

Supplementary Information

Rose Bengal used as photocatalyst: visible light-mediated Friedel–Crafts alkylation of indoles with nitroalkenes in water

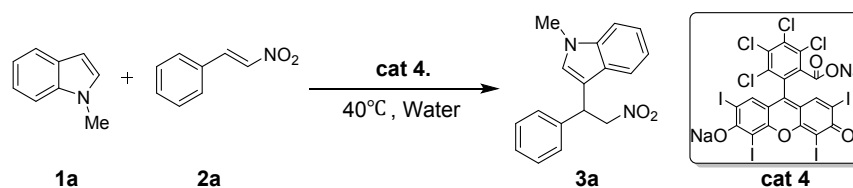
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Table S1. Screen of light source

Entry	Light source	Yield ^b (%)
1	White LED	64.98
2	Red LED	55.96
3	Green LED	19.13
4	Blue LED	46.31
5	Purple LED	40.06

^a N-methyl indole **1a** (39.4 mg, 0.3 mmol), (*E*)-2-nitroethenylbenzene **2a** (67.1 mg, 0.45 mmol) and catalyst were added to a test tube equipped with a stirring bar and dissolved in Water (3 mL) under the exposure of LED lamps.
^b Isolated yields.

Cyclic voltammetry (CV) experiments

Cyclic voltammetry (CV) experiments were performed in a CH Instruments Electrochemical Analyzer, a platinum mesh counter electrode, a glassy carbon working electrode, and a Ag/AgNO₃ (0.01M) reference electrode were used. Samples were prepared with a substrate concentration of 1 M in a 0.1 M tetraethylammonium hexafluorophosphate in acetonitrile electrolyte solution. From the result, $E_{1/2\text{ox}}(\mathbf{4}) = -1.211$ V vs SCE (Figure S1) is higher than $E_{1/2\text{red}}(\mathbf{1a}) = -1.977$ V vs SCE (Figure S2) so the photoredox reaction between Rose Bengal and **1a** could occur spontaneously.

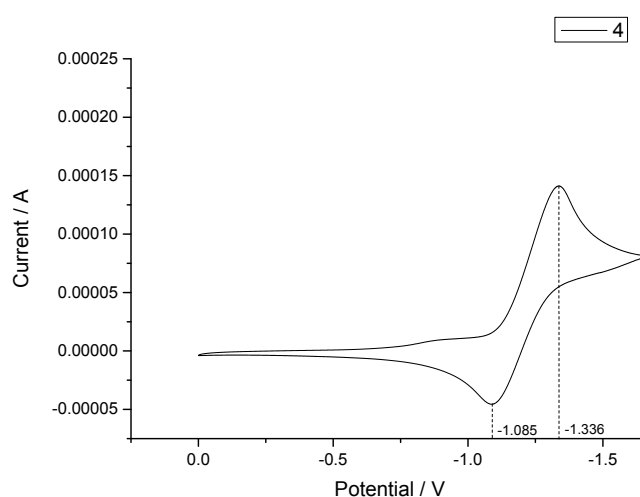


Figure S1. Cyclic voltammetry experiment of **1a**. Experiment conditions: Init E = -2 V, High = 0, Low E = -2 V, Init P/N = P, Scan Rate = 0.1 V/s, Sample Interval = 0.001 V, Quiet Time = 2 s, Sensitivity = 1e⁻⁴ A/V. $E_{1/2\text{ox}}(\mathbf{4}) = -1.211$ V

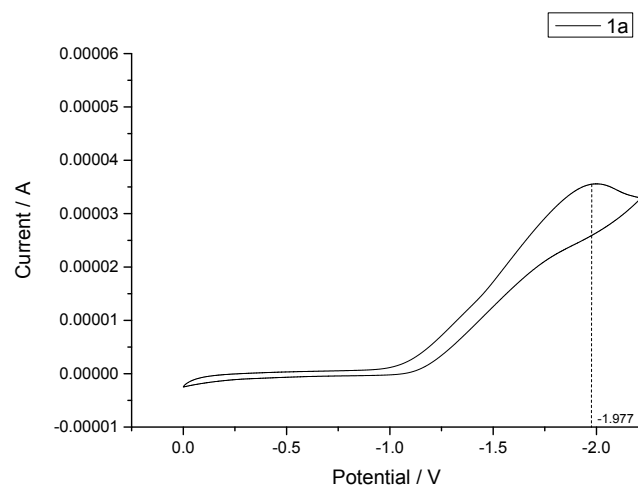
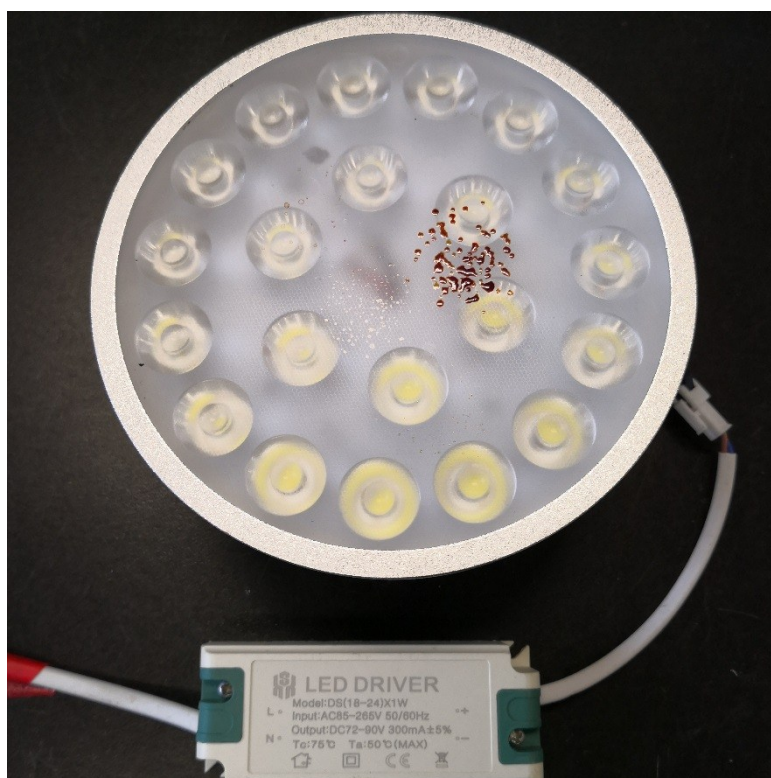


Figure S2. Cyclic voltammetry experiment of 1a. Experiment conditions: Init E = -2.5 V, High = 0, Low E = -2.5 V, Init P/N = P, Scan Rate = 0.1 V/s, Sample Interval = 0.001 V, Quiet Time = 2 s, Sensitivity = $2e^{-4}$ A/V

Graphical Supporting Information

Graphical Supporting Information for the 21W white LED lamps

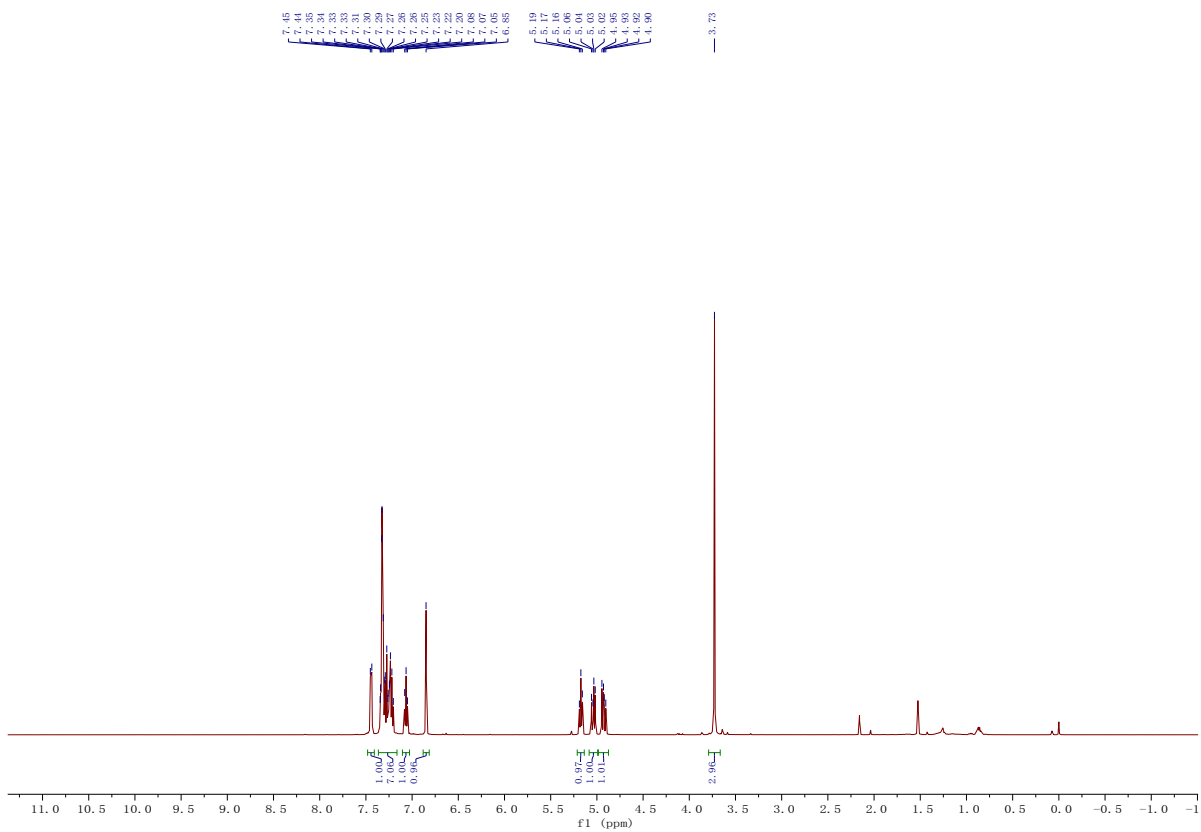
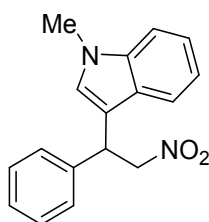


Graphical Supporting Information for the luminous flux detector



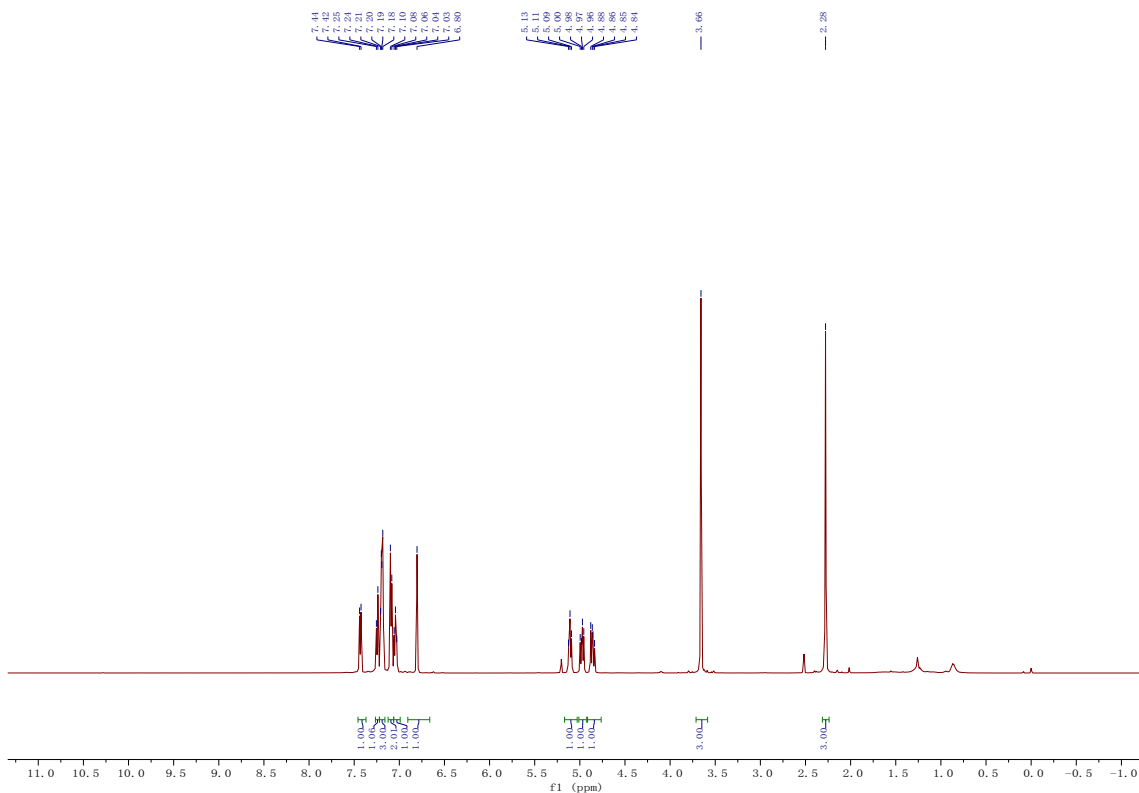
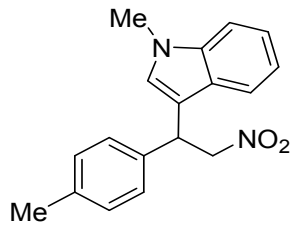
Copies of NMR Spectra for Compounds 3a

¹H NMR copy of compound 3a:



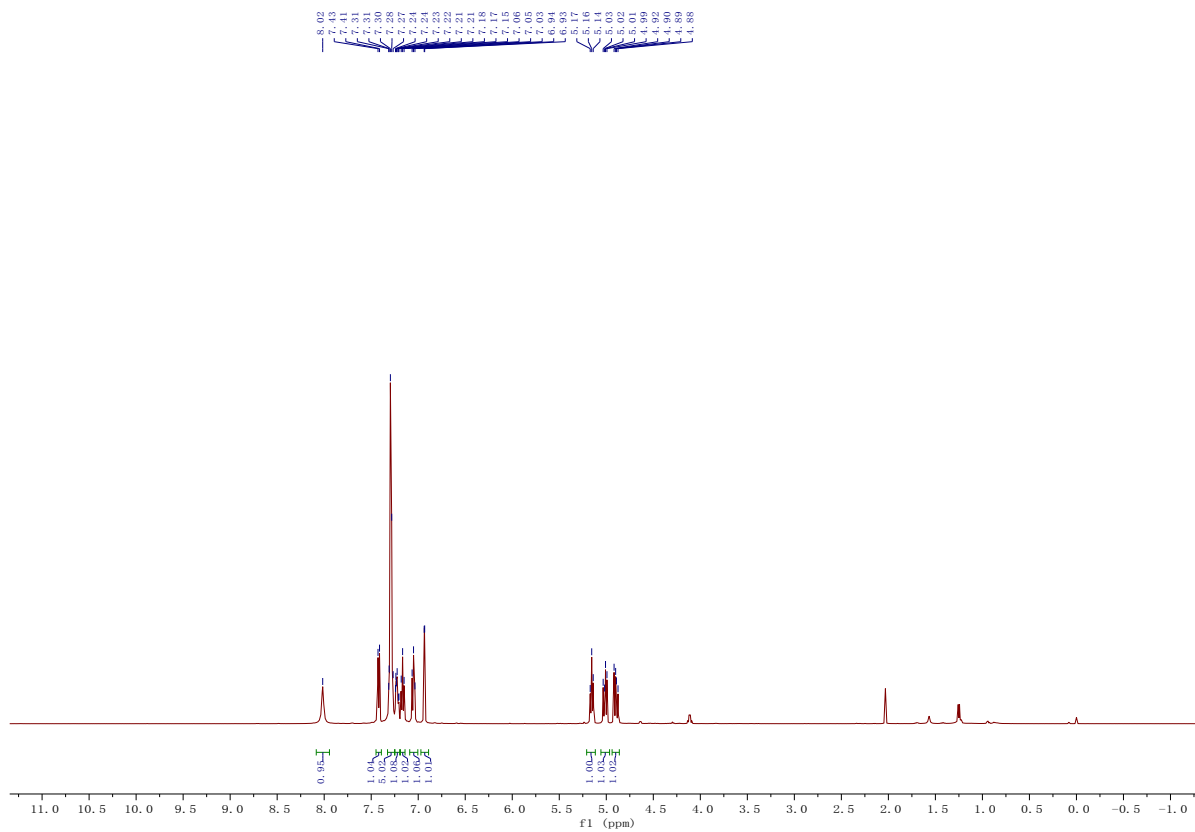
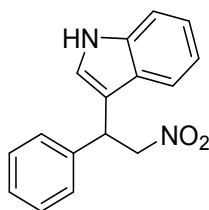
Copies of NMR Spectra for Compounds 3b

¹H NMR copy of compound 3b:



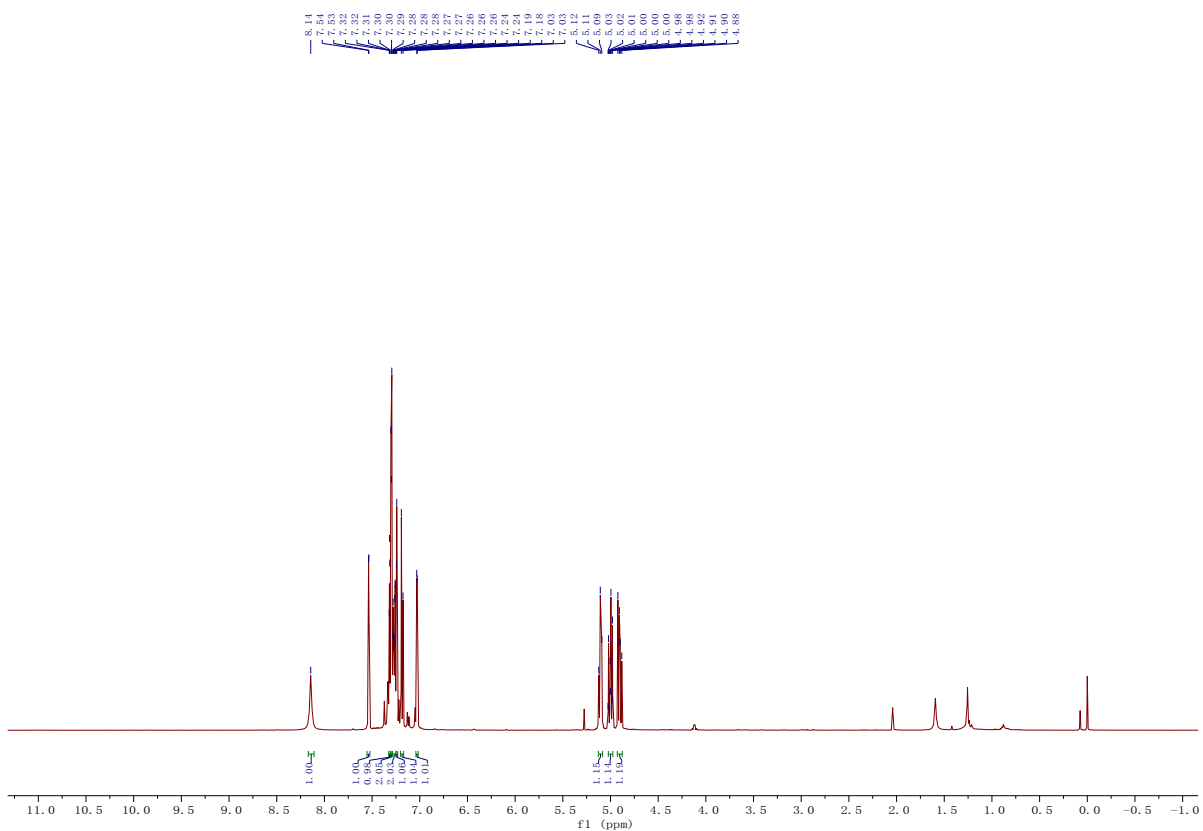
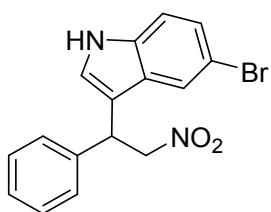
Copies of NMR Spectra for Compounds 3e

¹H NMR copy of compound 3e:



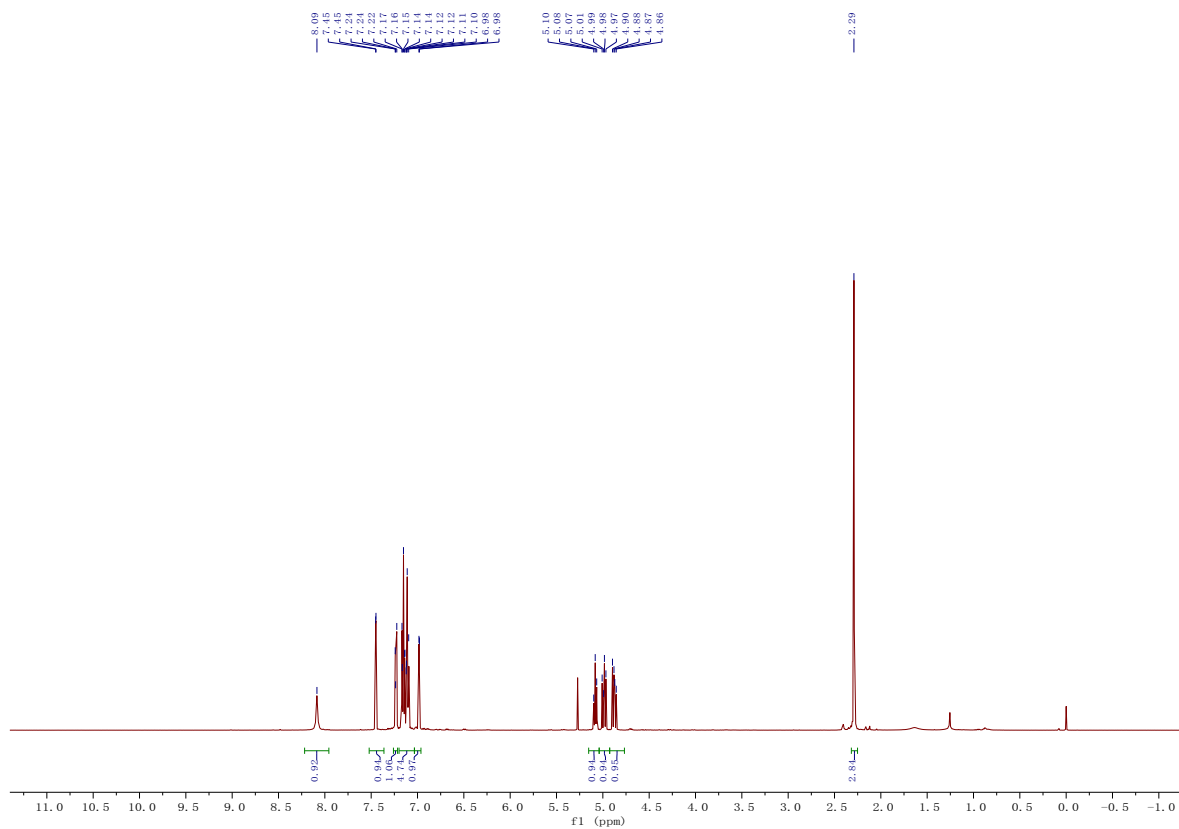
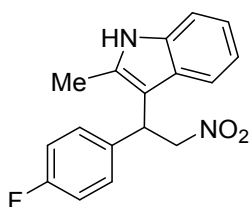
Copies of NMR Spectra for Compounds 3h

¹H NMR copy of compound 3h:



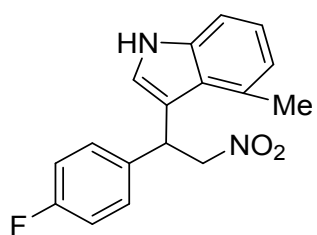
Copies of NMR Spectra for Compounds 3i

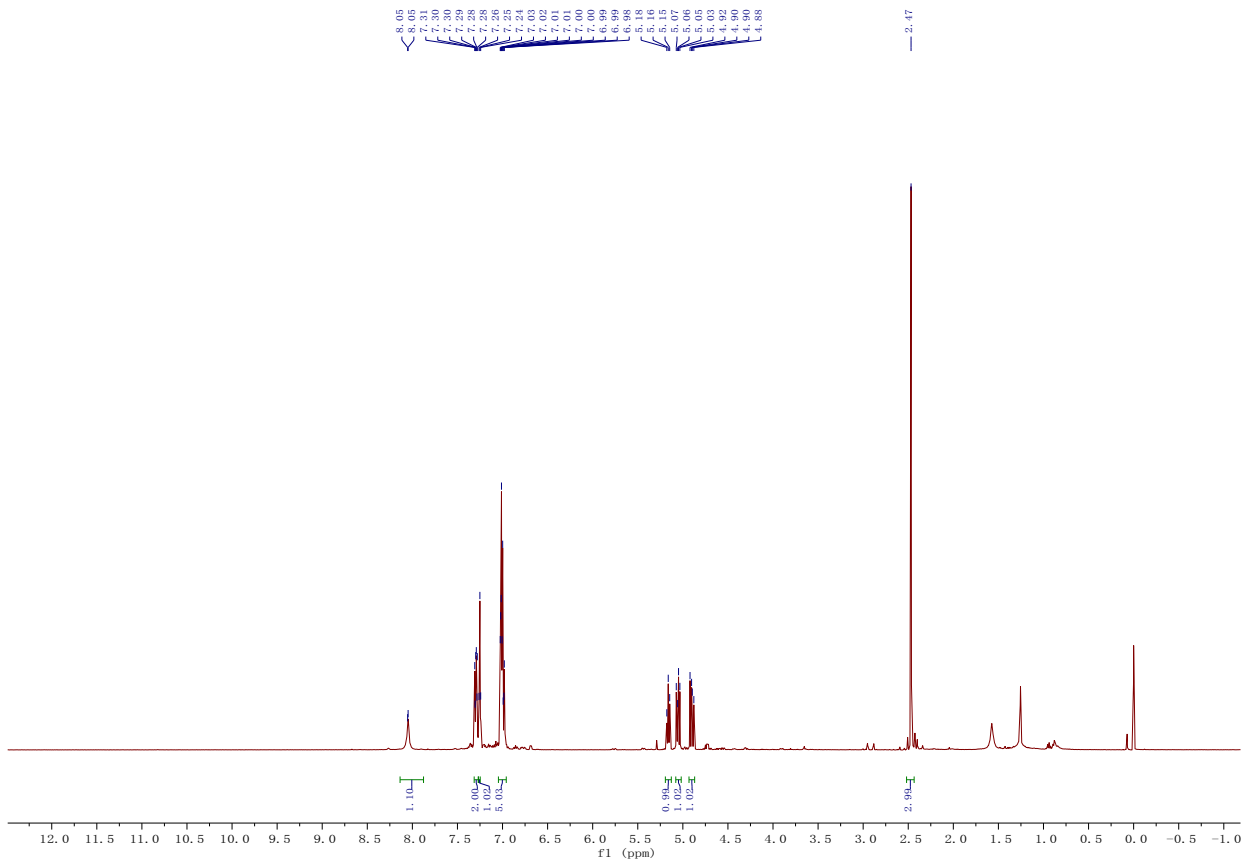
¹H NMR copy of compound 3i:



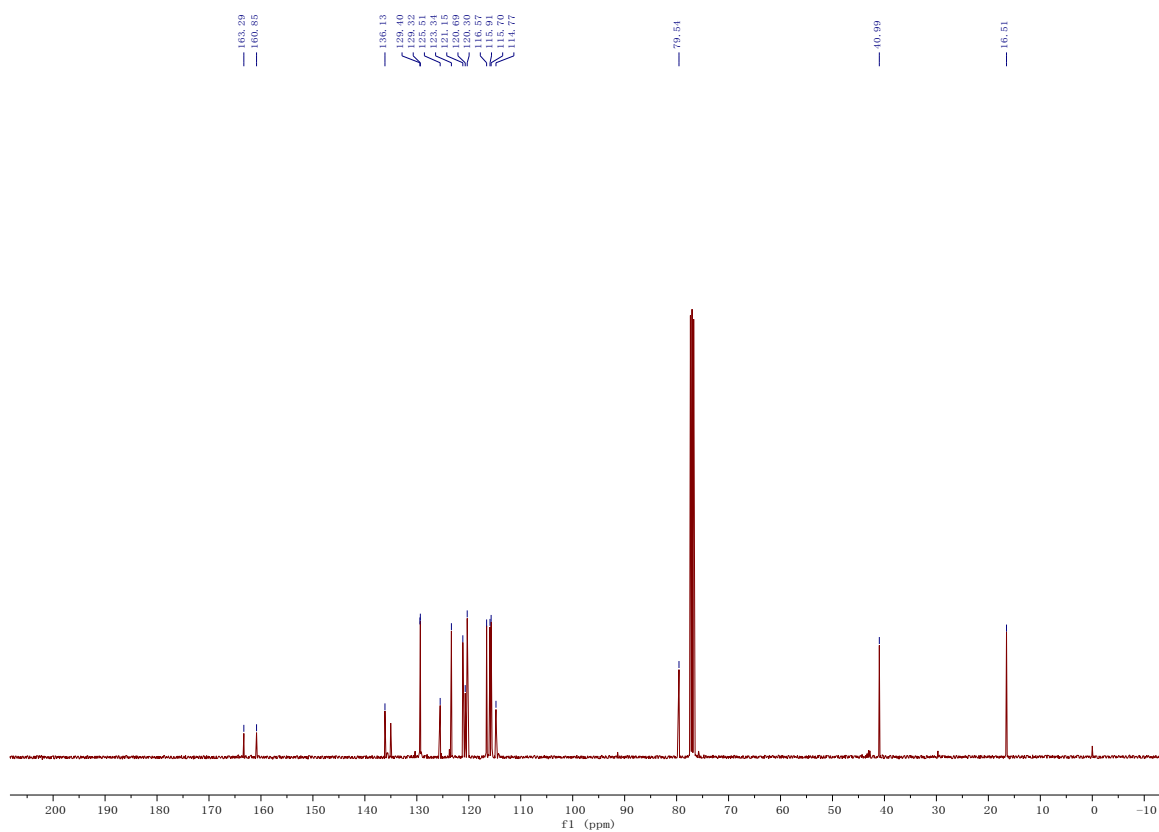
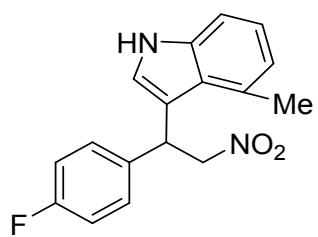
Copies of NMR Spectra for Compounds 3j

¹H NMR copy of compound 3j:



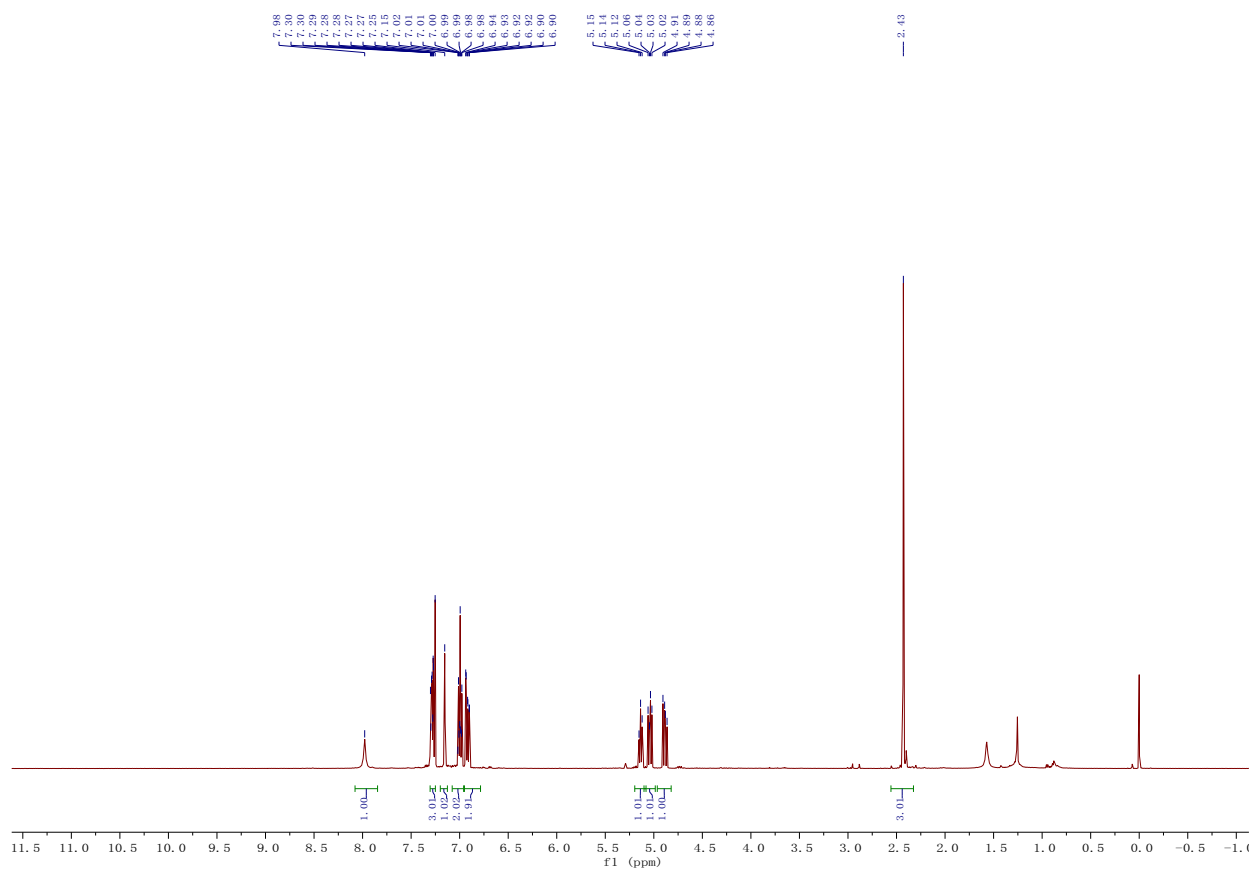
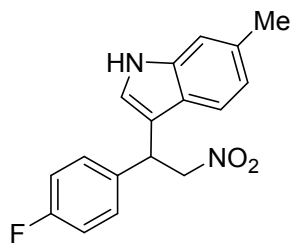


¹³C NMR copy of compound **3j**:

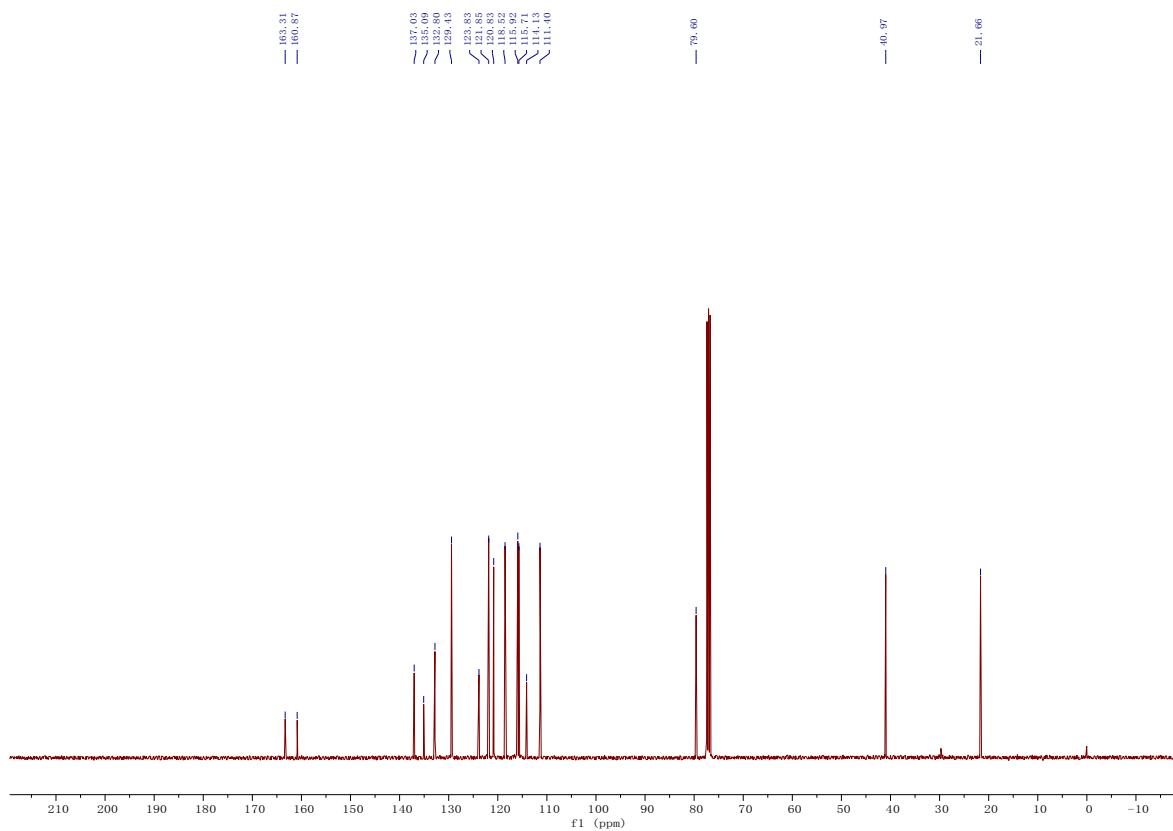
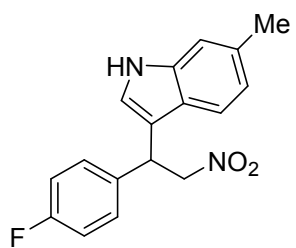


Copies of NMR Spectra for Compounds 3k

¹H NMR copy of compound 3k:

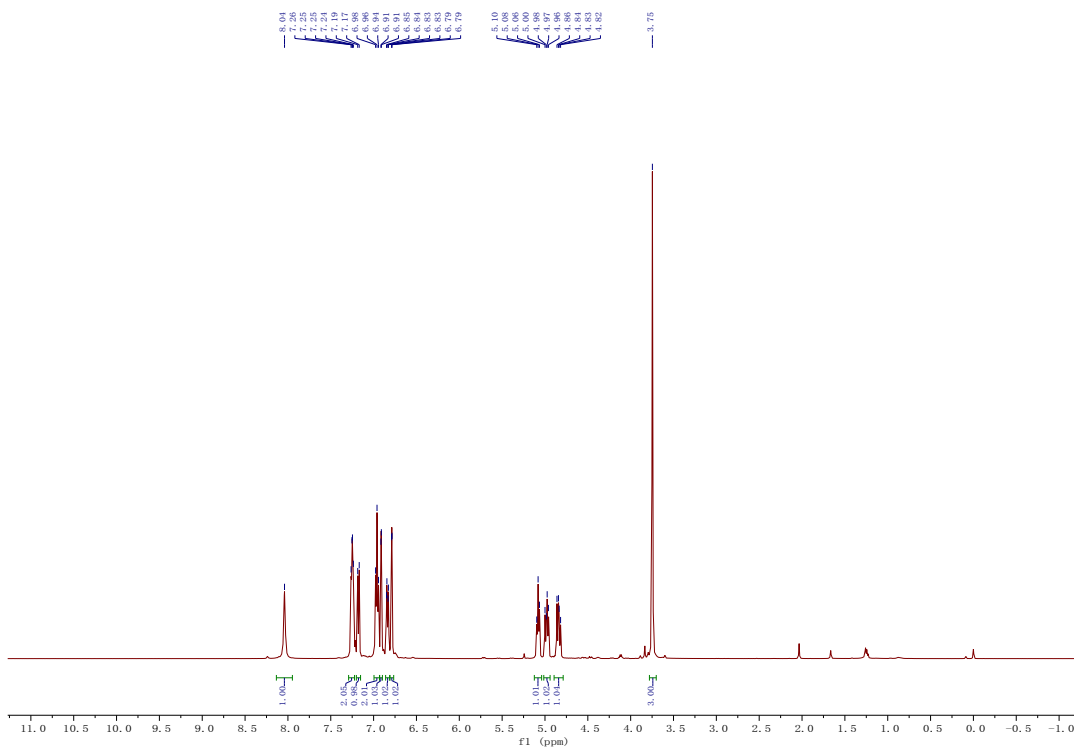
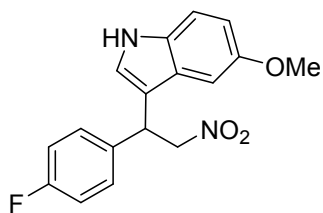


¹³C NMR copy of compound **3k**:

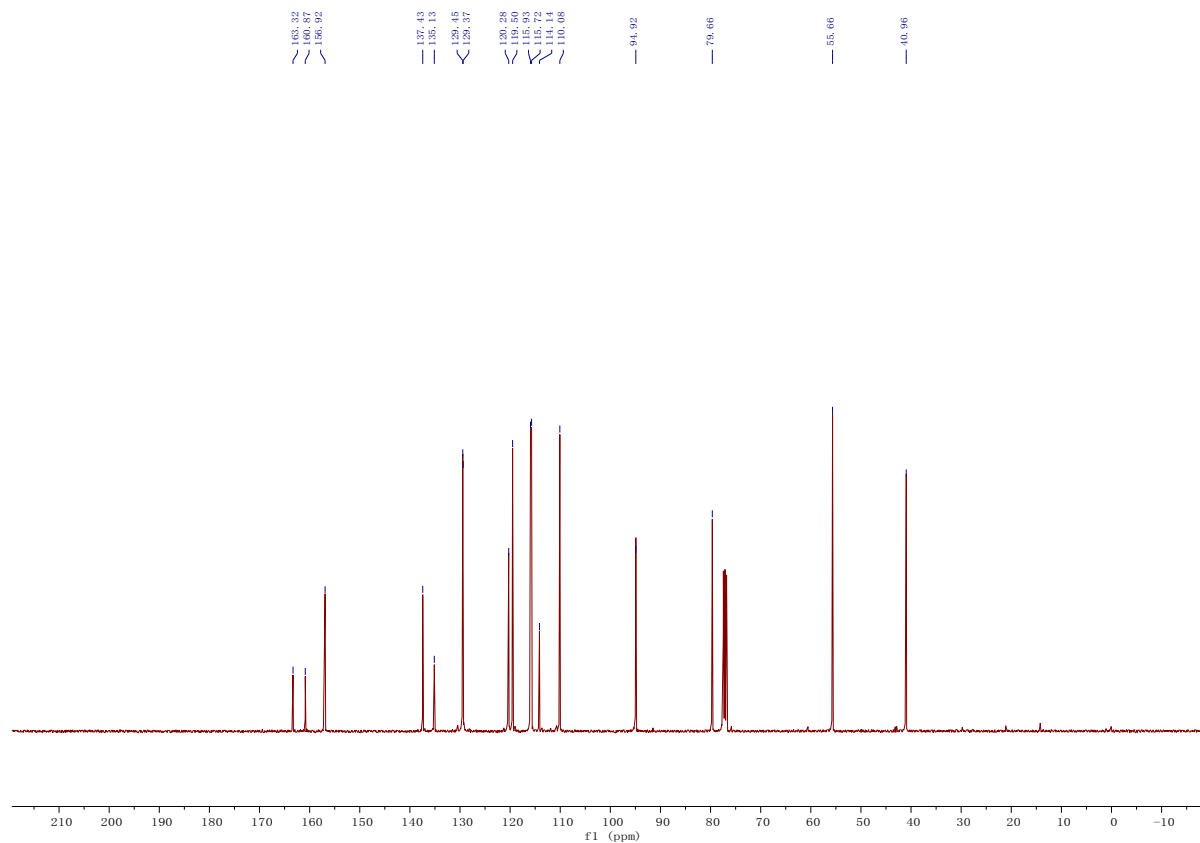
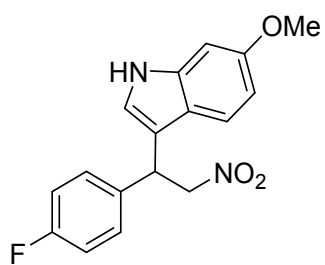


Copies of NMR Spectra for Compounds 3I

¹H NMR copy of compound 3I:

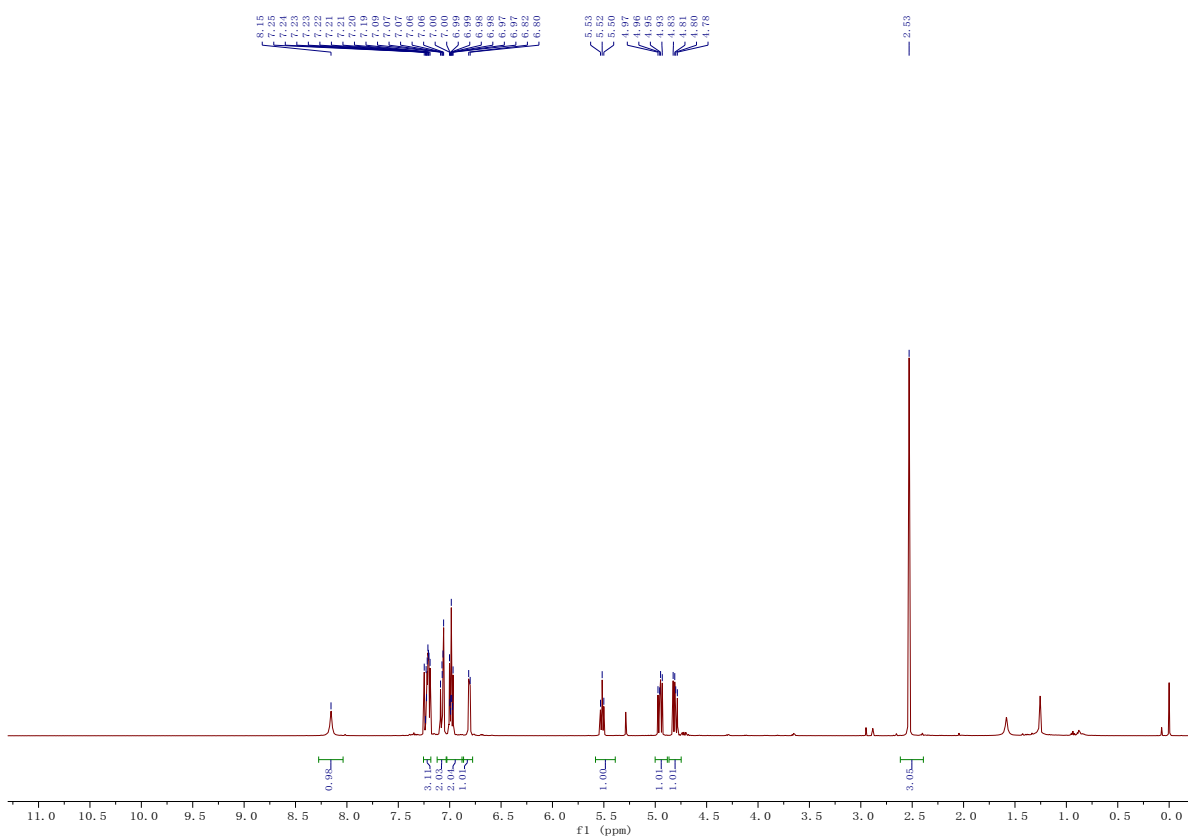
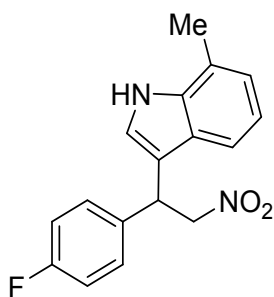


¹³C NMR copy of compound **3m**:

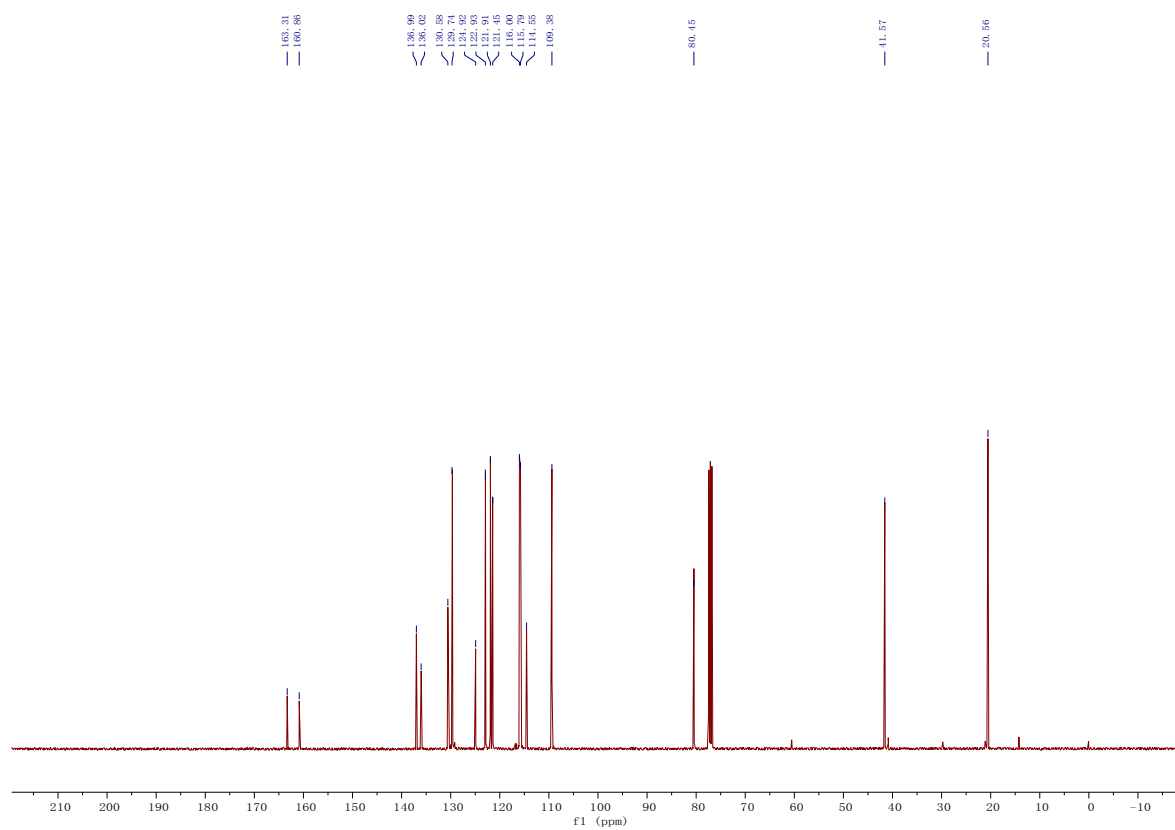
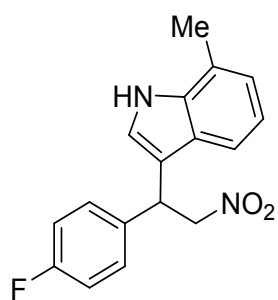


Copies of NMR Spectra for Compounds 3n

¹H NMR copy of compound 3n:

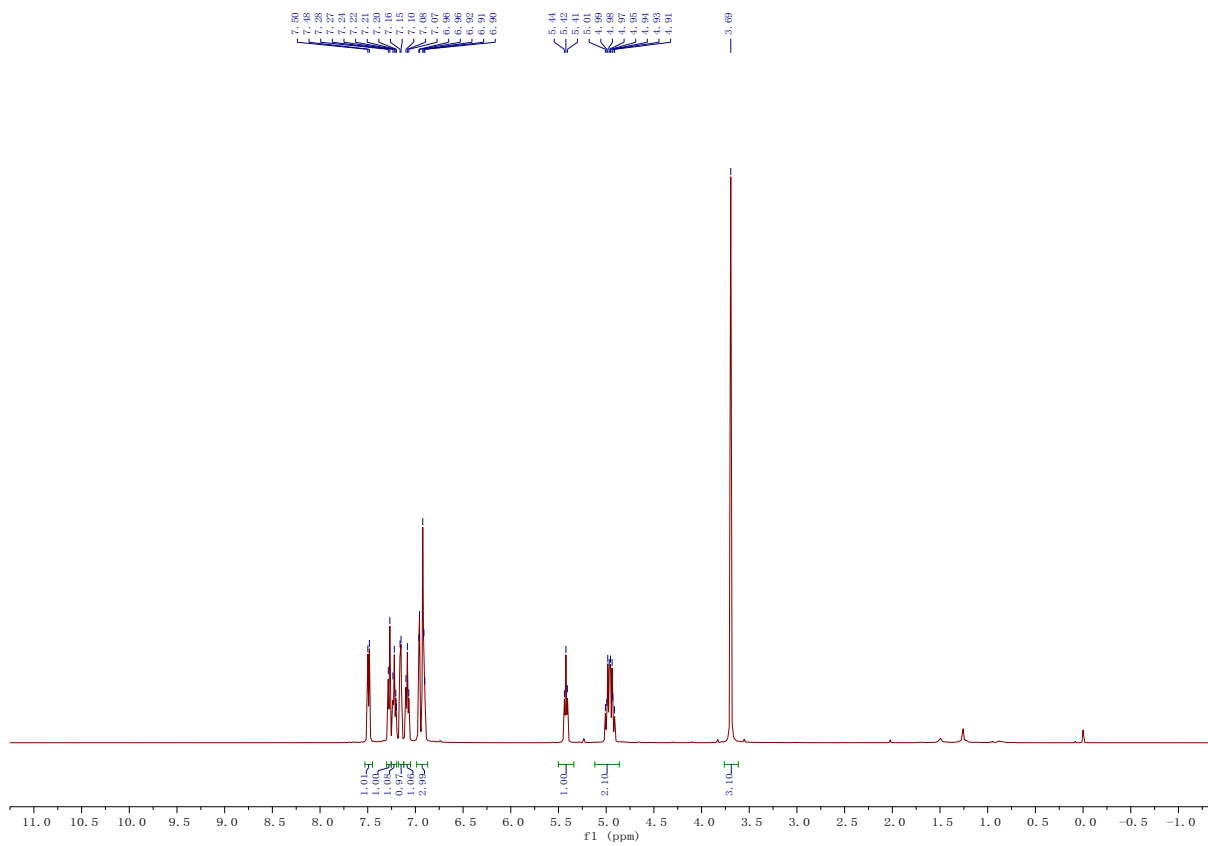
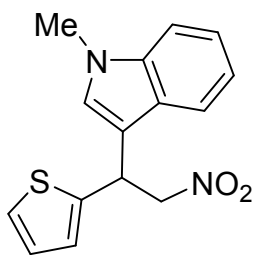


¹³C NMR copy of compound **3n**:



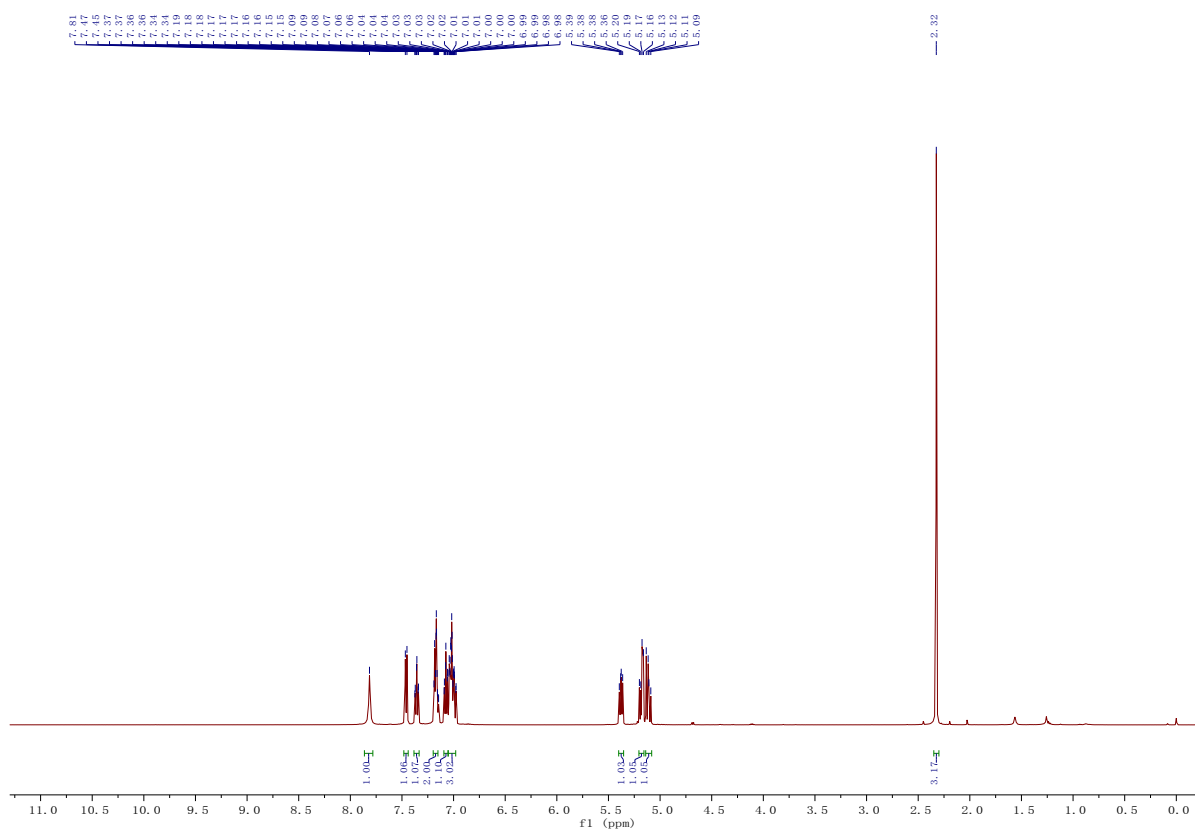
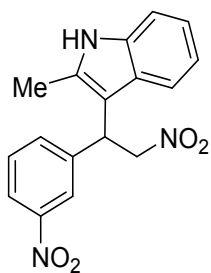
Copies of NMR Spectra for Compounds 3o

¹H NMR copy of compound 3o:



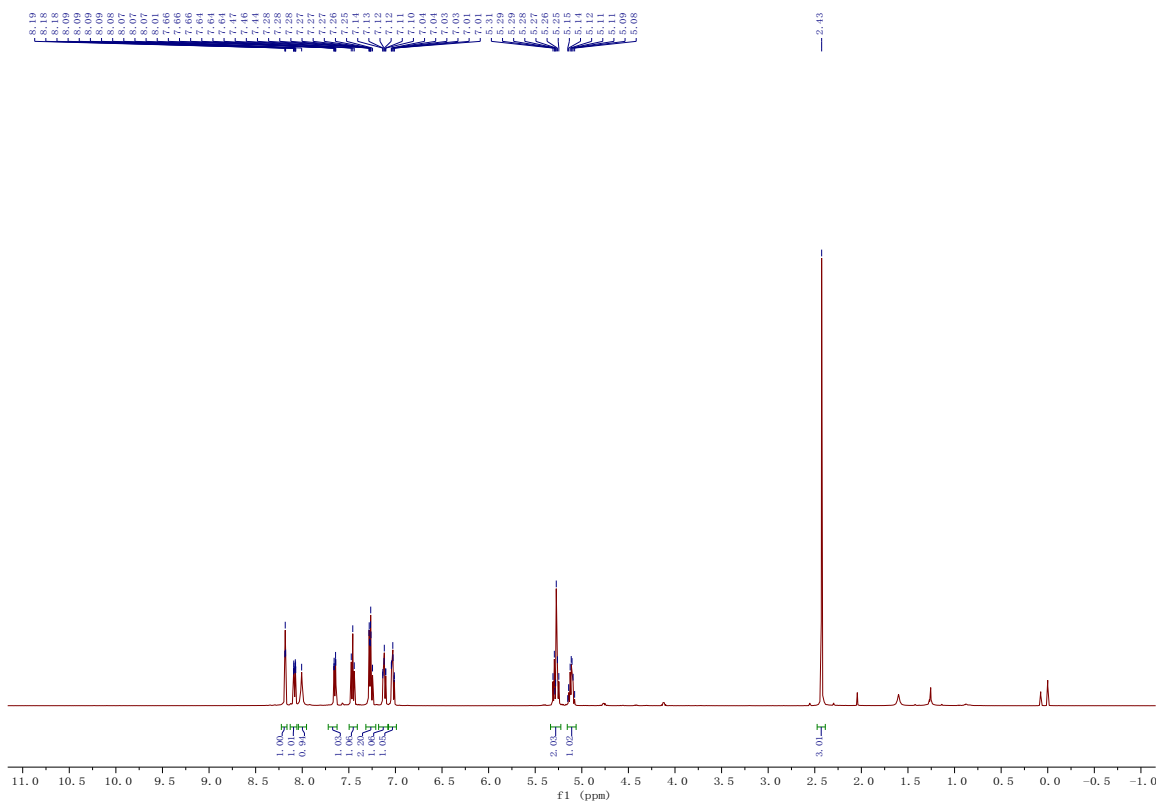
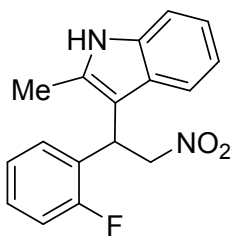
Copies of NMR Spectra for Compounds 3p

¹H NMR copy of compound 3p:

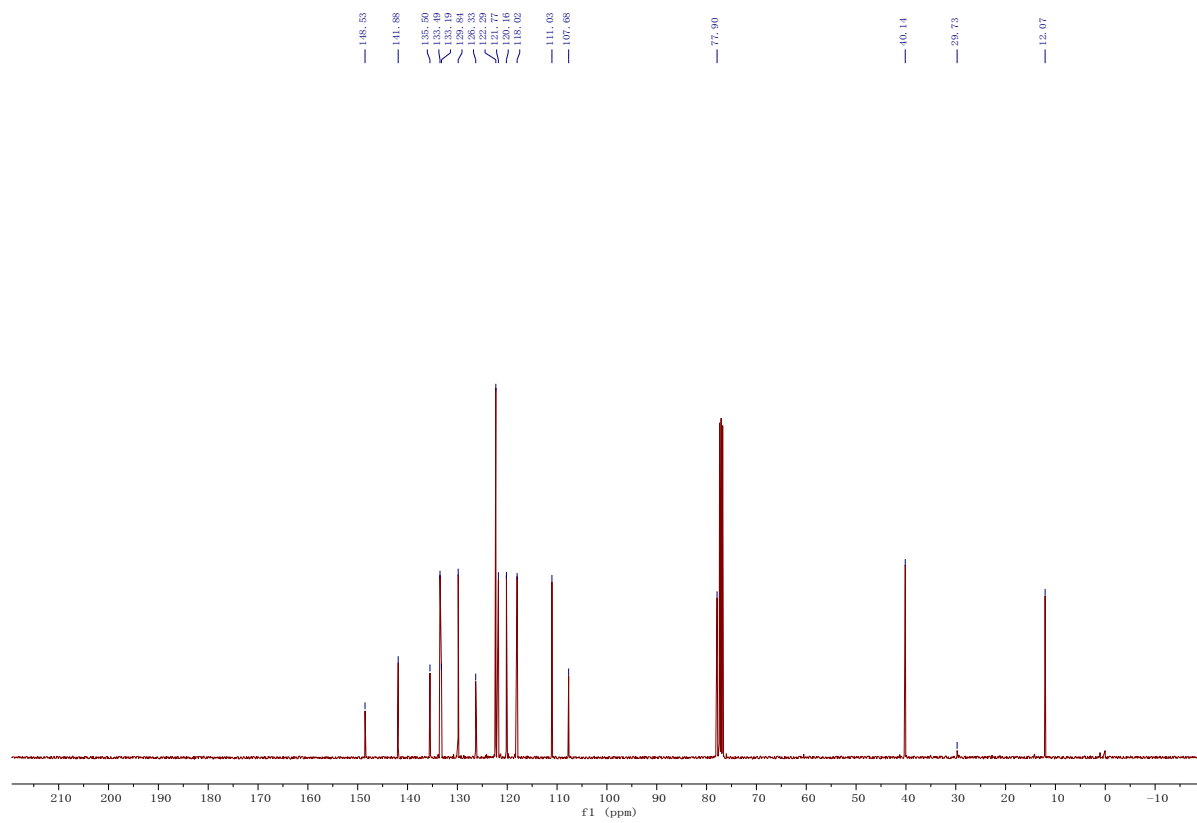
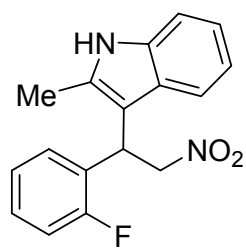


Copies of NMR Spectra for Compounds 3q

¹H NMR copy of compound 3q:

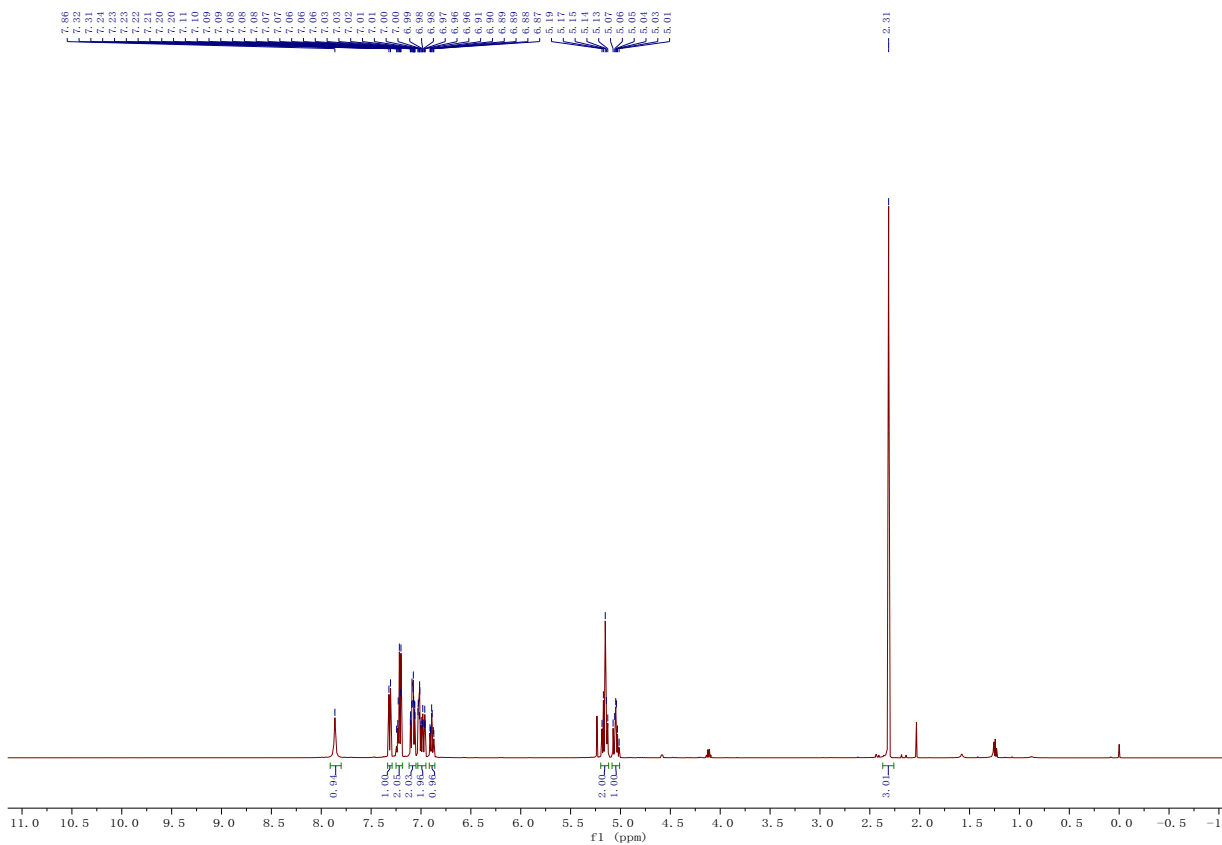
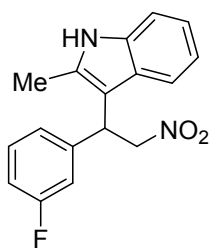


¹³C NMR copy of compound **3q**:



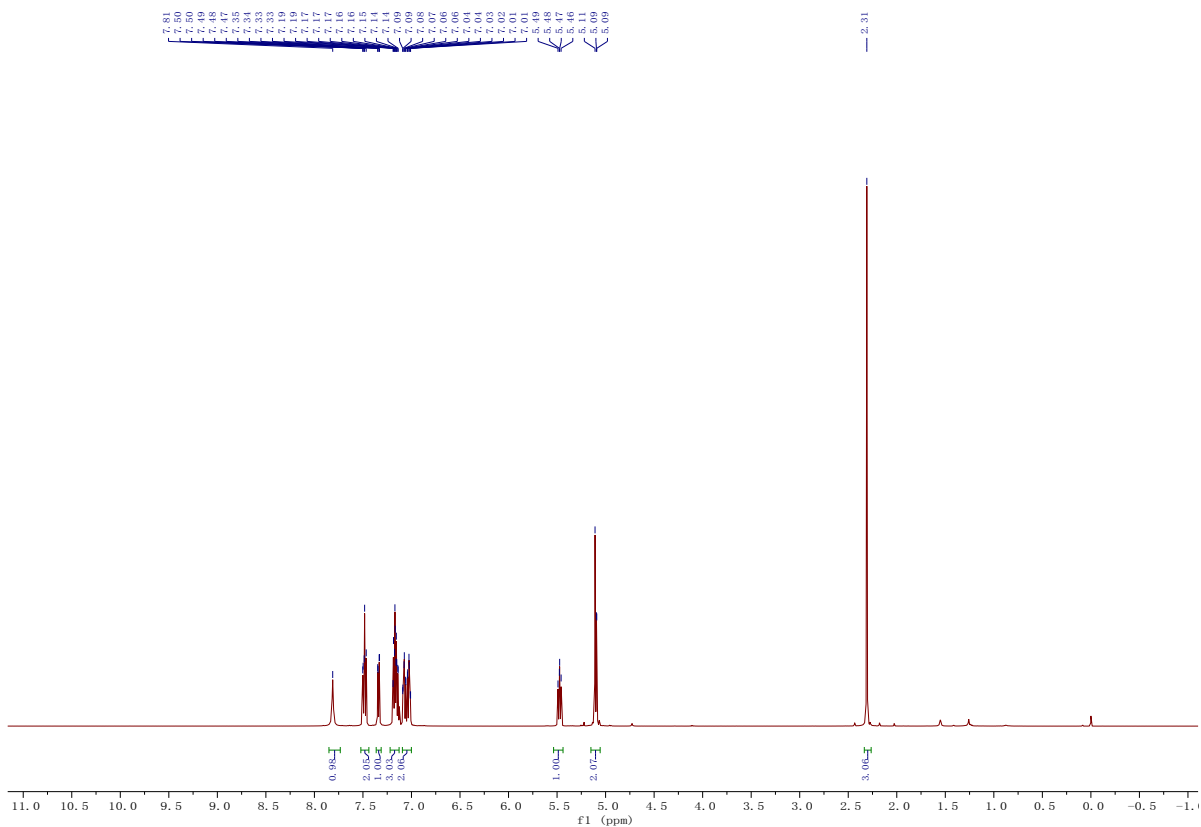
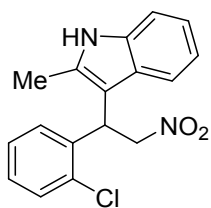
Copies of NMR Spectra for Compounds 3r

¹H NMR copy of compound 3r:

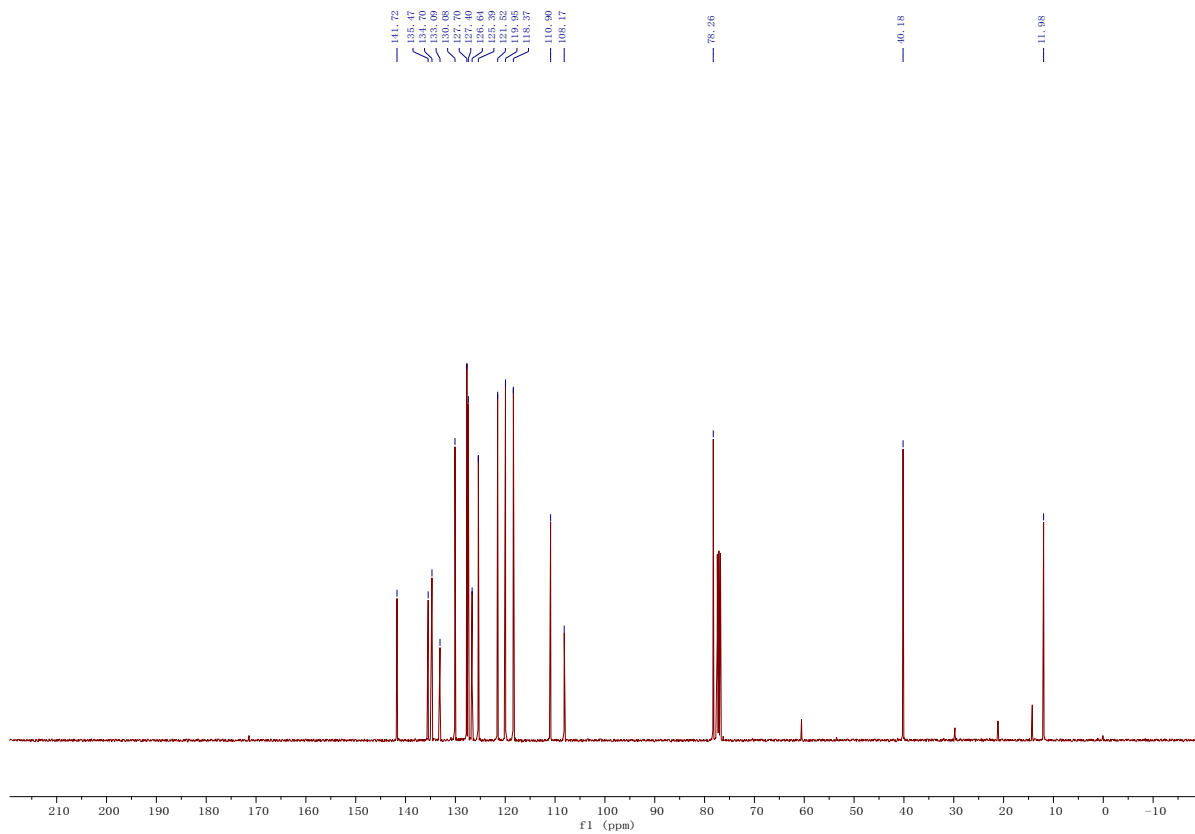
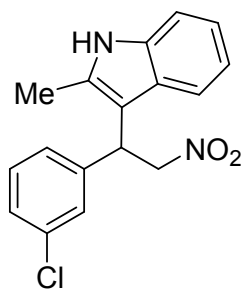


Copies of NMR Spectra for Compounds 3s

¹H NMR copy of compound 3s:



¹³C NMR copy of compound **3t**:



Copies of NMR Spectra for Compounds 3u

¹H NMR copy of compound 3u:

