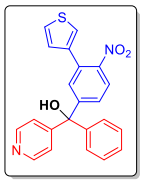


(3-(Furan-3-yl)-4-nitrophenyl)(phenyl)(pyridin-4-yl)methanol (3ka). The reaction was performed following the General Procedure A with 3-(2-nitrophenyl)furan **1k** (18.9 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (34.2 mg, 92% yield) as a red solid. mp = 151−152 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.51 – 8.50 (m, 2H), 7.87 – 7.83 (m, 2H), 7.70 – 7.69 (m, 1H), 7.48 (d, J = 5.4 Hz, 1H), 7.33 – 7.25 (m, 6H), 7.22 – 7.20 (m, 2H), 7.04 (s, 1H), 6.47 (dd, J = 1.8, 0.9 Hz, 1H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 154.7, 151.0, 149.5, 147.3, 145.3, 144.2, 140.7, 130.0, 128.2, 128.0, 127.7, 127.6, 125.6, 123.7, 122.6, 121.3, 110.4, 79.7; IR (thin film): 3442, 1601, 1552, 1449 1331, 1310, 1069 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{22}H_{17}N_2O_4$ 373.1183; found 373.1196.

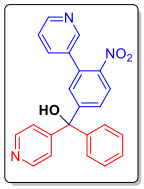


(4-Nitro-3-(thiophen-2-yl)phenyl)(phenyl)(pyridin-4-yl)methanol (3la). The reaction was performed following the General Procedure A with 2-(2-nitrophenyl)thiophene **1l** (20.5 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (35.7 mg, 92% yield) as a red solid. mp = 185−187 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.54 – 8.52 (m, 2H), 7.90 (d, J = 8.5 Hz, 1H), 7.67 (dd, J = 5.0, 1.3 Hz, 1H), 7.49 (d, J = 2.0 Hz, 1H), 7.37 –

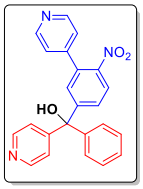
7.30 (m, 4H), 7.27 (dd, J = 4.5, 1.6 Hz, 2H), 7.25 – 7.22 (m, 2H), 7.12 – 7.06 (m, 3H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 154.6, 150.9, 149.6, 147.6, 145.2, 136.5, 130.6, 129.0, 128.6, 128.3, 128.2, 127.64, 127.61, 127.4, 126.7, 123.8, 122.5, 79.6; IR (thin film): 3450, 3071, 1599, 1534, 1490, 1357, 1048, 701 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{22}H_{17}N_2O_3S$ 389.0954; found 389.0959.



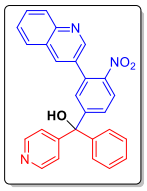
(4-Nitro-3-(thiophen-3-yl)phenyl)(phenyl)(pyridin-4-yl)methanol (3ma). The reaction was performed following the General Procedure A with 3-(2-nitrophenyl)thiophene **1m** (20.5 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (33.4 mg, 86% yield) as a yellow solid. mp = 203−205 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.52 (dd, J = 4.5, 1.6 Hz, 2H), 7.89 (d, J = 8.5 Hz, 1H), 7.59 (dd, J = 5.0, 2.9 Hz, 1H), 7.54 (dd, J = 2.9, 1.4 Hz, 1H), 7.44 (d, J = 2.0 Hz, 1H), 7.35 – 7.26 (m, 6H), 7.23 – 7.21 (m, 2H), 7.03 (d, J = 6.1 Hz, 1H), 7.02 (dd, J = 5.0, 1.4 Hz, 1H); $^{13}C\{^{1}H\}$ NMR (125 MHz, DMSO-d_6): δ 154.7, 151.0, 149.6, 147.4, 145.3, 136.6, 130.4, 129.4, 128.2, 128.0, 127.7, 127.6, 127.3, 127.2, 124.3, 123.8, 122.6, 79.7; IR (thin film): 3437, 1599, 1530, 1450, 1358, 1046, 1003, 829 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{22}H_{17}N_2O_3S$ 389.0954; found 389.0962.



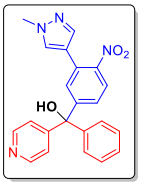
(4-Nitro-3-(pyridin-3-yl)phenyl)(phenyl)(pyridin-4-yl)methanol (3na). The reaction was performed following the General Procedure A with 3-(2-nitrophenyl)pyridine **1n** (20.0 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 5:1) to give the product (31.0 mg, 81% yield) as a yellow solid. mp = 129−131 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.38 (s, 3H), 8.10 (s, 1H), 7.84 (d, J = 8.5 Hz, 1H), 7.50 (d, J = 7.8 Hz, 1H), 7.44 (d, J = 1.7 Hz, 1H), 7.35 (dd, J = 8.5, 1.8 Hz, 1H), 7.31 – 7.19 (m, 8H), 5.92 (s, 1H); $^{13}C\{^{1}H\}$ NMR (125 MHz, $CDCl_3$): δ 155.2, 151.4, 149.5, 149.0, 147.9, 147.7, 144.6, 136.1, 133.9, 132.8, 131.4, 128.9, 128.8, 128.6, 127.9, 124.6, 123.6, 123.0, 80.7; IR (thin film): 3438, 1654, 1560, 1523, 1467, 1413, 1351, 1025 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{23}H_{18}N_3O_3$ 384.1343; found 384.1363.



(4-Nitro-3-(pyridin-4-yl)phenyl)(phenyl)(pyridin-4-yl)methanol (3oa). The reaction was performed following the General Procedure A with 4-(2-nitrophenyl)pyridine **1o** (20.0 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 μL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 5:1) to give the product (29.9 mg, 78% yield) as a yellow solid. mp = 135−137 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.60 (dd, J = 4.4, 1.6 Hz, 2H), 8.53 (dd, J = 4.5, 1.6 Hz, 2H), 8.07 (d, J = 8.6 Hz, 1H), 7.47 (dd, J = 8.6, 2.1 Hz, 1H), 7.42 (d, J = 2.0 Hz, 1H), 7.36 – 7.27 (m, 7H), 7.24 – 7.23 (m, 2H), 7.11 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 154.6, 151.9, 149.9, 149.6, 146.8, 145.3, 145.2, 132.9, 130.4, 129.2, 128.2, 127.7, 124.6, 122.8, 122.6, 79.7. one resonance was not observed due to coincidental overlap; IR (thin film): 3439, 1594, 1530, 1491, 1448, 1358, 1027, 831 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{23}H_{18}N_3O_3$ 384.1343; found 384.1356.

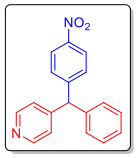


(4-Nitro-3-(quinolin-3-yl)phenyl)(phenyl)(pyridin-4-yl)methanol (3pa). The reaction was performed following the General Procedure A with 3-(2-nitrophenyl)quinoline **1p** (25.0 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 μL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 5:1) to give the product (32.0 mg, 74% yield) as a yellow solid. mp = 186−187 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.73 (dd, J = 9.4, 4.2 Hz, 1H), 8.46 (dd, J = 4.7, 1.4 Hz, 2H), 8.26 (d, J = 6.4 Hz, 1H), 8.06 (d, J = 8.6 Hz, 1H), 7.96 – 7.91 (m, 2H), 7.71 – 7.68 (m, 1H), 7.55 – 7.52 (m, 2H), 7.43 (dd, J = 2.3, 0.8 Hz, 1H), 7.28 – 7.24 (m, 4H), 7.21 – 7.18 (m, 3H), 7.08 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 154.7, 152.1, 149.6, 149.5, 147.1, 146.8, 145.3, 134.5, 132.4, 131.4, 131.0, 130.3, 129.0, 128.7, 128.4, 128.2, 127.8, 127.7, 127.3, 127.1, 124.8, 122.7, 79.8; IR (thin film): 3439, 1594, 1578, 1529, 1491, 1352, 1047, 765 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{27}H_{20}N_3O_3$ 434.1499; found 434.1515.

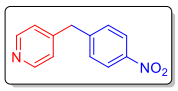


(3-(1-Methyl-1*H*-pyrazol-4-yl)-4-nitrophenyl)(phenyl)(pyridin-4-yl)methanol (3qa). The reaction was performed following the General Procedure A with 1-methyl-4-(2-nitrophenyl)-1*H*-pyrazole **1q** (20.3 mg, 0.1 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 μL, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 5:1) to give the product (33.2 mg, 86% yield) as a yellow solid. mp =

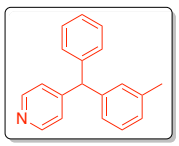
180−182 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.47 (dd, J = 4.6, 1.5 Hz, 2H), 7.81 (s, 1H), 7.75 (d, J = 8.5 Hz, 1H), 7.41 (d, J = 2.0 Hz, 1H), 7.39 (d, J = 0.7 Hz, 1H), 7.30 – 7.27 (m, 2H), 7.24 – 7.21 (m, 3H), 7.20 – 7.17 (m, 3H), 6.98 (s, 1H), 3.76 (s, 3H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 154.8, 150.7, 149.5, 147.0, 145.4, 137.3, 129.8, 129.6, 128.2, 127.7, 127.6, 127.0, 125.6, 123.5, 122.6, 116.2, 79.7, 38.7; IR (thin film): 3427, 2924, 1600, 1531, 1448, 1365, 1343, 1051 cm^{-1}; HRMS (ESI) m/z: [M + H]$^+$ calcd for $C_{22}H_{19}N_4O_3$ 387.1452; found 387.1465.



4-((4-Nitrophenyl)(phenyl)methyl)pyridine (3aa'). The reaction was performed with nitrobenzene **1a** (10.2 µL, 0.1 mmol), KN(SiMe$_3$)$_2$ (60.0 mg, 0.3 mmol), and 4-benzylpyridine **2a** (15.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature under an inert atmosphere for 8 h. Other operations are the same as procedure **A**. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (24.7 mg, 85% yield) as a yellow solid. mp = 91–92 °C. ^{1}H NMR (500 MHz, CDCl$_3$): δ 8.40 (dd, J = 4.5, 1.6 Hz, 2H), 8.04 – 8.01 (m, 2H), 7.22 – 7.11 (m, 5H), 6.94 – 6.92 (m, 2H), 6.88 (dd, J = 4.8, 1.3 Hz, 2H), 5.45 (s, 1H); ^{13}C{^{1}H} NMR (125 MHz, CDCl$_3$): δ 151.2, 150.3, 149.7, 147.0, 140.6, 130.3, 129.3, 129.1, 127.6, 124.5, 123.9, 56.0; IR (thin film): 3062, 2852, 1668, 1592, 1515, 1450, 1344, 1110 cm^{-1}; HRMS (ESI) m/z: [M + H]$^+$ calcd for $C_{18}H_{15}N_2O_2$ 291.1128; found 291.1133.

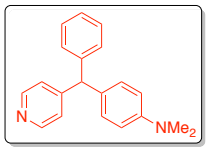


4-(4-Nitrobenzyl)pyridine (4). The reaction was performed with nitrobenzene **1a** (10.2 µL, 0.1 mmol), KN(SiMe$_3$)$_2$ (60.0 mg, 0.3 mmol), and 4-methylpyridine (9.9 µL, 0.1 mmol) dissolved in THF (1 mL) at room temperature under an inert atmosphere for 12 h. Other operations are the same as procedure **A**. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (15.1 mg, 71% yield) as a white solid. ^{1}H NMR (500 MHz, CDCl$_3$): δ 8.52 (dd, J = 4.4, 1.6 Hz, 2H), 8.16 – 8.13 (m, 2H), 7.34 – 7.31 (m, 2H), 7.08 (dd, J = 4.4, 1.6 Hz, 2H), 4.06 (s, 2H). The NMR spectral data match the previously published data.[6]

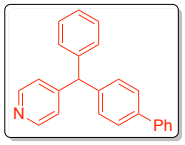


4-(Phenyl(*m*-tolyl)methyl)pyridine (5b). The reaction was performed following the reported procedure[3] with 4-benzylpyridine (2.03 g, 12 mmol), 1-bromo-3-methylbenzene (1.71 g, 10 mmol), KN(SiMe$_3$)$_2$ (5.98 g, 30 mmol) and a solution of Pd(OAc)$_2$ (112 mg, 0.5 mmol) and NiXantphos (414 mg, 0.75 mmol) in 10 mL of dry CPME at 24 °C for 12 h. The crude material was purified by flash chromatography on silica gel (eluted

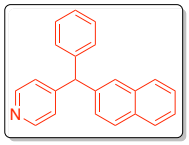
with hexanes:EtOAc = 10:1) to give the product (2.08 g, 80% yield) as a yellow solid. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.44 – 8.43 (m, 2H), 7.25 – 7.22 (m, 2H), 7.19 – 7.17 (m, 1H), 7.12 (t, J = 7.6 Hz, 1H), 7.03 – 6.98 (m, 5H), 6.84 – 6.79 (m, 2H), 5.40 (s, 1H), 2.22 (s, 3H). The NMR spectral data match the previously published data.[7]



***N*,*N*-Dimethyl-4-(phenyl(pyridin-4-yl)methyl)aniline (5d)**. The reaction was performed following the reported procedure[3] with 4-benzylpyridine (2.03 g, 12 mmol), 4-bromo-*N*,*N*-dimethylaniline (2.00 g, 10 mmol), $KN(SiMe_3)_2$ (5.98 g, 30 mmol), and a solution of $Pd(OAc)_2$ (112 mg, 0.5 mmol) and NiXantphos (414 mg, 0.75 mmol) in 10 mL of dry CPME at 24 °C for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 8:1) to give the product (1.79 g, 62% yield) as a white solid. mp = 107−109 °C. ^{1}H NMR (500 MHz, DMSO-d_6): δ 8.48 – 8.46 (m, 2H), 7.33 – 7.29 (m, 2H), 7.24 – 7.21 (m, 1H), 7.12 – 7.08 (m, 4H), 6.94 – 6.91 (m, 2H), 6.69 – 6.66 (m, 2H), 5.49 (s, 1H), 2.85 (s, 6H); ^{13}C{^{1}H} NMR (125 MHz, DMSO-d_6): δ 153.2, 149.5, 149.1, 143.1, 129.7, 129.5, 128.9, 128.4, 126.4, 124.2, 112.5, 54.2, 40.1; IR (KBr): 3021, 2917, 1611, 1591, 1522, 1492, 1201, 747 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{20}H_{21}N_2$ 289.1699; found 289.1696.

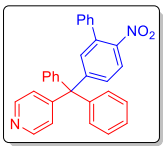


4-([1,1'-Biphenyl]-4-yl(phenyl)methyl)pyridine (5f). The reaction was performed following the reported procedure[3] with 4-benzylpyridine (2.03 g, 12 mmol), 4-bromo-1,1'-biphenyl (2.33 g, 10 mmol), $KN(SiMe_3)_2$ (5.98 g, 30 mmol) and a solution of $Pd(OAc)_2$ (112 mg, 0.5 mmol) and NiXantphos (414 mg, 0.75 mmol) in 10 mL of dry CPME at 24 °C for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (2.41 g, 75% yield) as a white solid. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.55 – 8.56 (m, 2H), 7.60 – 7.55 (m, 4H), 7.46 – 7.43 (m, 2H), 7.37 – 7.33 (m, 3H), 7.30 – 7.27 (m, 1H), 7.19 – 7.14 (m, 4H), 7.11 – 7.10 (m, 2H), 5.56 (s, 1H). The NMR spectral data match the previously published data.[7]

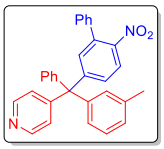


4-(Naphthalen-2-yl(phenyl)methyl)pyridine (5g). The reaction was performed following the reported procedure[3] with 4-benzylpyridine (2.03 g, 12 mmol), 2-bromonaphthalene (2.07 g, 10 mmol), $KN(SiMe_3)_2$ (5.98 g, 30 mmol), and a solution of $Pd(OAc)_2$ (112 mg, 0.5 mmol) and NiXantphos (414 mg, 0.75 mmol) in 10 mL of dry CPME at 24 °C for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (1.42 g, 48% yield) as yellow liquid. ^{1}H NMR (500

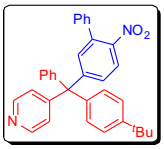
MHz, $CDCl_3$): δ 8.55 – 8.51 (m, 2H), 7.84 – 7.79 (m, 2H), 7.74 – 7.71 (m, 1H), 7.50 – 7.45 (m, 3H), 7.36 – 7.32 (m, 2H), 7.30 – 7.25 (m, 2H), 7.19 – 7.14 (m, 4H), 5.69 (s, 1H). $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 153.8, 149.1, 141.8, 139.5, 133.4, 132.5, 129.6, 128.9, 128.5, 128.04, 127.97, 127.73, 127.65, 127.2, 126.5, 126.2, 125.1, 56.5; IR (thin film): 3026, 2968, 1633, 1596, 1558, 1494, 1272, 749 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{22}H_{18}N$ 296.1434; found 296.1435.



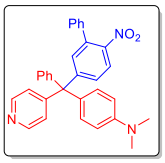
4-((6-Nitro-[1,1'-biphenyl]-3-yl)diphenylmethyl)pyridine (6fa). The reaction was performed following the General Procedure B with 2-nitro-1,1'-biphenyl **1f** (39.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (34.1 mg, 77% yield) as a white solid. mp = 225−227 °C. ^1H NMR (500 MHz, $CDCl_3$): δ 8.55 (dd, J = 4.7, 1.4 Hz, 2H), 7.78 (d, J = 8.5 Hz, 1H), 7.39 – 7.30 (m, 9H), 7.28 – 7.25 (m, 2H), 7.22 – 7.20 (m, 8H); $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 154.7, 150.5, 149.8, 147.4, 144.3, 137.2, 135.8, 134.3, 130.7, 130.6, 128.9, 128.5, 128.4, 128.0, 127.1, 125.8, 123.8, 64.9; IR (thin film): 3030, 1588, 1541, 1488, 1443, 1377, 1074, 703 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{30}H_{23}N_2O_2$ 443.1754; found 443.1763.



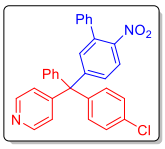
4-((6-Nitro-[1,1'-biphenyl]-3-yl)(phenyl)(*m*-tolyl)methyl)pyridine (6fb). The reaction was performed following the General Procedure B with 2-nitro-1,1'-biphenyl **1f** (39.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(phenyl(*m*-tolyl)methyl)pyridine **5b** (25.9 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (19.7 mg, 43% yield) as a yellow oil. ^1H NMR (500 MHz, $CDCl_3$): δ 8.55 – 8.54 (m, 2H), 7.78 (d, J = 8.4, 1H), 7.39 – 7.30 (m, 7H), 7.27 – 7.19 (m, 8H), 7.08 – 7.06 (m, 1H), 6.99 (dd, J = 10.8, 2.5 Hz, 2H), 2.29 (s, 3H); $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 155.0, 150.6, 149.5, 147.3, 144.3, 144.1, 138.0, 137.3, 135.8, 134.3, 131.3, 130.7, 130.6, 128.8, 128.5, 128.4, 128.2, 127.97, 127.96, 127.9, 127.1, 125.8, 123.8, 64.9, 21.8; IR (thin film): 2921, 2851, 1630, 1598, 1405, 1349, 1112, 1074 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{31}H_{25}N_2O_2$ 457.1911; found 457.1923.



4-((4-tert-butylphenyl)(6-nitrobiphenyl-3-yl)(phenyl)methyl)pyridine (6fc). The reaction was performed following the General Procedure B with 2-nitro-1,1'-biphenyl **1f** (39.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-((4-(*tert*-butyl)phenyl)(phenyl)methyl)pyridine **5c** (30.1 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (26.4 mg, 53% yield) as a yellow solid. mp = 196−198 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.54 (dd, J = 4.8, 1.4 Hz, 2H), 7.77 (d, J = 8.5 Hz, 1H), 7.39 – 7.35 (m, 4H), 7.34 – 7.29 (m, 5H), 7.27 – 7.25 (m, 1H), 7.24 – 7.20 (m, 6H), 7.12 – 7.10 (m, 2H), 1.31 (s, 9H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$) δ 155.2, 150.7, 150.0, 149.4, 147.3, 144.4, 141.0, 137.3, 135.8, 134.3, 130.7, 130.6, 130.4, 128.8, 128.4, 128.3, 128.0, 127.0, 125.8, 125.3, 123.8, 64.6, 34.6, 31.4; IR (thin film): 3032, 2963, 2867, 1589, 1537, 1375, 830, 700 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{34}H_{31}N_2O_2$ 499.2380; found 499.2416.

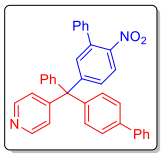


***N*,*N*-Dimethyl-4-((6-nitro-[1,1'-biphenyl]-3-yl)(phenyl)(pyridin-4-yl)methyl)aniline (6fd)**. The reaction was performed following the General Procedure B with 2-nitro-1,1'-biphenyl **1f** (39.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and *N*,*N*-dimethyl-4-(phenyl(pyridin-4-yl)methyl)aniline **5d** (28.8 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (20.9 mg, 43% yield) as a yellow oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.52 (d, J = 6.1 Hz, 2H), 7.76 (dd, J = 8.5, 4.0 Hz, 1H), 7.38 – 7.34 (m, 5H), 7.31 – 7.28 (m, 2H), 7.24 (dd, J = 5.3, 1.5 Hz, 1H), 7.22 – 7.20 (m, 6H), 7.02 – 6.99 (m, 2H), 6.64 – 6.62 (m, 2H), 2.95 (s, 6H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 155.4, 151.2, 149.6, 149.0, 147.2, 144.9, 137.4, 135.7, 134.2, 131.6, 131.5, 130.7, 130.6, 128.8, 128.4, 128.3, 128.0, 126.9, 125.8, 123.8, 111.8, 64.1, 40.4; IR (thin film): 3028, 2923, 1608, 1590, 1521, 1444, 1353, 814 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{32}H_{28}N_3O_2$ 486.2176; found 486.2186.

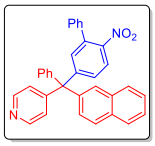


4-((4-Chlorophenyl)(6-nitro-[1,1'-biphenyl]-3-yl)(phenyl)methyl)pyridine (6fe). The reaction was performed following the General Procedure B with 2-nitro-1,1'-biphenyl **1f** (39.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-((4-chlorophenyl)(phenyl)methyl)pyridine **5e** (27.9 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (26.2 mg, 55% yield) as a yellow oil. ^{1}H NMR (500

MHz, $CDCl_3$): δ 8.48 (dd, J = 4.7, 1.5 Hz, 2H), 7.70 (d, J = 8.5 Hz, 1H), 7.31 – 7.29 (m, 3H), 7.26 – 7.22 (m, 5H), 7.21 – 7.19 (m, 2H), 7.13 – 7.10 (m, 5H), 7.09 – 7.06 (m, 3H); $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 154.5, 149.9, 149.7, 147.5, 143.8, 142.8, 137.0, 136.0, 134.1, 133.2, 132.0, 131.2, 130.6, 130.5, 128.9, 128.61, 128.58, 127.9, 127.4, 125.6, 124.0, 64.5; IR (thin film): 3055, 1588, 1540, 1489, 1476, 1443, 1376, 1097, 820 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{30}H_{22}ClN_2O_2$ 477.1364; found 477.1371.

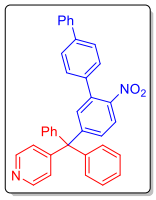


4-([1,1'-Biphenyl]-4-yl(6-nitro-[1,1'-biphenyl]-3-yl)(phenyl)methyl)pyridine (6ff). The reaction was performed following the General Procedure B with 2-nitro-1,1'-biphenyl **1f** (39.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-([1,1'-biphenyl]-4-yl(phenyl)methyl)pyridine **5f** (32.1 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (22.8 mg, 44% yield) as a yellow oil. ^1H NMR (500 MHz, $CDCl_3$): δ 8.44 (d, J = 5.3 Hz, 2H), 7.66 (d, J = 8.4 Hz, 1H), 7.47 – 7.41 (m, 4H), 7.32 – 7.28 (m, 3H), 7.26 – 7.19 (m, 7H), 7.16 – 7.12 (m, 7H), 7.11 – 7.09 (m, 2H); $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 154.7, 150.4, 149.7, 147.4, 144.2, 143.2, 140.1, 139.8, 137.2, 135.9, 134.2, 131.1, 130.7, 130.6, 129.0, 128.9, 128.5, 128.0, 127.7, 127.2, 127.1, 127.0, 125.7, 123.9, 64.7, one resonance was not observed due to coincidental overlap; IR (thin film): 3057, 1590, 1523, 1486, 1408, 1353, 731 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{36}H_{27}N_2O_2$ 519.2067; found 519.2070.

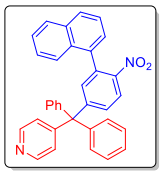


4-(Naphthalen-2-yl(6-nitro-[1,1'-biphenyl]-3-yl)(phenyl)methyl)pyridine (6fg). The reaction was performed following the General Procedure B with 2-nitro-1,1'-biphenyl **1f** (39.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-(naphthalen-2-yl(phenyl)methyl)pyridine **5g** (29.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (30.1 mg, 61% yield) as a yellow oil. ^1H NMR (500 MHz, $CDCl_3$): δ 8.49 (dd, J = 4.6, 1.6 Hz, 2H), 7.75 – 7.63 (m, 5H), 7.45 – 7.40 (m, 2H), 7.33 – 7.28 (m, 5H), 7.26 – 7.24(m, 2H), 7.20 – 7.16 (m, 5H), 7.14 – 7.11 (m, 3H); $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 154.4, 150.2, 149.9, 147.5, 144.0, 141.7, 137.2, 135.9, 134.4, 133.0, 132.1, 130.9, 130.8, 129.6, 128.9, 128.51, 128.50, 128.0, 127.9, 127.6, 127.3, 126.9, 126.7, 125.9, 123.9, 65.0, two resonances were not observed due to coincidental overlap; IR (thin film): 3056, 1590, 1523, 1493, 1445, 1353, 1262, 1073, 908 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{34}H_{25}N_2O_2$ 493.1911; found

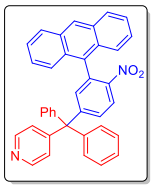
493.1921.



4-((6-Nitro-[1,1':4',1''-terphenyl]-3-yl)diphenylmethyl)pyridine (6ga). The reaction was performed following the General Procedure B with 2-nitro-1,1':4',1''-terphenyl **1g** (55.0 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (34.3 mg, 66% yield) as a yellow solid. mp = 222−224 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.56 (dd, J = 4.7, 1.5 Hz, 2H), 7.80 (d, J = 8.6 Hz, 1H), 7.62 – 7.59 (m, 4H), 7.46 – 7.43 (m, 2H), 7.41 (d, J = 2.1 Hz, 1H), 7.39 – 7.36 (m, 2H), 7.36 – 7.27 (m, 8H), 7.25 – 7.23 (m, 6H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 154.7, 150.6, 149.8, 147.3, 144.3, 141.4, 140.3, 136.1, 135.5, 134.3, 130.7, 130.6, 128.9, 128.4, 127.7, 127.6, 127.2, 127.1, 125.8, 123.9, 64.9. one resonance was not observed due to coincidental overlap; IR (thin film): 3028, 1590, 1548, 1521, 1490, 1384, 1360, 857 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{36}H_{27}N_2O_2$ 519.2067; found 519.2074.

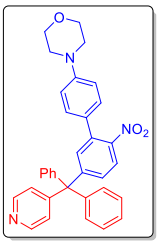


4-((3-(Naphthalen-1-yl)-4-nitrophenyl)diphenylmethyl)pyridine (6ha). The reaction was performed following the General Procedure B with 1-(2-nitrophenyl)naphthalene **1h** (49.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (34.5 mg, 70% yield) as yellow solid. mp = 216−218 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.52 (dd, J = 4.6, 1.6 Hz, 2H), 7.98 (d, J = 8.7 Hz, 1H), 7.87 (dd, J = 8.2, 5.2 Hz, 2H), 7.52 – 7.45 (m, 3H), 7.38 – 7.34 (m, 2H), 7.32 – 7.26 (m, 7H), 7.24 – 7.22 (m, 7H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 154.8, 150.7, 149.8, 147.9, 144.3, 136.0, 135.2, 134.7, 133.6, 131.4, 130.7, 130.5, 128.8, 128.7, 128.5, 127.1, 126.7, 126.2, 126.1, 125.7, 125.3, 124.6, 124.1, 65.0; IR (thin film): 3055, 1588, 1523, 1492, 1445, 1354, 703 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{34}H_{25}N_2O_2$ 493.1911; found 493.1919.

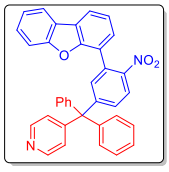


4-((3-(Anthracen-9-yl)-4-nitrophenyl)diphenylmethyl)pyridine (6Ha). The reaction was performed following the General Procedure B with 9-(2-nitrophenyl)anthracene **1H** (59.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine

5a (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (32.0 mg, 59% yield) as a yellow oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.41 (d, J = 5.8 Hz, 2H), 8.38 (s, 1H), 8.08 (d, J = 8.7 Hz, 1H), 7.92 (d, J = 8.5 Hz, 2H), 7.56 (dd, J = 8.7, 2.2 Hz, 1H), 7.36 – 7.33 (m, 2H), 7.29 (d, J = 2.2 Hz, 1H), 7.26 – 7.17 (m, 11H), 7.16 – 7.11 (m, 5H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 154.8, 151.4, 149.7, 148.4, 144.2, 137.2, 133.5, 131.4, 131.3, 130.7, 130.6, 129.8, 128.9, 128.5, 127.7, 127.1, 126.4, 125.7, 125.3, 125.1, 124.5, 65.2; IR (thin film): 3054, 1590, 1577, 1521, 1491, 1443, 1345, 908 cm^{-1}; HRMS (ESI) m/z: [M + H]$^{+}$ calcd for $C_{38}H_{27}N_2O_2$ 543.2067; found 543.2053.

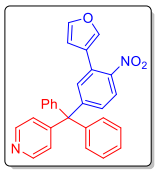


4-(5'-(Diphenyl(pyridin-4-yl)methyl)-2'-nitro-[1,1'-biphenyl]-4-yl)morpholine (6Ia). The reaction was performed following the General Procedure B with 4-(2'-nitro-[1,1'-biphenyl]-4-yl)morpholine **1I** (56.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 10:1) to give the product (35.4 mg, 67% yield) as a red oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.46 (dd, J = 4.7, 1.6 Hz, 2H), 7.63 (d, J = 8.6 Hz, 1H), 7.25 – 7.17 (m, 8H), 7.14 – 7.11 (m, 6H), 7.05 – 7.02 (m, 2H), 6.82 – 6.79 (m, 2H), 3.78 – 3.76 (m, 4H), 3.12 – 3.10 (m, 4H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 155.1, 151.2, 150.2, 149.5, 147.4, 144.3, 135.4, 134.1, 130.8, 130.0, 128.9, 128.3, 127.8, 127.1, 125.9, 123.8, 115.3, 66.9, 64.9, 48.6; IR (thin film): 3055, 2962, 2852, 1608, 1590, 1522, 1448, 1355, 1262, 815 cm^{-1}; HRMS (ESI) m/z: [M + H]$^{+}$ calcd for $C_{34}H_{30}N_3O_3$ 528.2282; found 528.2300.

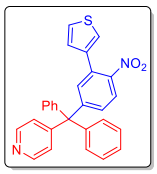


4-((3-(Dibenzo[*b*,*d*]furan-4-yl)-4-nitrophenyl)diphenylmethyl)pyridine (6ja). The reaction was performed following the General Procedure B with 4-(2-nitrophenyl)dibenzo[*b*,d]furan **1j** (57.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (35.2 mg, 66% yield) as a yellow solid. mp = 260−262 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.46 (dd, J = 4.7, 1.6 Hz, 2H), 7.91 (dd, J = 10.7, 5.4 Hz, 1H), 7.87 – 7.84 (m, 2H), 7.47 (d, J = 2.2 Hz, 1H), 7.41 – 7.33 (m, 3H), 7.29 – 7.21 (m, 6H), 7.18 – 7.15 (m, 9H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 156.1, 154.7, 153.2, 151.0, 149.8, 147.5, 144.3,

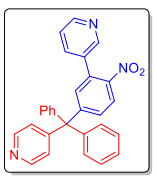
135.4, 131.0, 130.8, 130.7, 128.4, 127.7, 127.1, 126.7, 125.8, 124.7, 124.4, 124.0, 123.3, 123.2, 121.9, 121.1, 120.9, 111.9, 65.0; IR (thin film): 3049, 1587, 1531, 1488, 1449, 1349, 1184, 847 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{36}H_{25}N_2O_3$ 533.1860; found 533.1868.



4-((3-(Furan-3-yl)-4-nitrophenyl)diphenylmethyl)pyridine (6ka). The reaction was performed following the General Procedure B with 3-(2-nitrophenyl)furan **1k** (37.8 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (19.9 mg, 46% yield) as a red solid. mp = 175−176 °C. ^1H NMR (500 MHz, $CDCl_3$): δ 8.54 (dd, J = 4.7, 1.6 Hz, 2H), 7.70 (d, J = 8.6 Hz, 1H), 7.47 (dd, J = 1.4, 0.9 Hz, 1H), 7.41 (t, J = 1.7 Hz, 1H), 7.34 – 7.26 (m, 8H), 7.20 – 7.18 (m, 6H), 6.34 (dd, J = 1.8, 0.9 Hz, 1H); $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 154.6, 150.4, 149.8, 147.0, 144.2, 143.6, 140.6, 133.5, 130.8, 130.7, 128.4, 127.2, 126.5, 125.8, 123.7, 121.6, 110.6, 64.8; IR (thin film): 3030, 1610, 1592, 1534, 1490, 1371, 1163, 874 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{28}H_{21}N_2O_3$ 433.1547; found 433.1570.

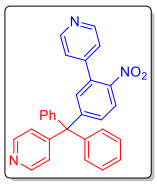


4-((4-Nitro-3-(thiophen-3-yl)phenyl)diphenylmethyl)pyridine (6ma). The reaction was performed following the General Procedure B with 3-(2-nitrophenyl)thiophene **1m** (41.0 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 20:1) to give the product (31.9 mg, 71% yield) as a yellow solid. mp = 211−212 °C. ^1H NMR (500 MHz, $CDCl_3$): δ 8.54 (dd, J = 4.6, 1.6 Hz, 2H), 7.71 (d, J = 8.6 Hz, 1H), 7.37 (d, J = 2.1 Hz, 1H), 7.34 – 7.29 (m, 6H), 7.28 – 7.27 (m, 2H), 7.20 – 7.18 (m, 7H), 6.97 (dd, J = 5.0, 1.3 Hz, 1H); $^{13}C\{^1H\}$ NMR (125 MHz, $CDCl_3$): δ 154.7, 150.4, 149.8, 147.2, 144.3, 136.9, 133.9, 130.8, 130.7, 130.3, 128.4, 127.4, 127.2, 126.5, 125.8, 123.9, 123.7, 64.9; IR (thin film): 3080, 1590, 1534, 1488, 1446, 1370, 1261, 1095, 799 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{28}H_{21}N_2O_2S$ 449.1318; found 449.1326.

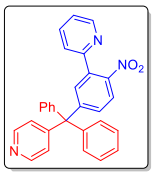


3-(5-(Diphenyl(pyridin-4-yl)methyl)-2-nitrophenyl)pyridine (6na). The reaction was performed following the General Procedure B with 3-(2-nitrophenyl)pyridine **1n** (40.0 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 8:1) to give

the product (27.1 mg, 61% yield) as a yellow solid. mp = 199–201 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.61 (dd, J = 4.8, 1.6 Hz, 1H), 8.55 (dd, J = 4.8, 1.4 Hz, 2H), 8.46 (t, J = 3.7 Hz, 1H), 7.91 (d, J = 8.6 Hz, 1H), 7.55 – 7.52 (m, 1H), 7.45 (dd, J = 8.7, 2.2 Hz, 1H), 7.34 – 7.30 (m, 6H), 7.28 – 7.27 (m, 2H), 7.21 – 7.19 (m, 6H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 154.5, 151.3, 149.9, 149.6, 148.6, 146.9, 144.1, 135.6, 134.4, 133.5, 132.7, 131.5, 130.7, 128.5, 127.3, 125.7, 124.4, 123.4, 64.9; IR (thin film): 3030, 1592, 1533, 1488, 1467, 1446, 1371, 703 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{29}H_{22}N_3O_2$ 444.1707; found 444.1724.

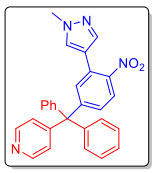


4-(5-(Diphenyl(pyridin-4-yl)methyl)-2-nitrophenyl)pyridine (6oa). The reaction was performed following the General Procedure B with 4-(2-nitrophenyl)pyridine **1o** (40.0 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 8:1) to give the product (28.9 mg, 65% yield) as a yellow solid. mp = 226–228 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.60 (dd, J = 4.4, 1.6 Hz, 2H), 8.54 (dd, J = 4.6, 1.6 Hz, 2H), 7.89 (d, J = 8.6 Hz, 1H), 7.45 (dd, J = 8.6, 2.2 Hz, 1H), 7.33 – 7.30 (m, 4H), 7.28 – 7.26 (m, 3H), 7.19 – 7.17 (m, 6H), 7.11 (dd, J = 4.4, 1.6 Hz, 2H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 154.3, 151.4, 150.1, 149.8, 146.5, 145.5, 144.0, 133.8, 133.5, 131.8, 130.6, 128.5, 127.2, 125.6, 124.3, 122.8, 64.9; IR (thin film): 3030, 1589, 1537, 1488, 1407, 1374, 706 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{29}H_{22}N_3O_2$ 444.1707; found 444.1723



2-(5-(Diphenyl(pyridin-4-yl)methyl)-2-nitrophenyl)pyridine (6Pa). The reaction was performed following the General Procedure B with 2-(2-nitrophenyl)pyridine **1P** (40.0 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 8:1) to give the product (24.4 mg, 55% yield) as a yellow solid. mp = 174–176 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.48 (dd, J = 6.8, 2.6 Hz, 1H), 8.45 (dd, J = 4.7, 1.5 Hz, 2H), 7.71 (d, J = 8.6 Hz, 1H), 7.64 – 7.60 (m, 1H), 7.38 (d, J = 2.1 Hz, 1H), 7.31 (dd, J = 8.6, 2.1 Hz, 1H), 7.23 – 7.20 (m, 4H), 7.18 – 7.14 (m, 4H), 7.11 (d, J = 6.3 Hz, 6H) ; ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 155.3, 154.6, 150.4, 149.7, 147.4, 144.1, 137.0, 134.8, 133.3, 131.6, 130.7, 128.3, 127.1, 125.7, 124.1, 123.0, 122.6, 64.8. one resonance was not observed due to coincidental overlap; IR (thin film): 3054, 1589, 1565, 1491, 1467, 1357, 703 cm^{-1};

HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{29}H_{22}N_3O_2$ 444.1707; found 444.1719.



4-((3-(1-Methyl-1*H*-pyrazol-4-yl)-4-nitrophenyl)diphenylmethyl)pyridine (6qa). The reaction was performed following the General Procedure B with 1-methyl-4-(2-nitrophenyl)-1*H*-pyrazole **1q** (40.6 mg, 0.2 mmol), $KN(SiMe_3)_2$ (60.0 mg, 0.3 mmol), and 4-benzhydrylpyridine **5a** (24.5 mg, 0.1 mmol) dissolved in THF (1 mL) at room temperature for 12 h. The crude material was purified by flash chromatography on silica gel (eluted with hexanes:EtOAc = 8:1) to give the product (26.4 mg, 59% yield) as a yellow solid. mp = 188−190 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.49 (dd, J = 4.7, 1.6 Hz, 2H), 7.6 (d, J = 8.6 Hz, 1H), 7.38 (s, 1H), 7.35 (d, J = 0.5 Hz, 1H), 7.29 – 7.24 (m, 5H), 7.22 – 7.16 (m, 4H), 7.14 – 7.12 (m, 5H), 3.84 (s, 3H); ^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$): δ 154.7, 150.2, 149.7, 146.8, 144.2, 138.7, 133.4, 130.8, 129.9, 129.5, 128.4, 127.2, 126.3, 125.8, 123.6, 117.1, 64.8, 39.3; IR (thin film): 3022, 2922, 1609, 1589, 1521, 1489, 1383, 1216, 704 cm^{-1}; HRMS (ESI) m/z: $[M + H]^+$ calcd for $C_{28}H_{23}N_4O_2$ 447.1816; found 447.1820.

Reference

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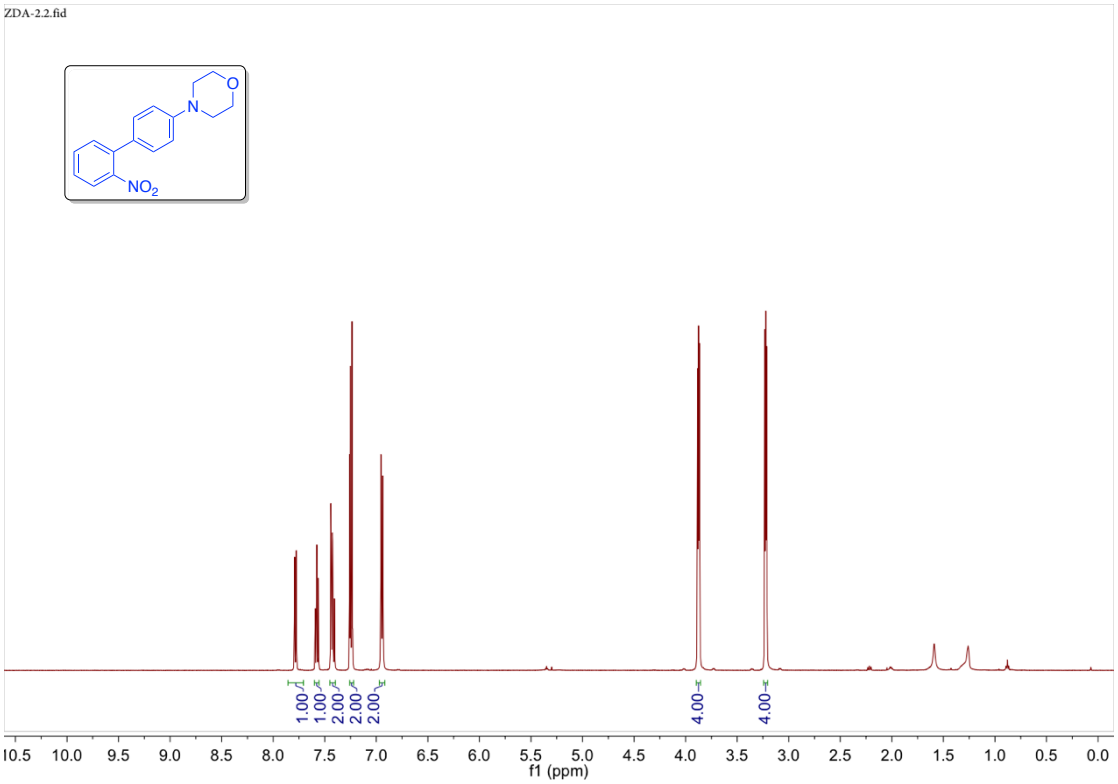
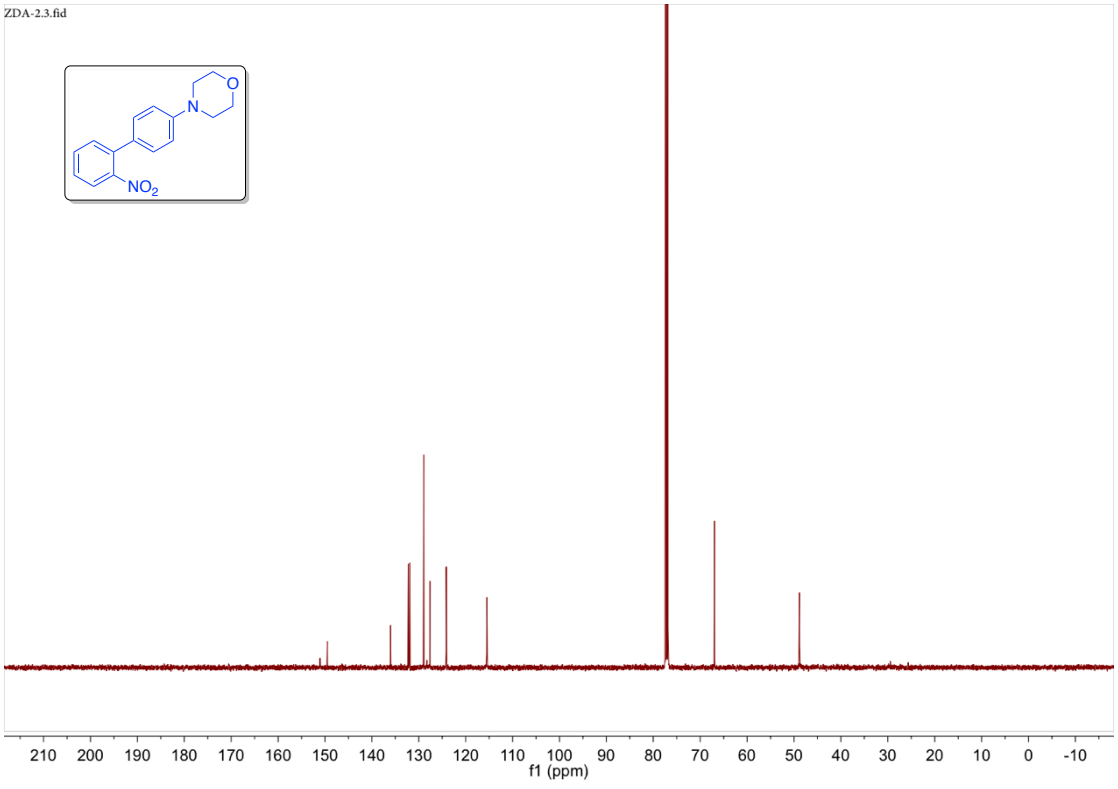
NMR Spectra

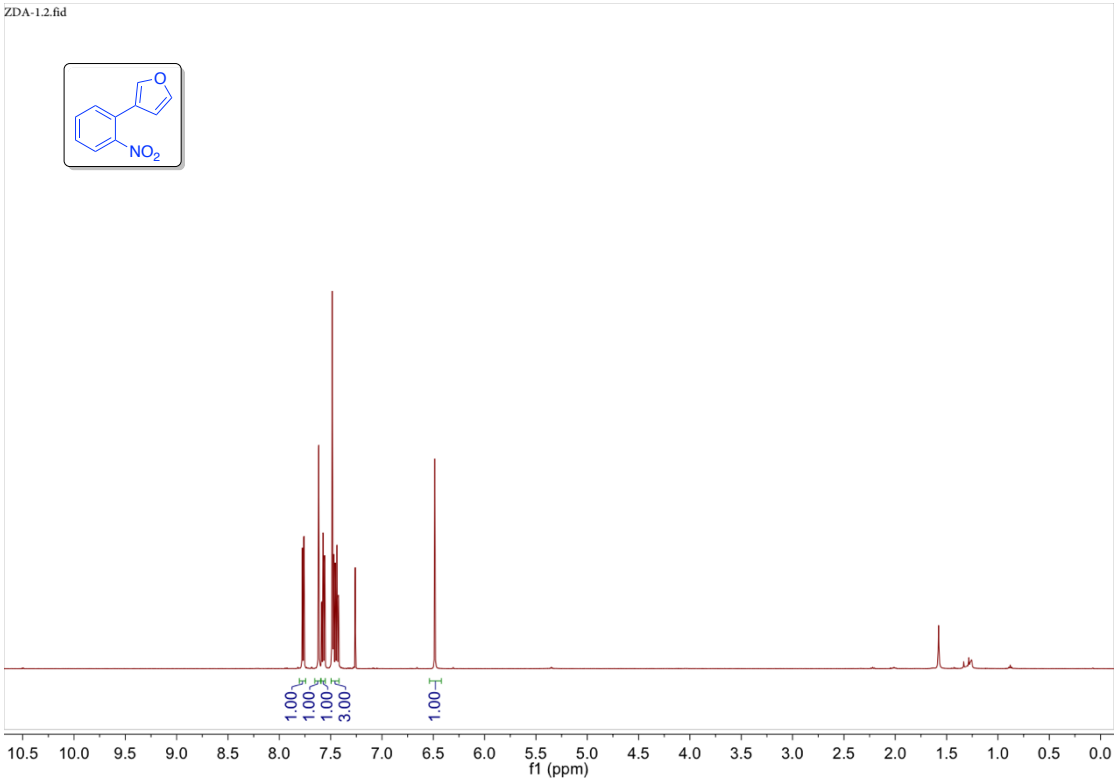
Supplementary Figure 1. ^{1}H NMR Spectrum of 1I (500 MHz, $CDCl_3$)



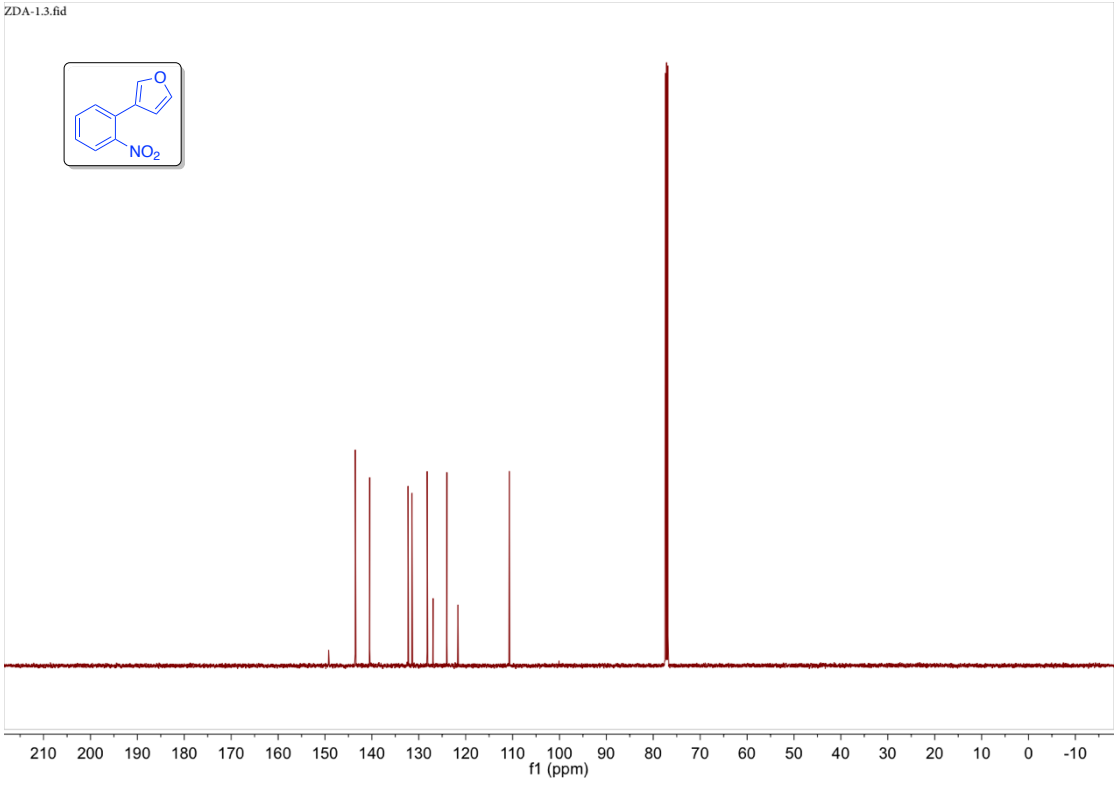
Supplementary Figure 2. ^{13}C NMR Spectrum of 1I (125 MHz, $CDCl_3$)



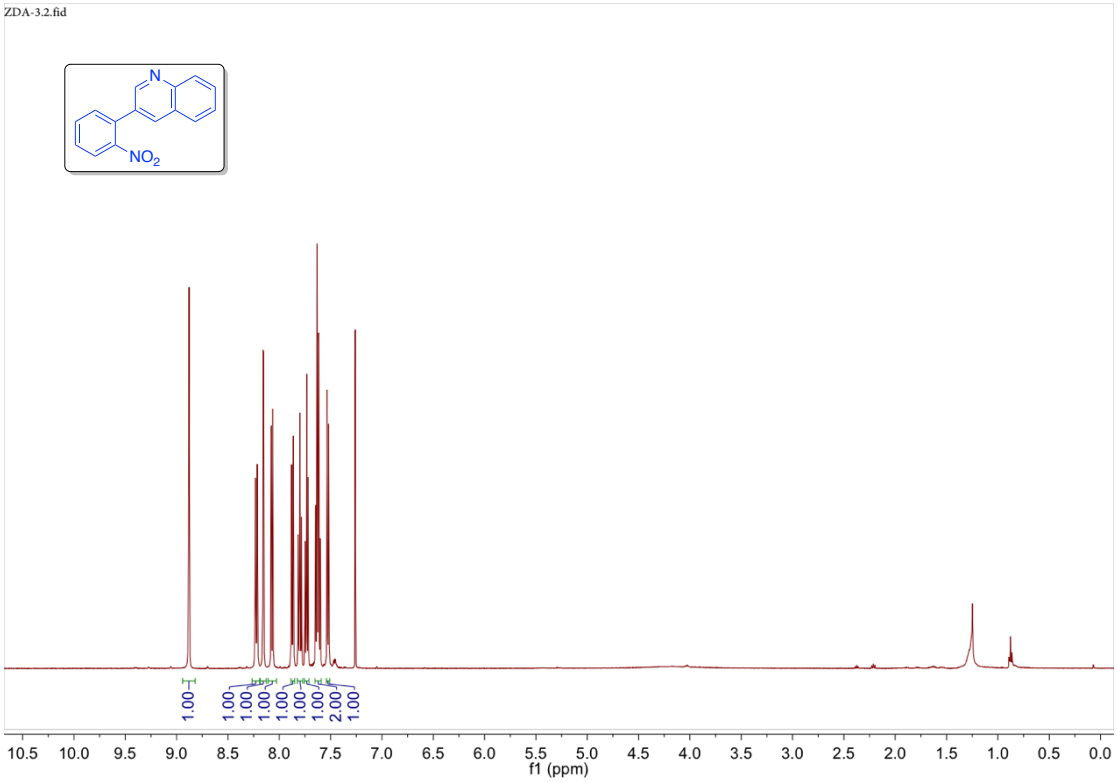
Supplementary Figure 3. ^{1}H NMR Spectrum of 1k (500 MHz, $CDCl_3$)



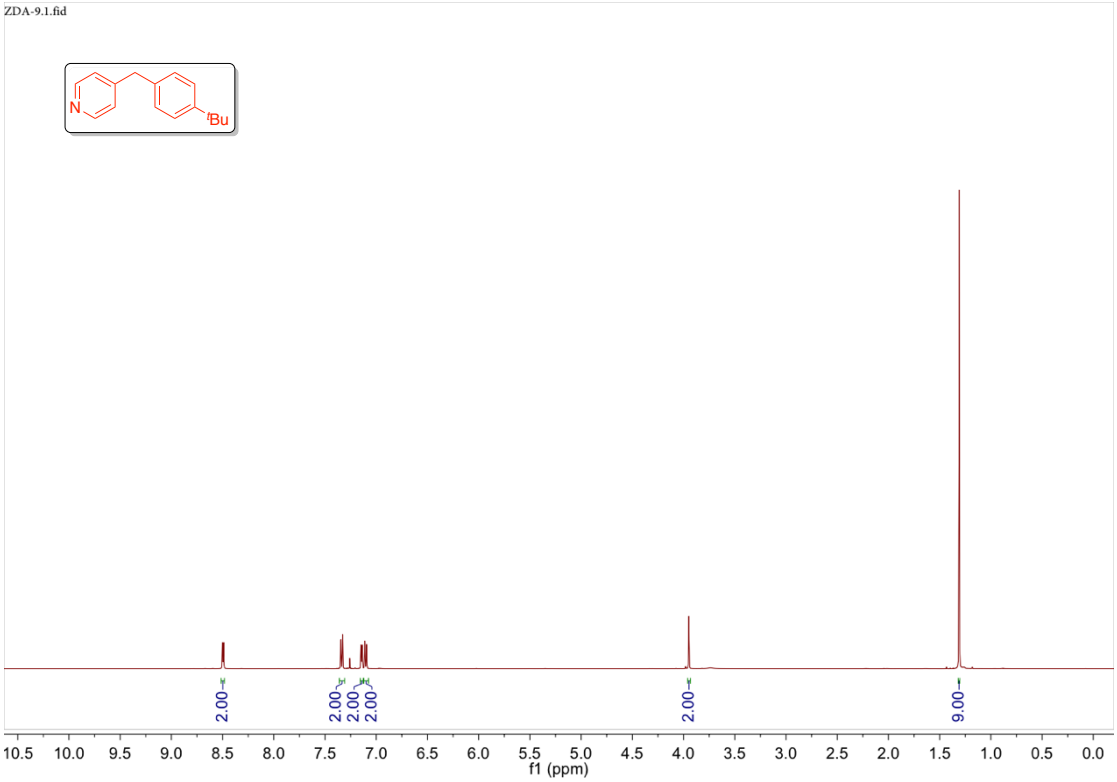
Supplementary Figure 4. ^{13}C NMR Spectrum of 1k (125 MHz, $CDCl_3$)



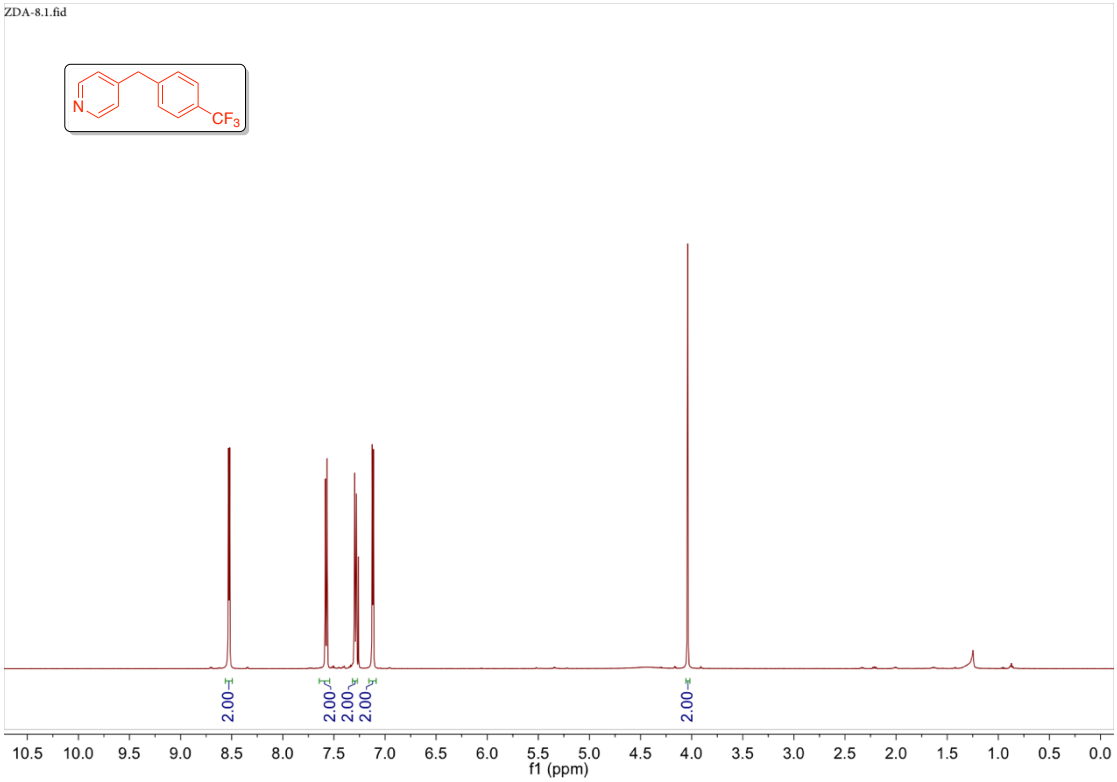
Supplementary Figure 5. ^{1}H NMR Spectrum of 1p (500 MHz, $CDCl_3$)



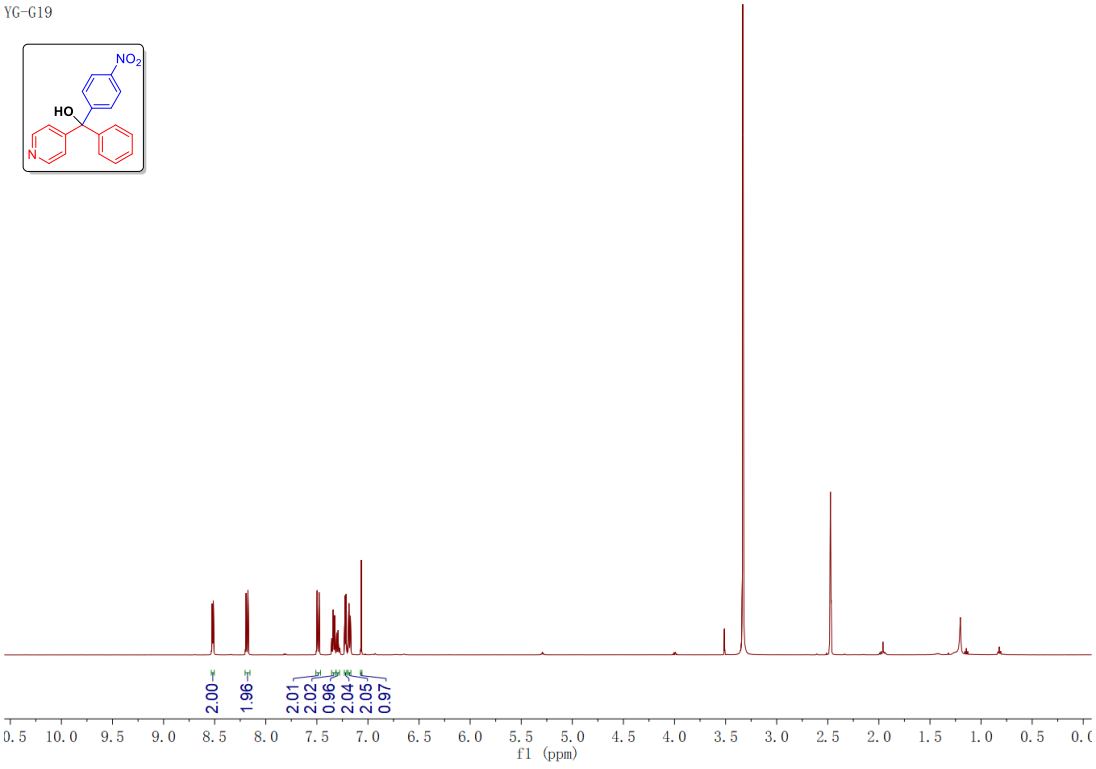
Supplementary Figure 6. ^{1}H NMR Spectrum of 2b (500 MHz, $CDCl_3$)



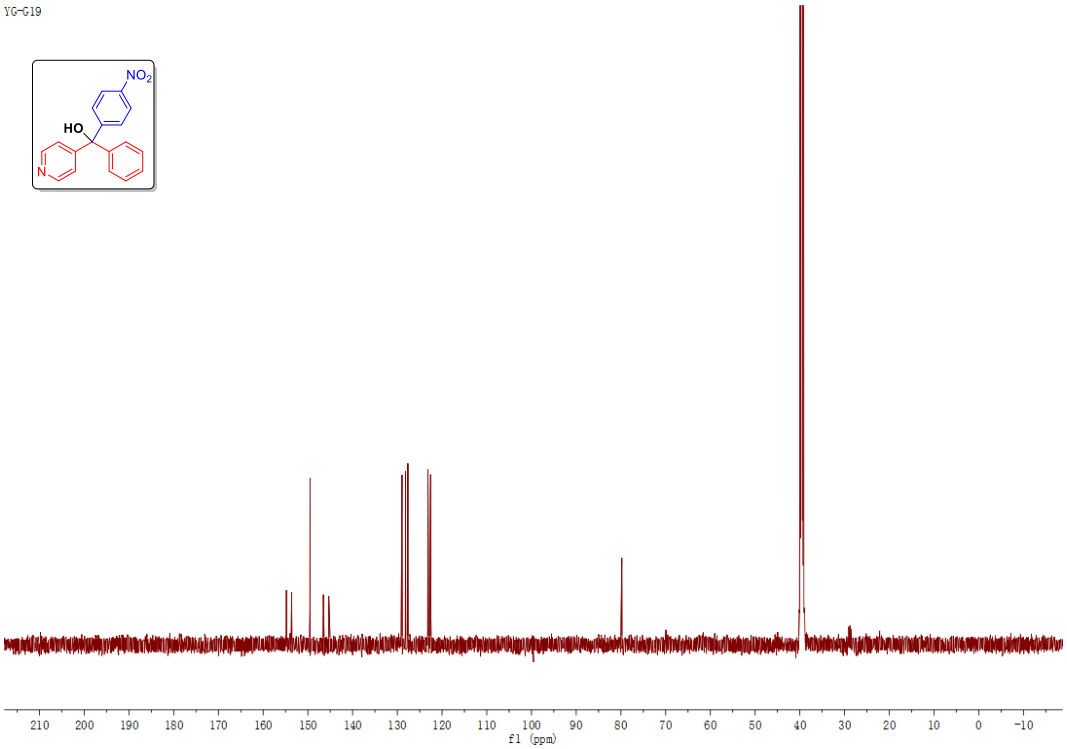
Supplementary Figure 7. ^{1}H NMR Spectrum of 2h (500 MHz, $CDCl_3$)



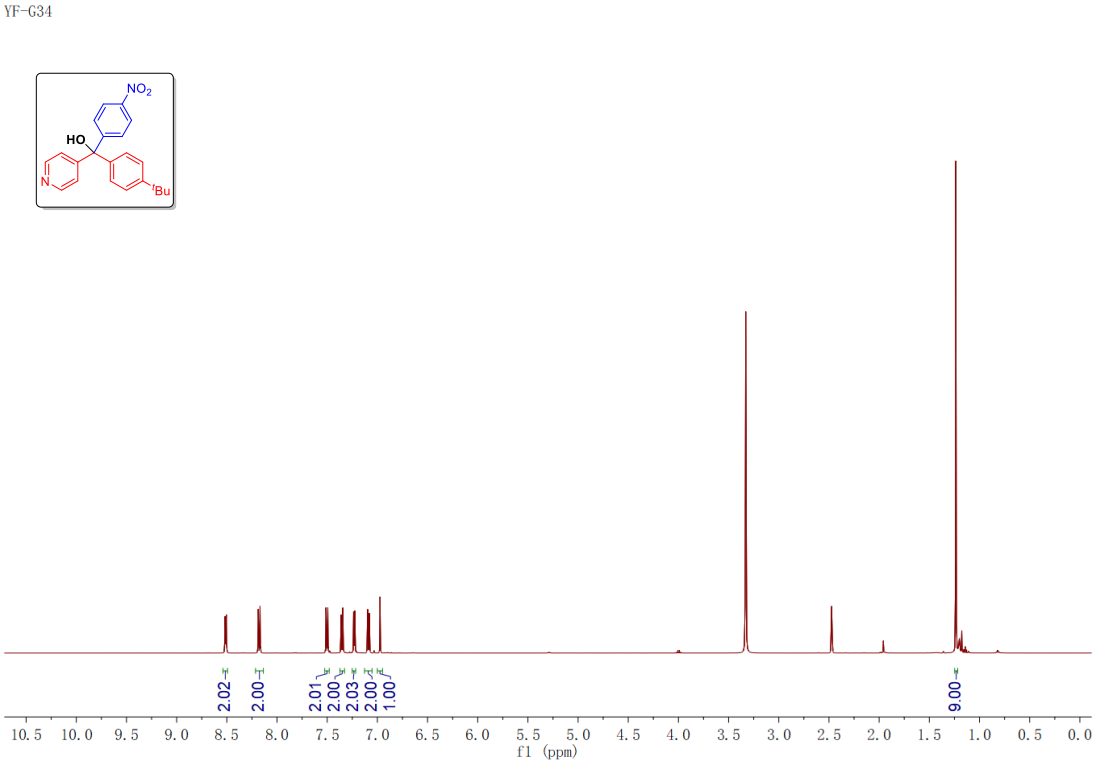
Supplementary Figure 8. ^{1}H NMR Spectrum of 3aa (500 MHz, DMSO-d_6)



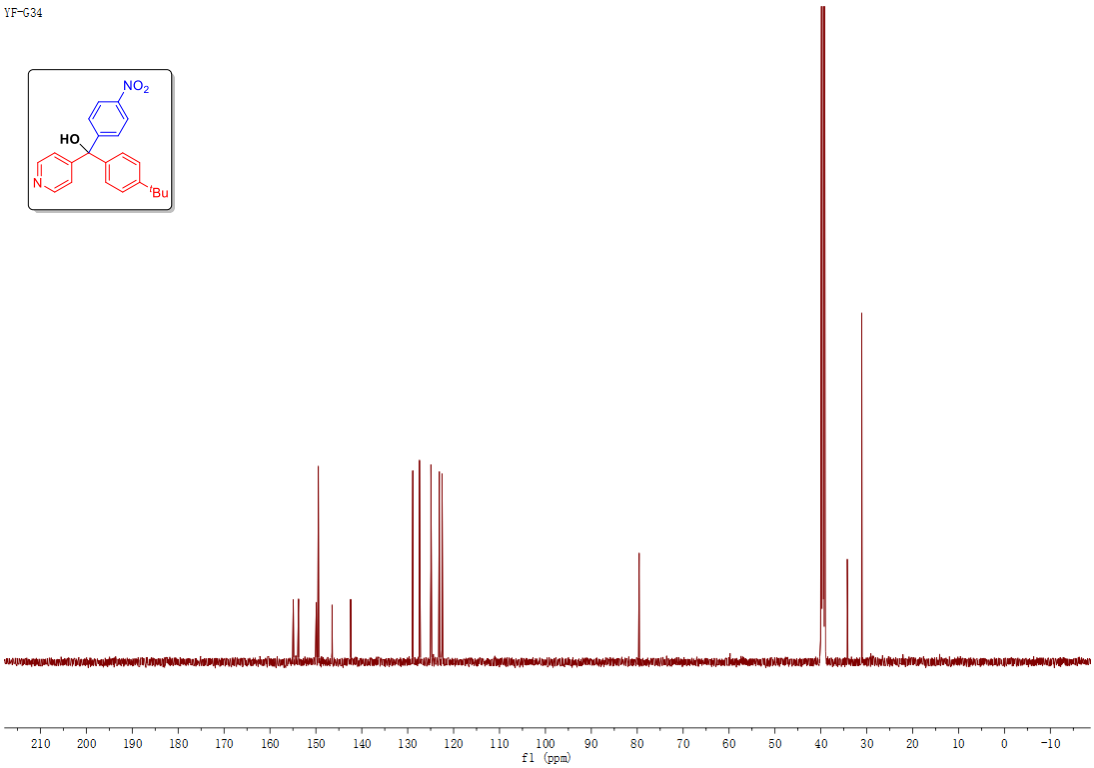
Supplementary Figure 9. ^{13}C NMR Spectrum of 3aa (125 MHz, DMSO-*d*$_6$)



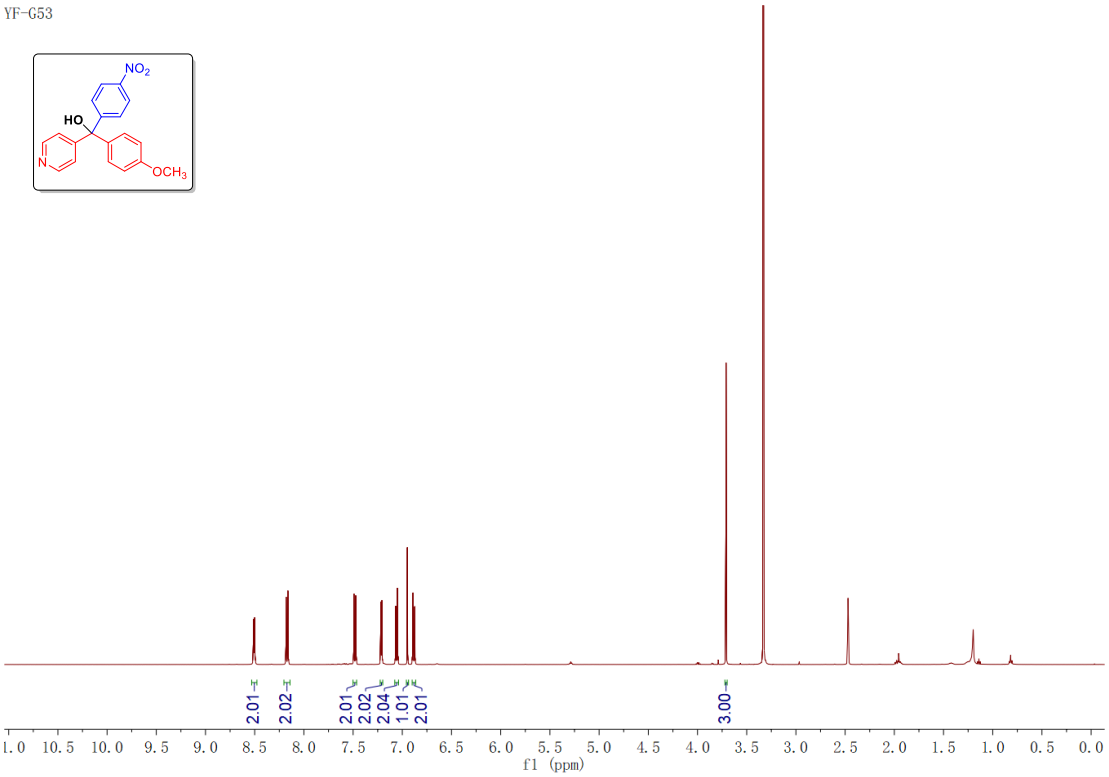
Supplementary Figure 10. ^{1}H NMR Spectrum of 3ab (500 MHz, DMSO-*d*$_6$)



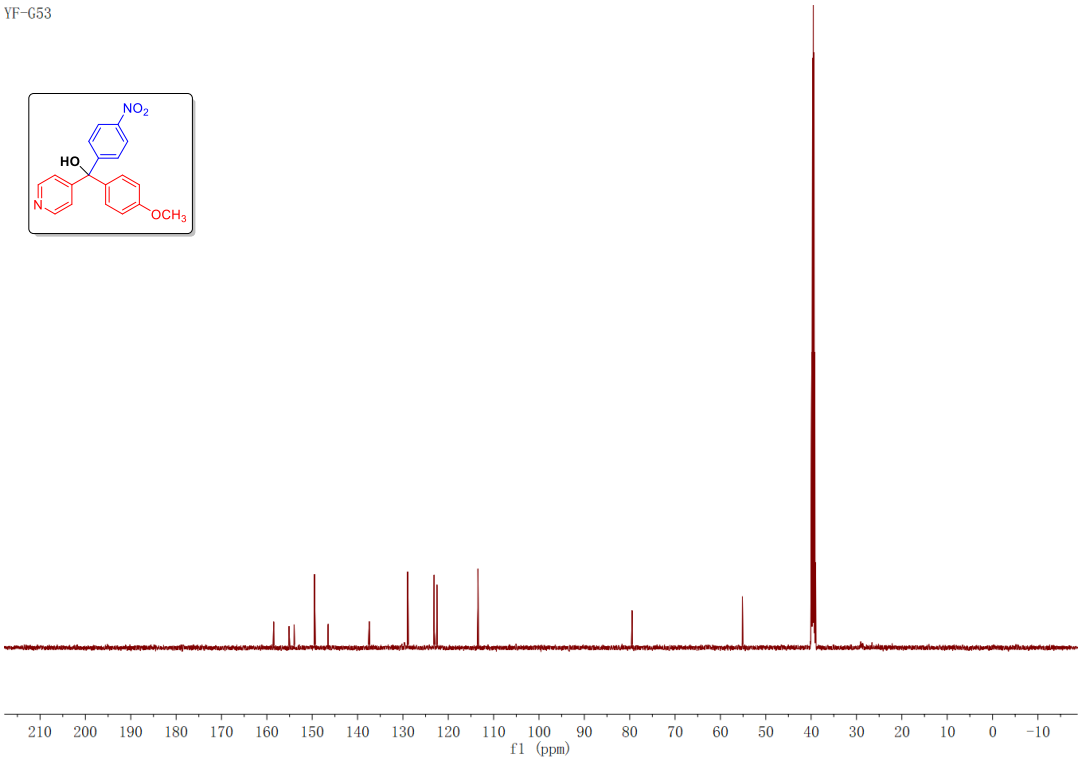
Supplementary Figure 11. ^{13}C NMR Spectrum of 3ab (125 MHz, DMSO-*d*$_6$)



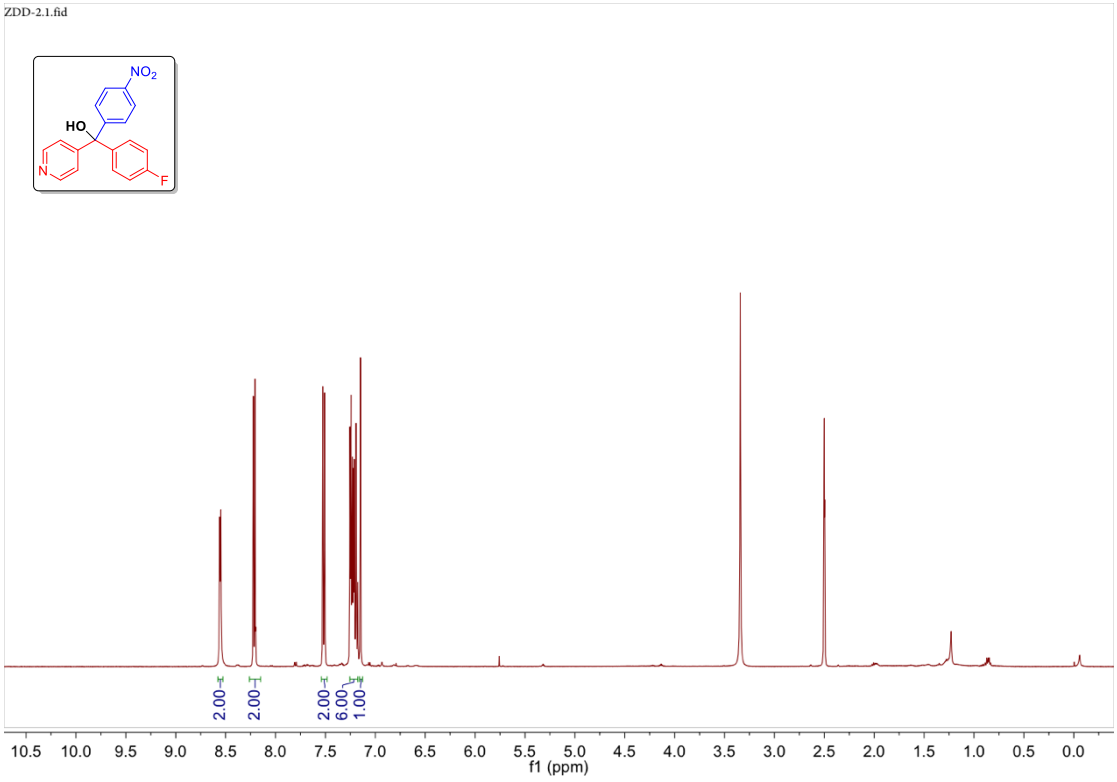
Supplementary Figure 12. ^{1}H NMR Spectrum of 3ac (500 MHz, DMSO-*d*$_6$)



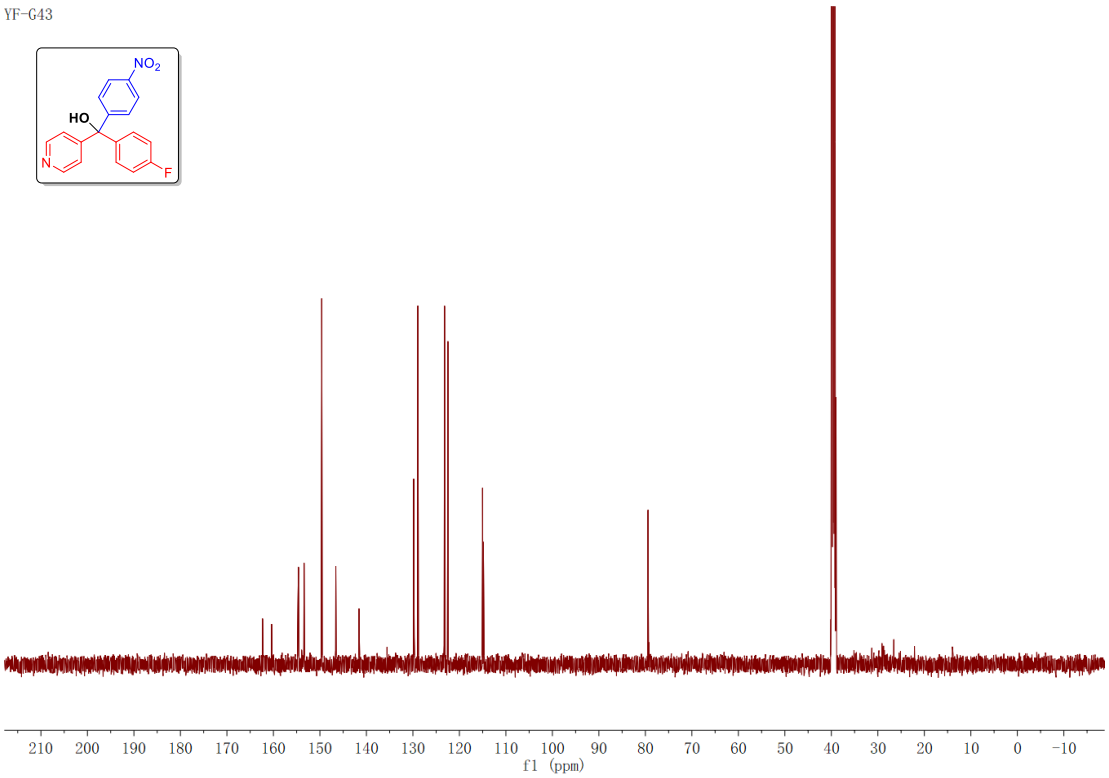
Supplementary Figure 13. ^{13}C NMR Spectrum of 3ac (125 MHz, DMSO-d_6)



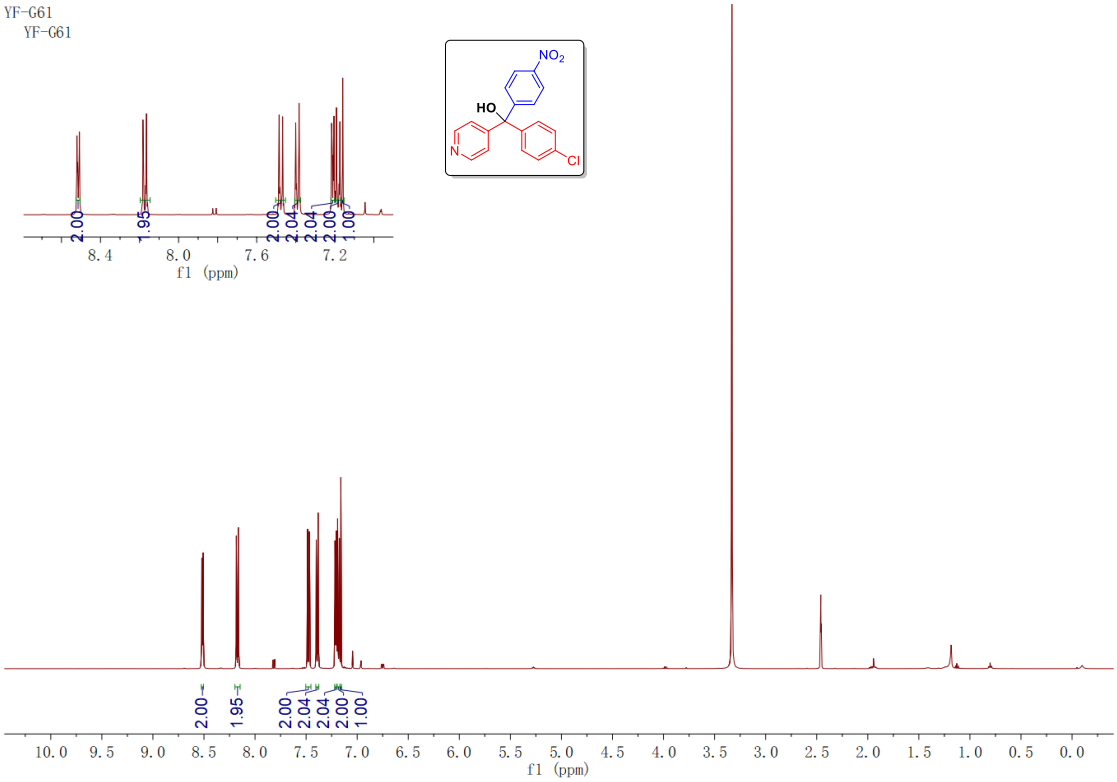
Supplementary Figure 14. ^{1}H NMR Spectrum of 3ad (500 MHz, DMSO-d_6)



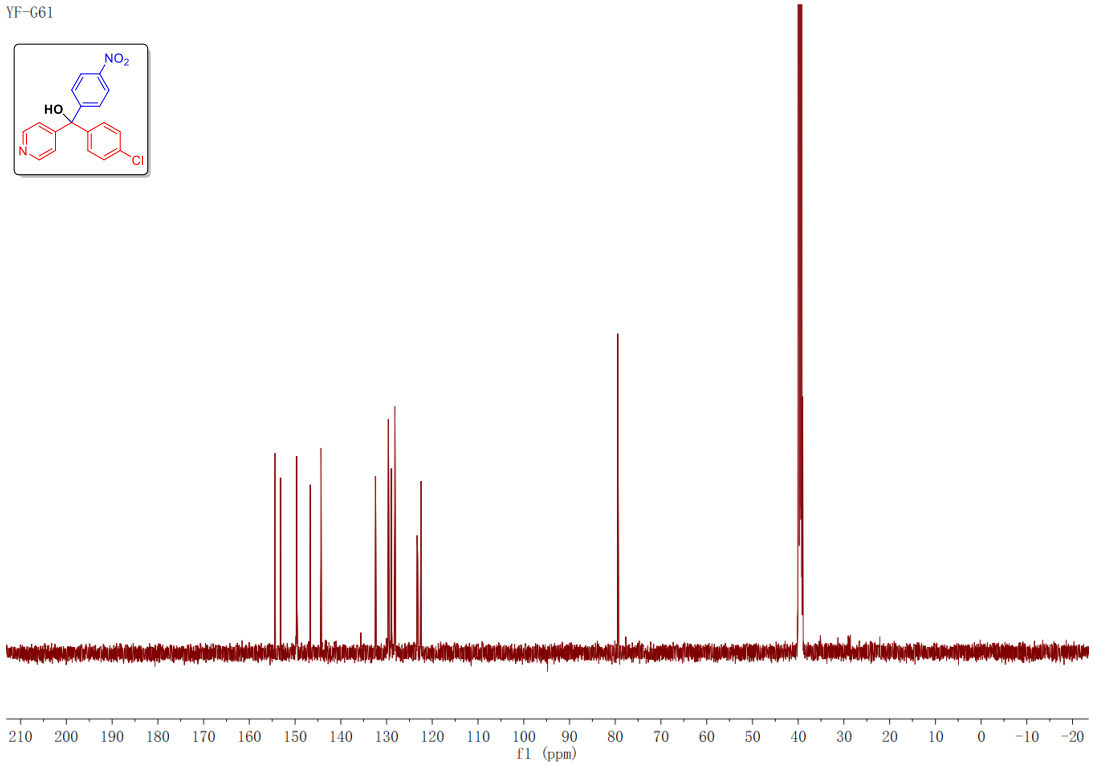
Supplementary Figure 15. ^{13}C NMR Spectrum of 3ad (125 MHz, DMSO-d_6)



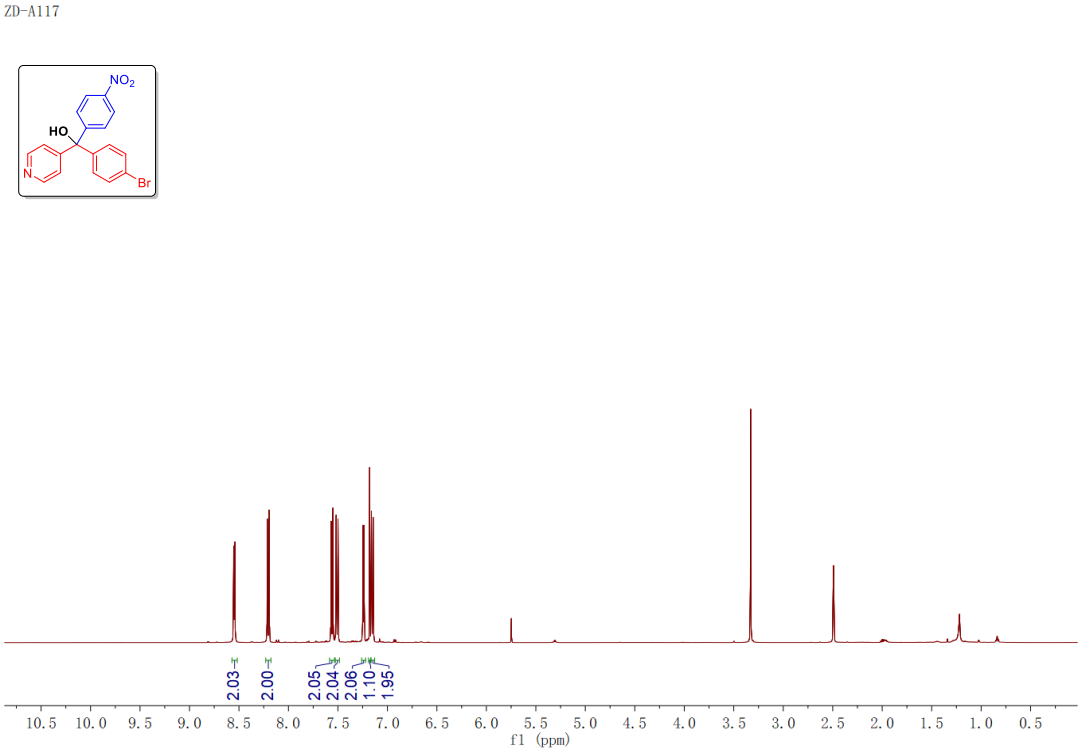
Supplementary Figure 16. ^{1}H NMR Spectrum of 3ae (500 MHz, DMSO-d_6)



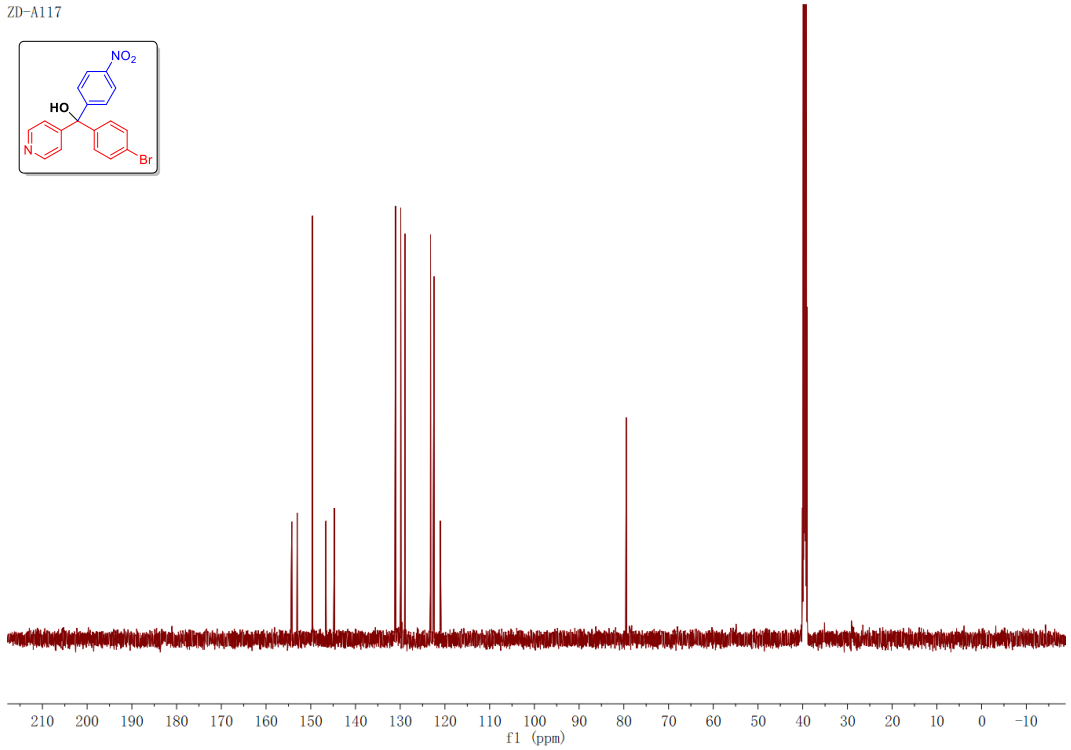
Supplementary Figure 17. ^{13}C NMR Spectrum of 3ae (125 MHz, DMSO-d_6)



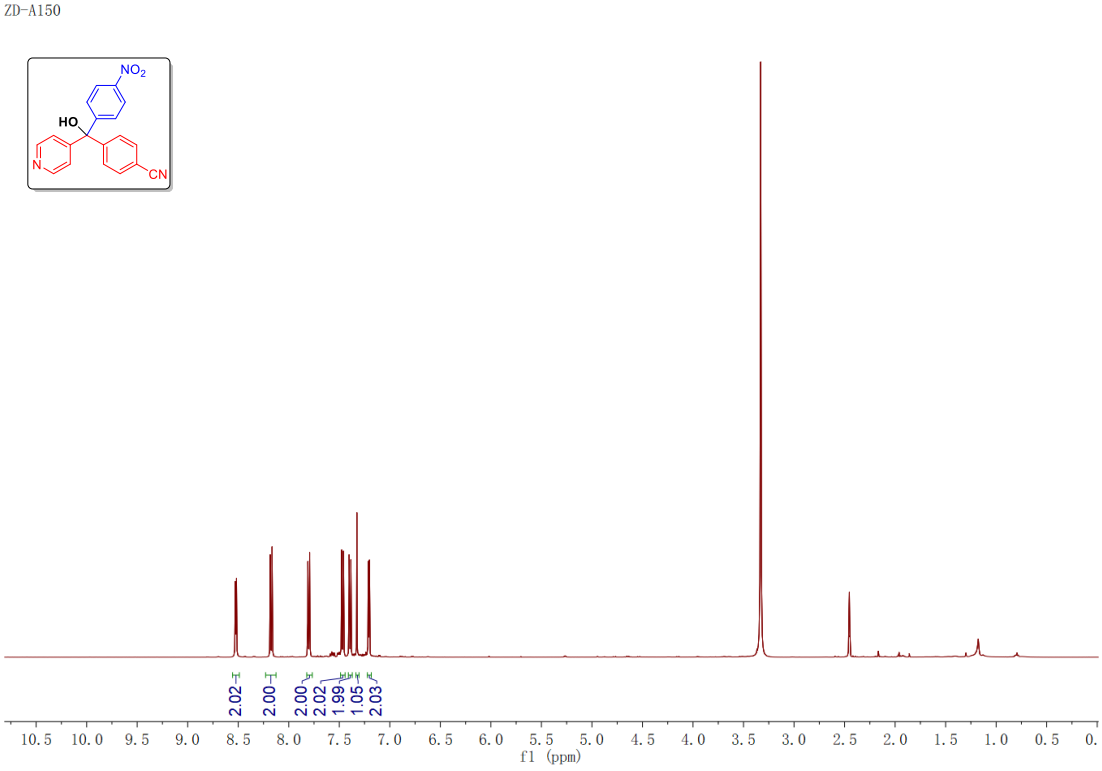
Supplementary Figure 18. ^{1}H NMR Spectrum of 3af (500 MHz, DMSO-d_6)



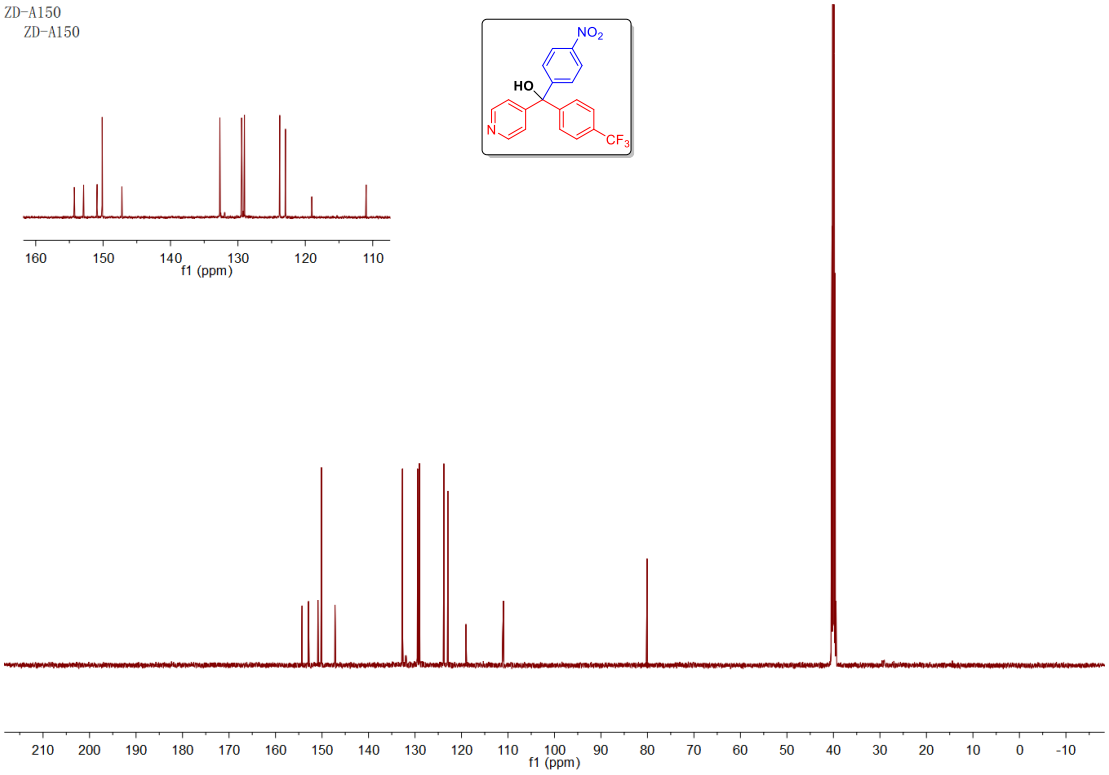
Supplementary Figure 19. ^{13}C NMR Spectrum of 3af (125 MHz, DMSO-*d*$_6$)



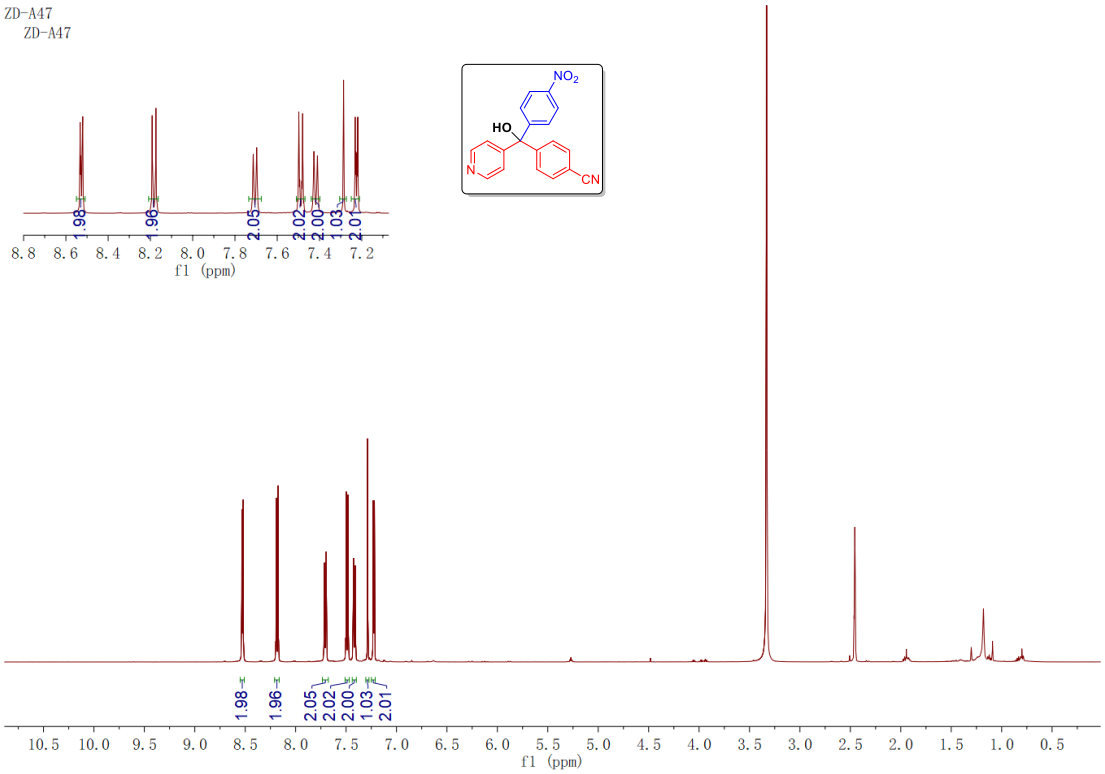
Supplementary Figure 20. ^{1}H NMR Spectrum of 3ag (500 MHz, DMSO-*d*$_6$)



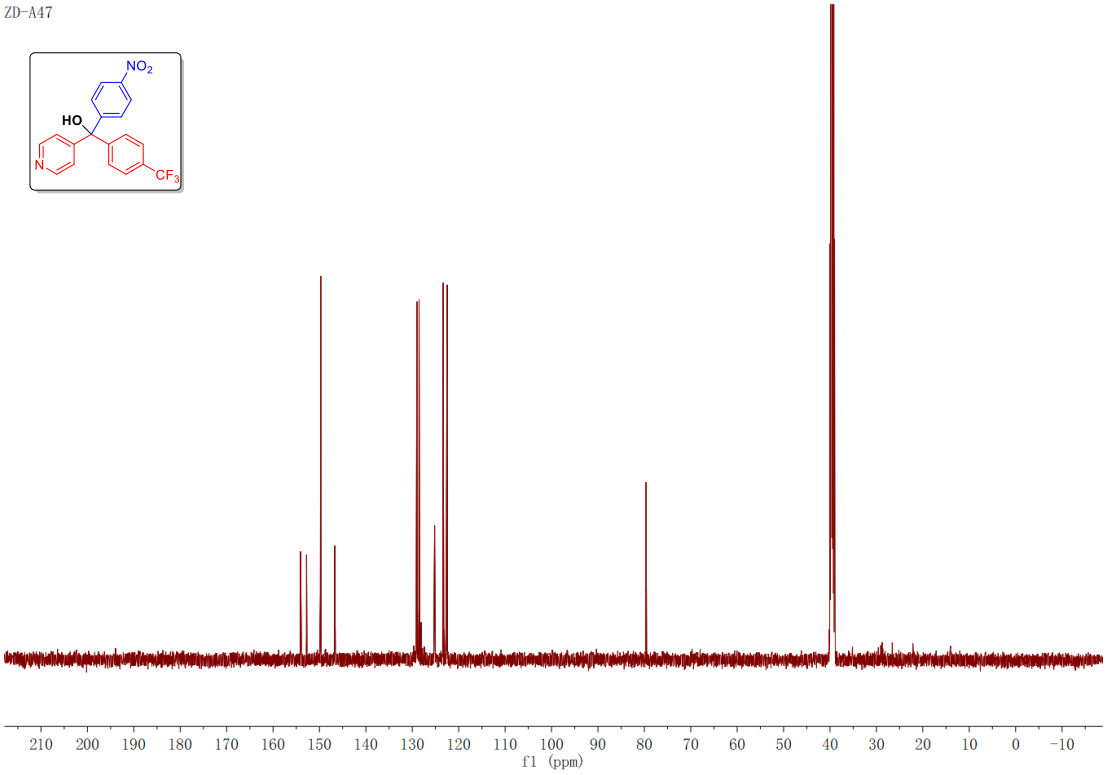
Supplementary Figure 21. ^{13}C NMR Spectrum of 3ag (125 MHz, DMSO-d_6)



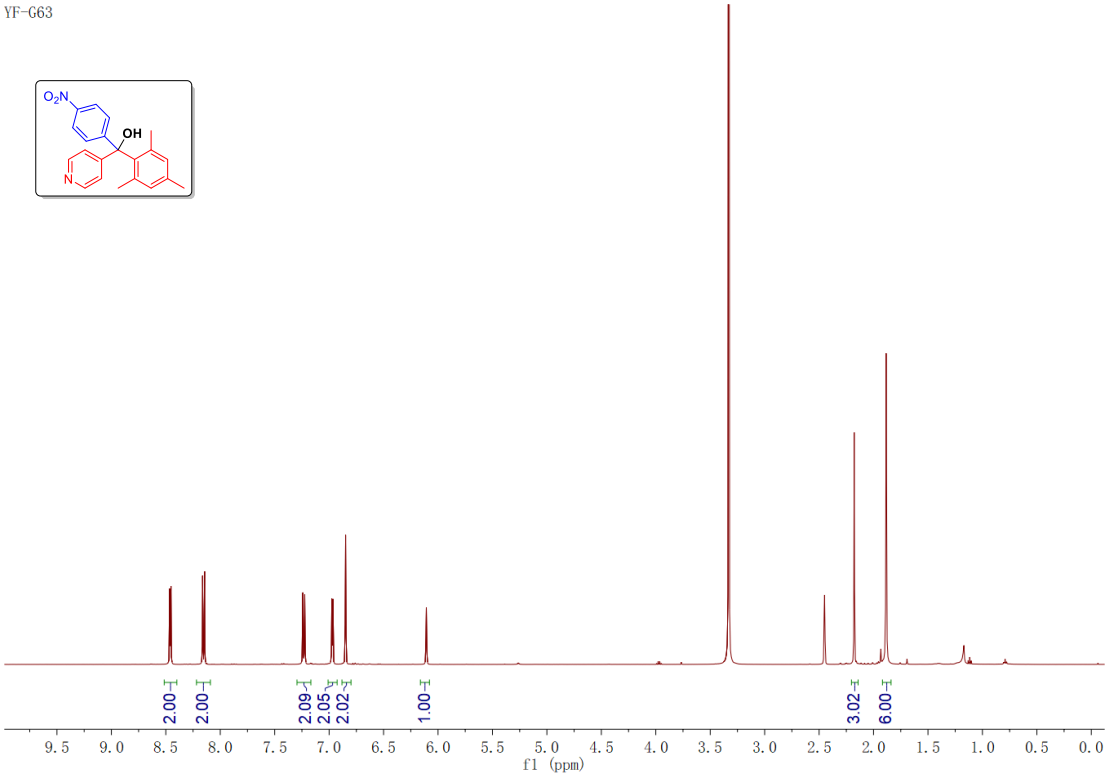
Supplementary Figure 22. ^{1}H NMR Spectrum of 3ah (500 MHz, DMSO-d_6)



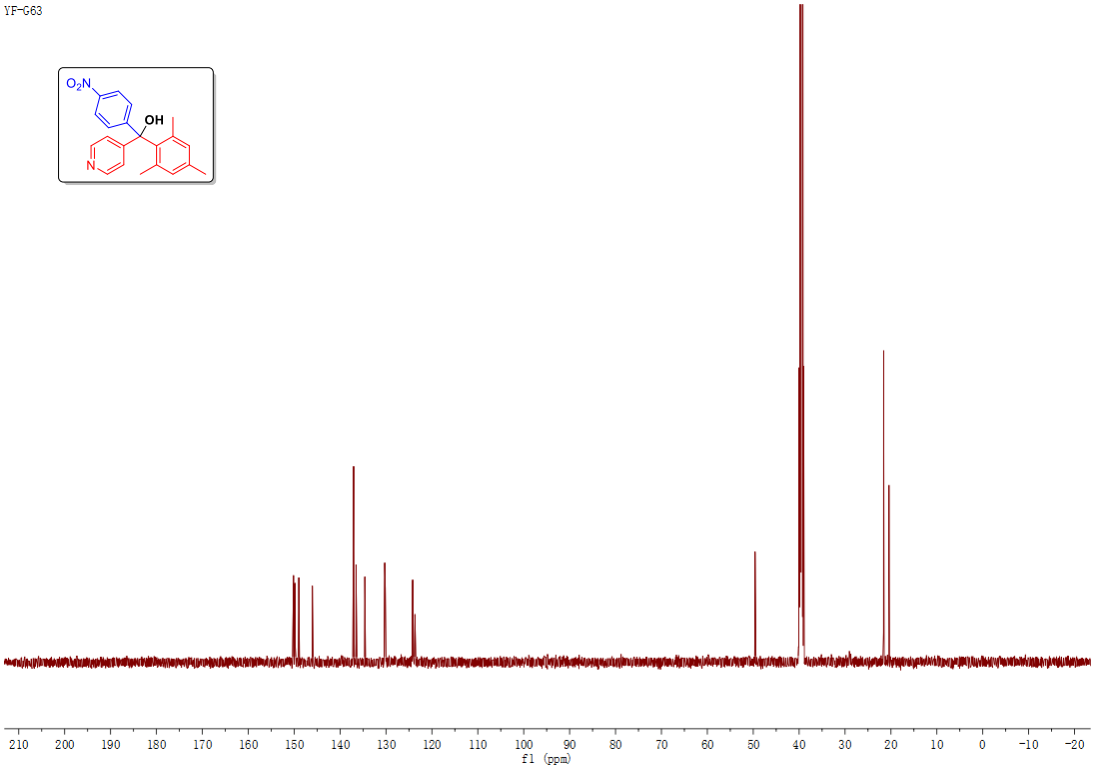
Supplementary Figure 23. ^{13}C NMR Spectrum of 3ah (125 MHz, DMSO-*d*$_6$)



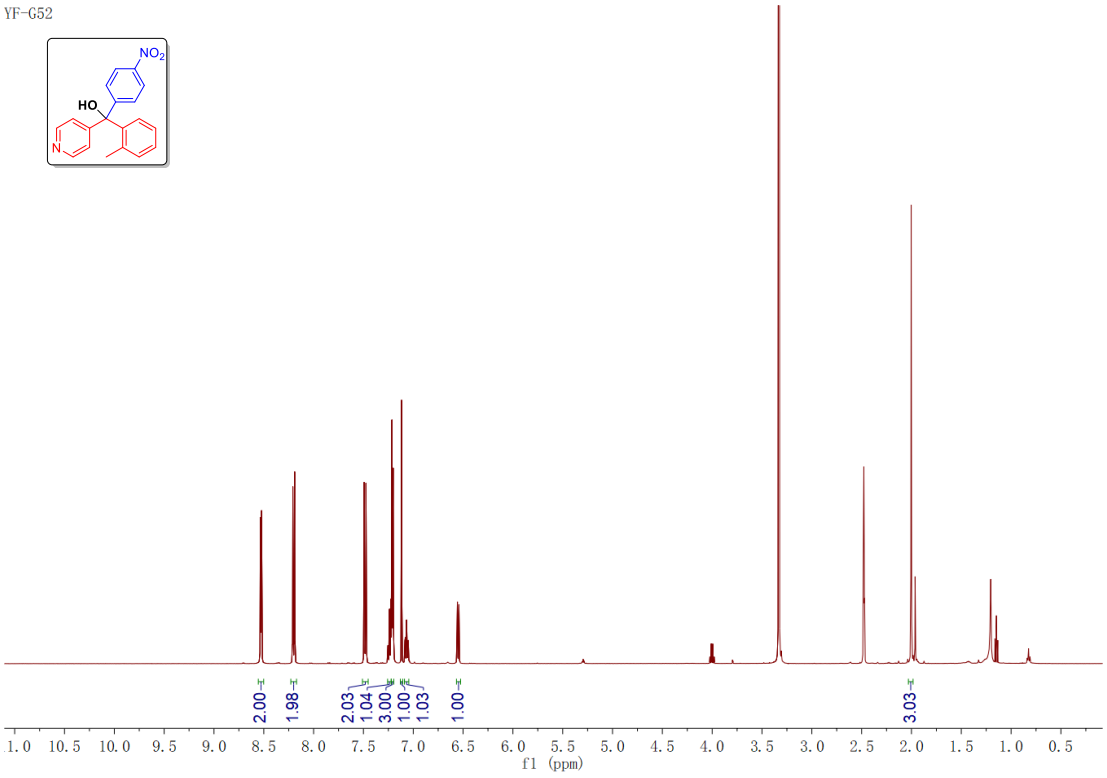
Supplementary Figure 24. ^{1}H NMR Spectrum of 3ai (500 MHz, DMSO-*d*$_6$)



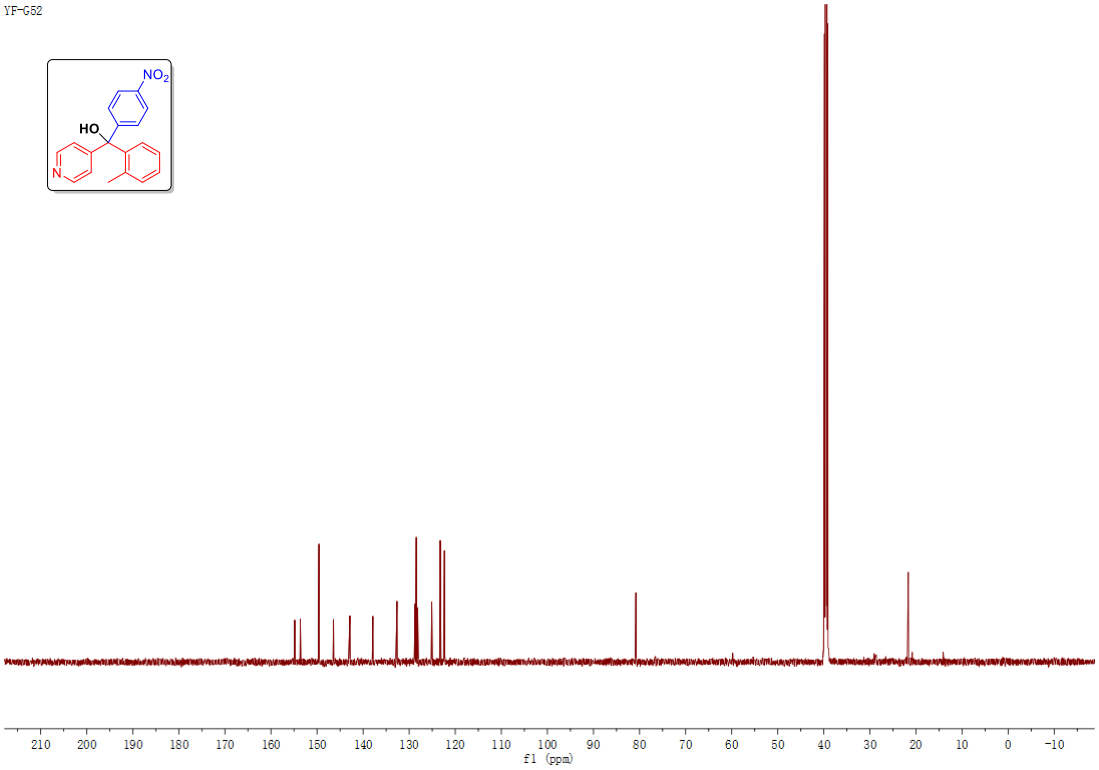
Supplementary Figure 25. ^{13}C NMR Spectrum of 3ai (125 MHz, DMSO-d_6)



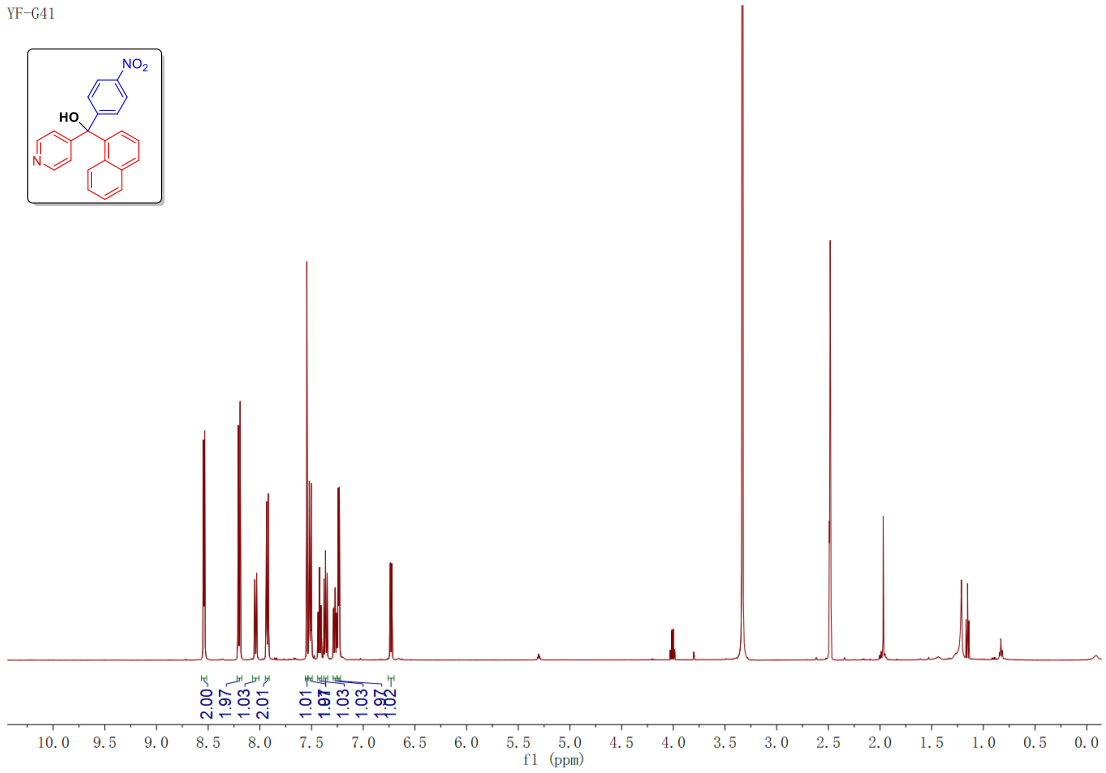
Supplementary Figure 26. ^{1}H NMR Spectrum of 3aj (500 MHz, DMSO-d_6)



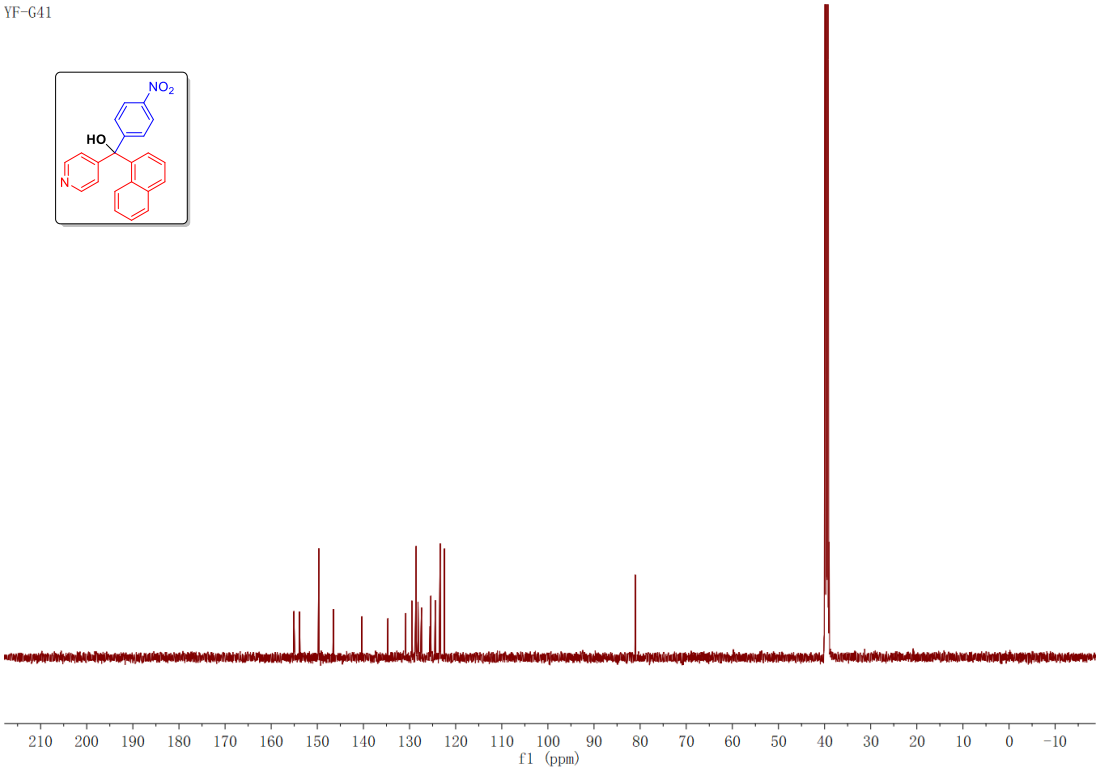
Supplementary Figure 27. ^{13}C NMR Spectrum of 3aj (125 MHz, DMSO-d_6)



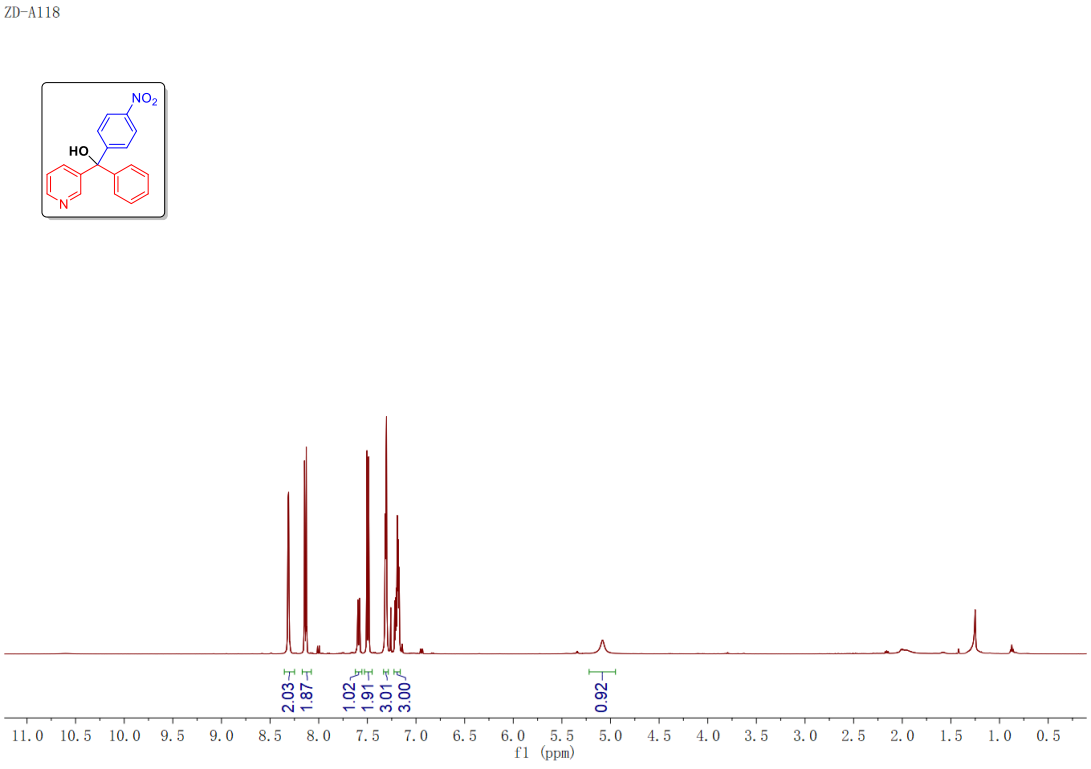
Supplementary Figure 28. ^{1}H NMR Spectrum of 3ak (500 MHz, DMSO-d_6)



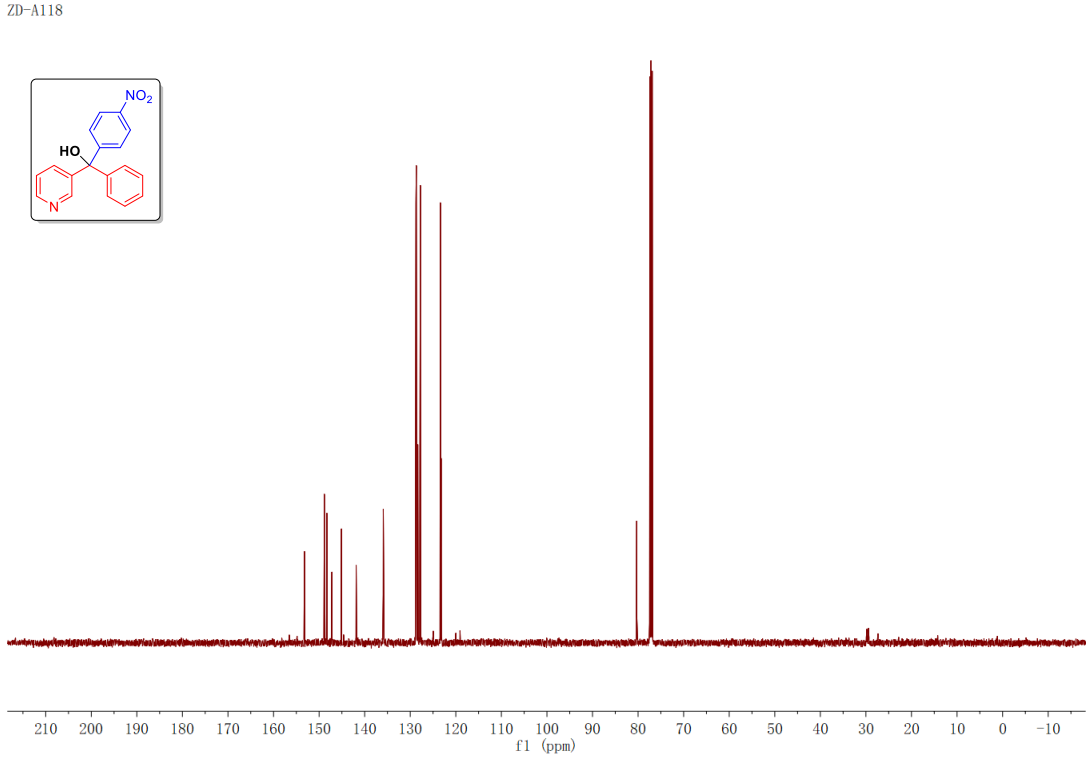
Supplementary Figure 29. ^{13}C NMR Spectrum of 3ak (125 MHz, DMSO-d_6)



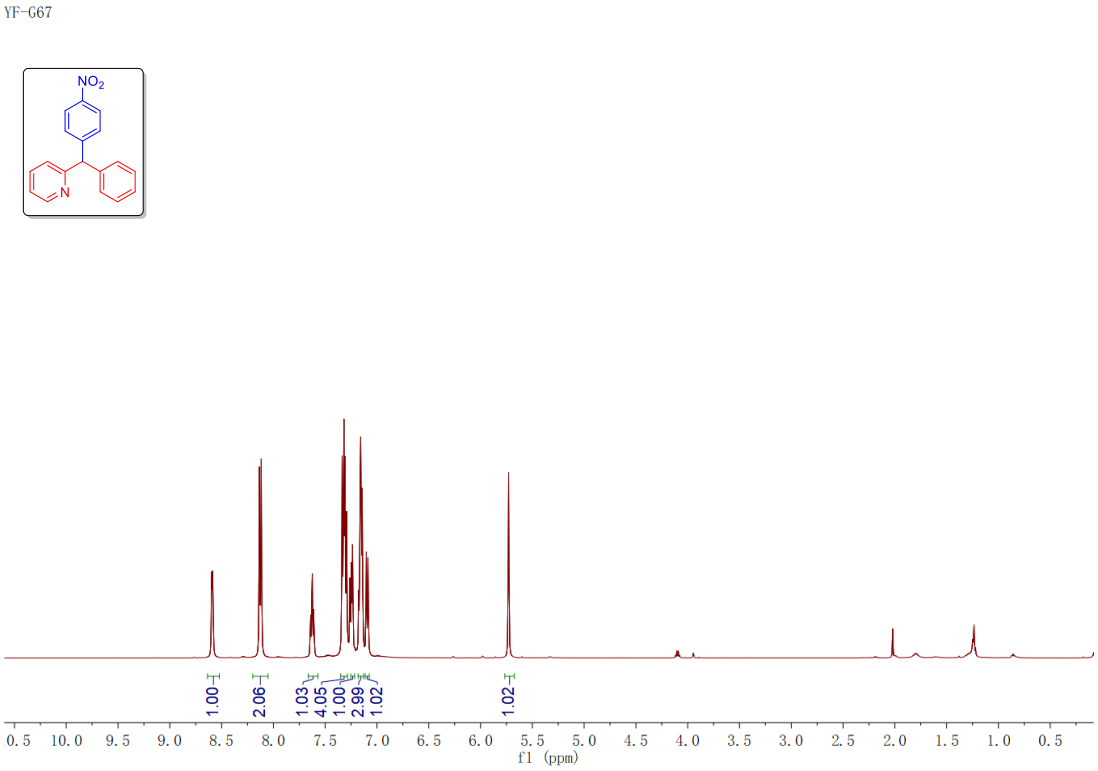
Supplementary Figure 30. ^{1}H NMR Spectrum of 3al (500 MHz, $CDCl_3$)



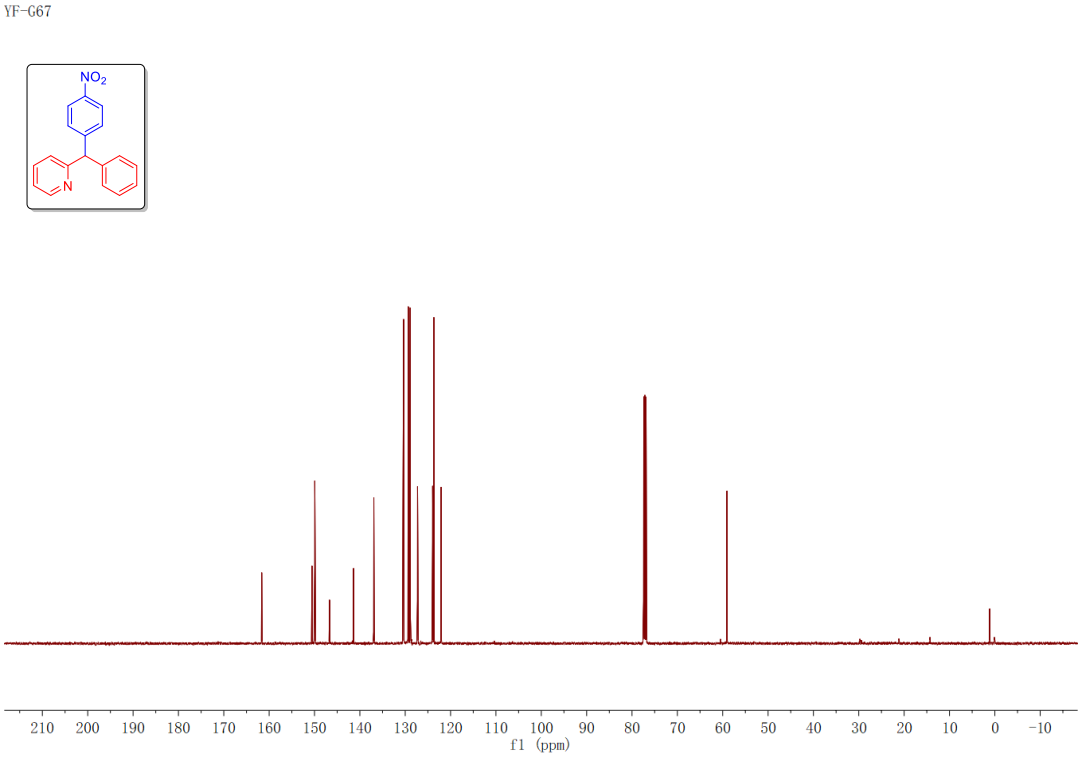
Supplementary Figure 31. ^{13}C NMR Spectrum of 3al (125 MHz, $CDCl_3$)



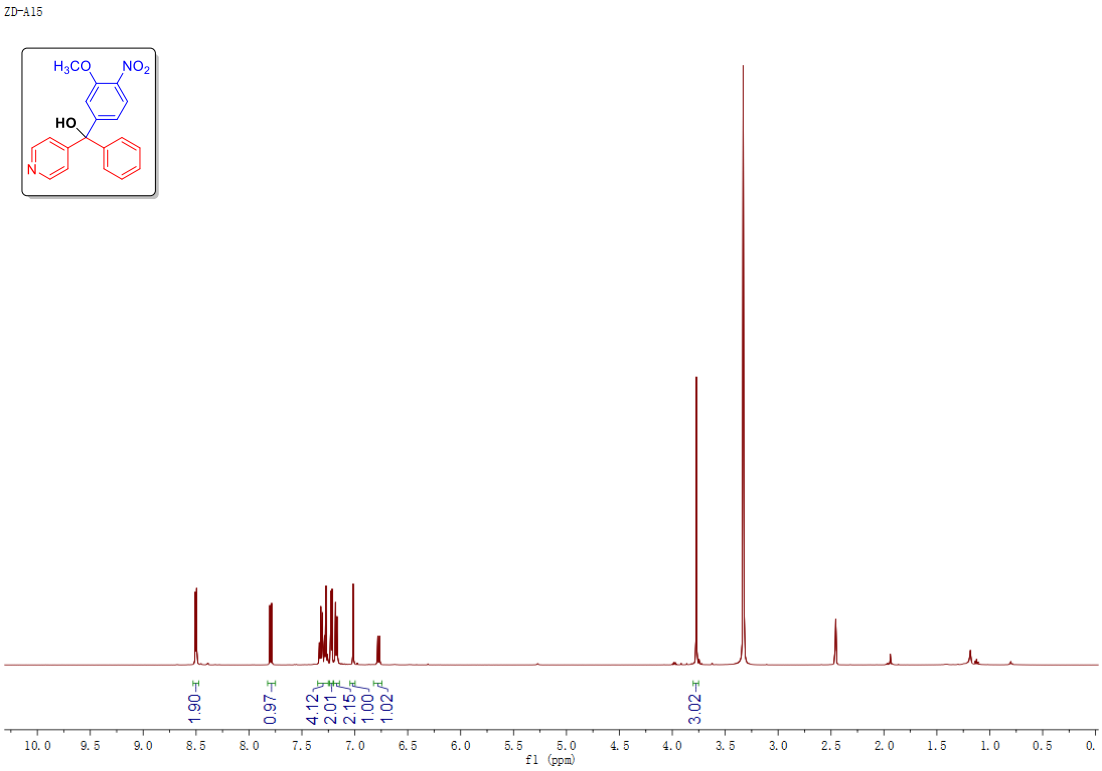
Supplementary Figure 32. ^{1}H NMR Spectrum of 3am (500 MHz, $CDCl_3$)



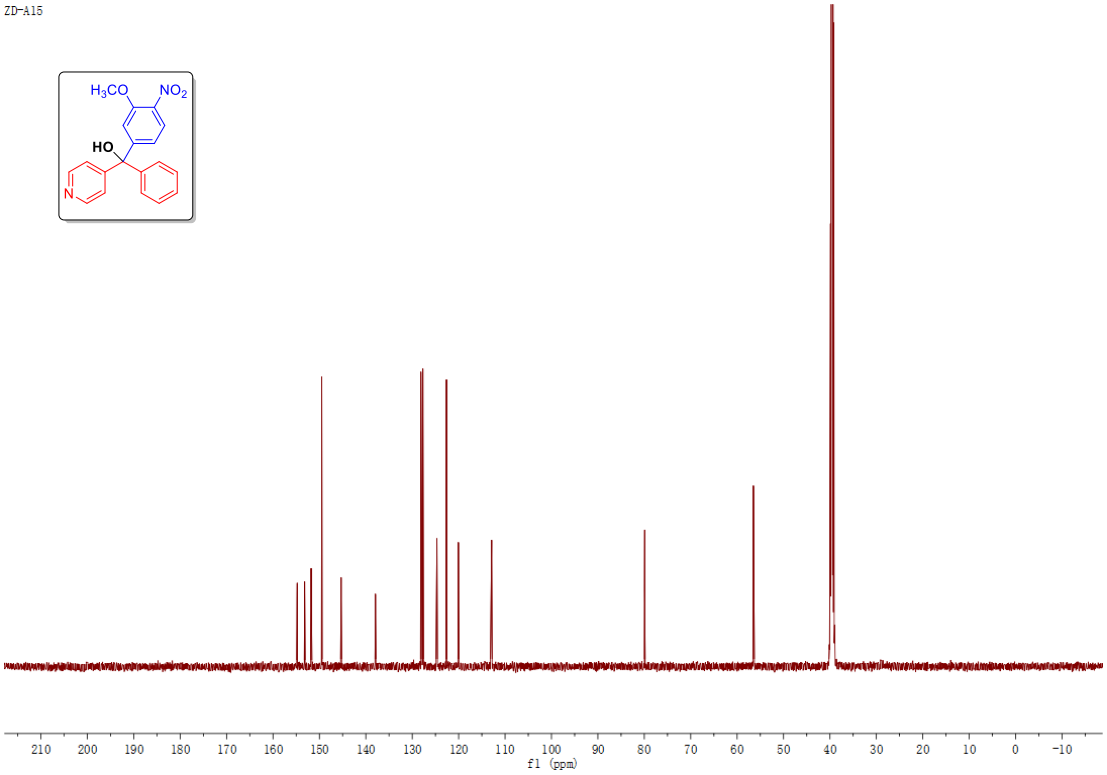
Supplementary Figure 33. ^{13}C NMR Spectrum of 3am (125 MHz, $CDCl_3$)



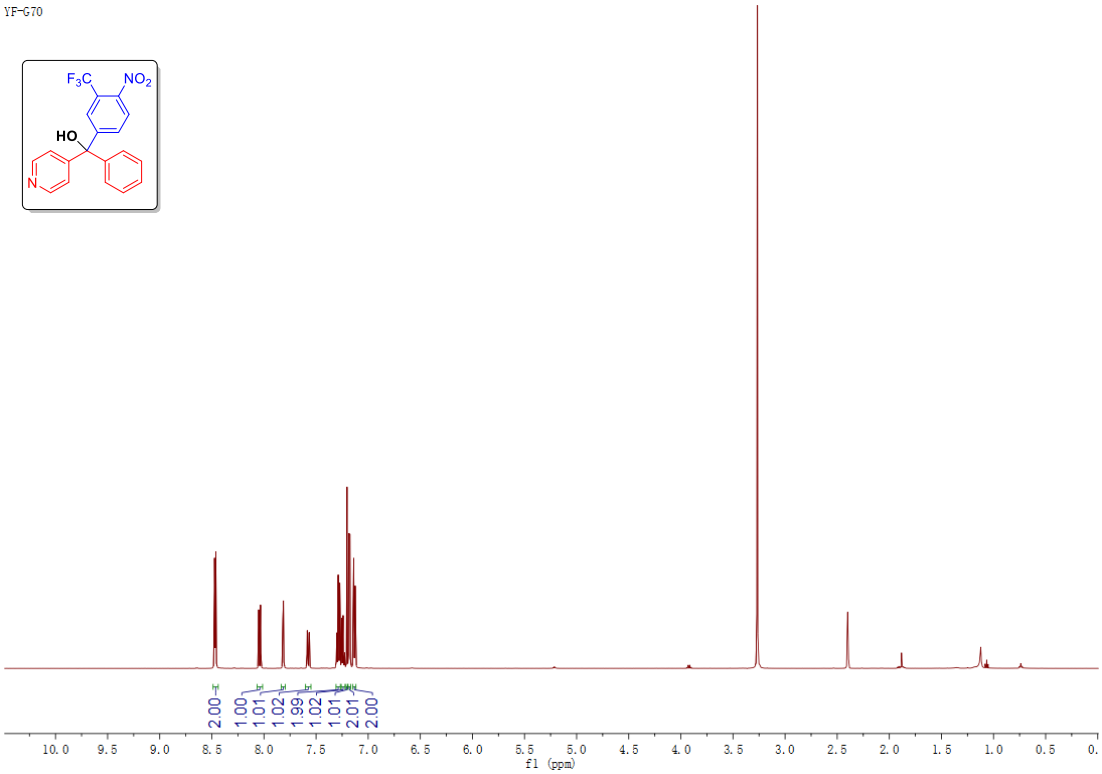
Supplementary Figure 34. ^{1}H NMR Spectrum of 3ba (500 MHz, DMSO-d_6)



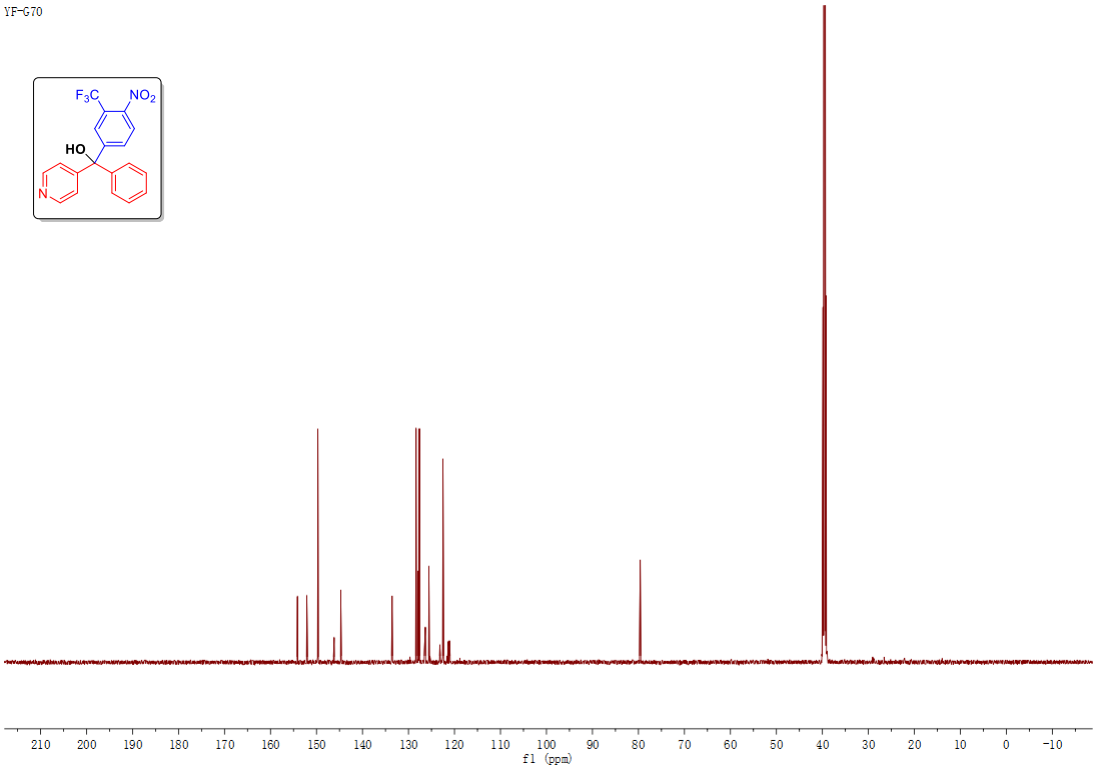
Supplementary Figure 35. ^{13}C NMR Spectrum of 3ba (125 MHz, DMSO-d_6)



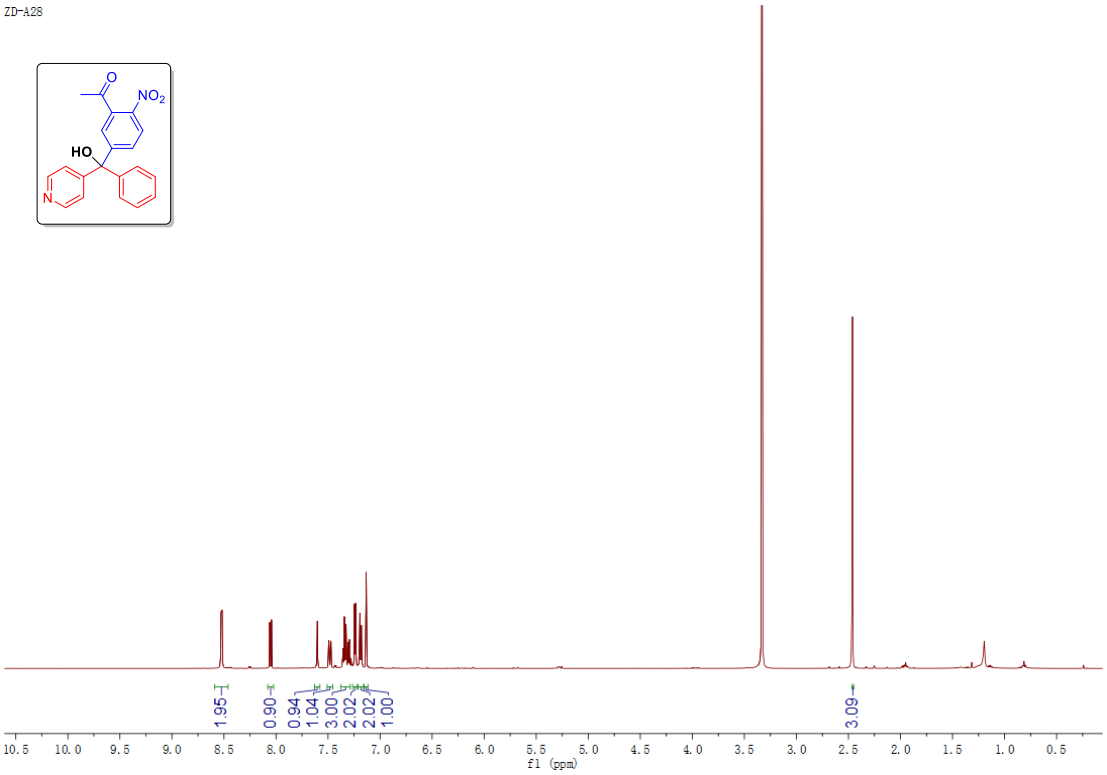
Supplementary Figure 36. ^{1}H NMR Spectrum of 3ca (500 MHz, DMSO-d_6)



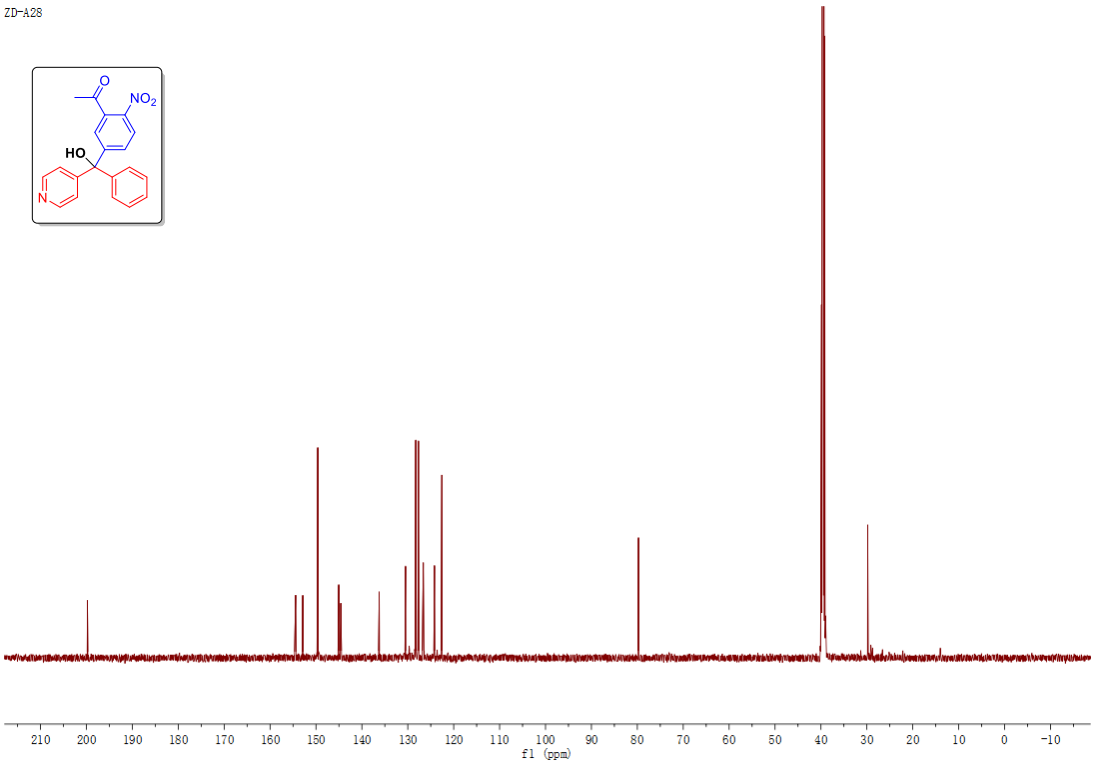
Supplementary Figure 37. ^{13}C NMR Spectrum of 3ca (125 MHz, DMSO-d_6)



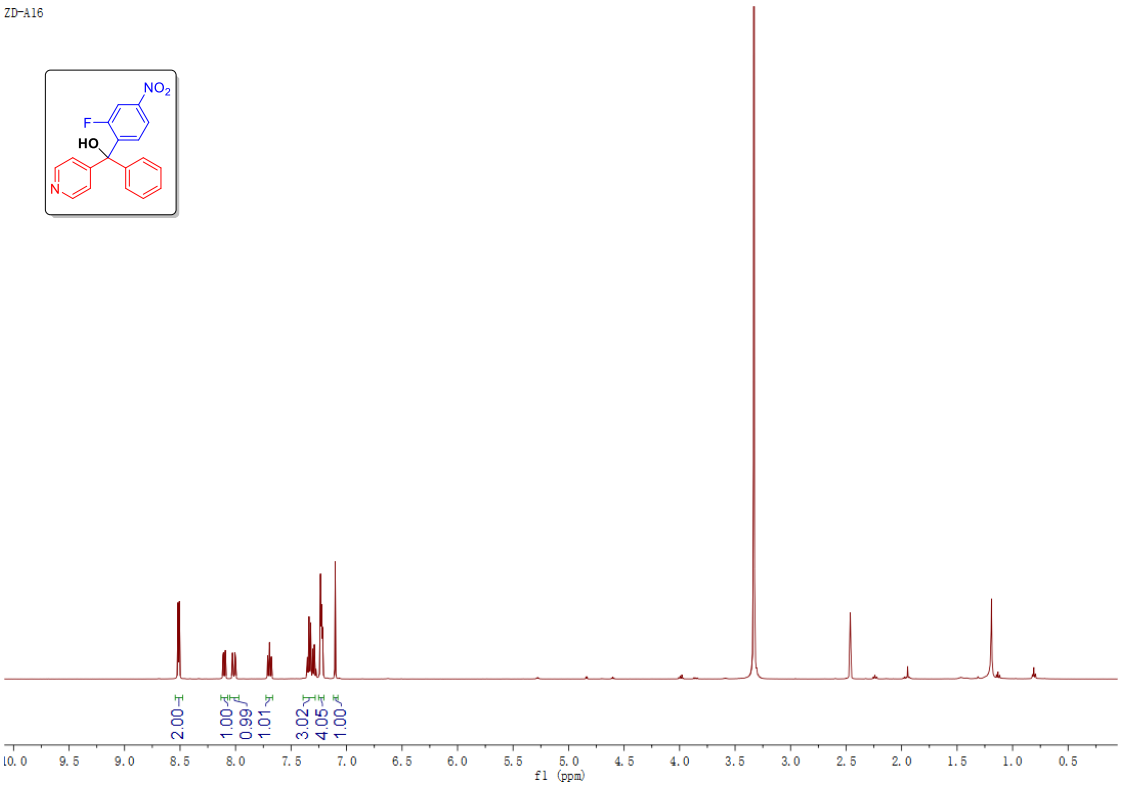
Supplementary Figure 38. ^{1}H NMR Spectrum of 3da (500 MHz, DMSO-d_6)



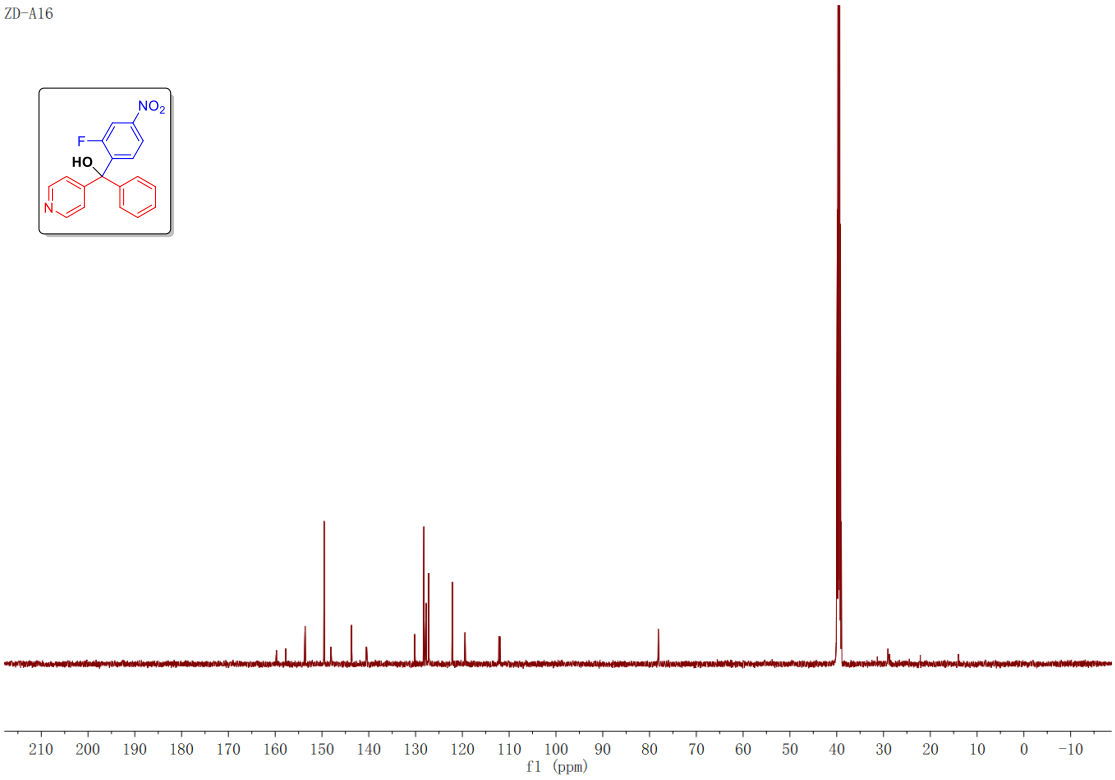
Supplementary Figure 39. ^{13}C NMR Spectrum of 3da (125 MHz, DMSO-d_6)



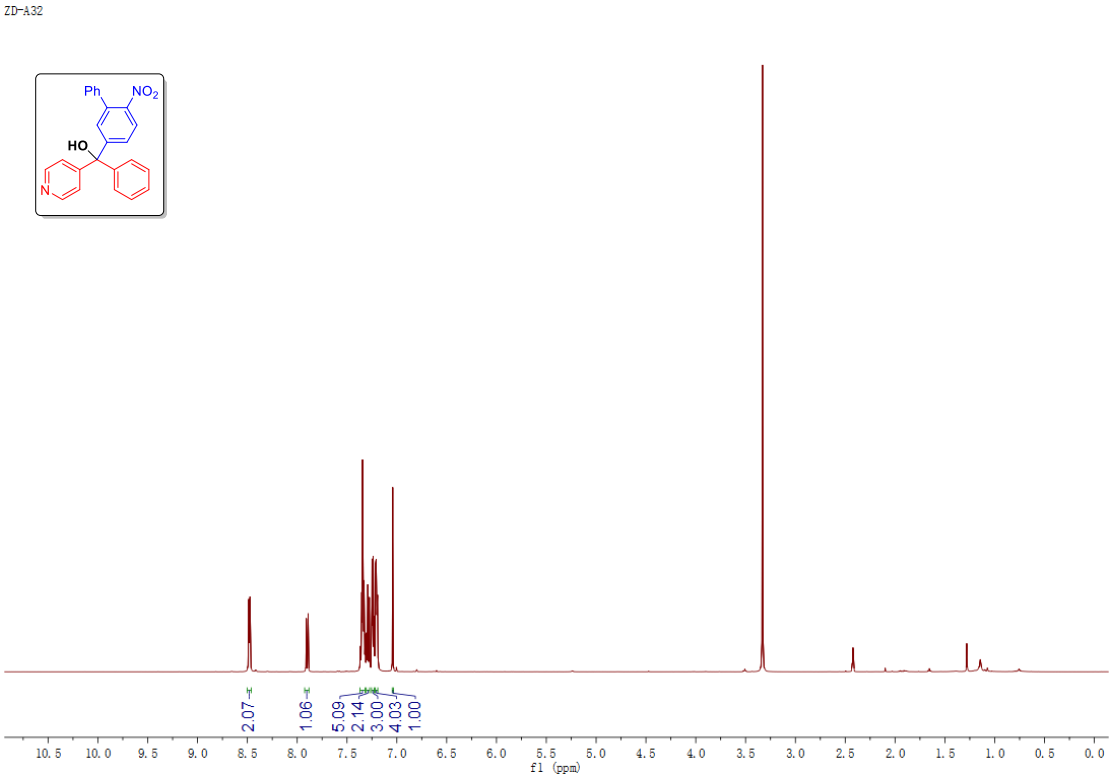
Supplementary Figure 40. ^{1}H NMR Spectrum of 3ea (500 MHz, DMSO-d_6)



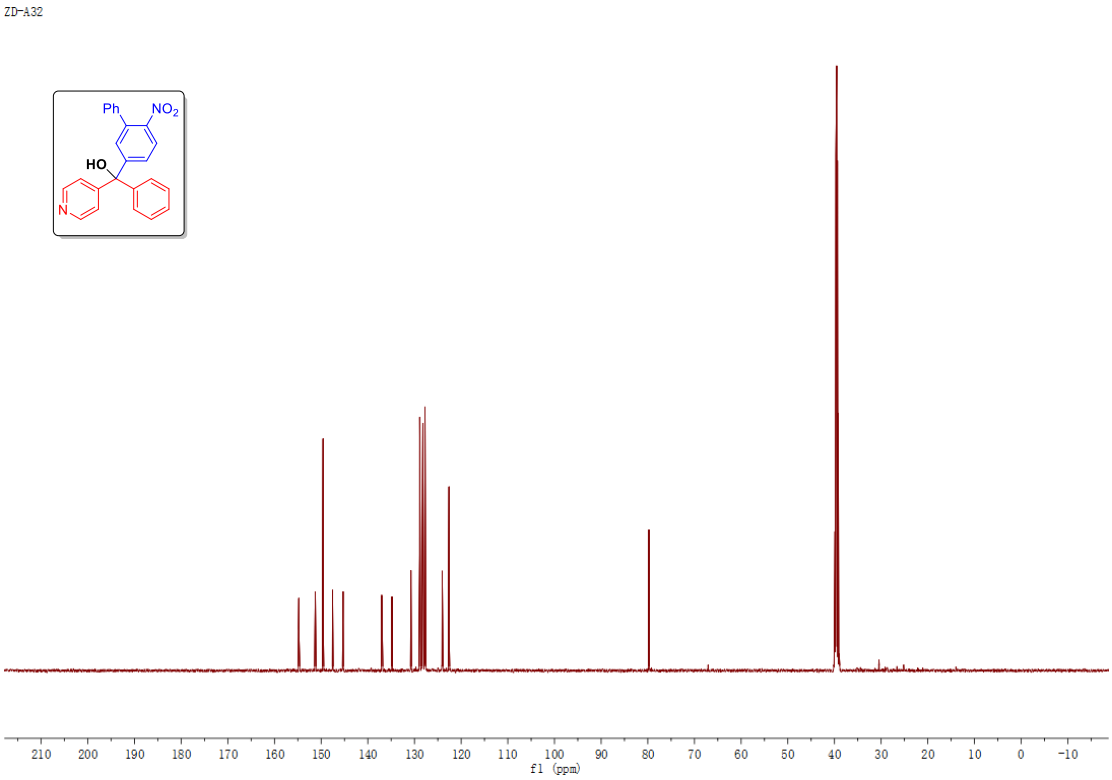
Supplementary Figure 41. ^{13}C NMR Spectrum of 3ea (125 MHz, DMSO-d_6)



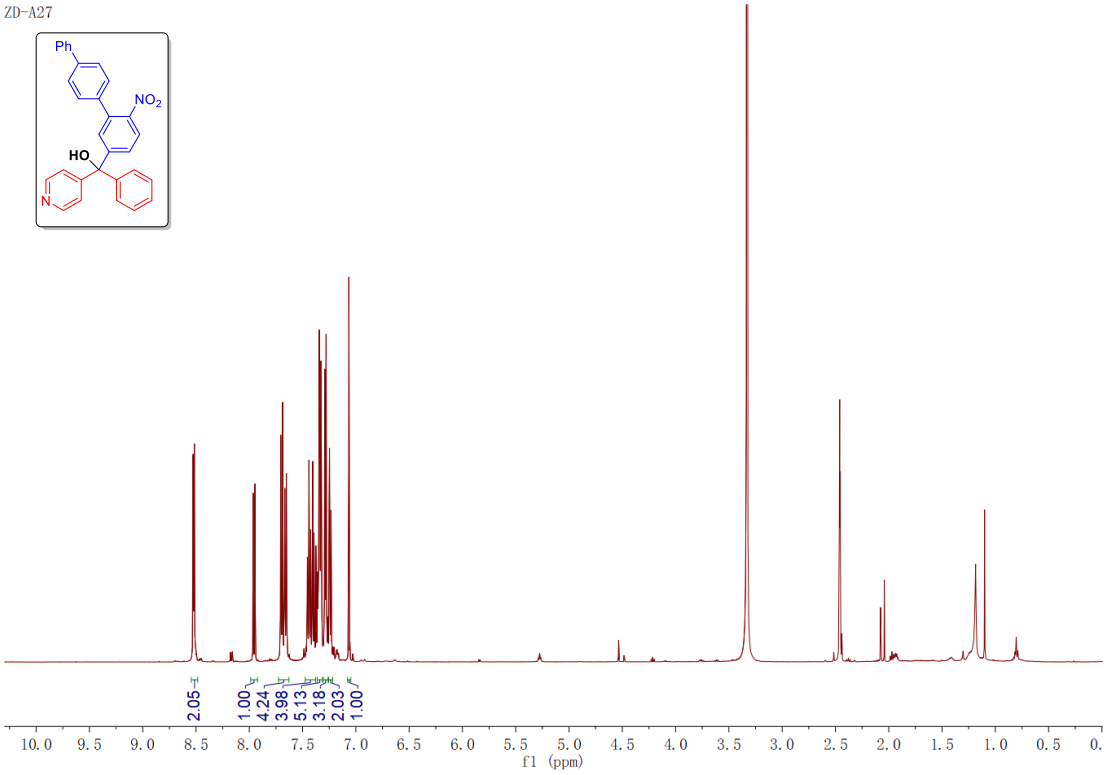
Supplementary Figure 42. ^{1}H NMR Spectrum of 3fa (500 MHz, DMSO-d_6)



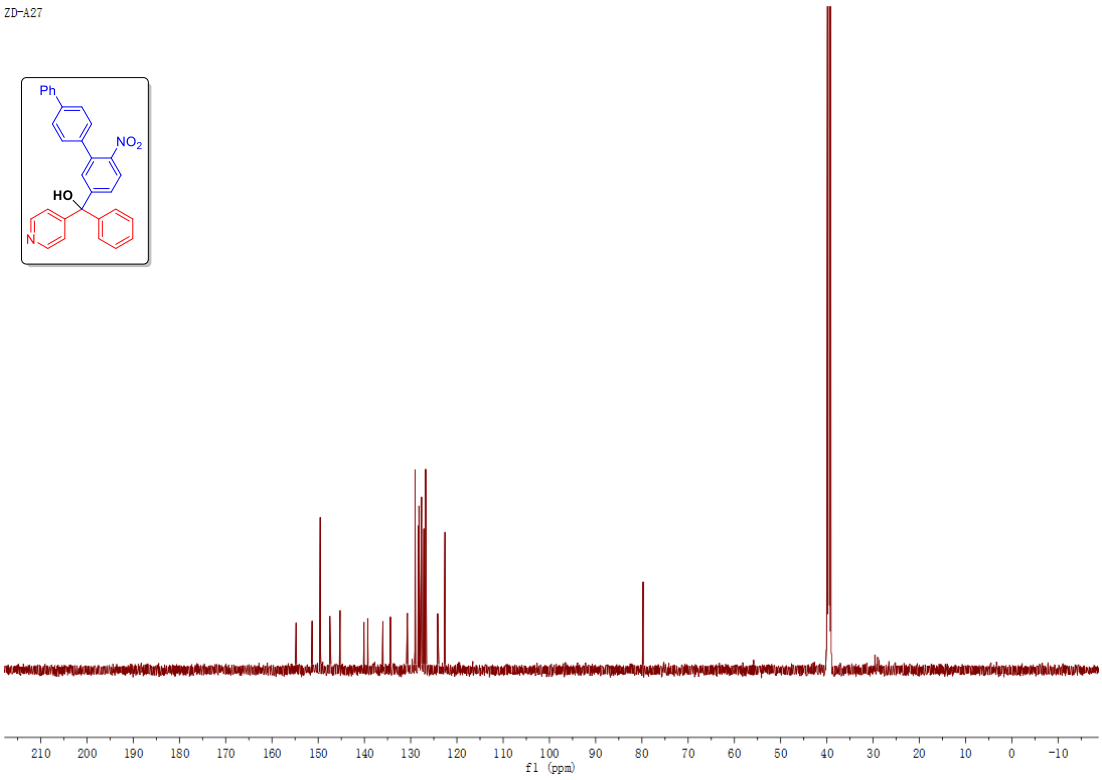
Supplementary Figure 43. ^{13}C NMR Spectrum of 3fa (125 MHz, DMSO-d_6)



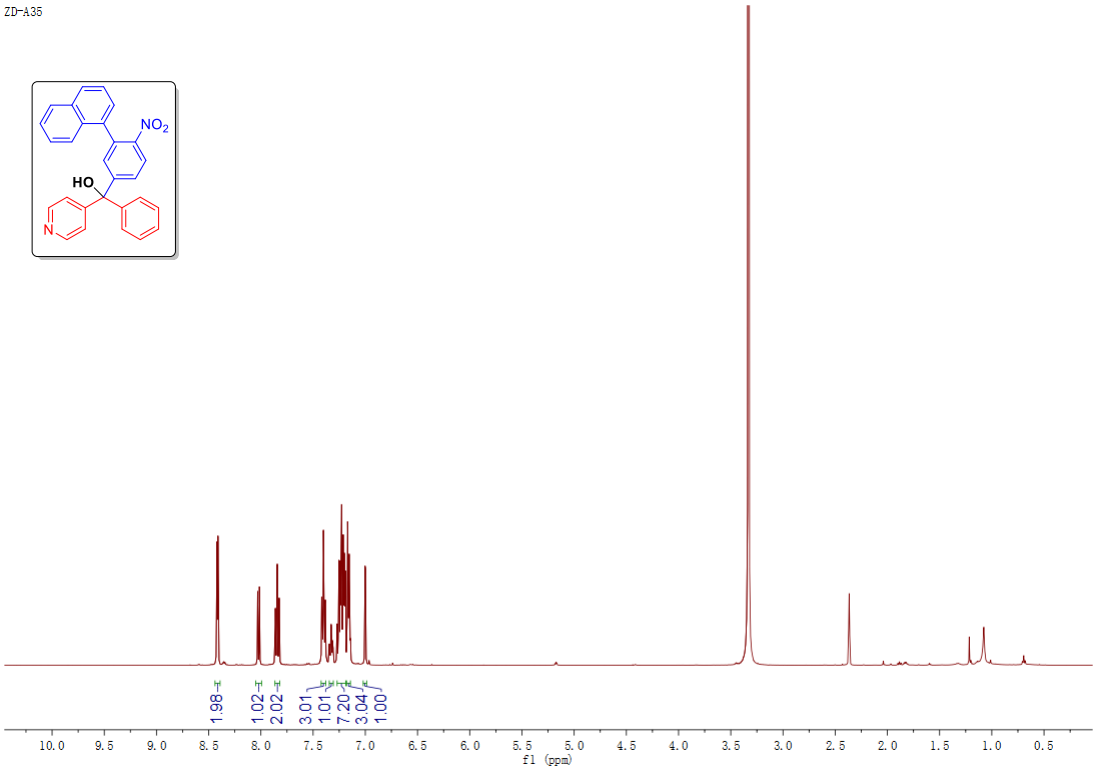
Supplementary Figure 44. ^{1}H NMR Spectrum of 3ga (500 MHz, DMSO-d_6)



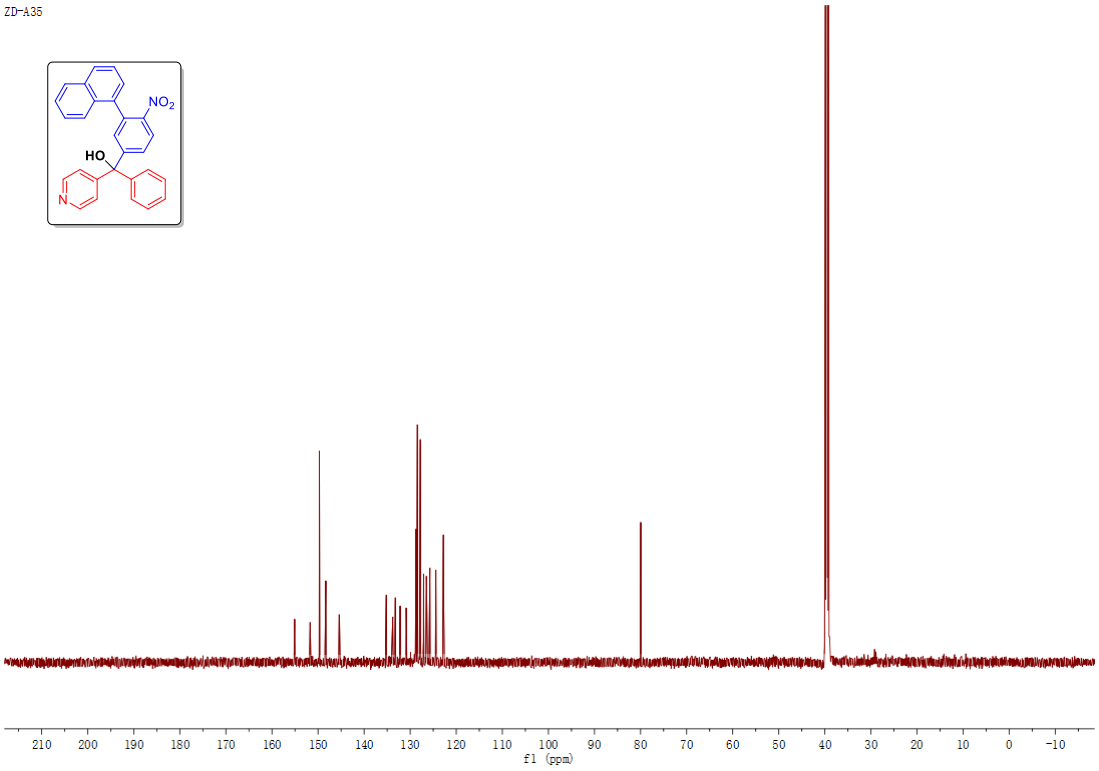
Supplementary Figure 45. ^{13}C NMR Spectrum of 3ga (125 MHz, DMSO-d_6)



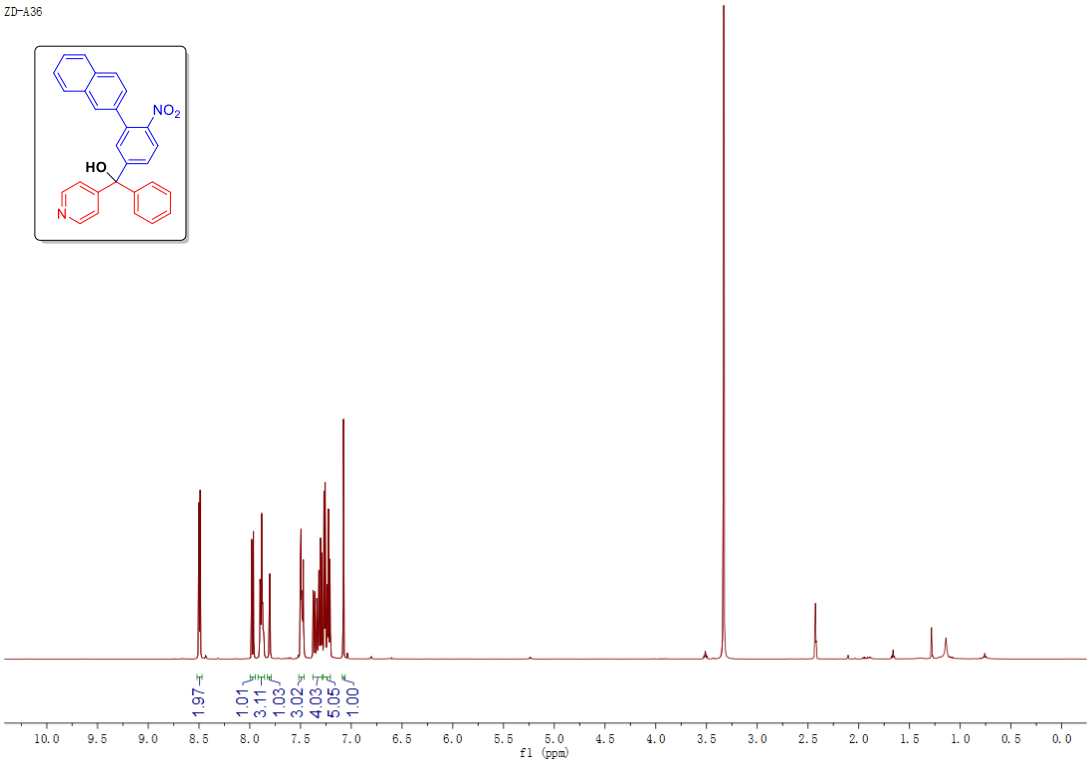
Supplementary Figure 46. ^{1}H NMR Spectrum of 3ha (500 MHz, DMSO-d_6)



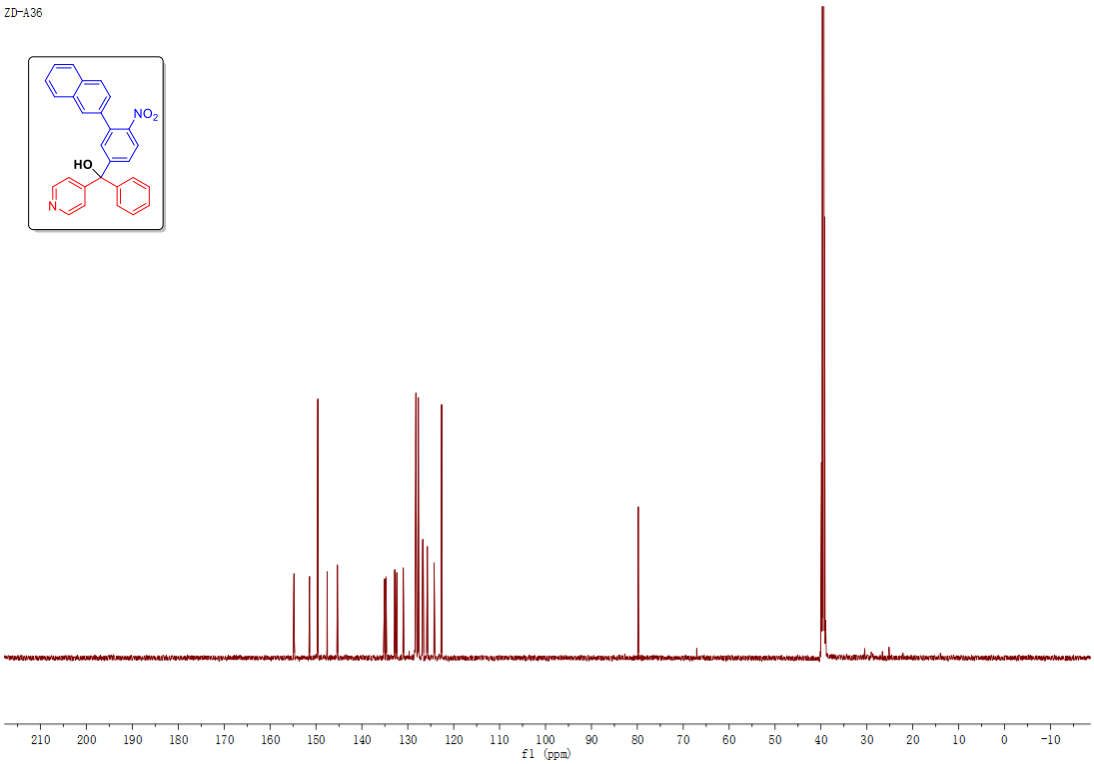
Supplementary Figure 47. ^{13}C NMR Spectrum of 3ha (125 MHz, DMSO-d_6)



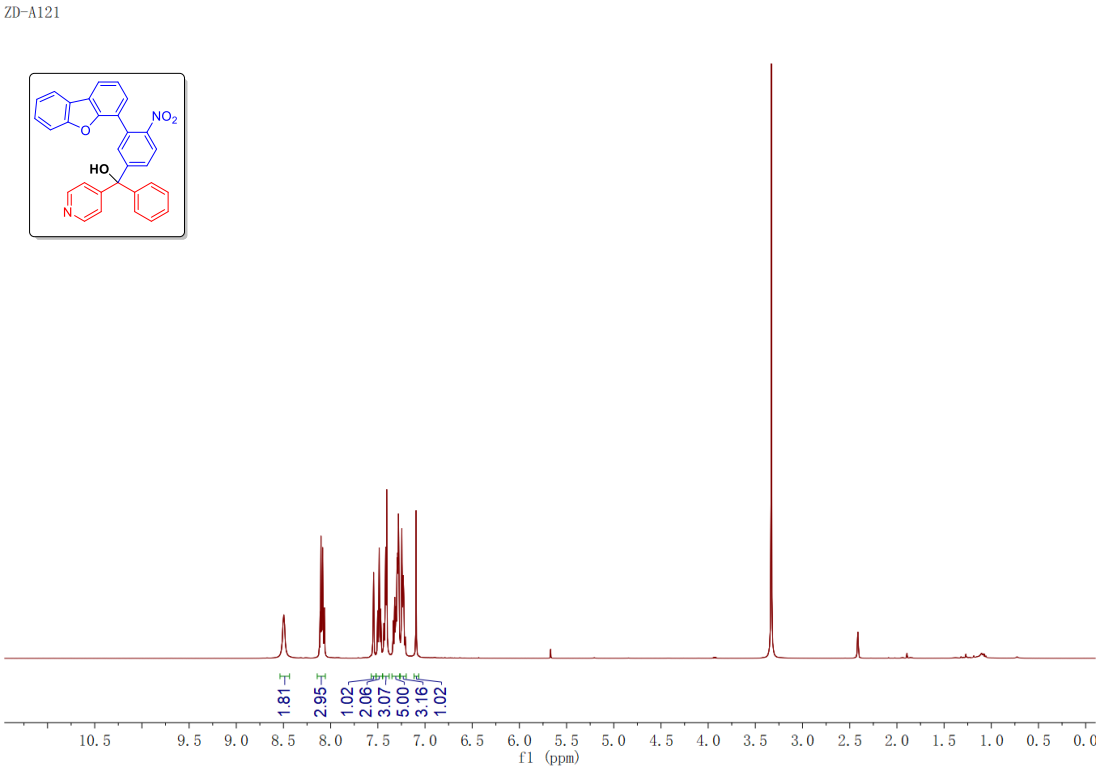
Supplementary Figure 48. ^{1}H NMR Spectrum of 3ia (500 MHz, DMSO-d_6)



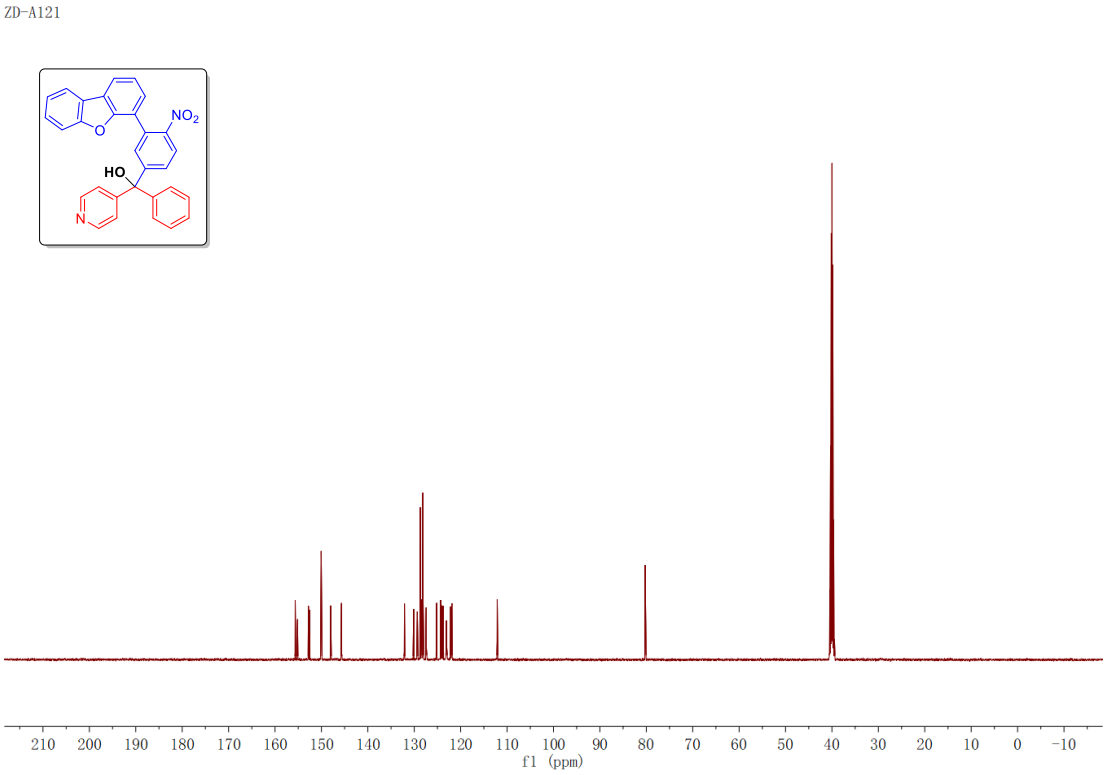
Supplementary Figure 49. ^{13}C NMR Spectrum of 3ia (125 MHz, DMSO-d_6)



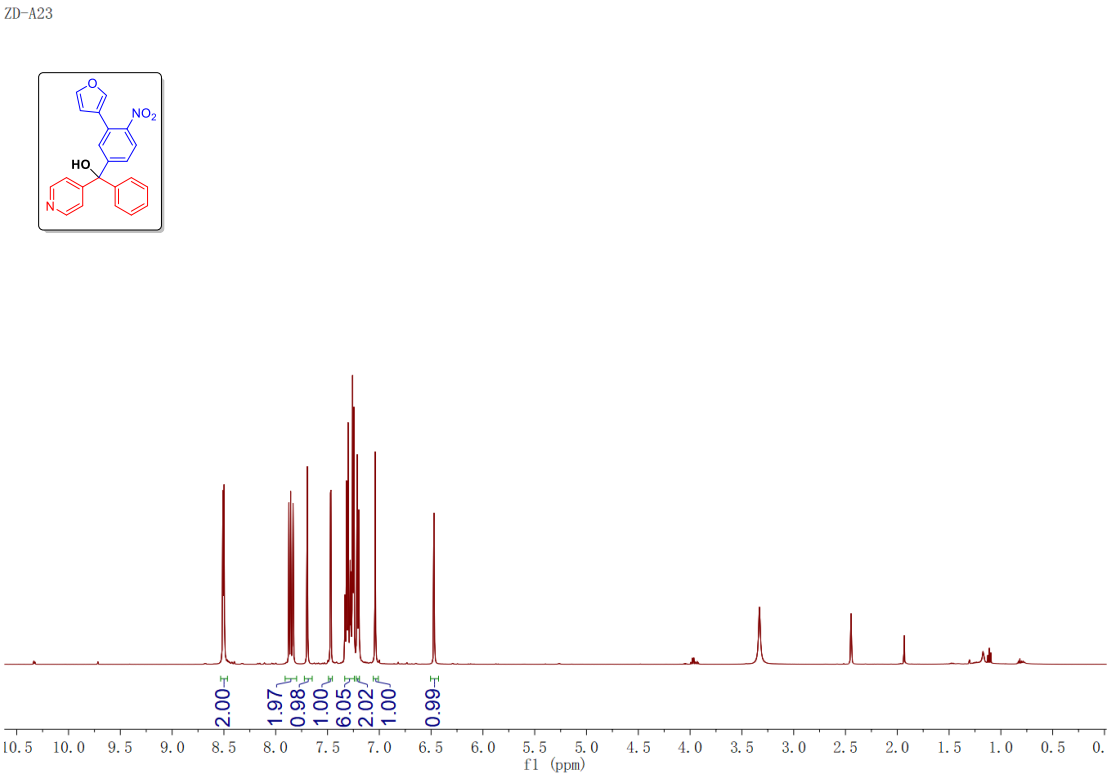
Supplementary Figure 50. ^{1}H NMR Spectrum of 3ja (500 MHz, DMSO-d_6)



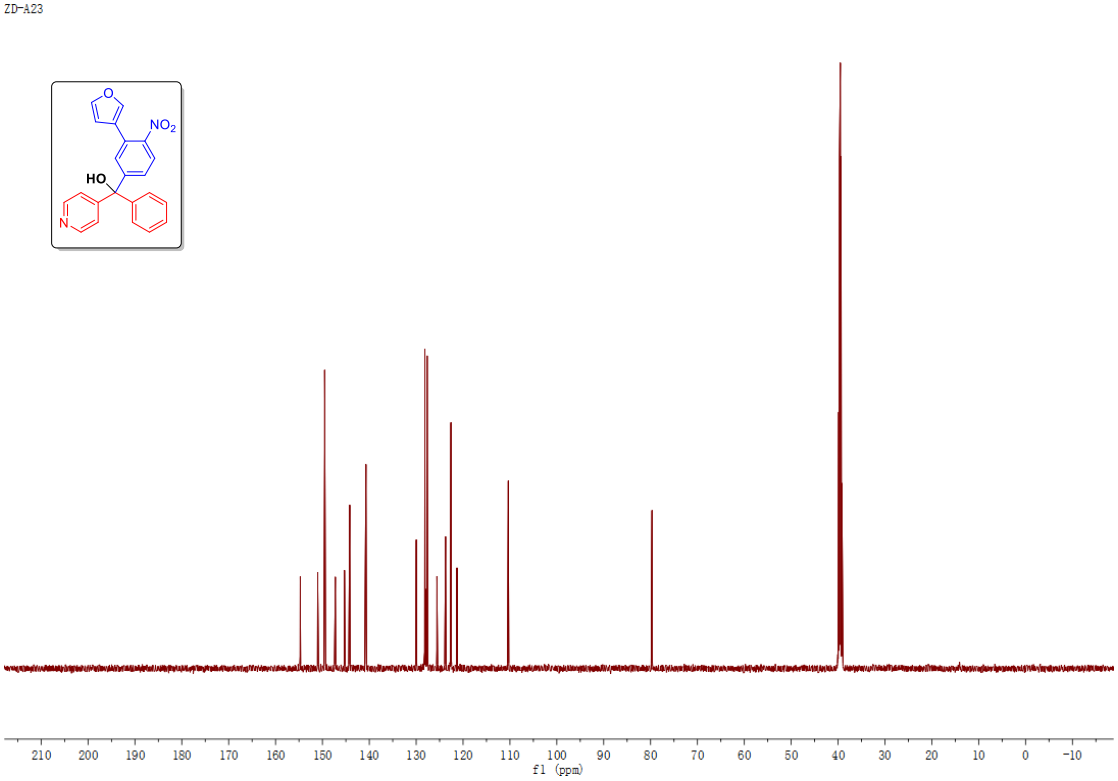
Supplementary Figure 51. ^{13}C NMR Spectrum of 3ja (125 MHz, DMSO-d_6)



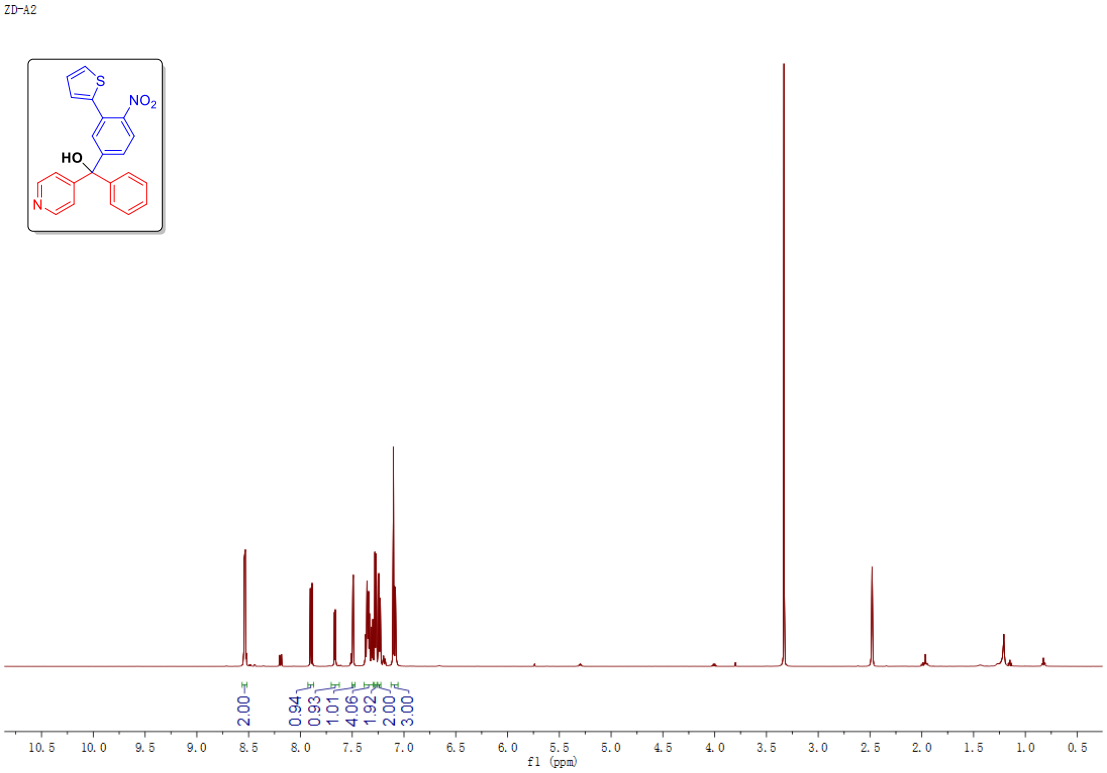
Supplementary Figure 52. ^{1}H NMR Spectrum of 3ka (500 MHz, DMSO-d_6)



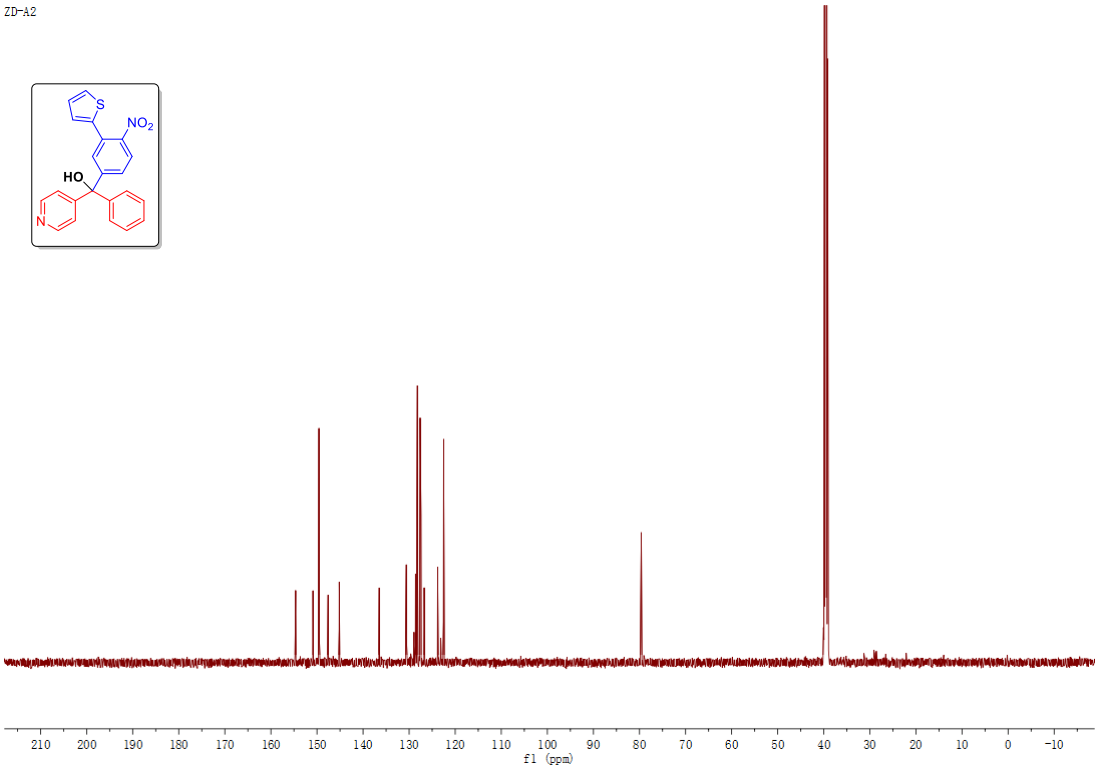
Supplementary Figure 53. ^{13}C NMR Spectrum of 3ka (125 MHz, DMSO-d_6)



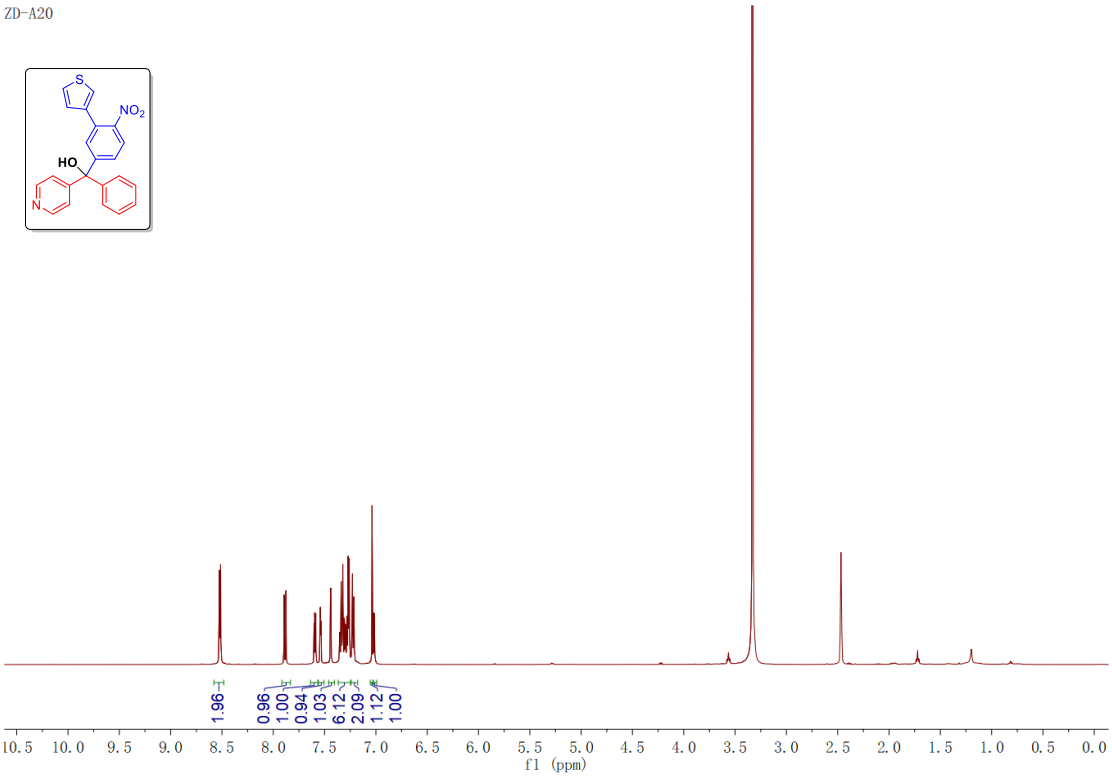
Supplementary Figure 54. ^{1}H NMR Spectrum of 3la (500 MHz, DMSO-d_6)



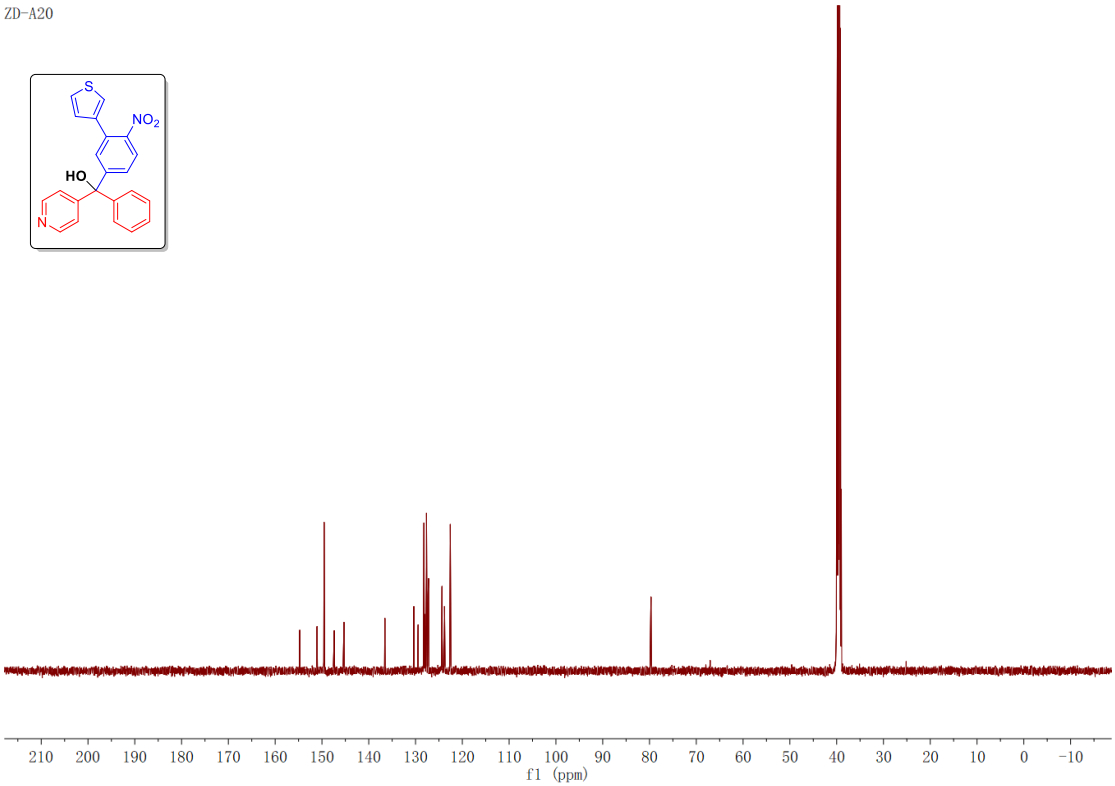
Supplementary Figure 55. ^{13}C NMR Spectrum of 3la (125 MHz, DMSO-d_6)



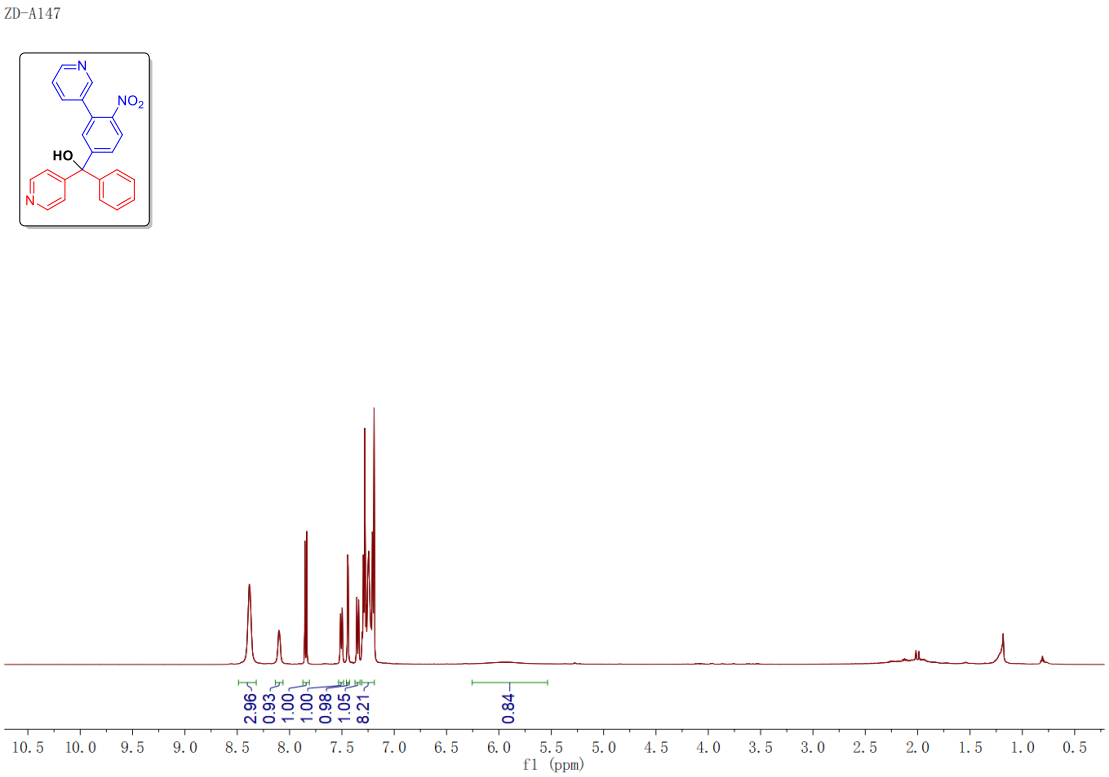
Supplementary Figure 56. ^{1}H NMR Spectrum of 3ma (500 MHz, DMSO-d_6)



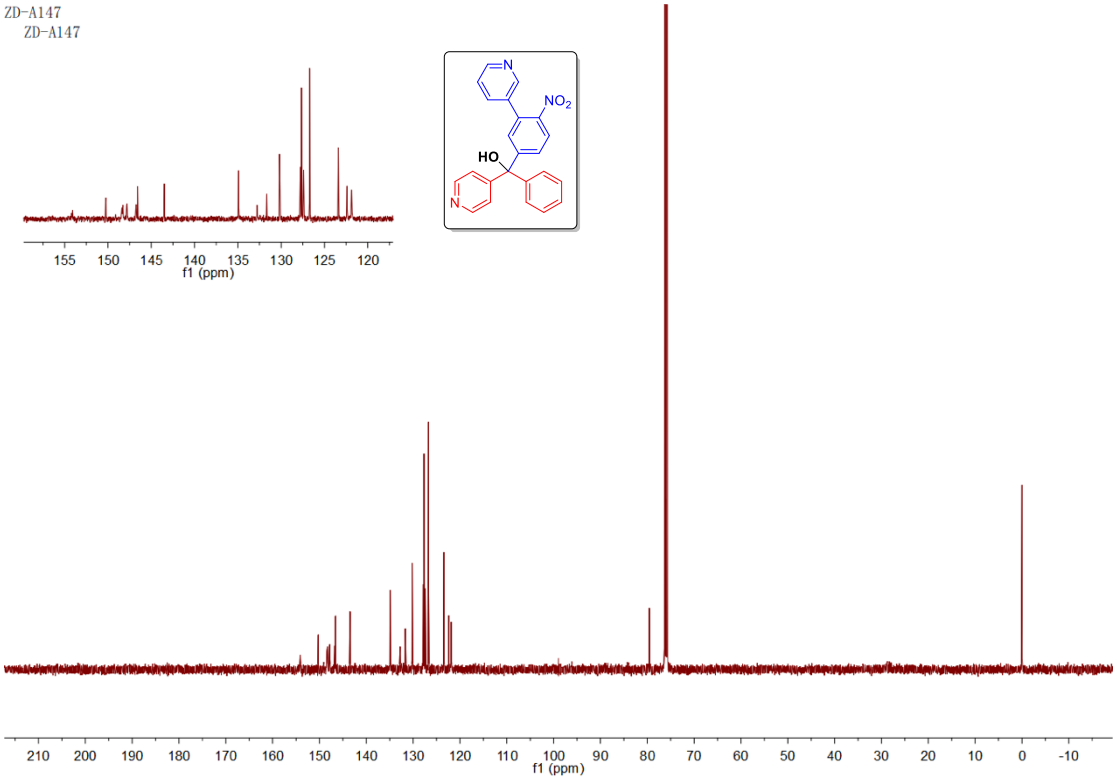
Supplementary Figure 57. ^{13}C NMR Spectrum of 3ma (125 MHz, DMSO-d_6)



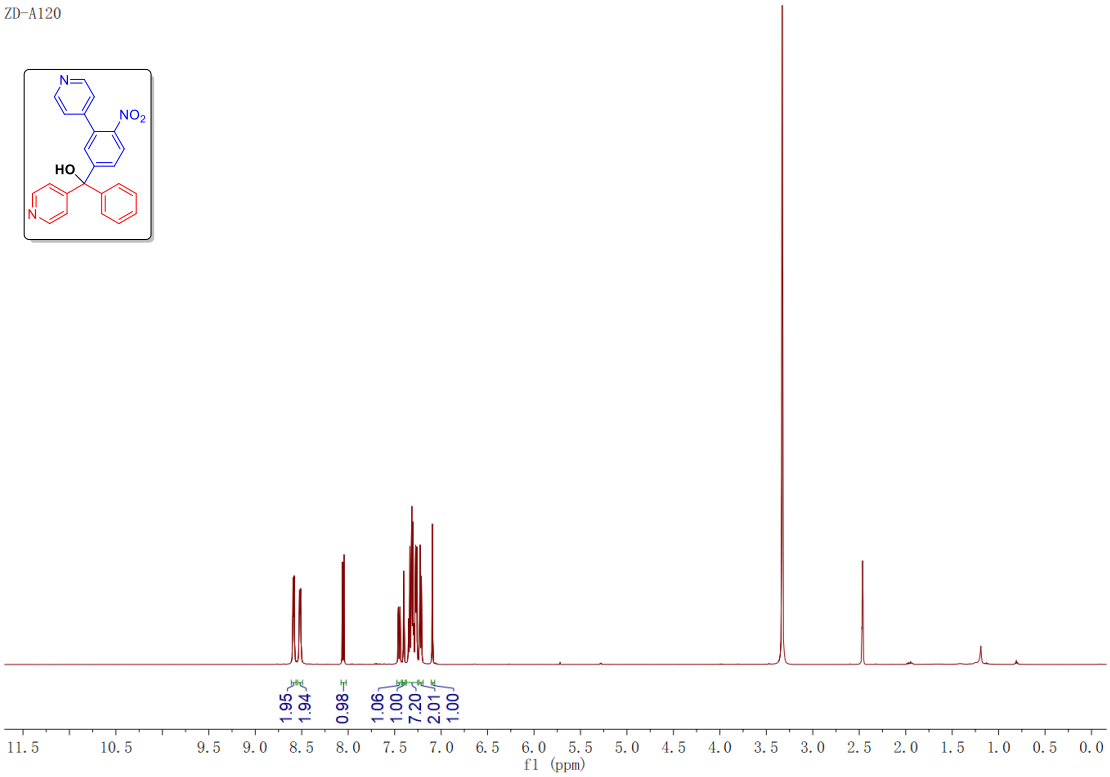
Supplementary Figure 58. ^{1}H NMR Spectrum of 3na (500 MHz, $CDCl_3$)



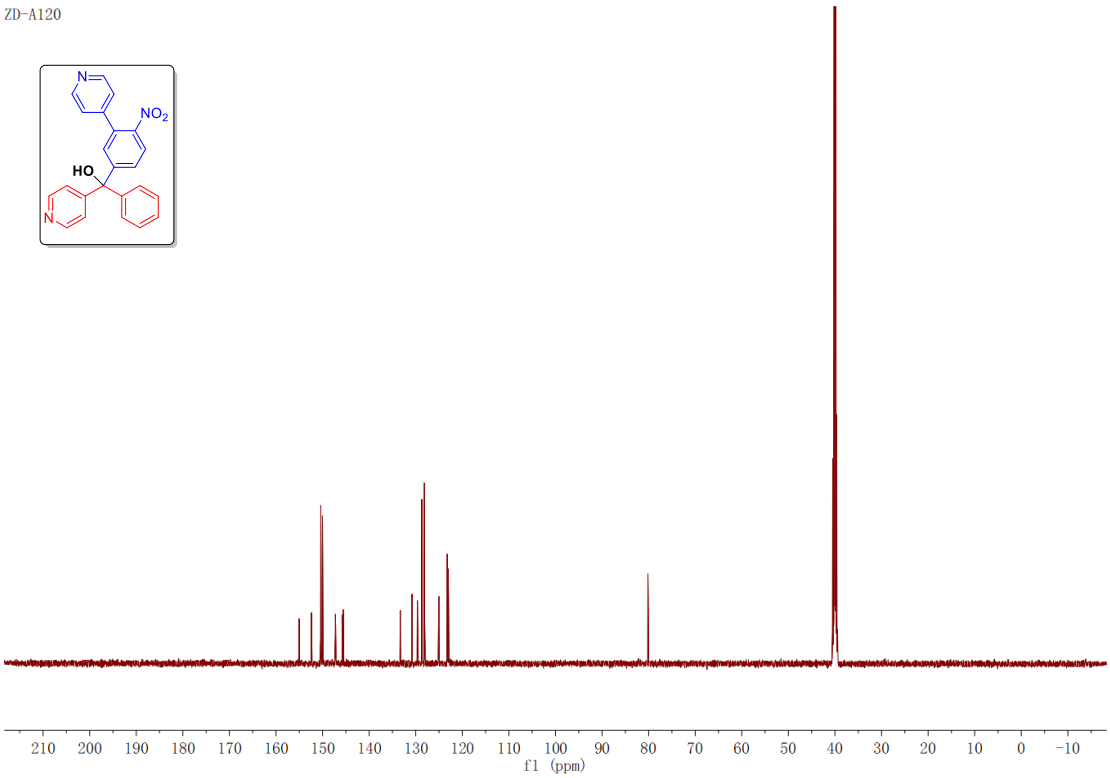
Supplementary Figure 59. ^{13}C NMR Spectrum of 3na (125 MHz, $CDCl_3$)



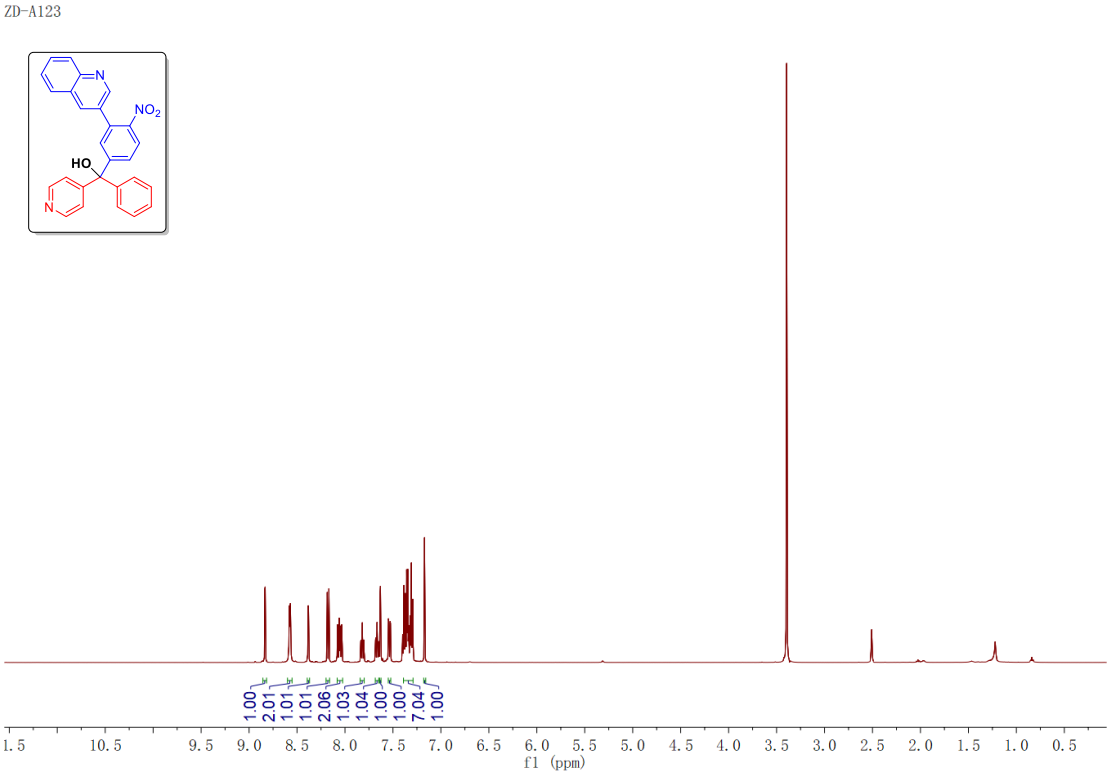
Supplementary Figure 60. ^{1}H NMR Spectrum of 3oa (500 MHz, DMSO-d_6)



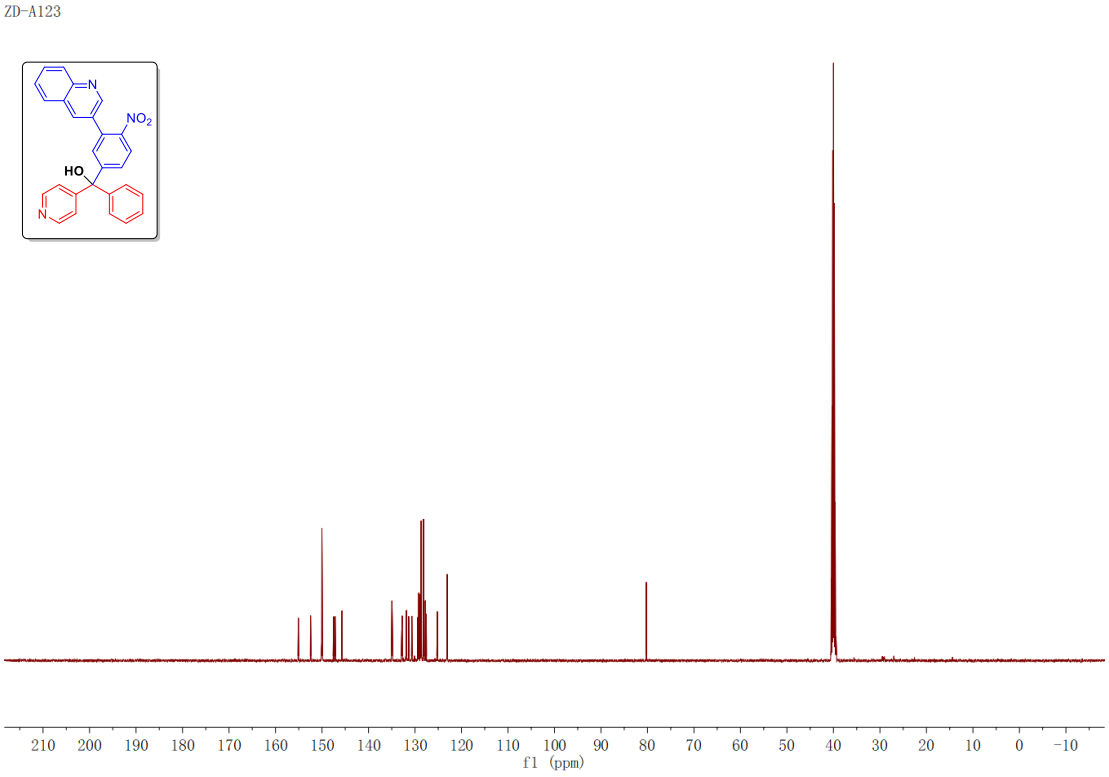
Supplementary Figure 61. ^{13}C NMR Spectrum of 3oa (125 MHz, DMSO-d_6)



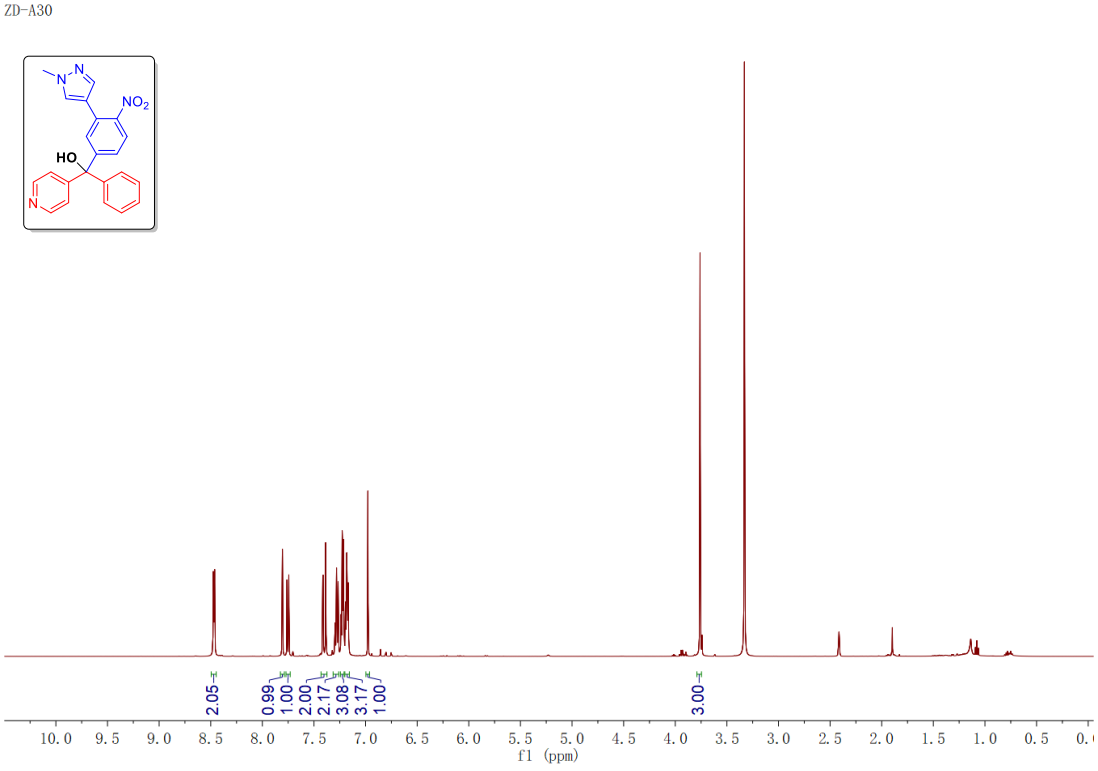
Supplementary Figure 62. ^{1}H NMR Spectrum of 3pa (500 MHz, DMSO-d_6)



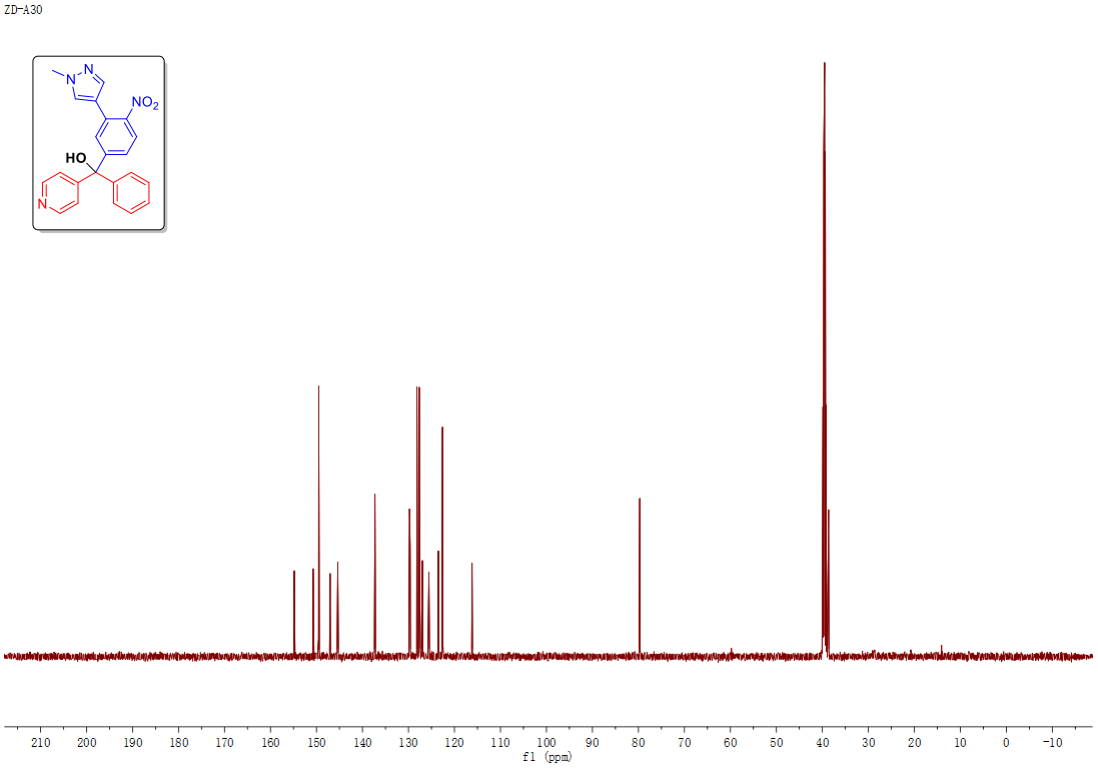
Supplementary Figure 63. ^{13}C NMR Spectrum of 3pa (125 MHz, DMSO-d_6)



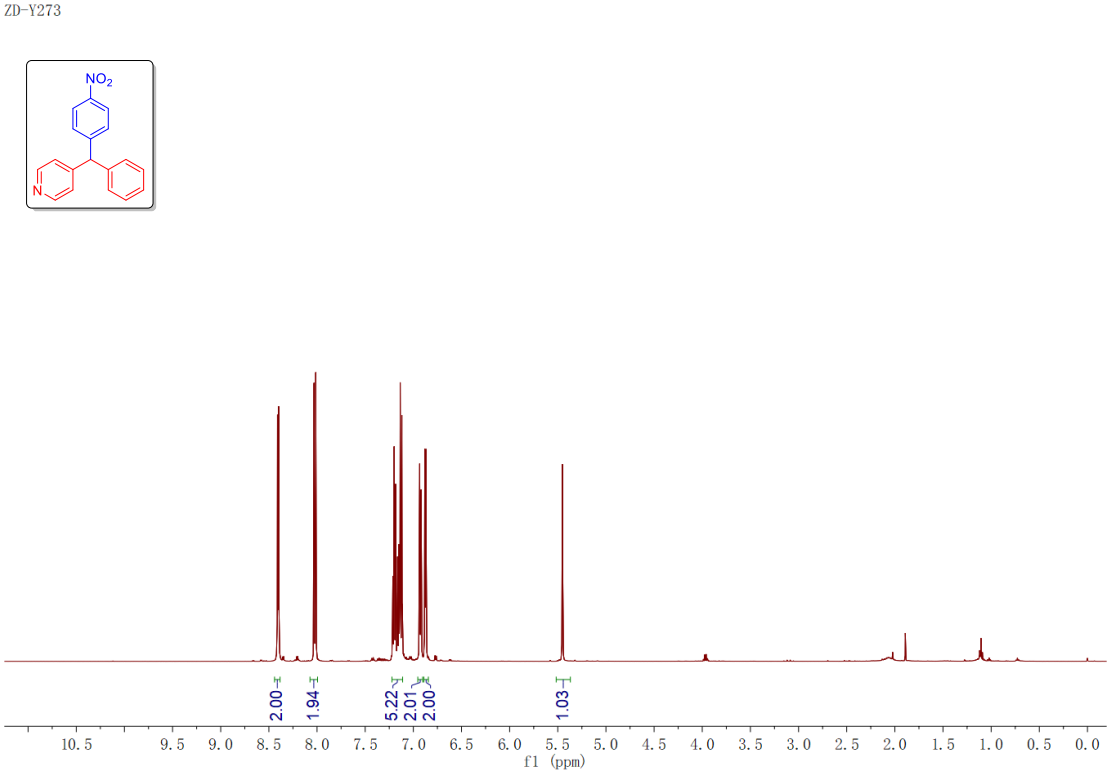
Supplementary Figure 64. ^{1}H NMR Spectrum of 3qa (500 MHz, DMSO-d_6)



Supplementary Figure 65. ^{13}C NMR Spectrum of 3qa (125 MHz, DMSO-d_6)

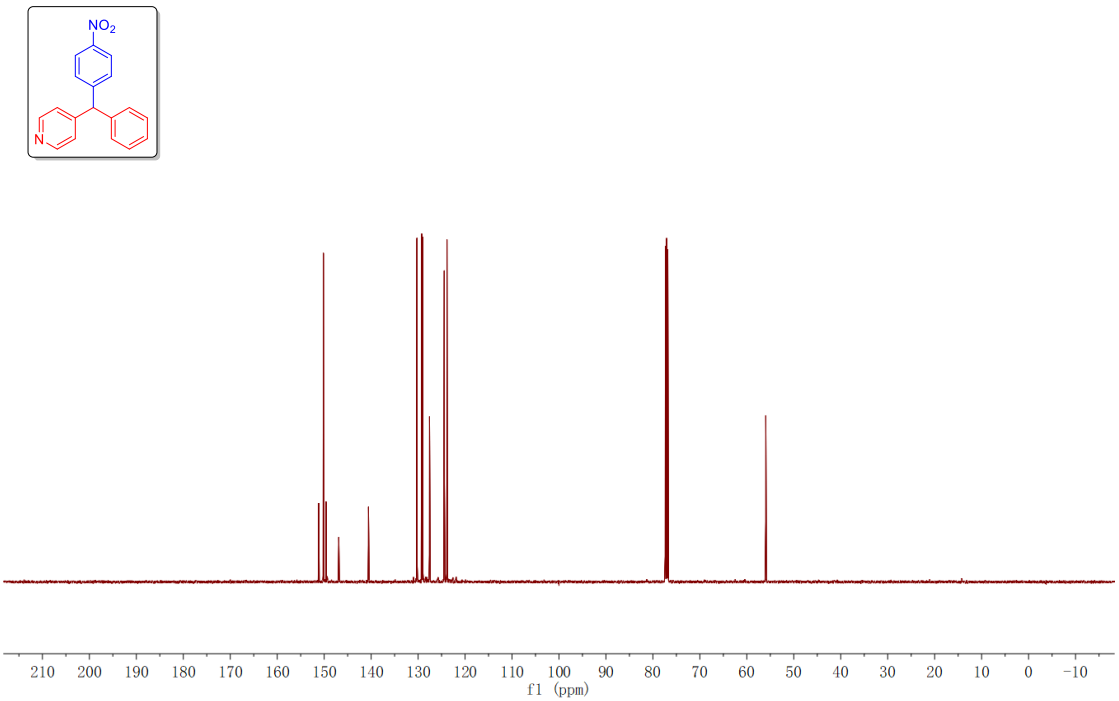


Supplementary Figure 66. ^{1}H NMR Spectrum of 3aa' (500 MHz, $CDCl_3$)



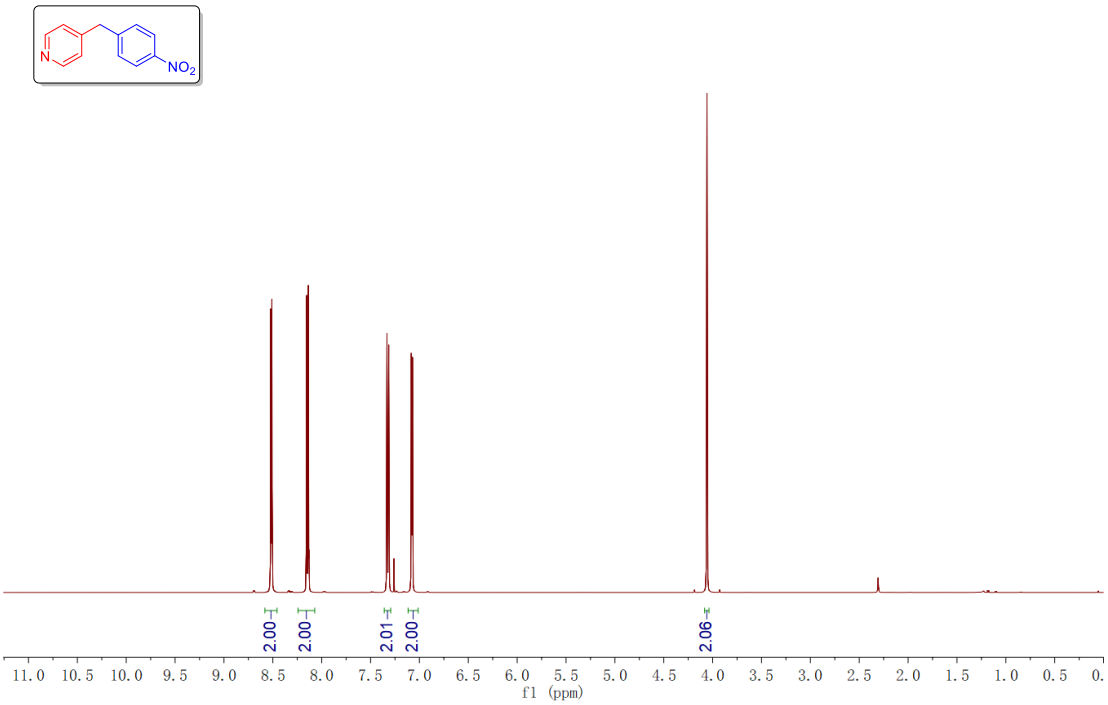
Supplementary Figure 67. ^{13}C NMR Spectrum of 3aa' (125 MHz, $CDCl_3$)

ZD-Y273

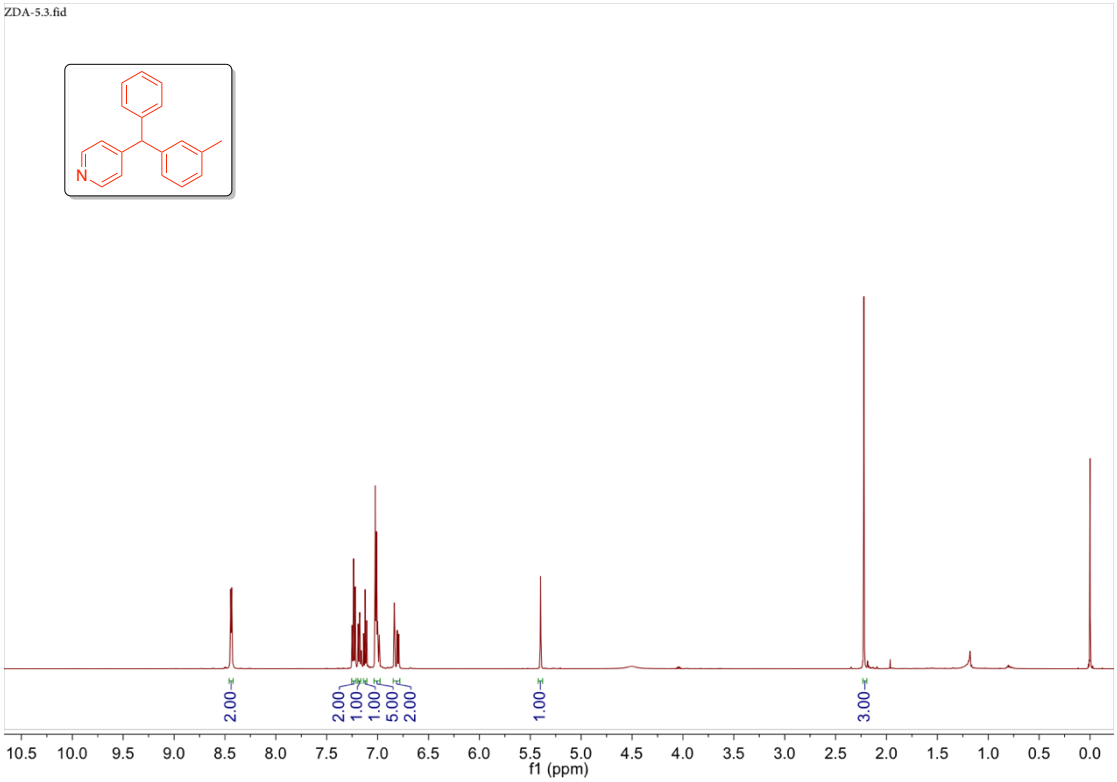


Supplementary Figure 68. ^{1}H NMR Spectrum of 4 (500 MHz, $CDCl_3$)

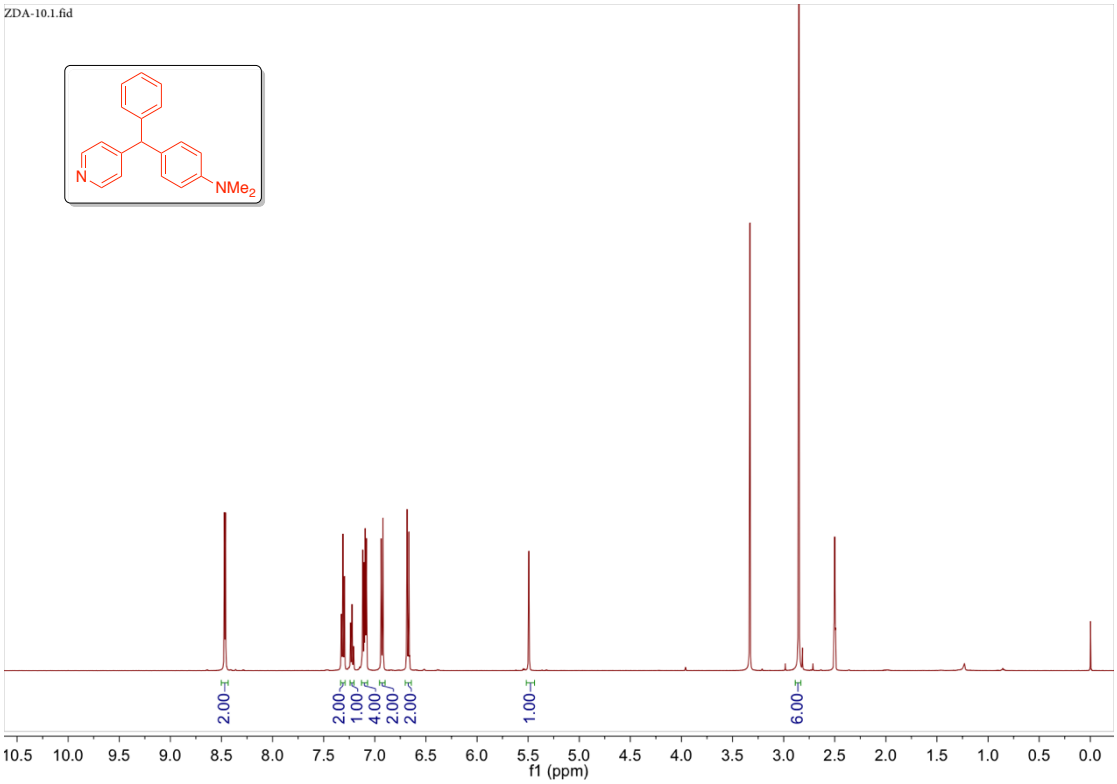
ZD-A114



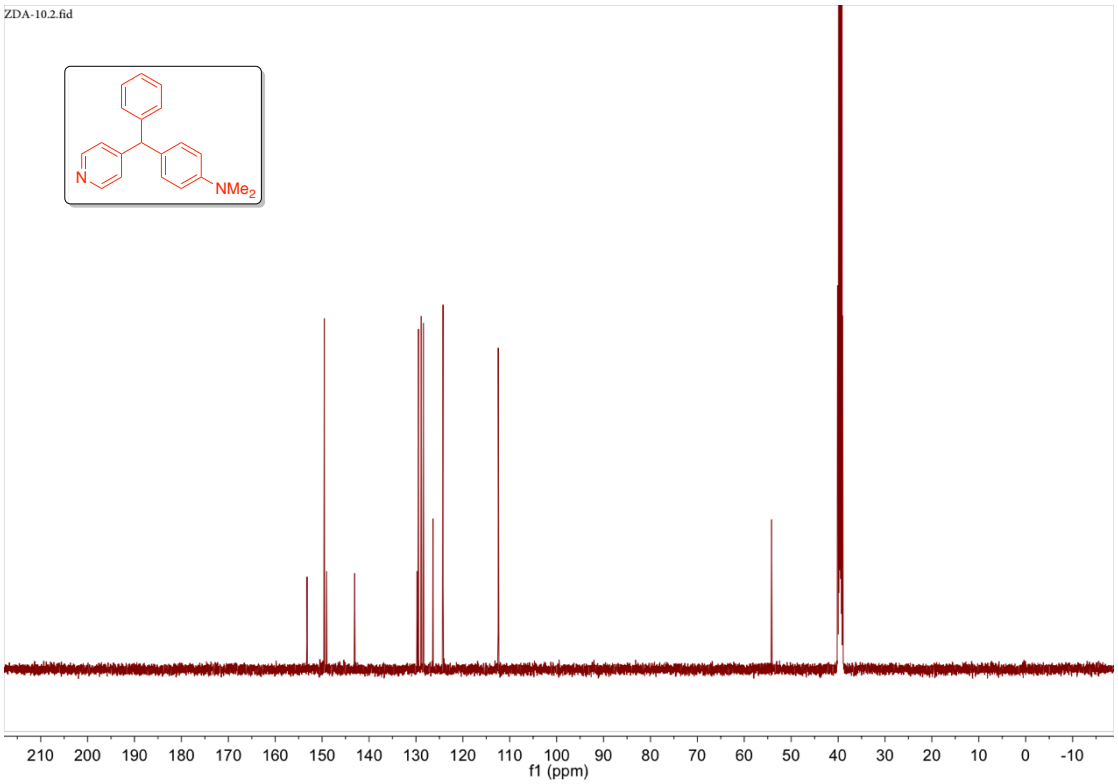
Supplementary Figure 69. ^{1}H NMR Spectrum of 5b (500 MHz, $CDCl_3$)



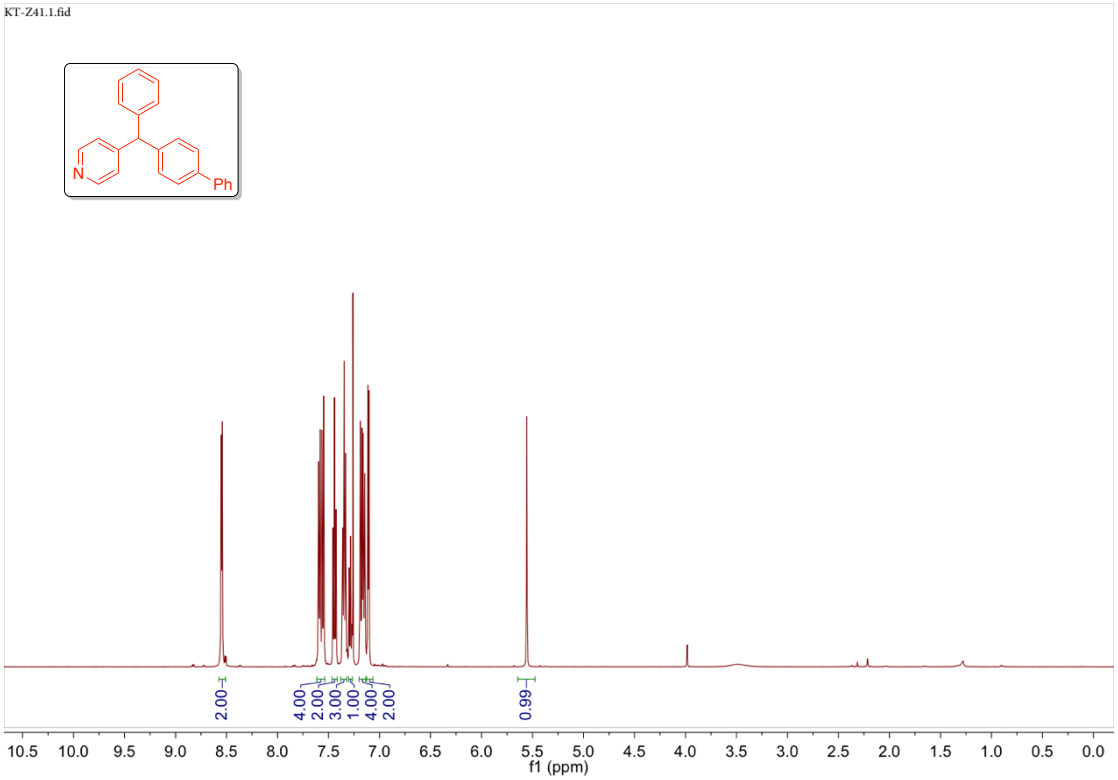
Supplementary Figure 70. ^{1}H NMR Spectrum of 5d (500 MHz, DMSO-d_6)



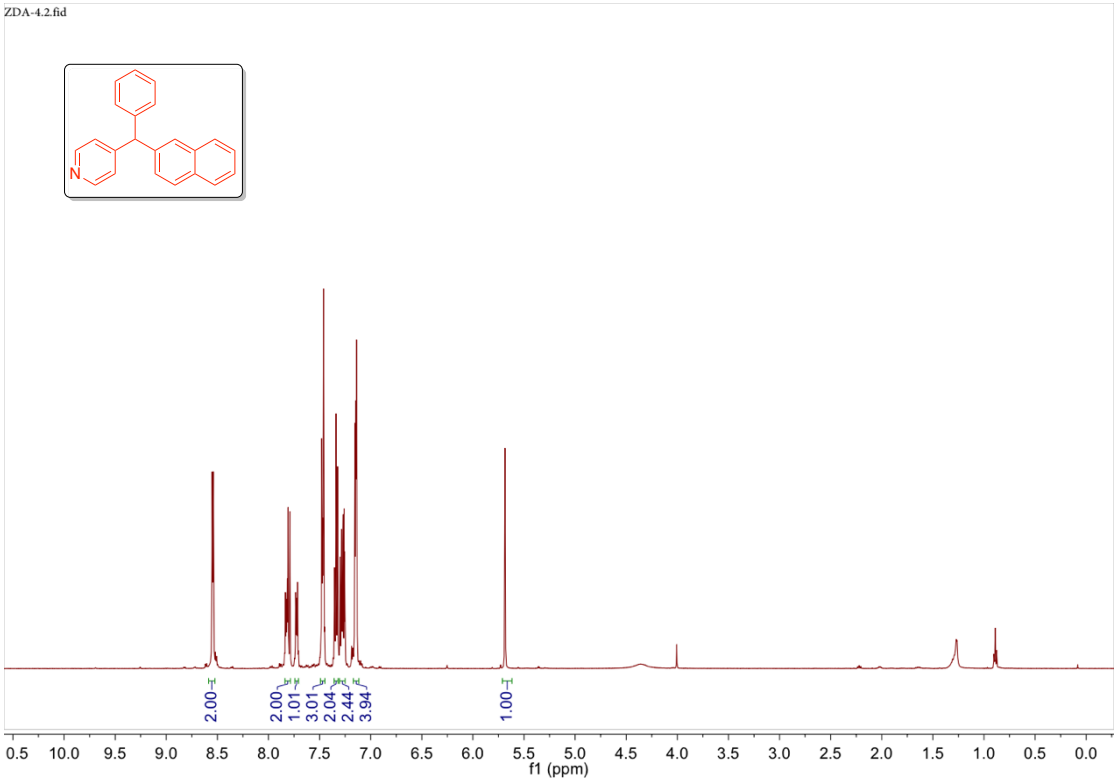
Supplementary Figure 71. ^{13}C NMR Spectrum of 5d (125 MHz, DMSO-d_6)



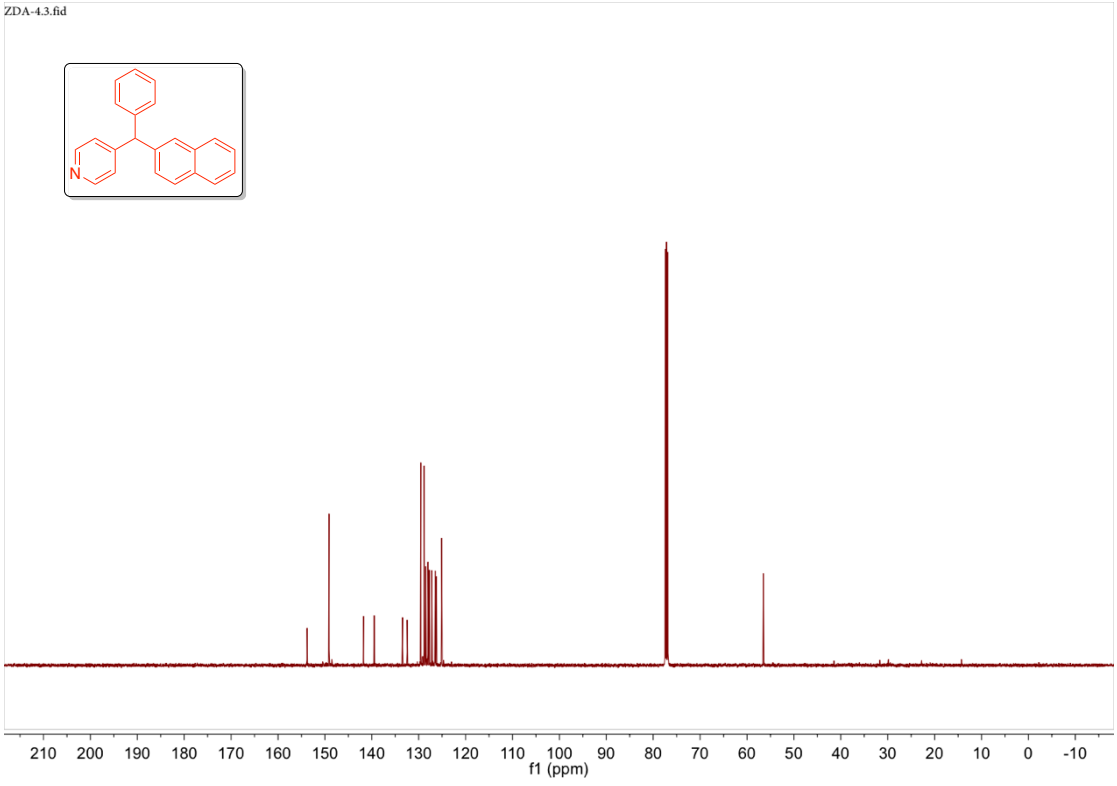
Supplementary Figure 72. ^{1}H NMR Spectrum of 5f (500 MHz, $CDCl_3$)



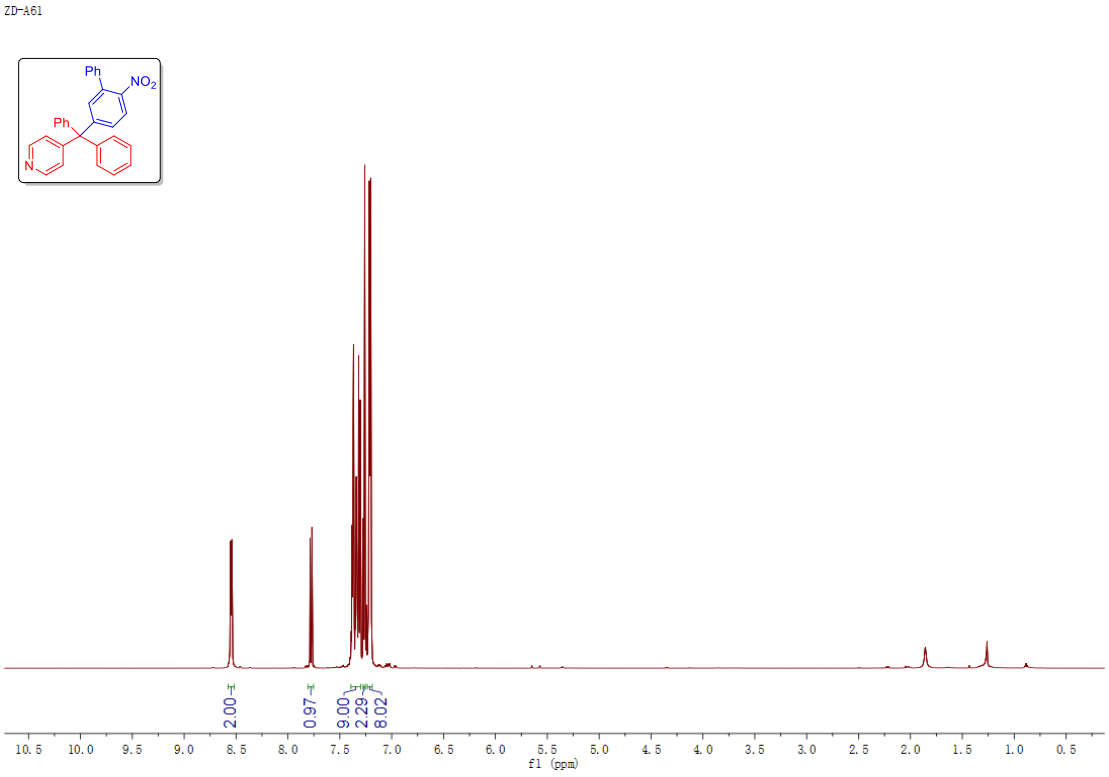
Supplementary Figure 73. ^{1}H NMR Spectrum of 5g (500 MHz, $CDCl_3$)



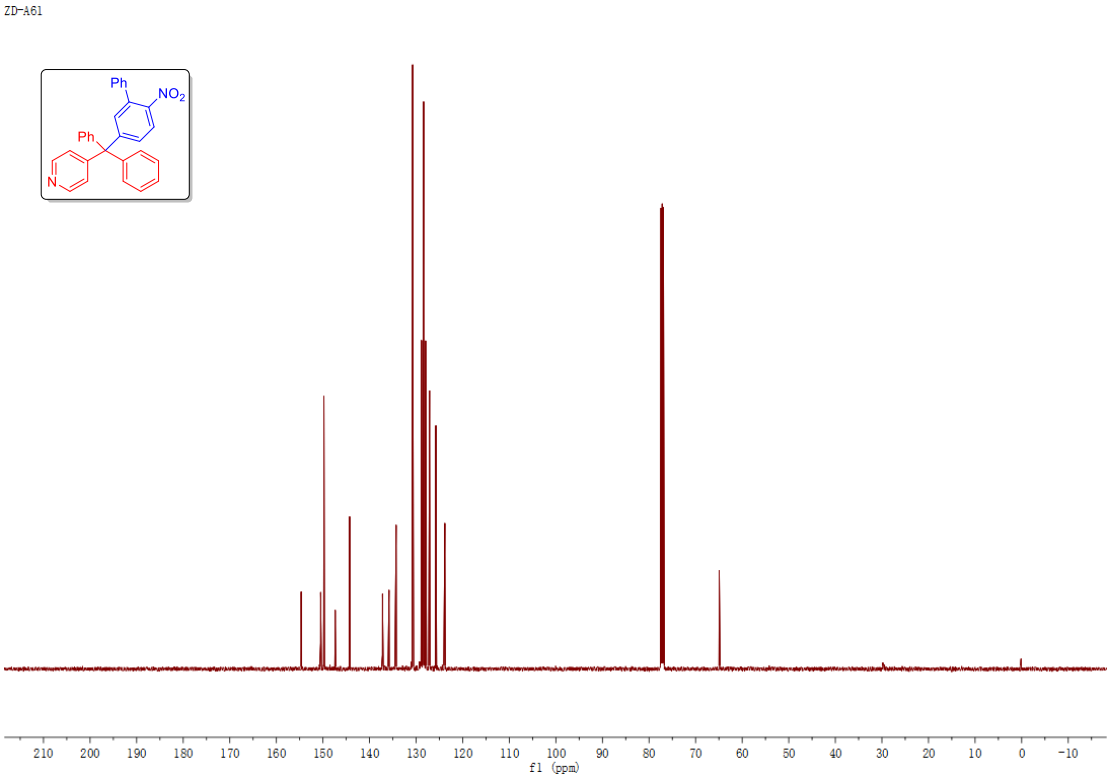
Supplementary Figure 74. ^{13}C NMR Spectrum of 5g (125 MHz, $CDCl_3$)



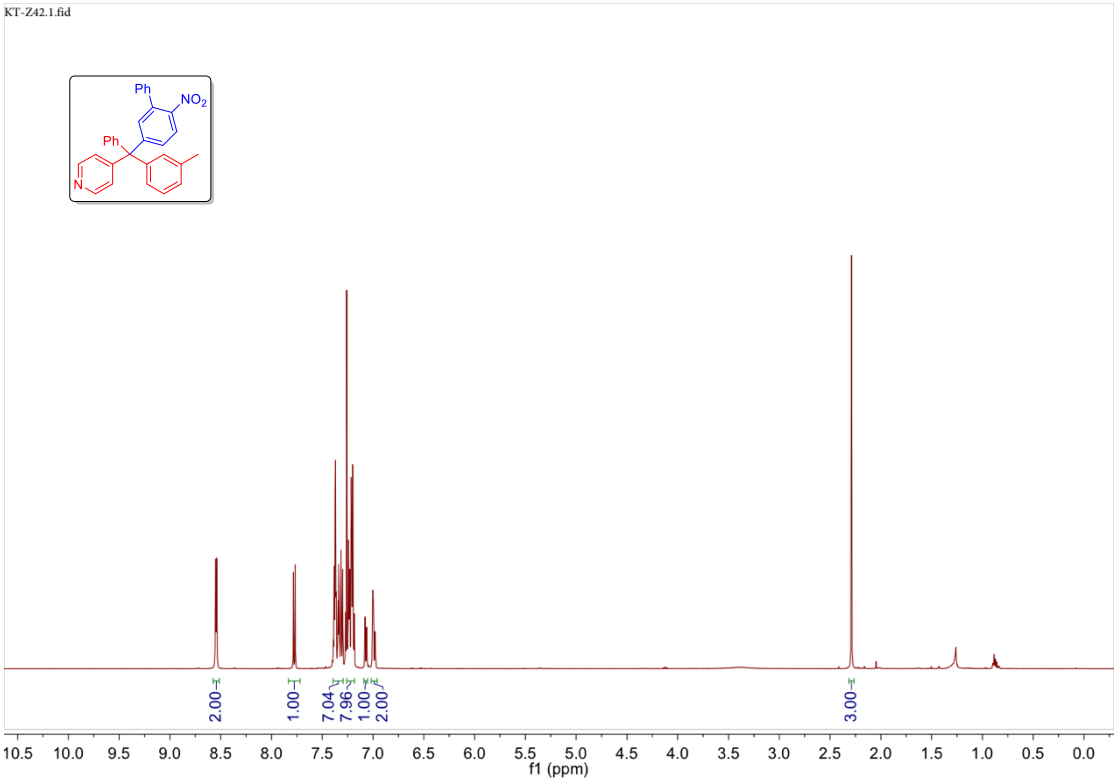
Supplementary Figure 75. ^{1}H NMR Spectrum of 6fa (500 MHz, $CDCl_3$)



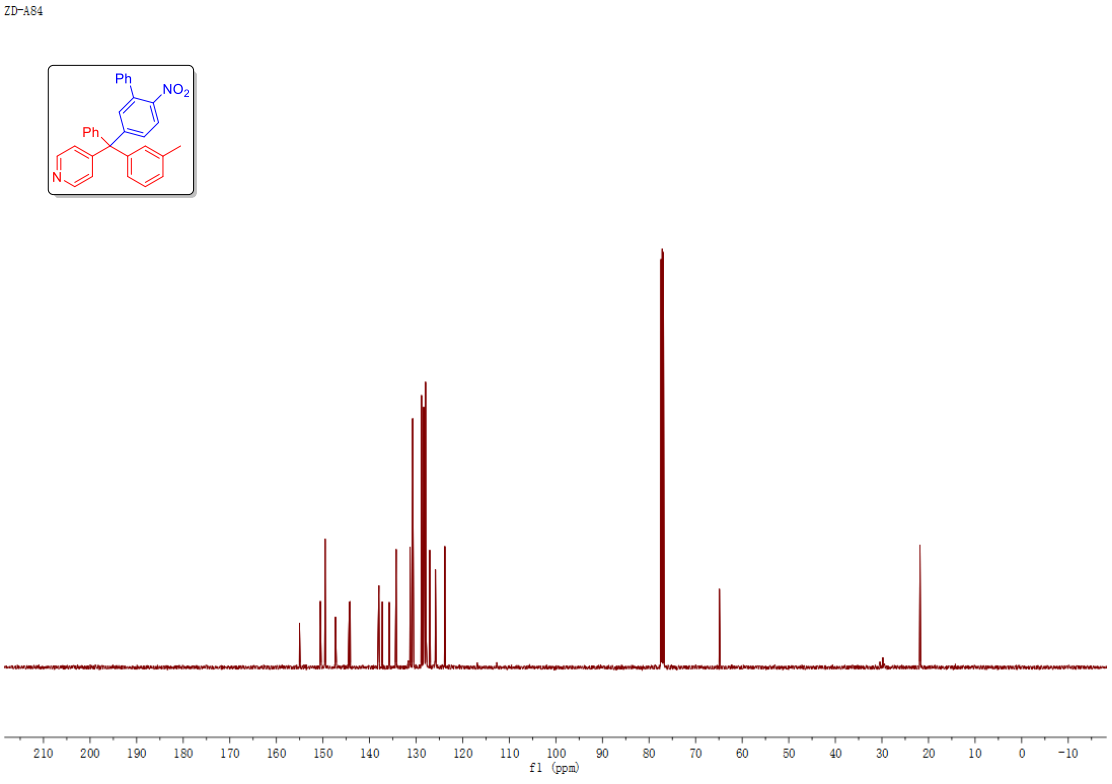
Supplementary Figure 76. ^{13}C NMR Spectrum of 6fa (125 MHz, $CDCl_3$)



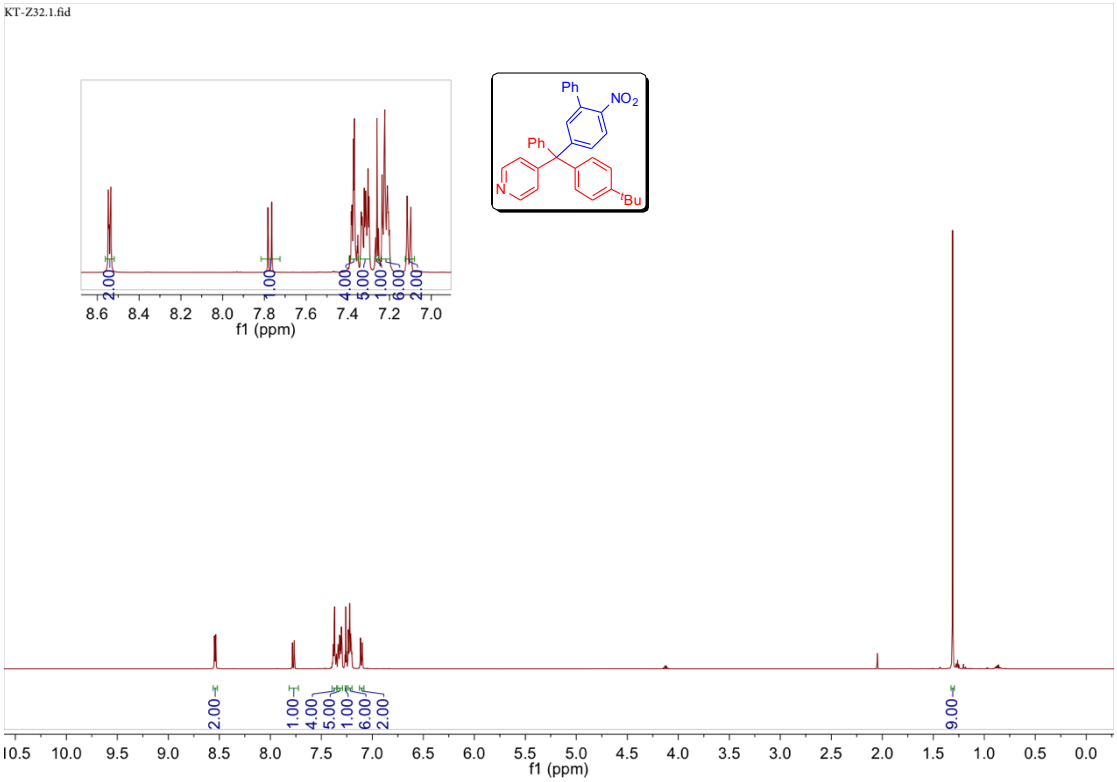
Supplementary Figure 77. ^{1}H NMR Spectrum of 6fb (500 MHz, $CDCl_3$)



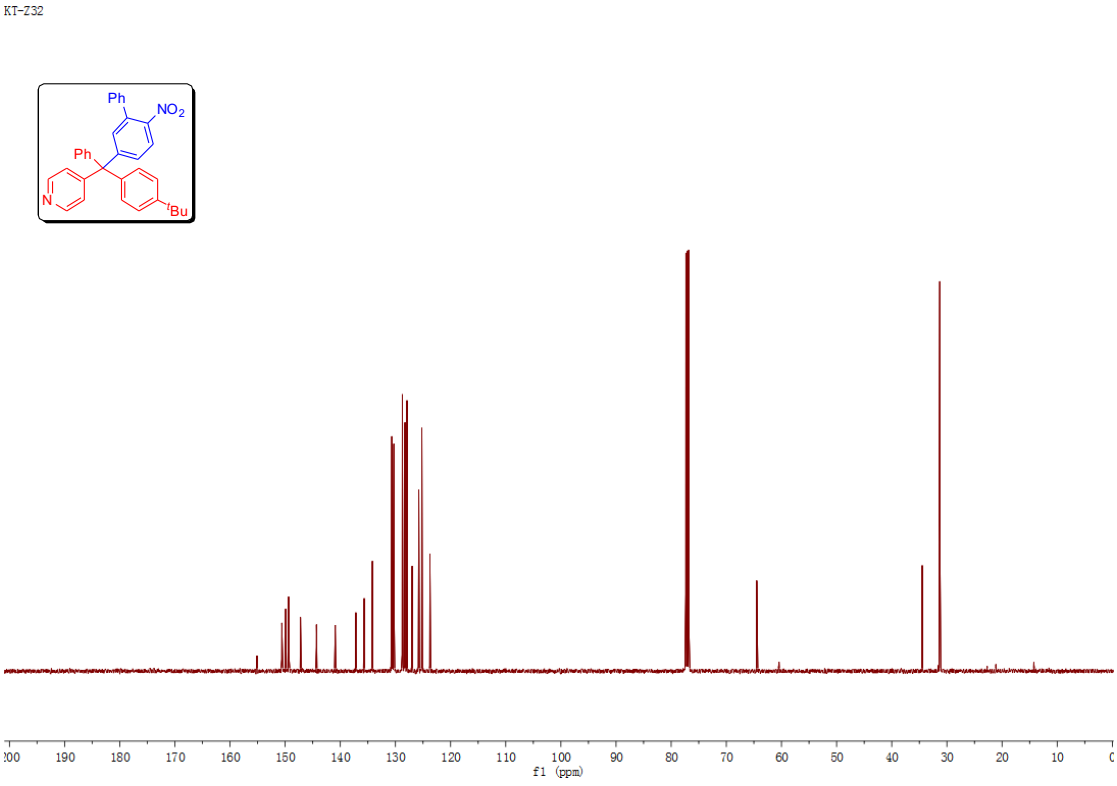
Supplementary Figure 78. ^{13}C NMR Spectrum of 6fb (125 MHz, $CDCl_3$)



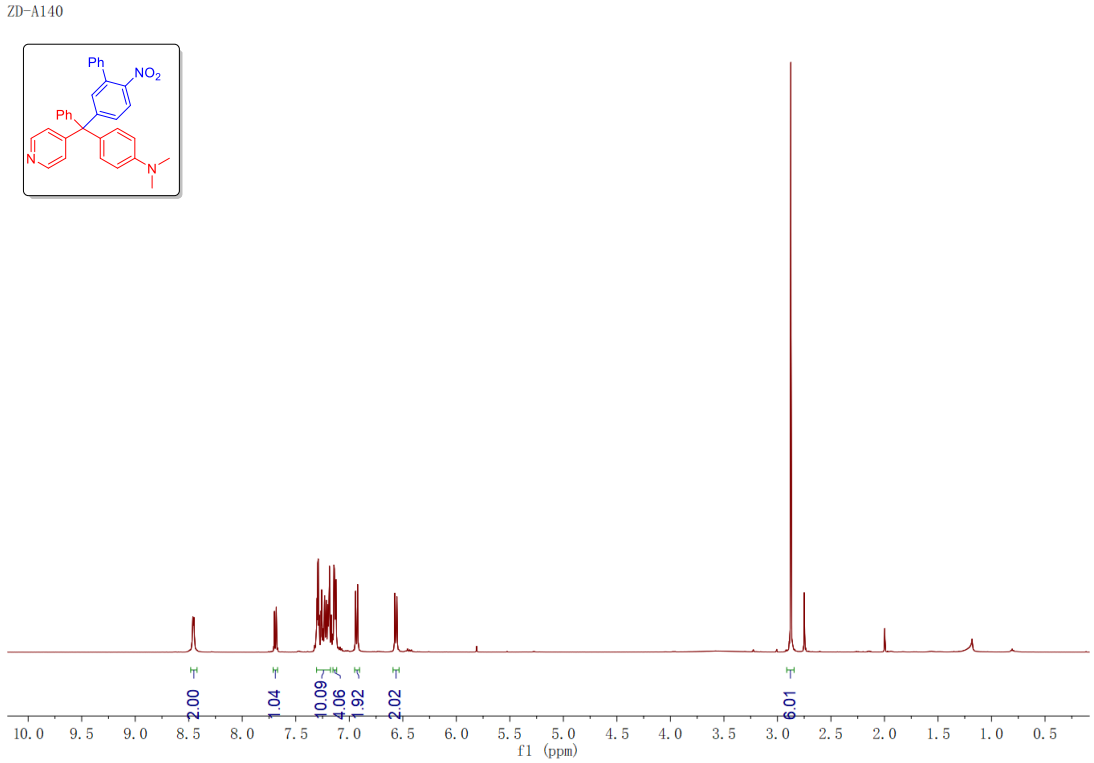
Supplementary Figure 79. ^{1}H NMR Spectrum of 6fc (500 MHz, $CDCl_3$)



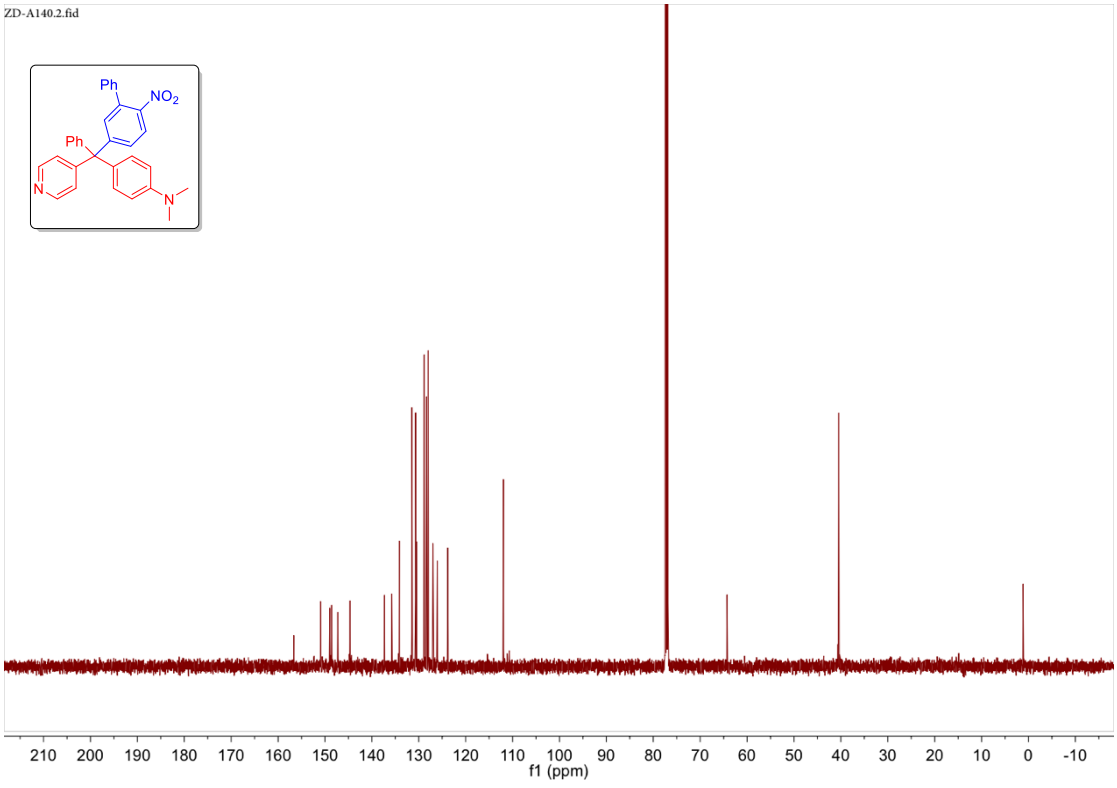
Supplementary Figure 80. ^{13}C NMR Spectrum of 6fc (125 MHz, $CDCl_3$)



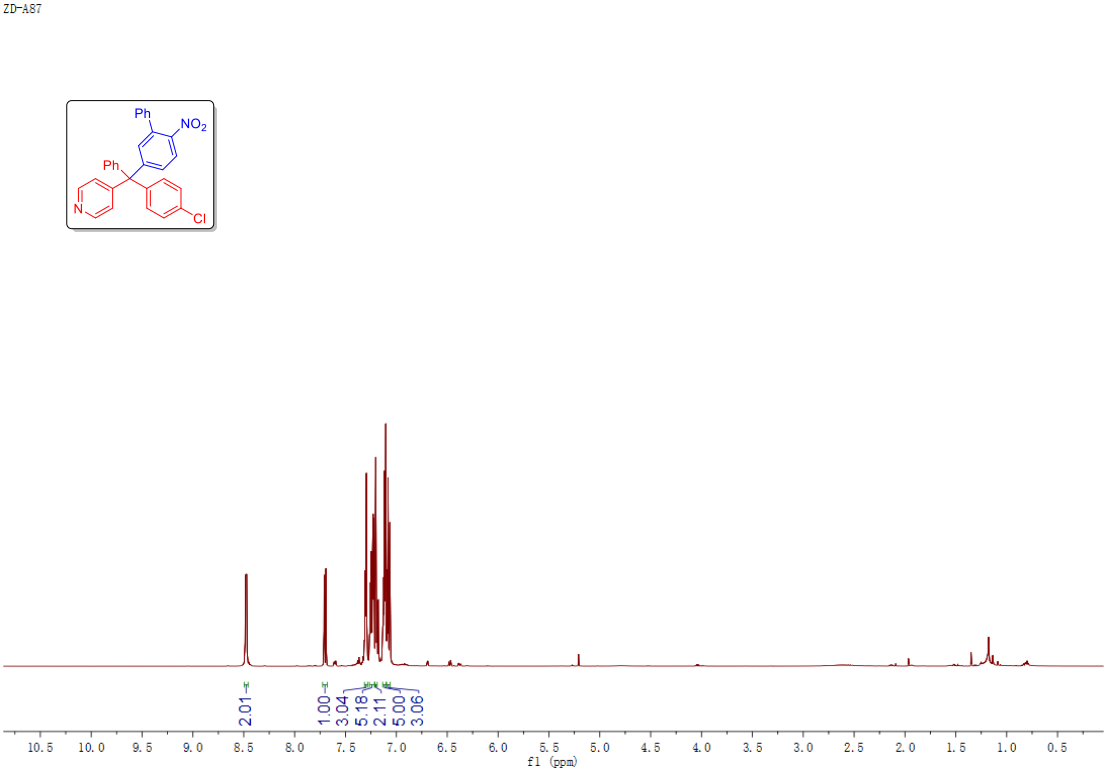
Supplementary Figure 81. ^{1}H NMR Spectrum of 6fd (500 MHz, $CDCl_3$)



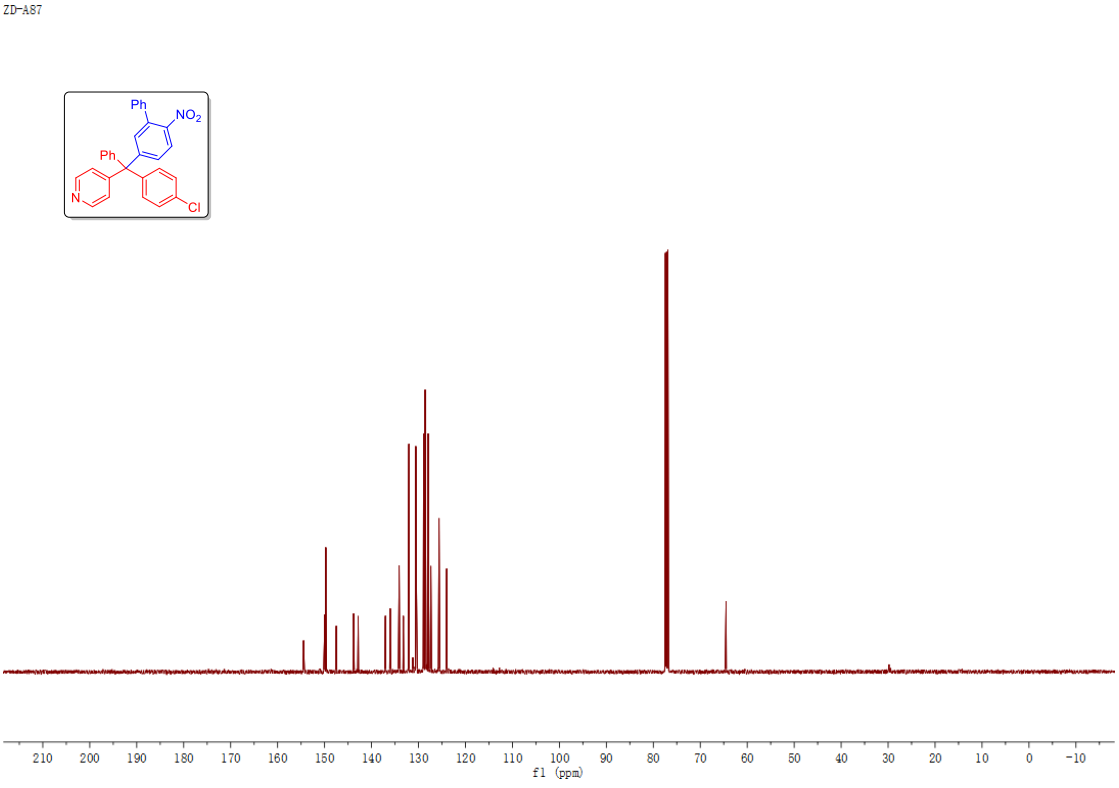
Supplementary Figure 82. ^{13}C NMR Spectrum of 6fd (125 MHz, $CDCl_3$)



Supplementary Figure 83. ^{1}H NMR Spectrum of 6fe (500 MHz, $CDCl_3$)

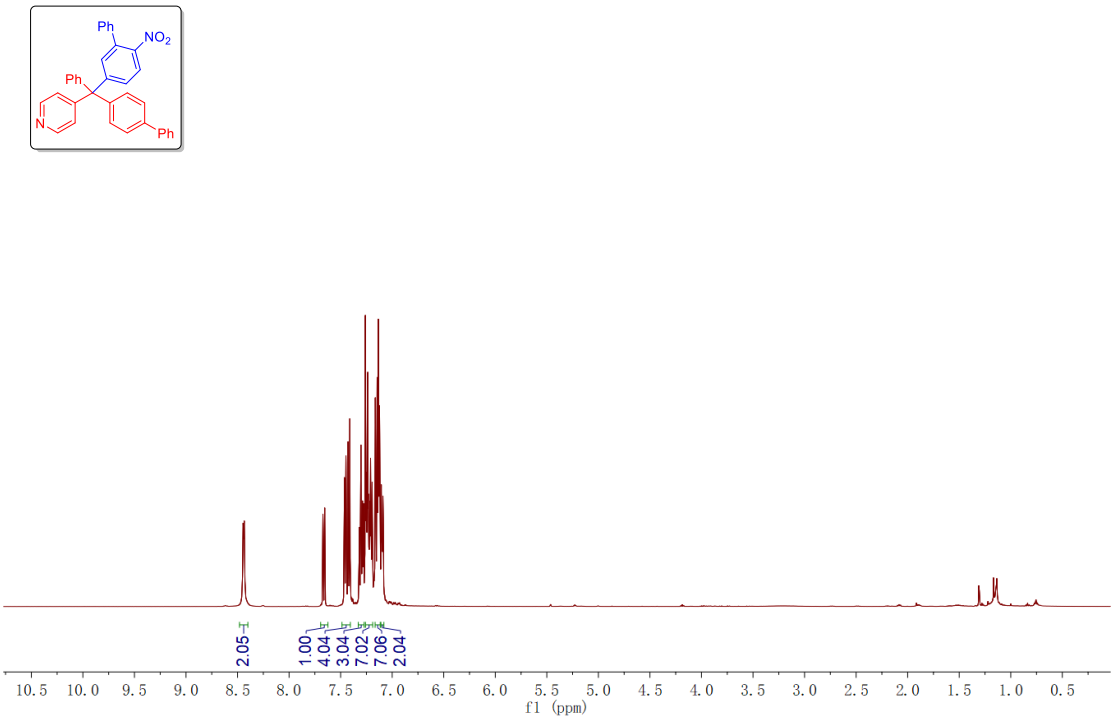


Supplementary Figure 84. ^{13}C NMR Spectrum of 6fe (125 MHz, $CDCl_3$)



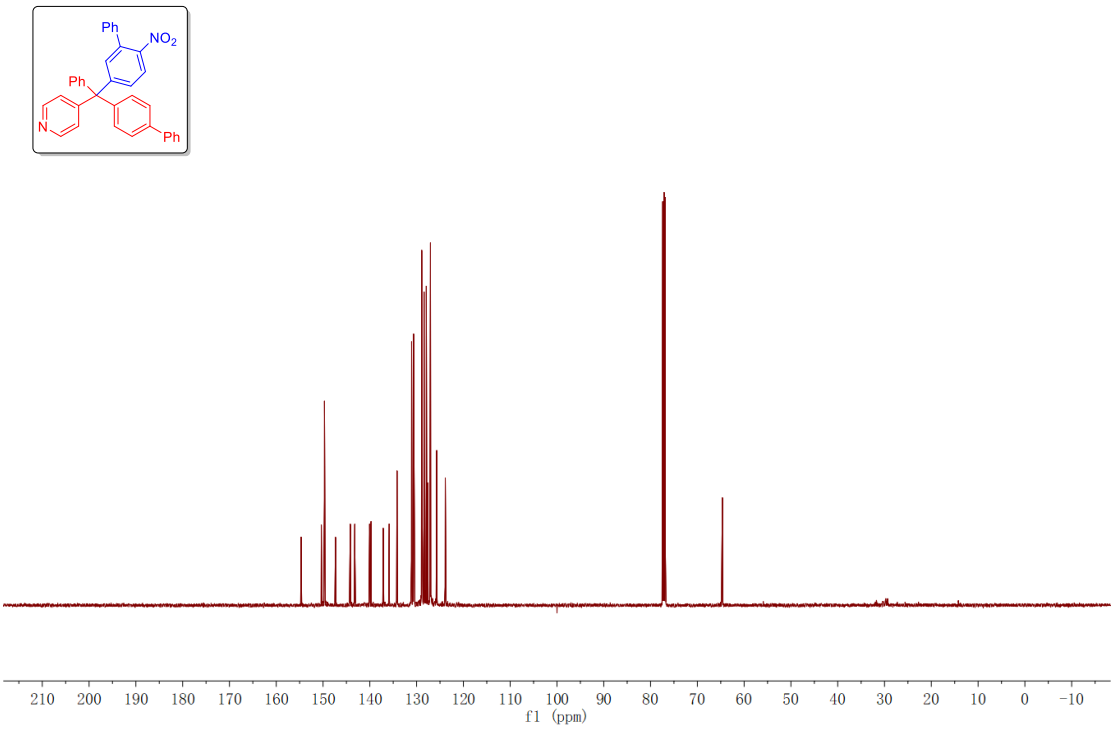
Supplementary Figure 85. ^{1}H NMR Spectrum of 6ff (500 MHz, $CDCl_3$)

ZD-A108

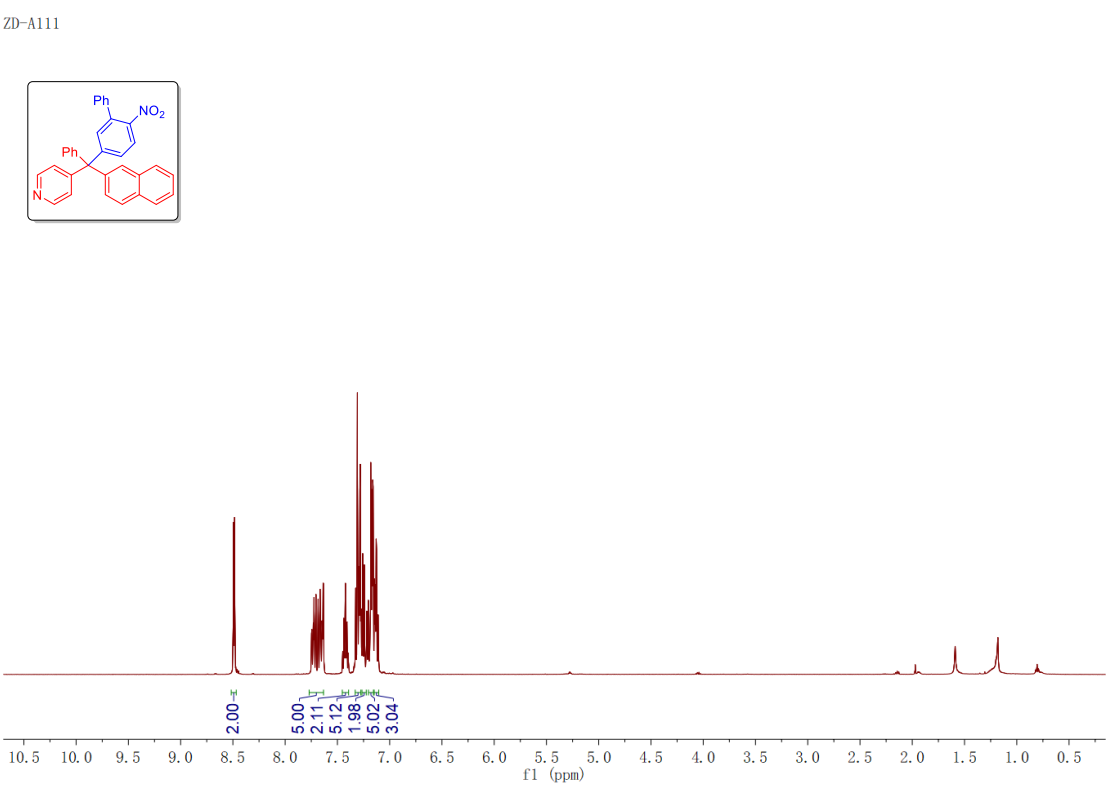


Supplementary Figure 86. ^{13}C NMR Spectrum of 6ff (125 MHz, $CDCl_3$)

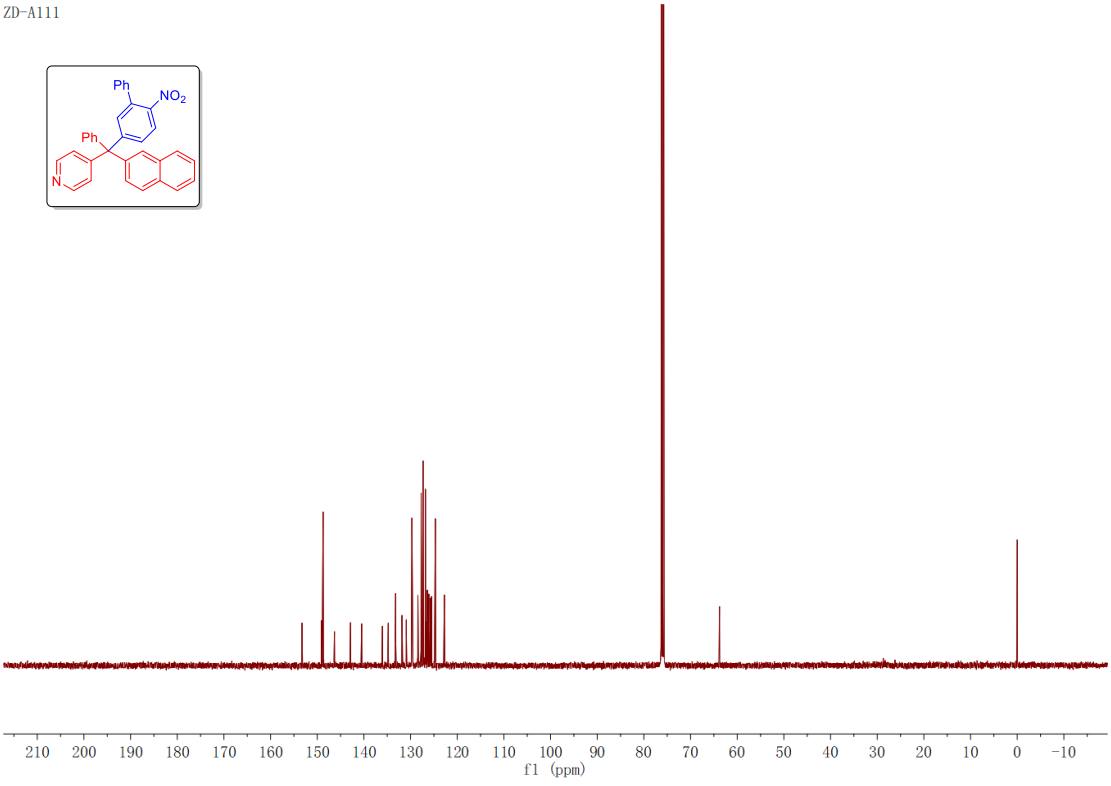
ZD-A108



Supplementary Figure 87. ^{1}H NMR Spectrum of 6fg (500 MHz, $CDCl_3$)

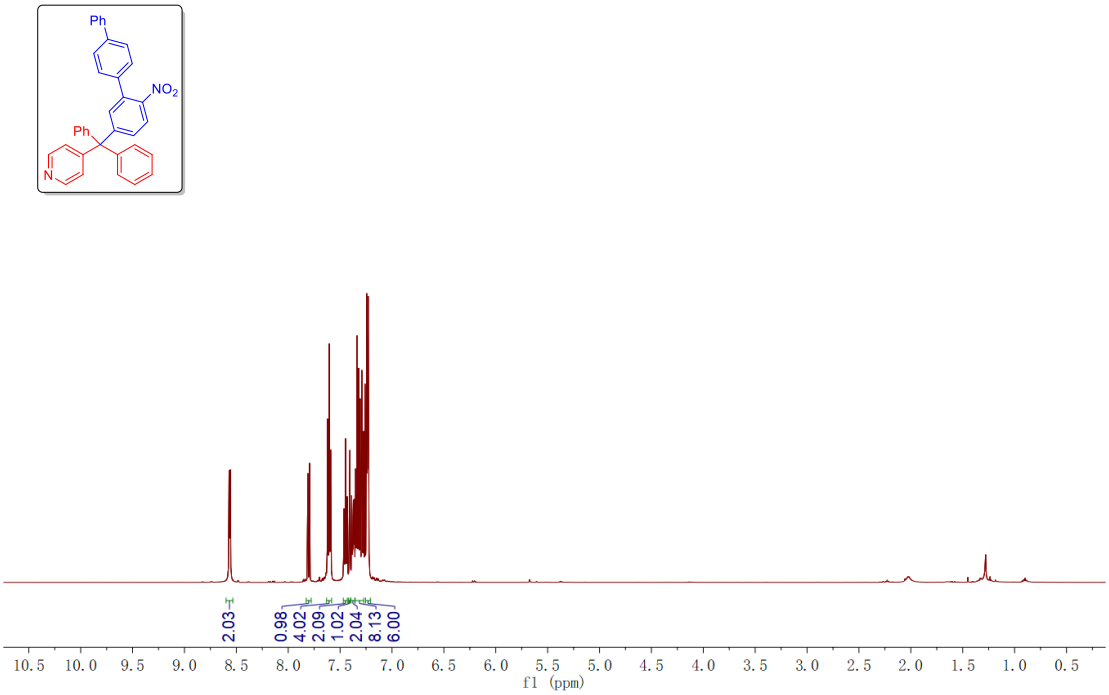


Supplementary Figure 88. ^{13}C NMR Spectrum of 6fg (125 MHz, $CDCl_3$)



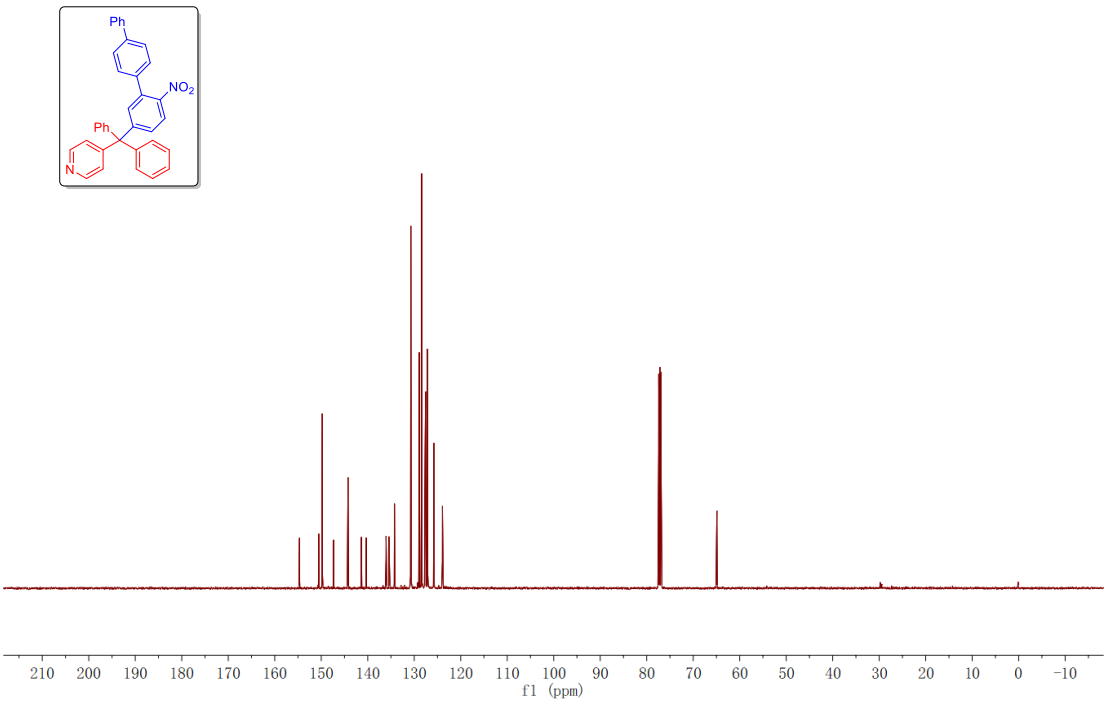
Supplementary Figure 89. ^{1}H NMR Spectrum of 6ga (500 MHz, $CDCl_3$)

ZD-A76

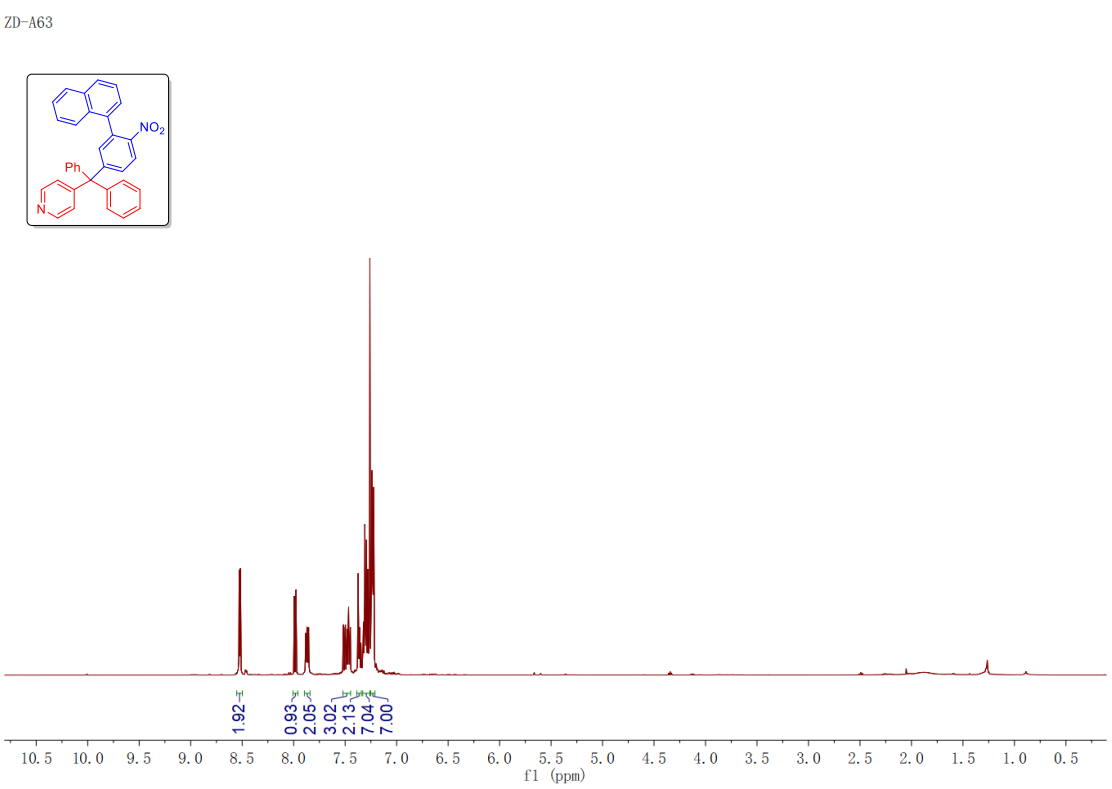


Supplementary Figure 90. ^{13}C NMR Spectrum of 6ga (125 MHz, $CDCl_3$)

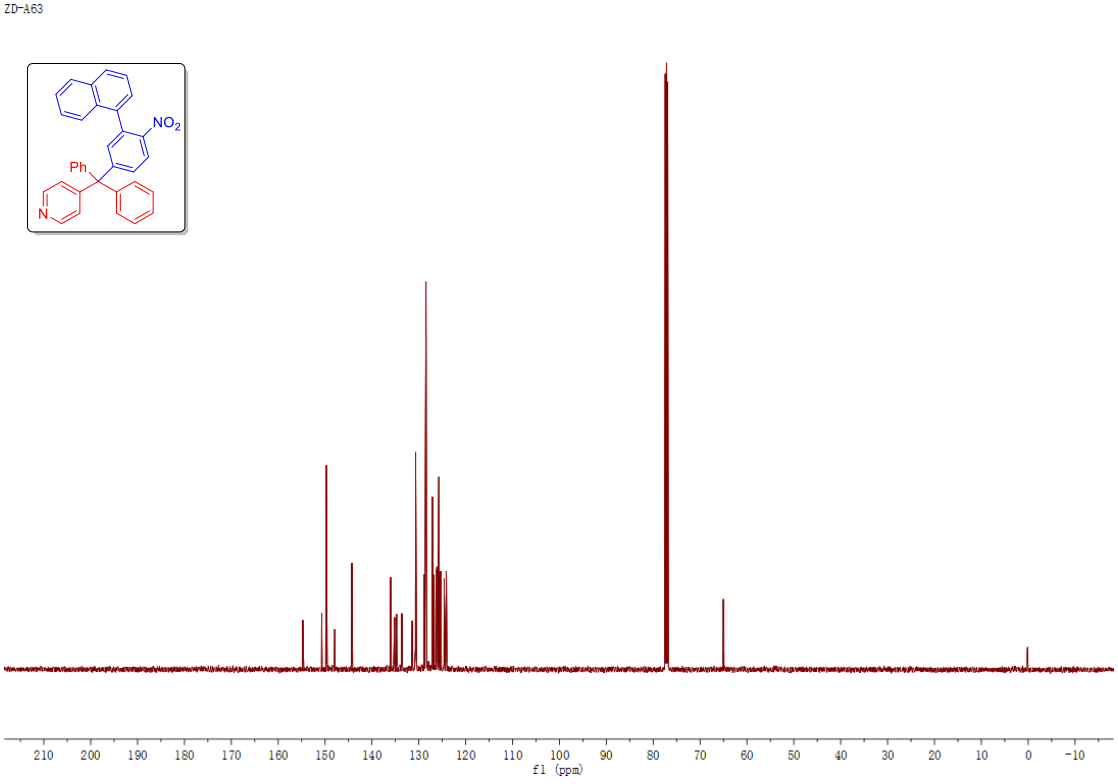
ZD-A76



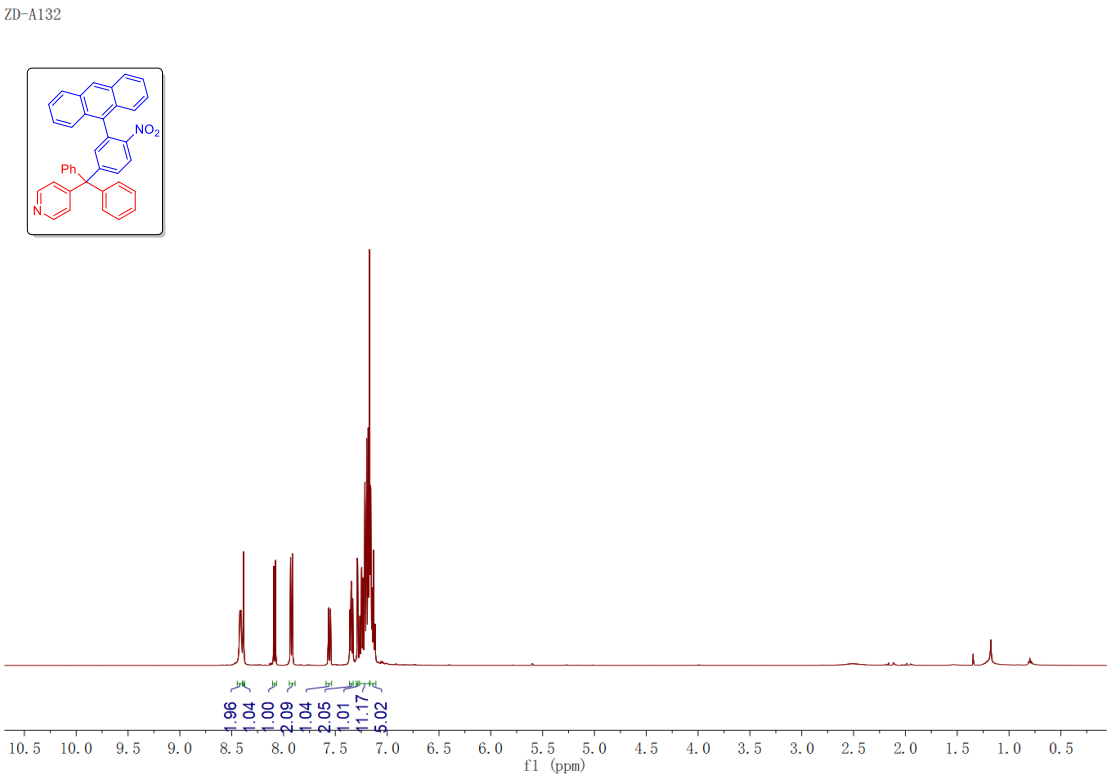
Supplementary Figure 91. ^{1}H NMR Spectrum of 6ha (500 MHz, $CDCl_3$)



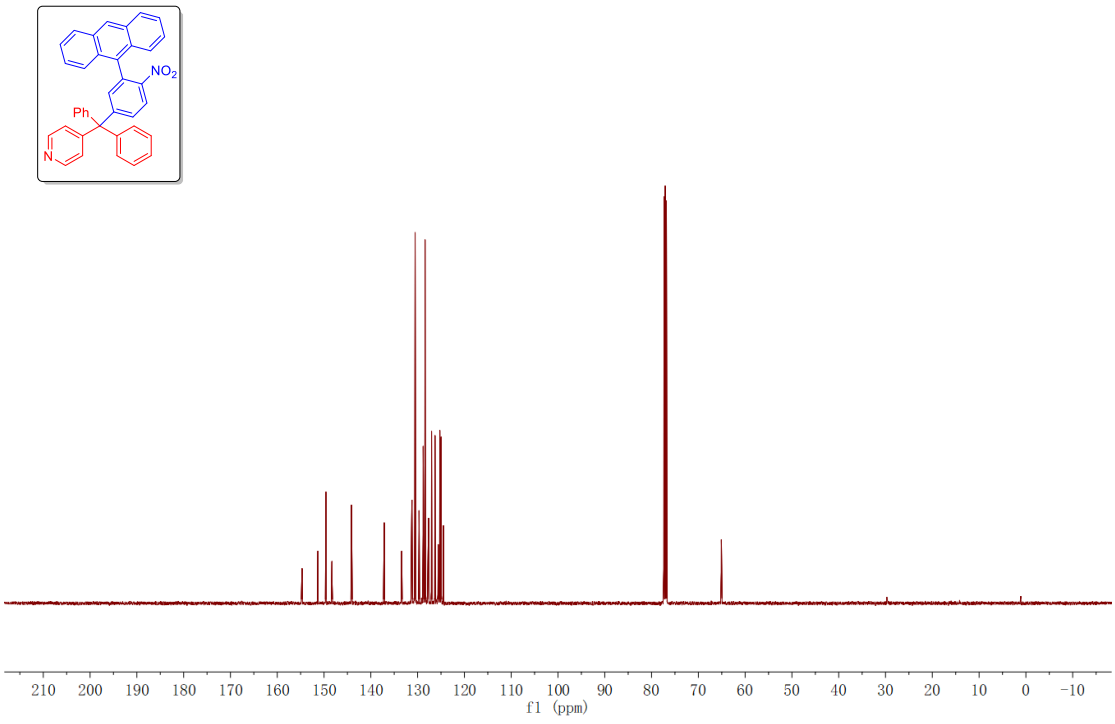
Supplementary Figure 92. ^{13}C NMR Spectrum of 6ha (125 MHz, $CDCl_3$)



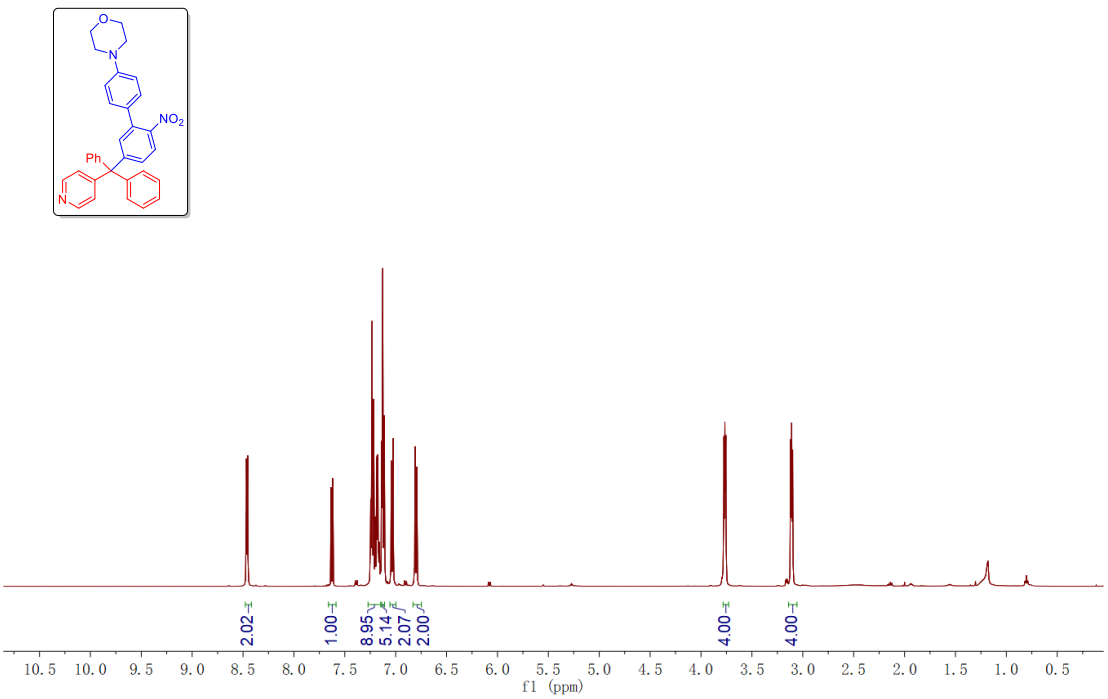
Supplementary Figure 93. ^{1}H NMR Spectrum of 6Ha (500 MHz, $CDCl_3$)



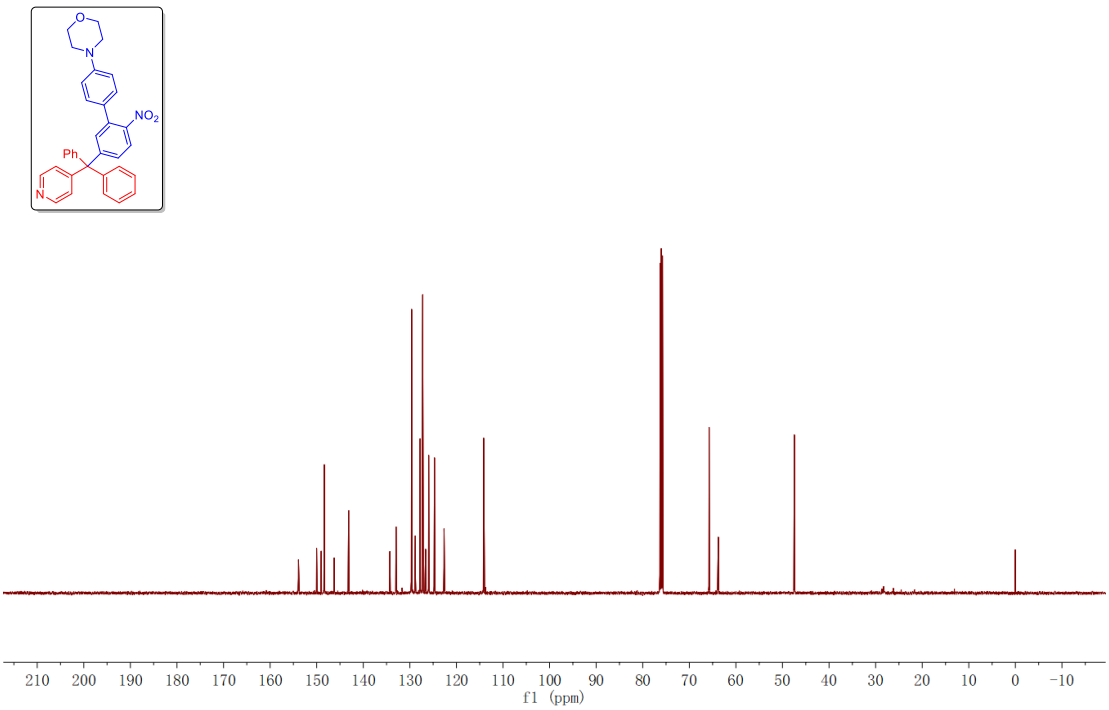
Supplementary Figure 94 ^{13}C NMR Spectrum of 6Ha (125 MHz, $CDCl_3$)



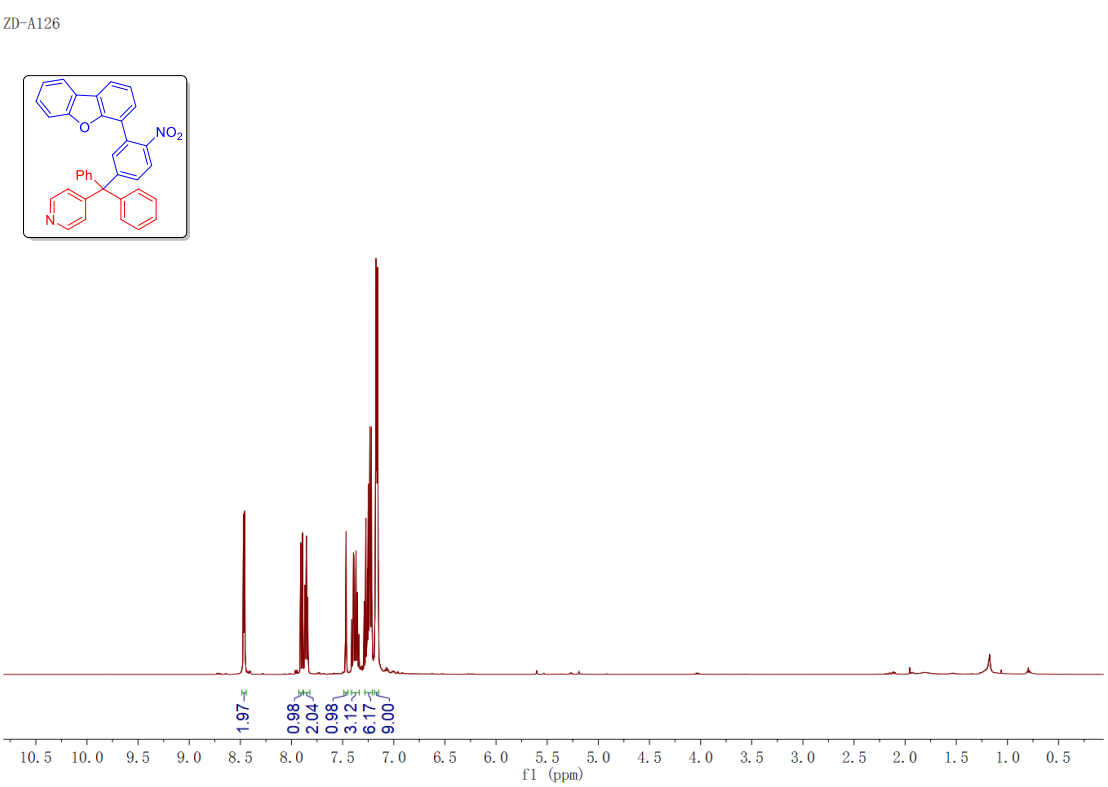
Supplementary Figure 95. ^{1}H NMR Spectrum of 6Ia (500 MHz, $CDCl_3$)



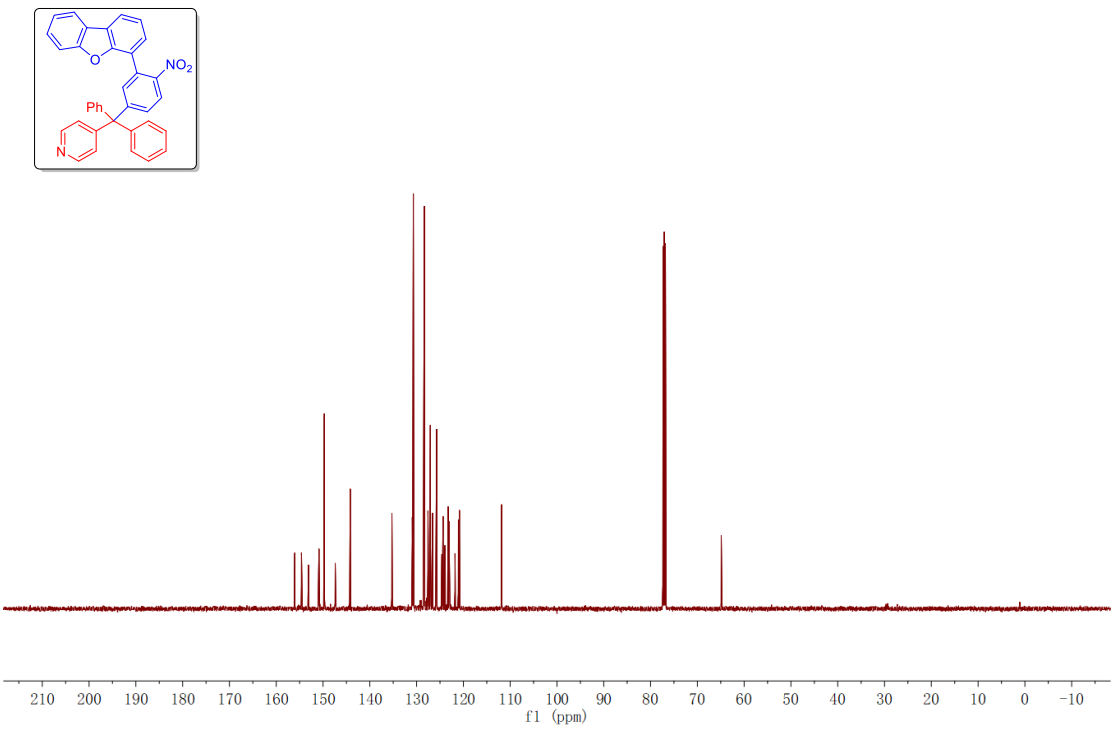
Supplementary Figure 96. ^{13}C NMR Spectrum of 6Ia (125 MHz, $CDCl_3$)



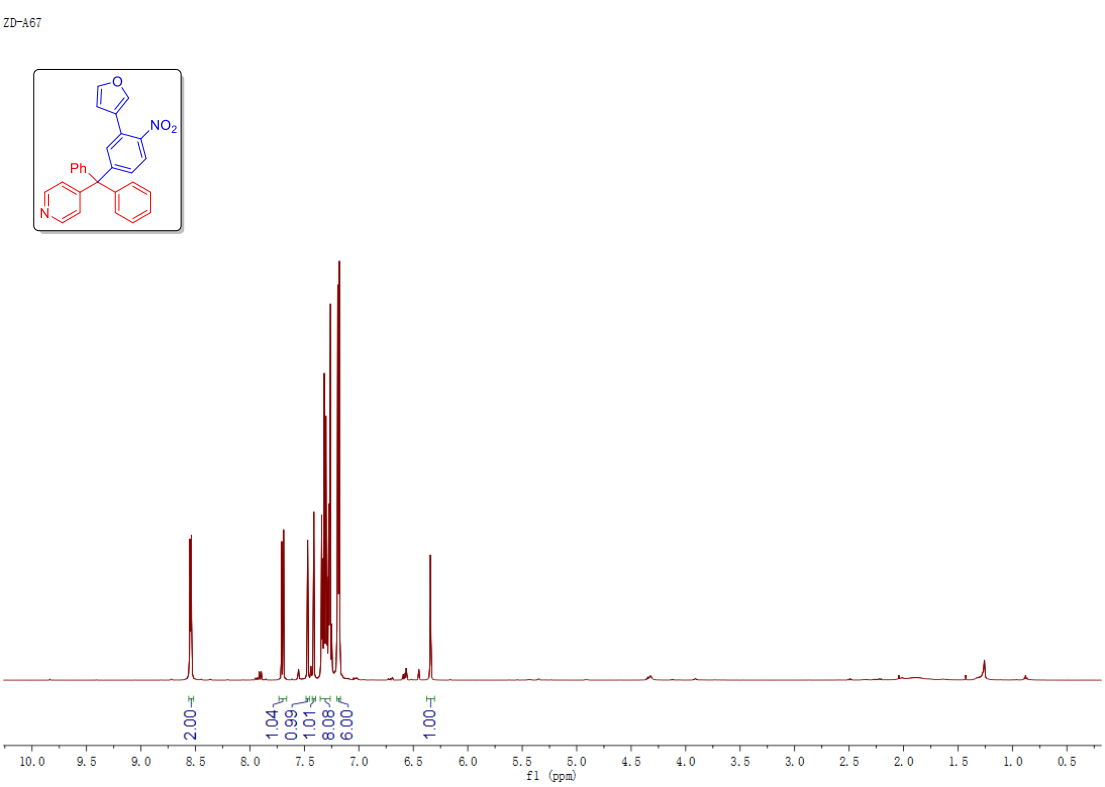
Supplementary Figure 97. ^{1}H NMR Spectrum of 6ja (500 MHz, $CDCl_3$)



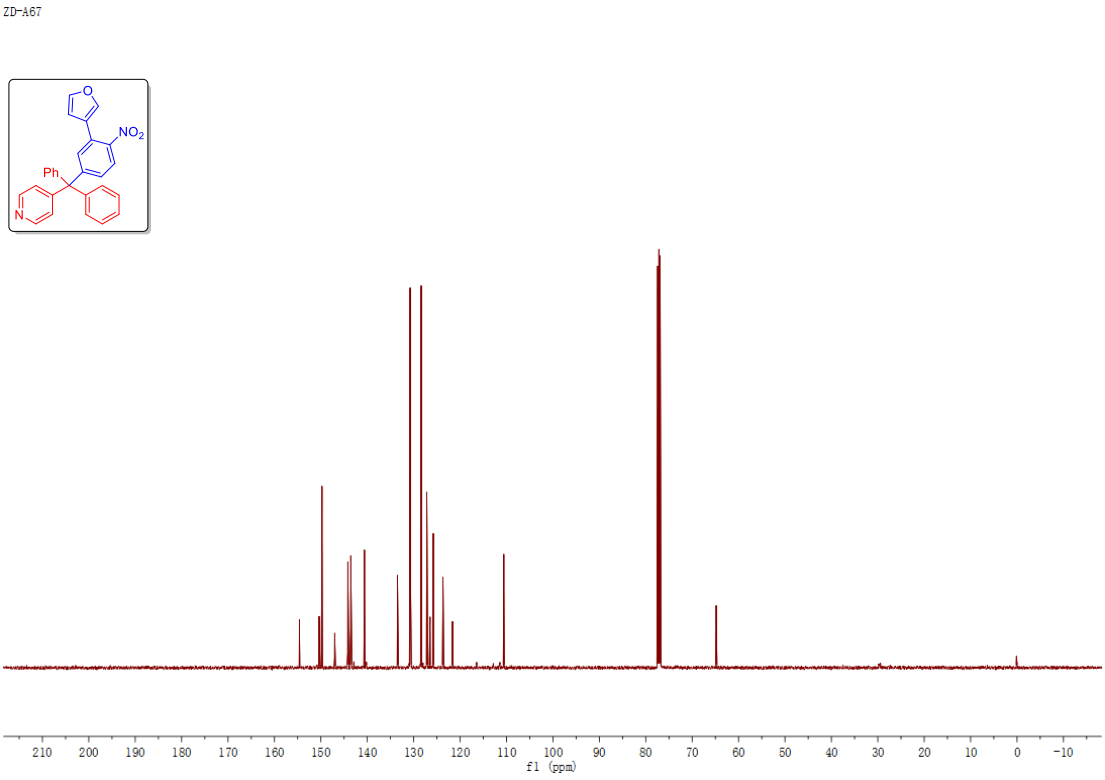
Supplementary Figure 98. ^{13}C NMR Spectrum of 6ja (125 MHz, $CDCl_3$)



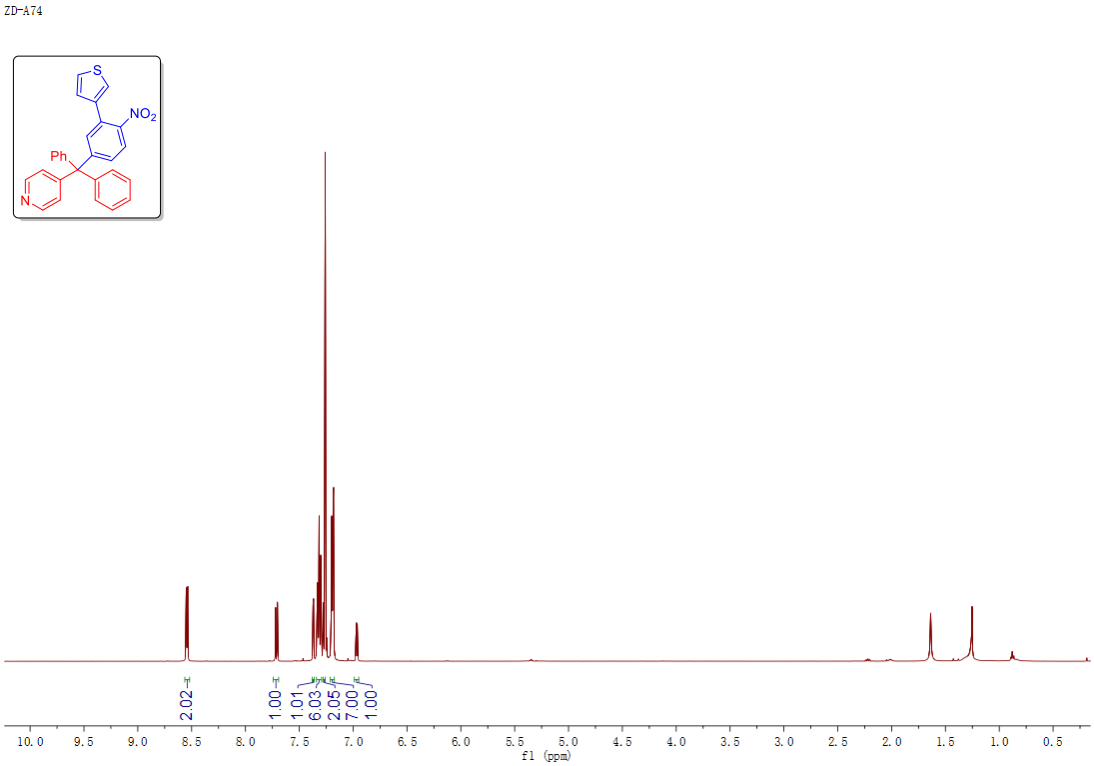
Supplementary Figure 99. ^{1}H NMR Spectrum of 6ka (500 MHz, $CDCl_3$)



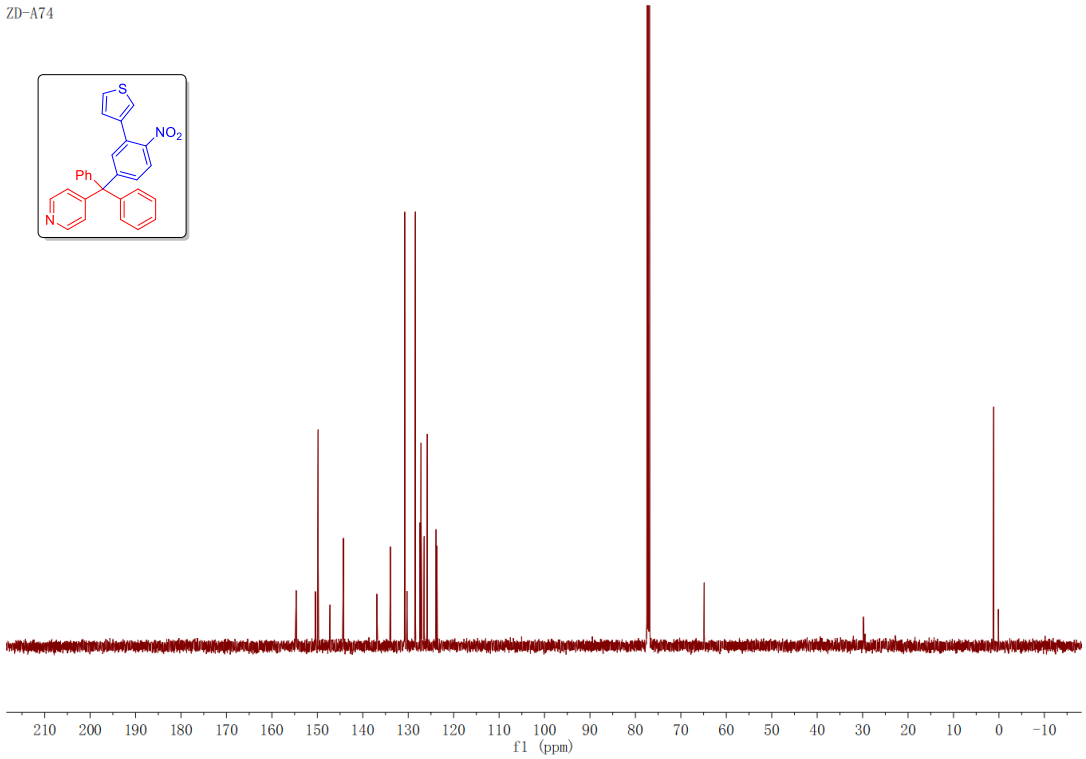
Supplementary Figure 100. ^{13}C NMR Spectrum of 6ka (125 MHz, $CDCl_3$)



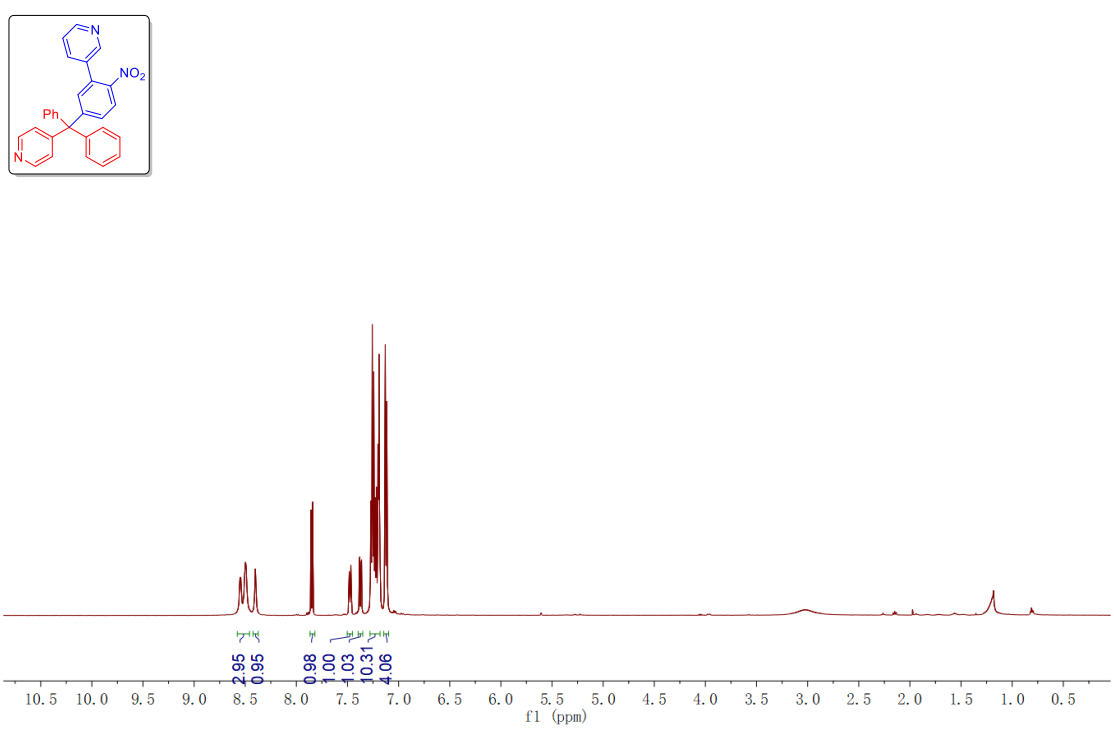
Supplementary Figure 101. ^{1}H NMR Spectrum of 6ma (500 MHz, $CDCl_3$)



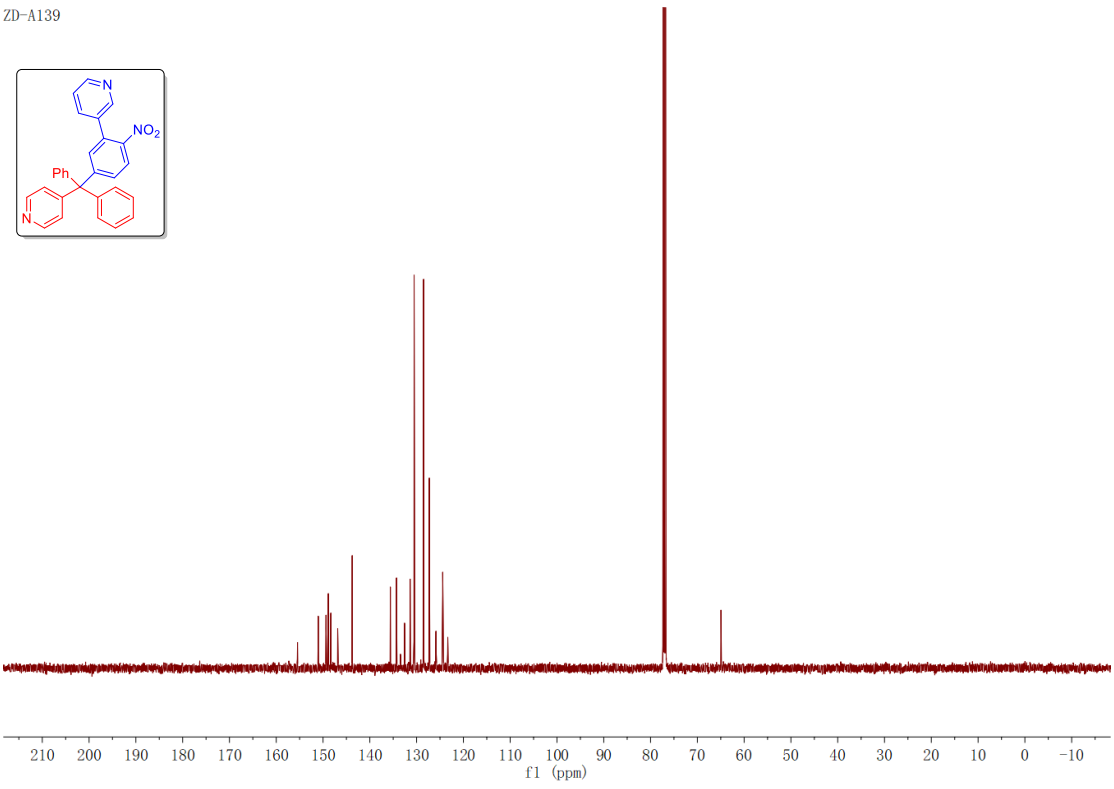
Supplementary Figure 102. ^{13}C NMR Spectrum of 6ma (125 MHz, $CDCl_3$)



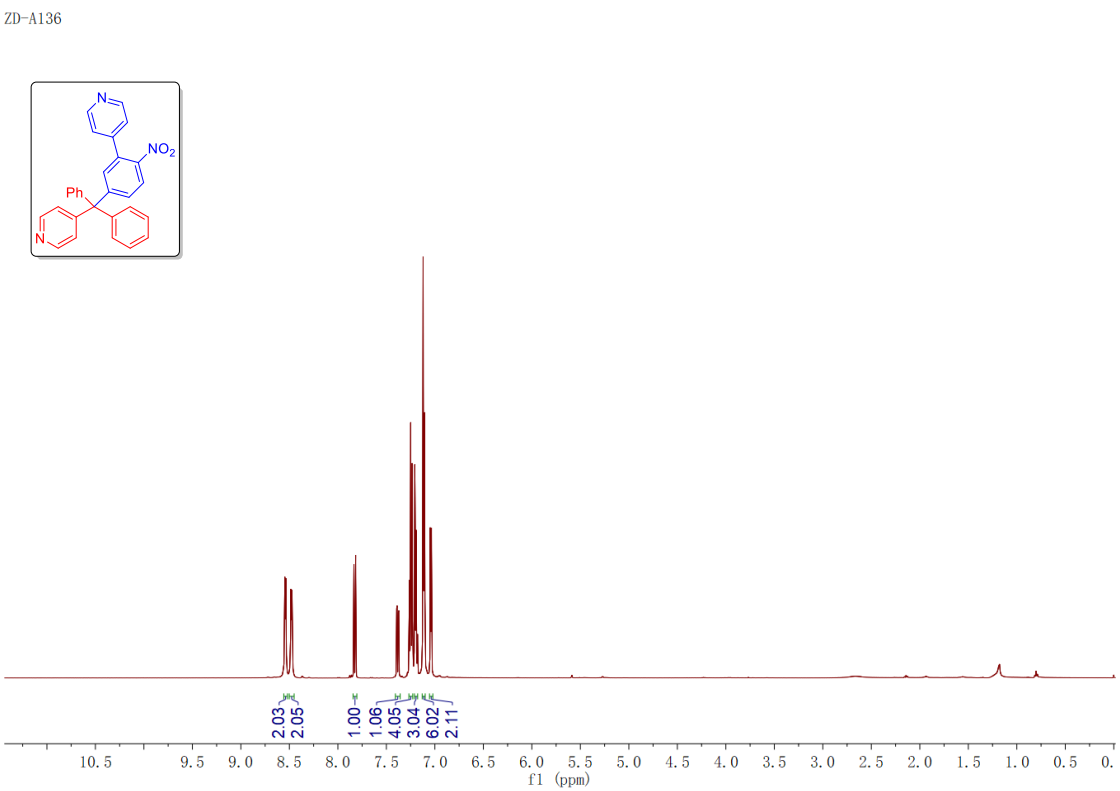
Supplementary Figure 103. ^{1}H NMR Spectrum of 6na (500 MHz, $CDCl_3$)



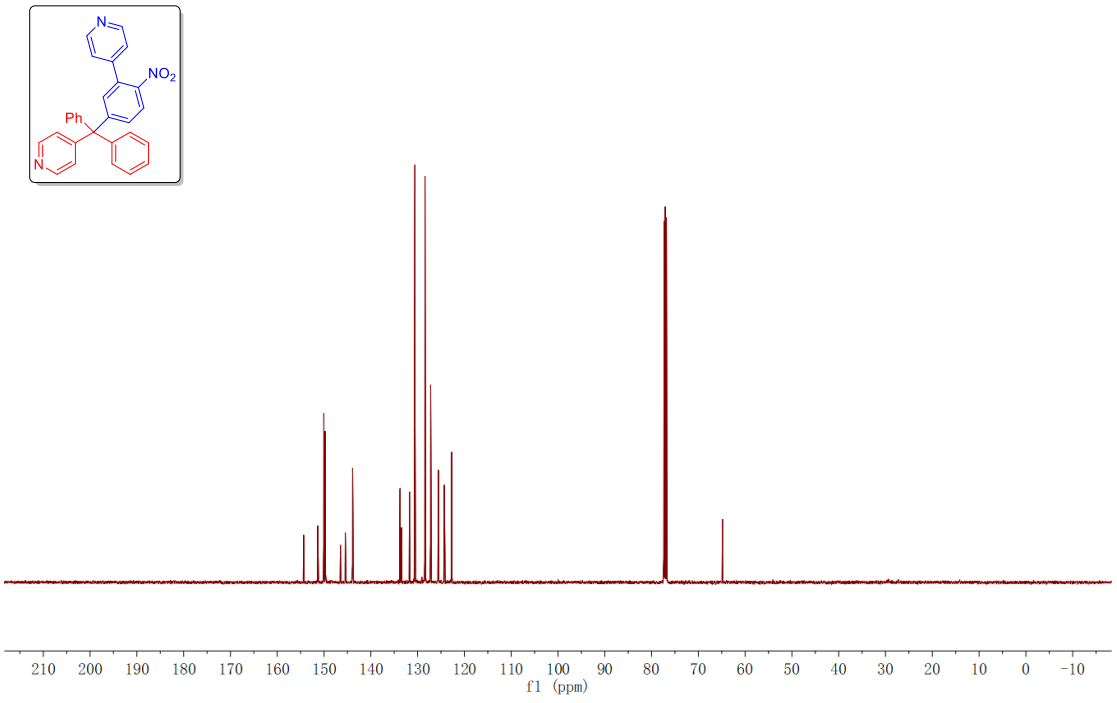
Supplementary Figure 104. ^{13}C NMR Spectrum of 6na (125 MHz, $CDCl_3$)



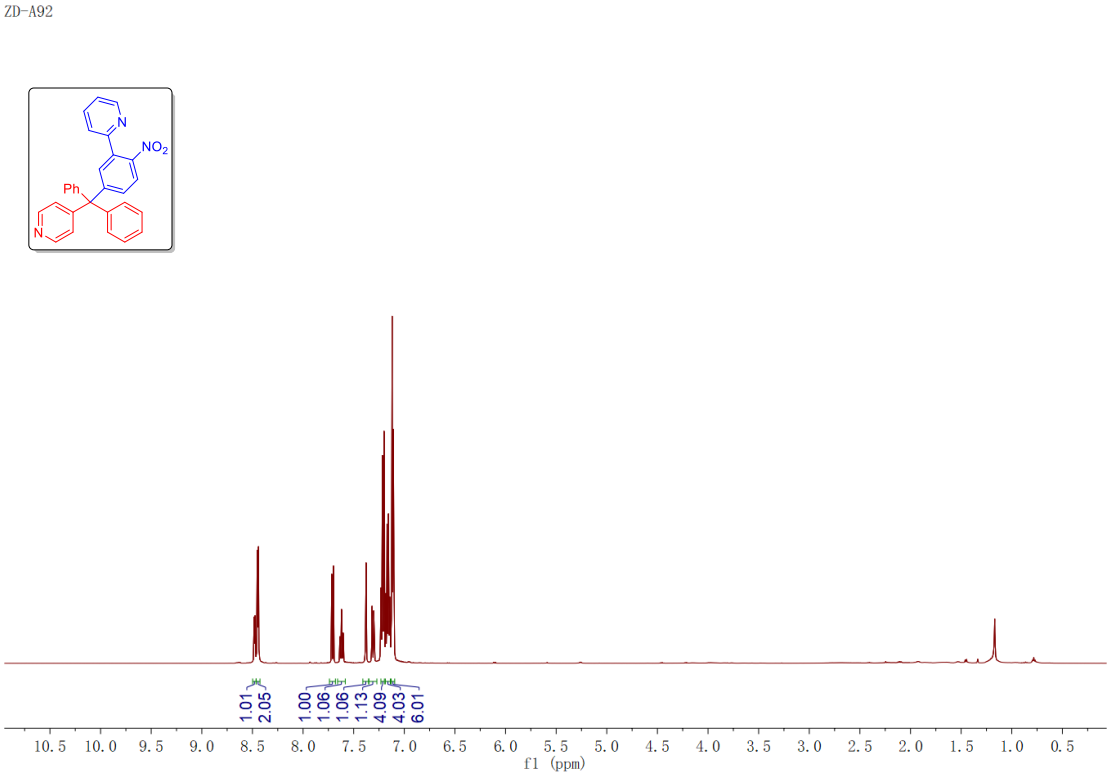
Supplementary Figure 105. ^{1}H NMR Spectrum of 6oa (500 MHz, $CDCl_3$)



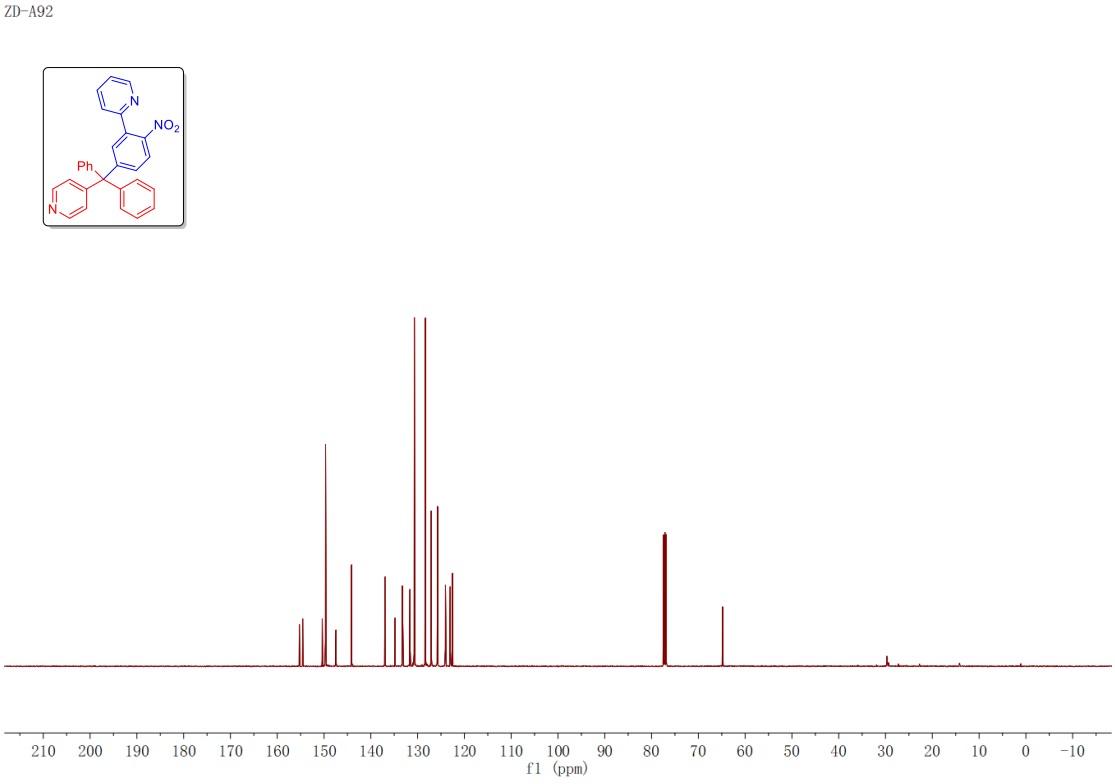
Supplementary Figure 106. ^{13}C NMR Spectrum of 6oa (125 MHz, $CDCl_3$)



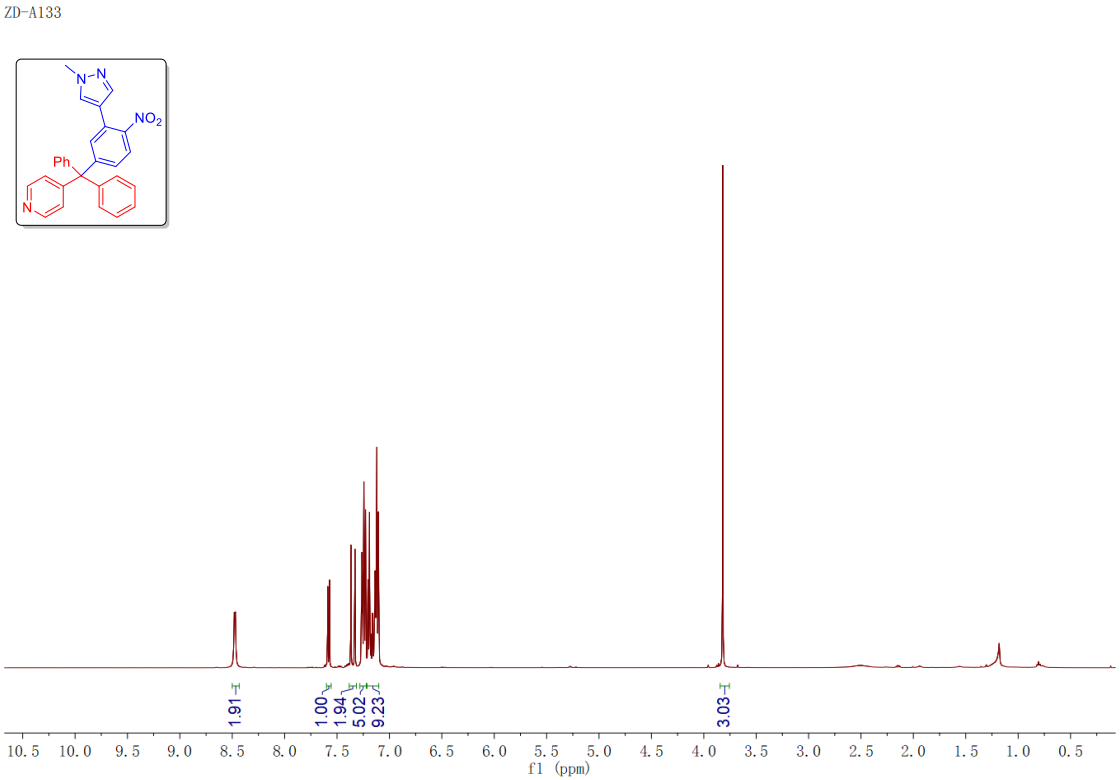
Supplementary Figure 107. ^{1}H NMR Spectrum of 6Pa (500 MHz, $CDCl_3$)



Supplementary Figure 108. ^{13}C NMR Spectrum of 6Pa (125 MHz, $CDCl_3$)



Supplementary Figure 109. ^{1}H NMR Spectrum of 6qa (500 MHz, $CDCl_3$)



Supplementary Figure 110.^{13}C NMR Spectrum of 6qa (125 MHz, $CDCl_3$)