

Regioselective synthesis of 3-anthracenyloxindoles and 3-carbazolyloxindoles by indium(III)-catalyzed direct arylation and their fluorescent chemosensor properties

Krishna Bahadur Somai Magar, T. N. Jebakumar Immanuel Edison, and Yong Rok Lee*

*School of Chemical Engineering, Yeungnam University
38541 Gyeongsan, Republic of Korea*

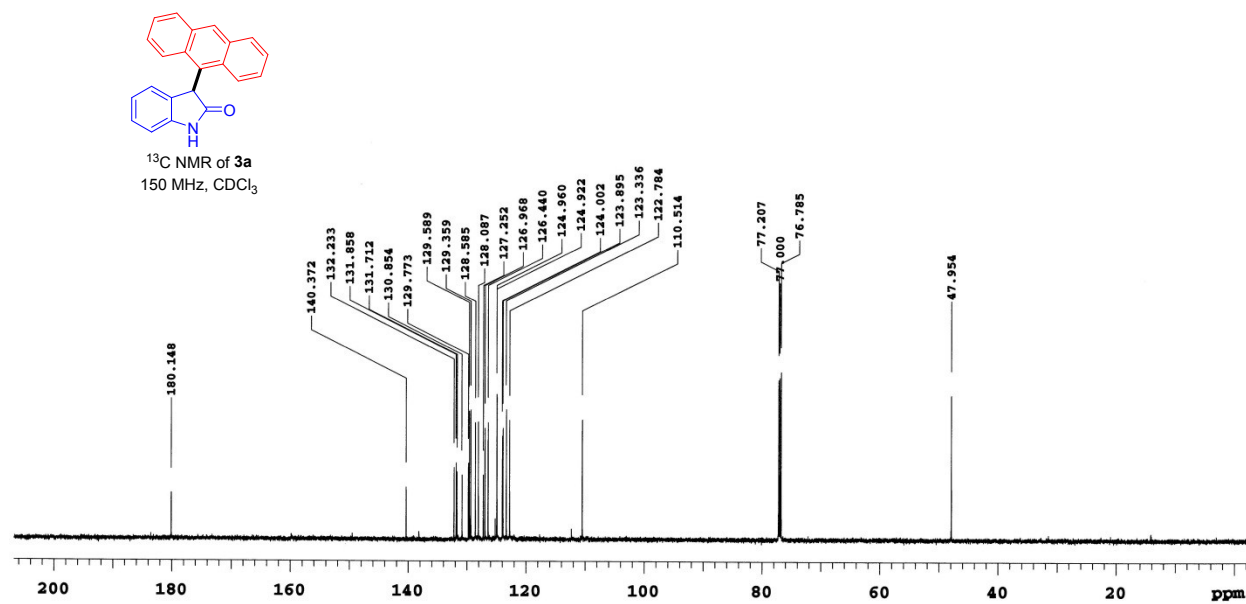
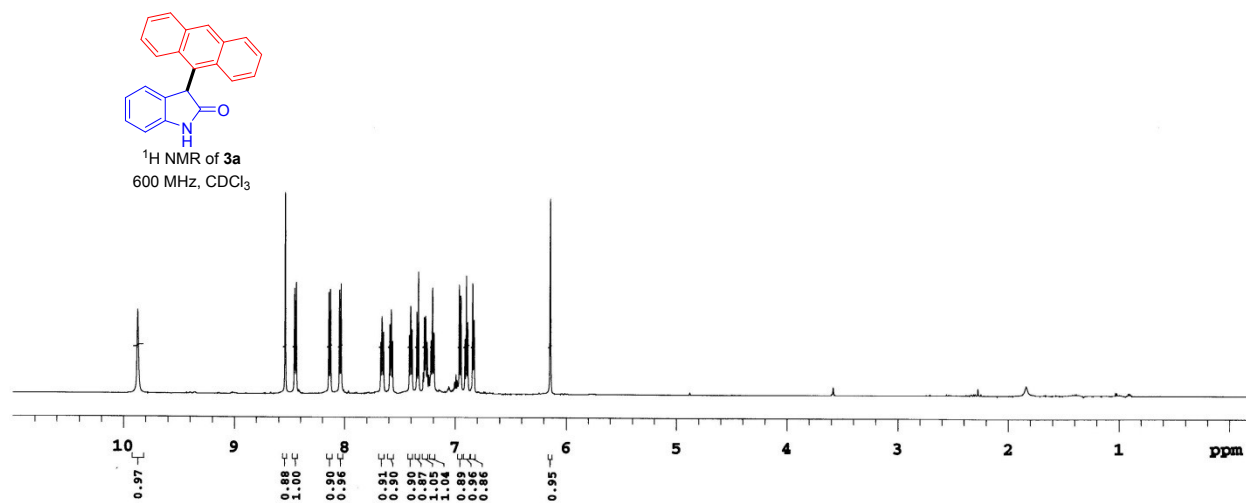
E-mail: yrlee@yu.ac.kr; Phone: 82-53-810-2529; Fax: 82-53-810-4631

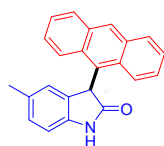
SUPPORTING INFORMATION

TABLE OF CONTENTS

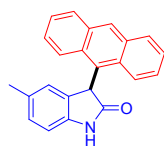
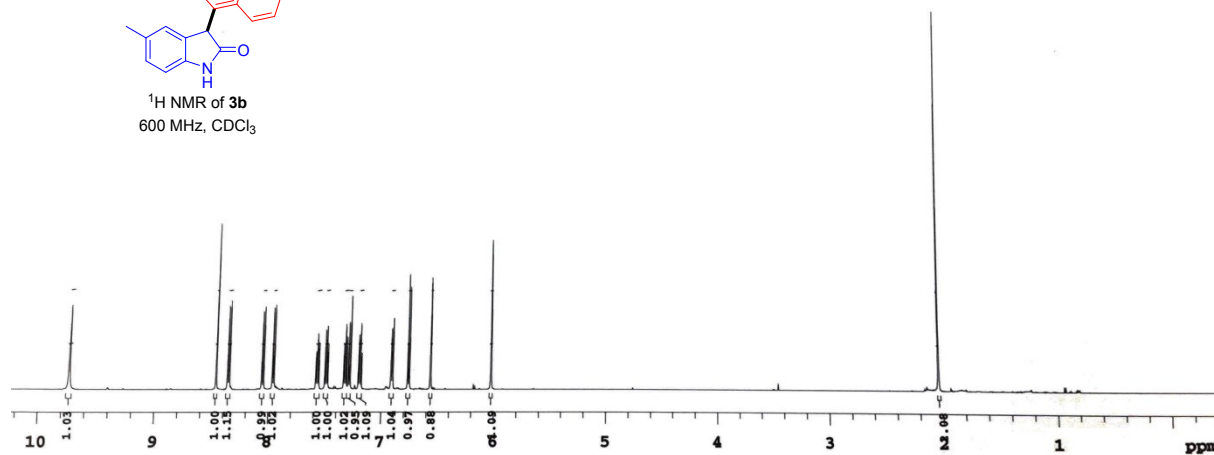
1. ¹ H NMR and ¹³ C NMR Spectra of Synthesized Compounds 3 and 5	S2
2. Experimental Section for Fluorescence Sensing of Compound 3a on Hg ²⁺ ion.....	S36
3. Figure S1	S36

1. ^1H NMR and ^{13}C NMR Spectra of Synthesized Compounds 3 and 5

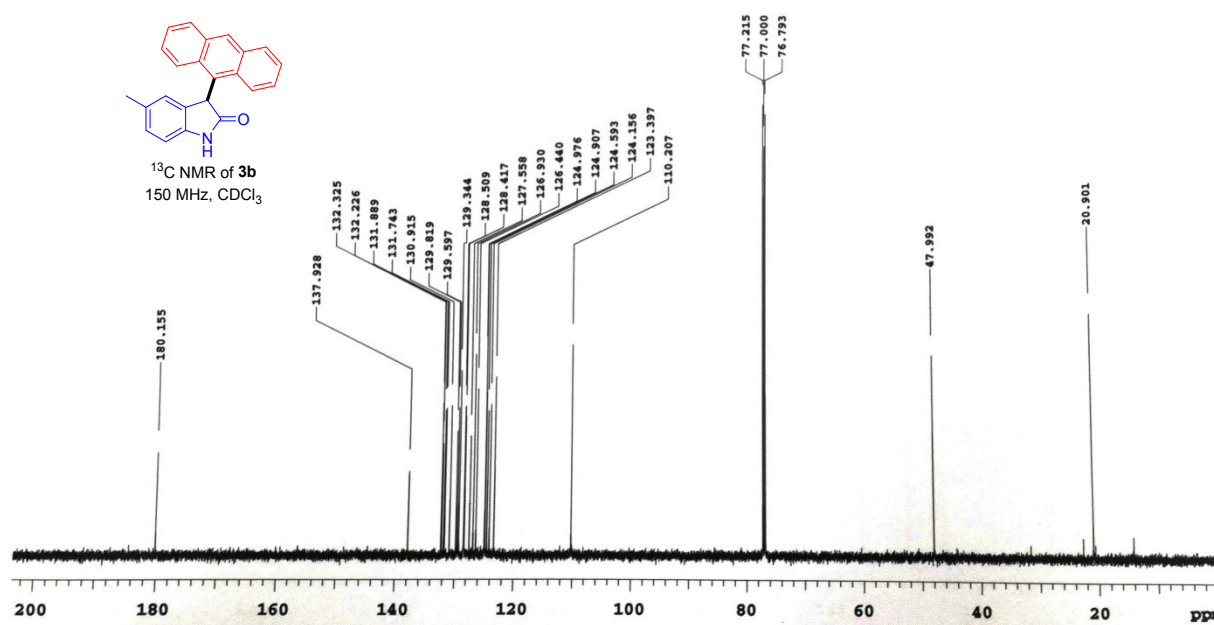


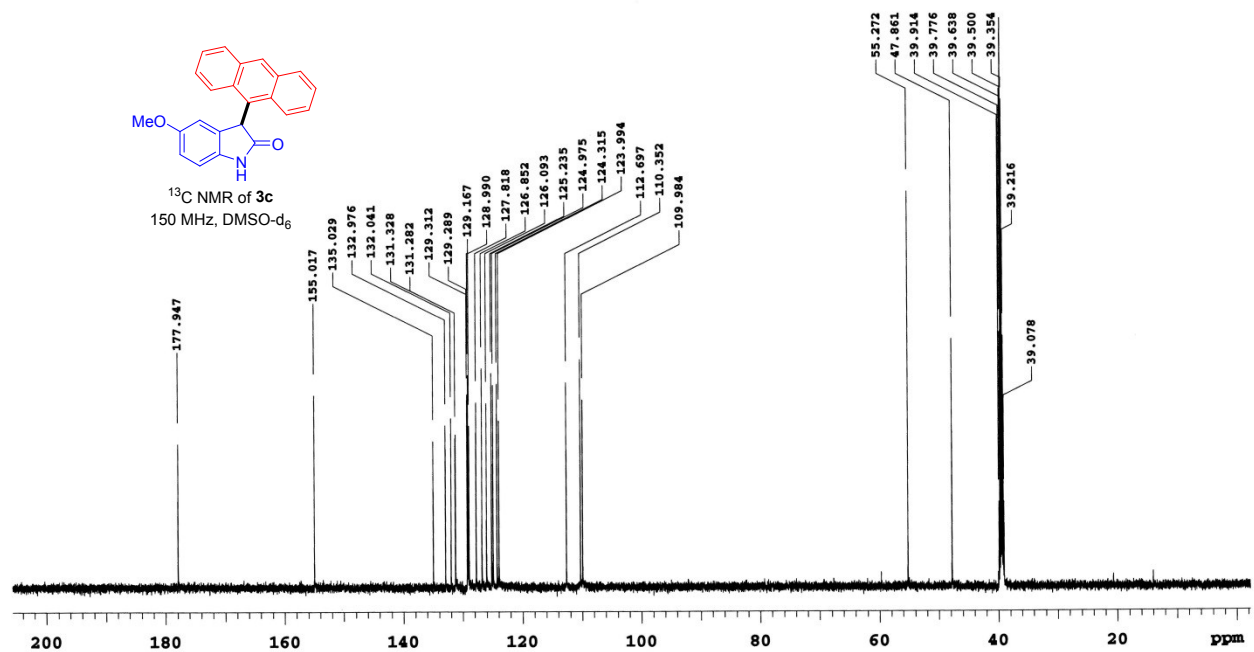
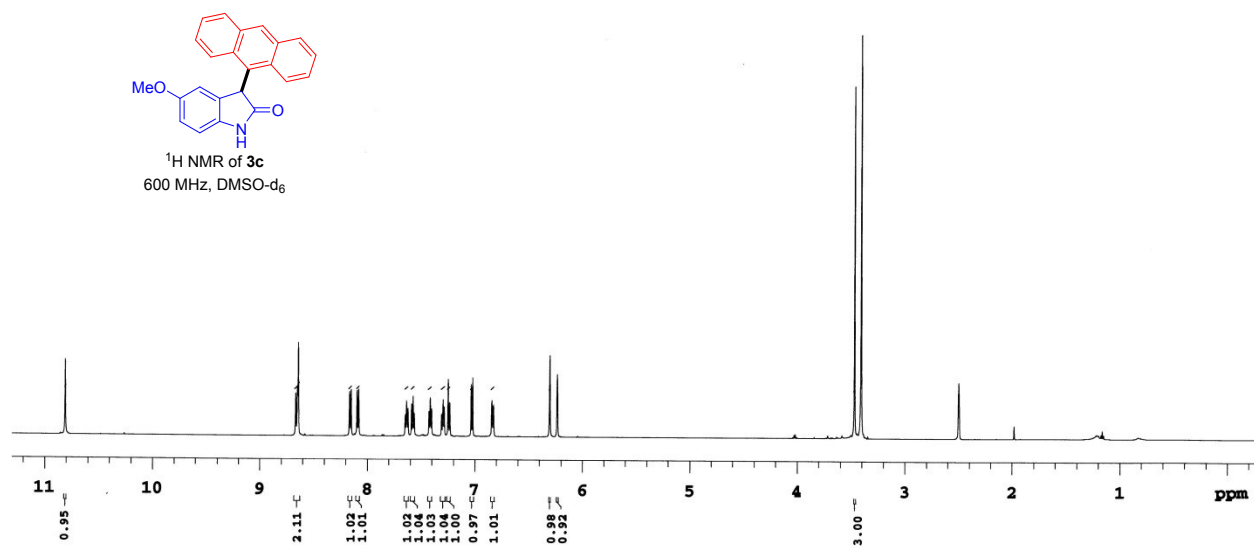


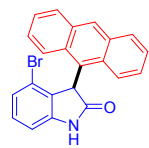
¹H NMR of **3b**
600 MHz, CDCl₃



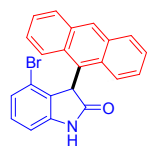
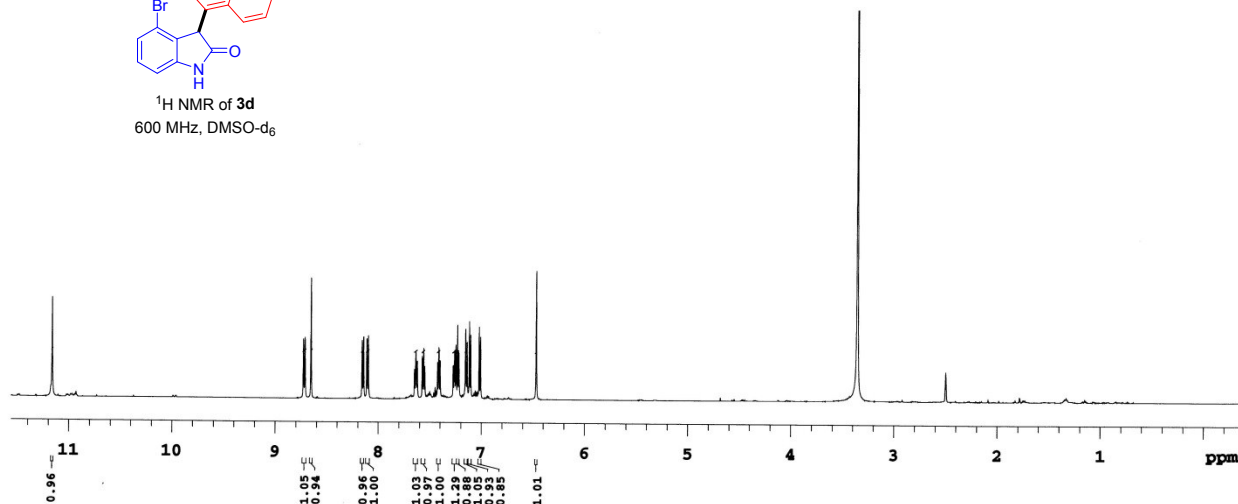
¹³C NMR of **3b**
150 MHz, CDCl₃



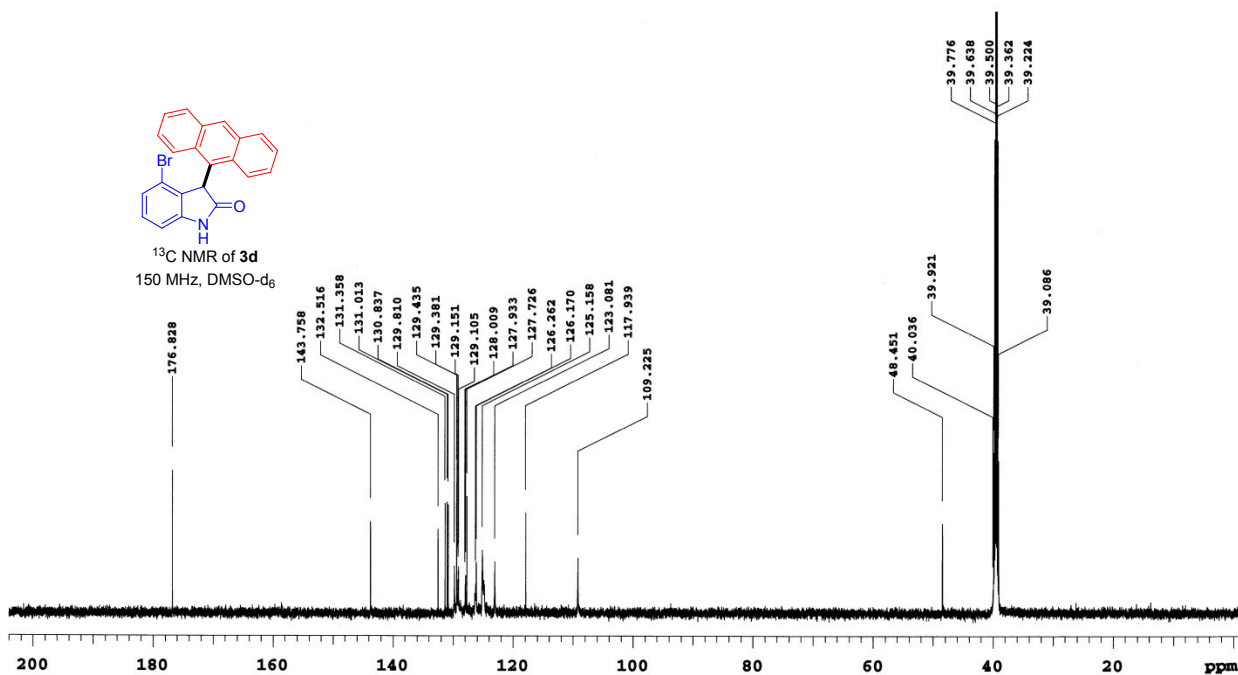


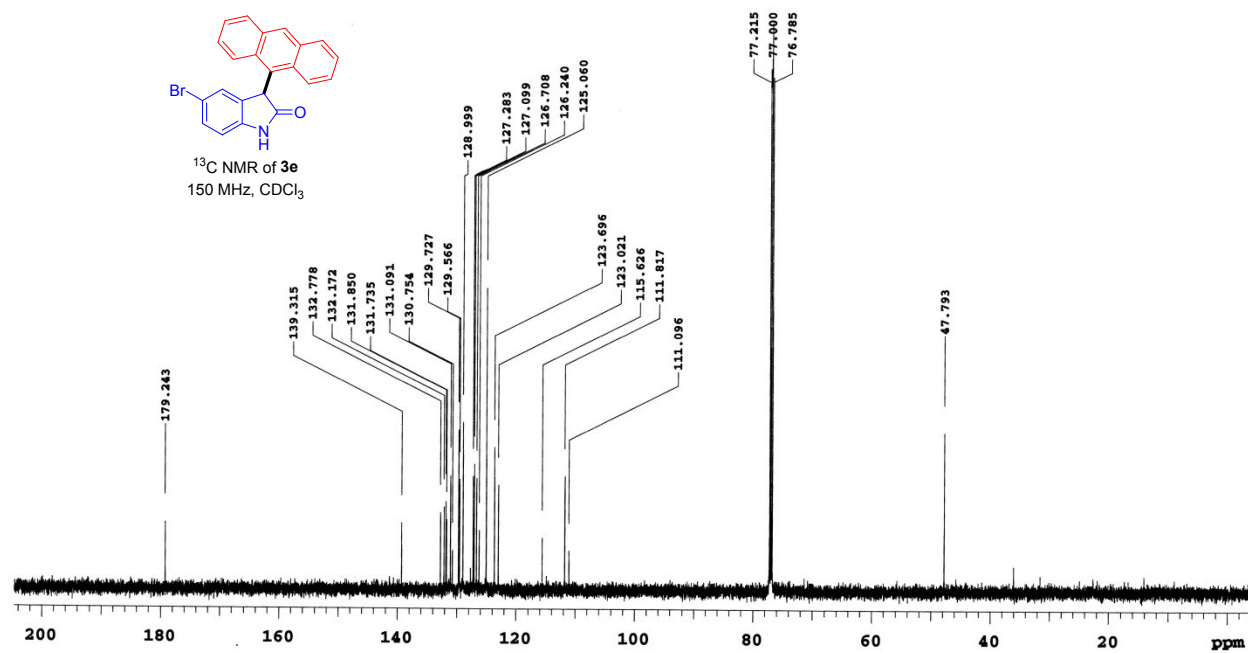
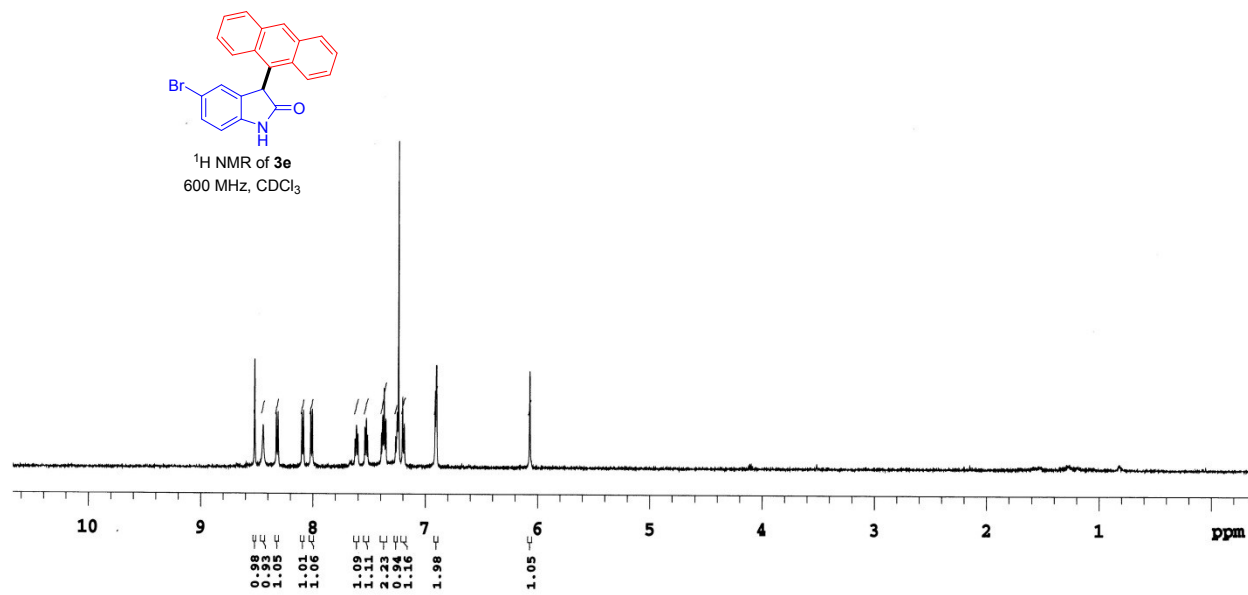


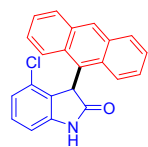
^1H NMR of **3d**
600 MHz, DMSO- d_6



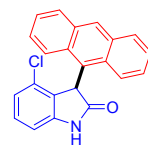
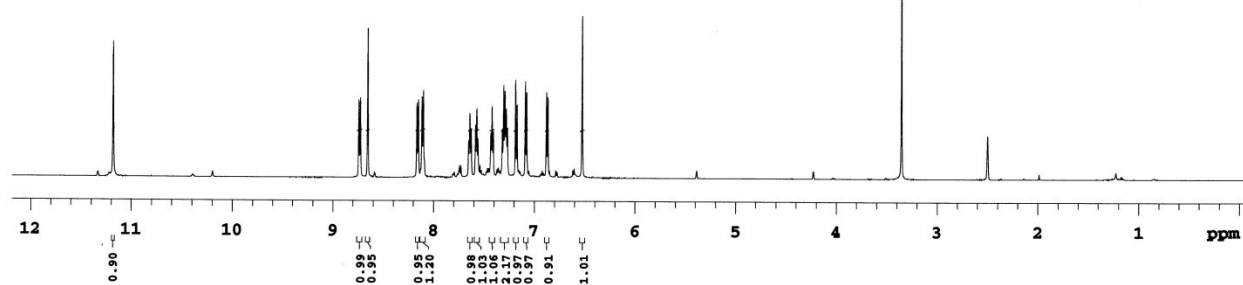
^{13}C NMR of **3d**
150 MHz, DMSO- d_6



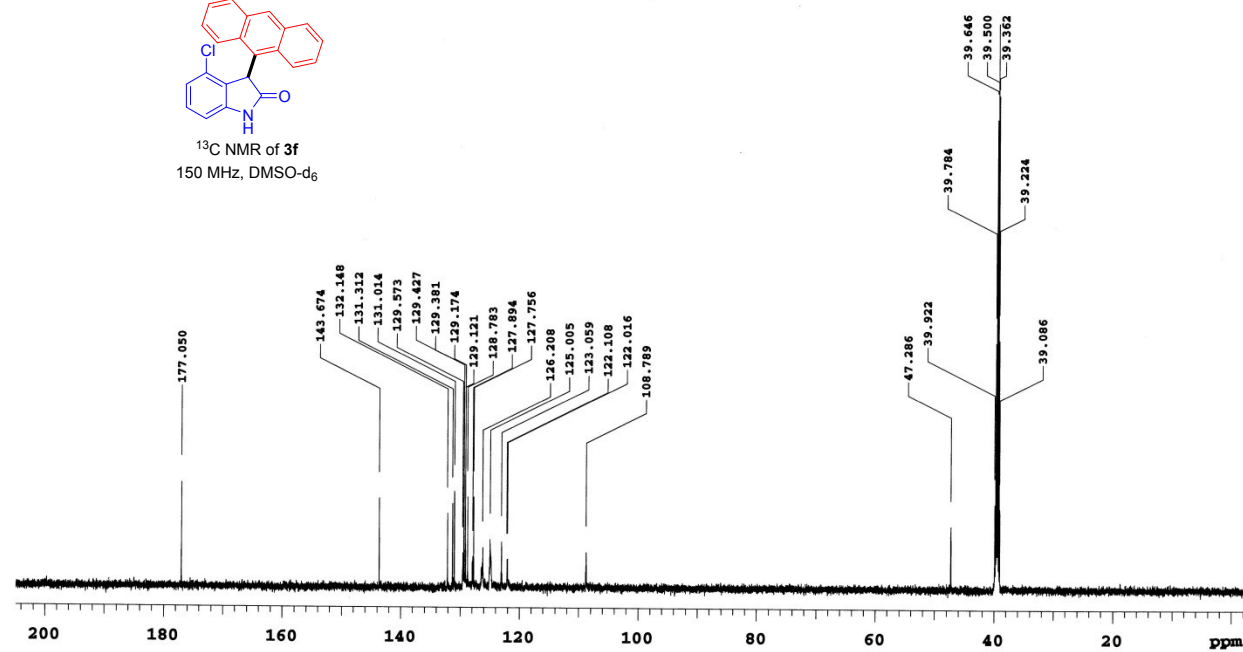


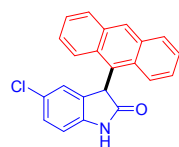


¹H NMR of **3f**
600 MHz, DMSO-d₆

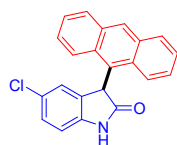
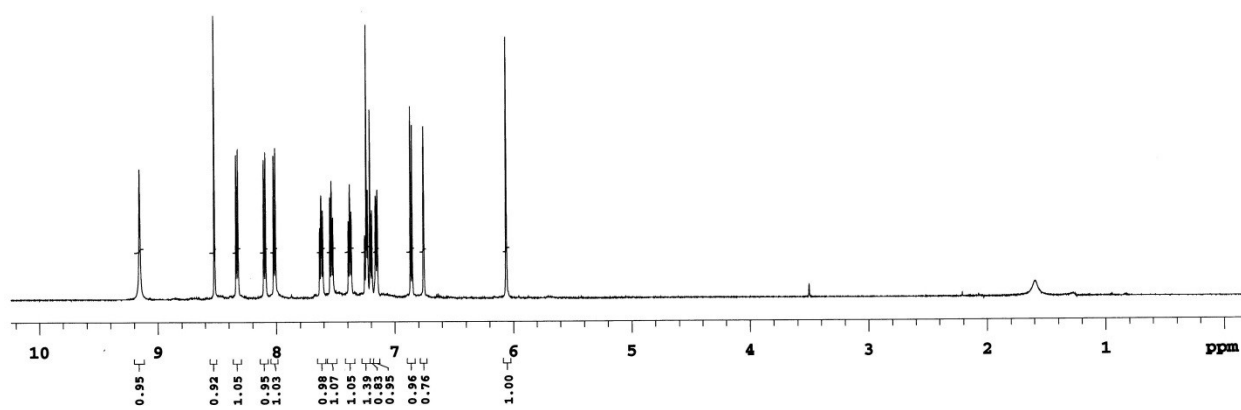


¹³C NMR of **3f**
150 MHz, DMSO-d₆

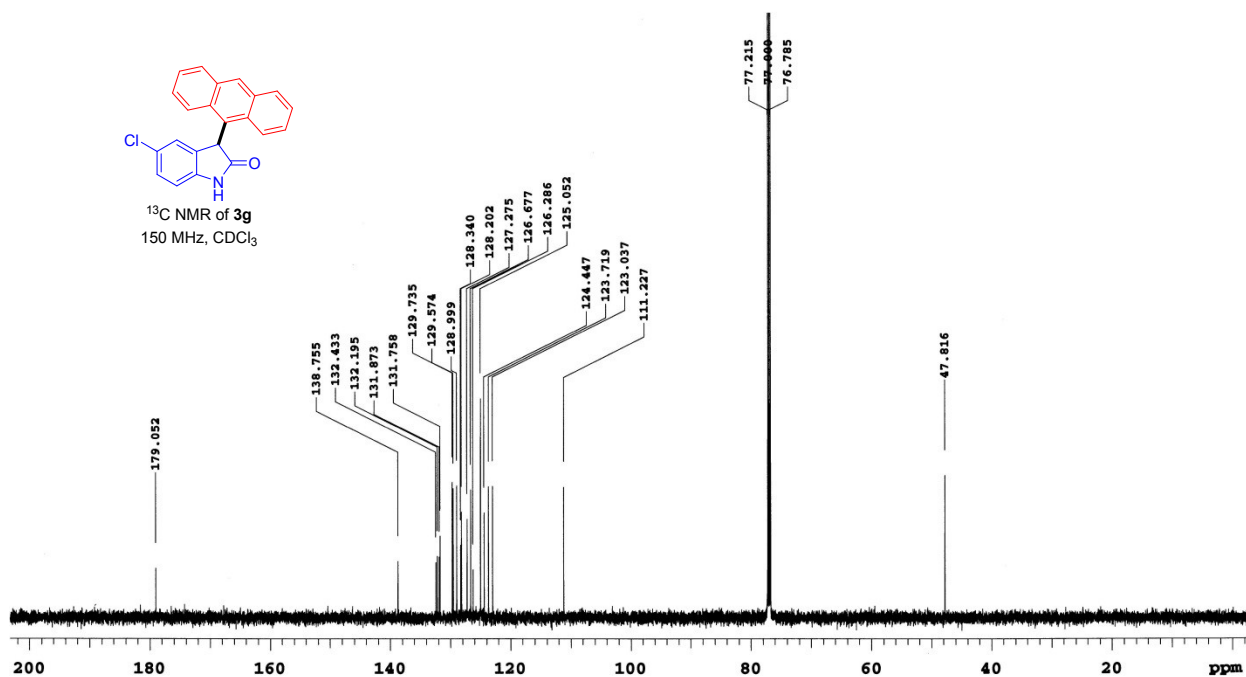


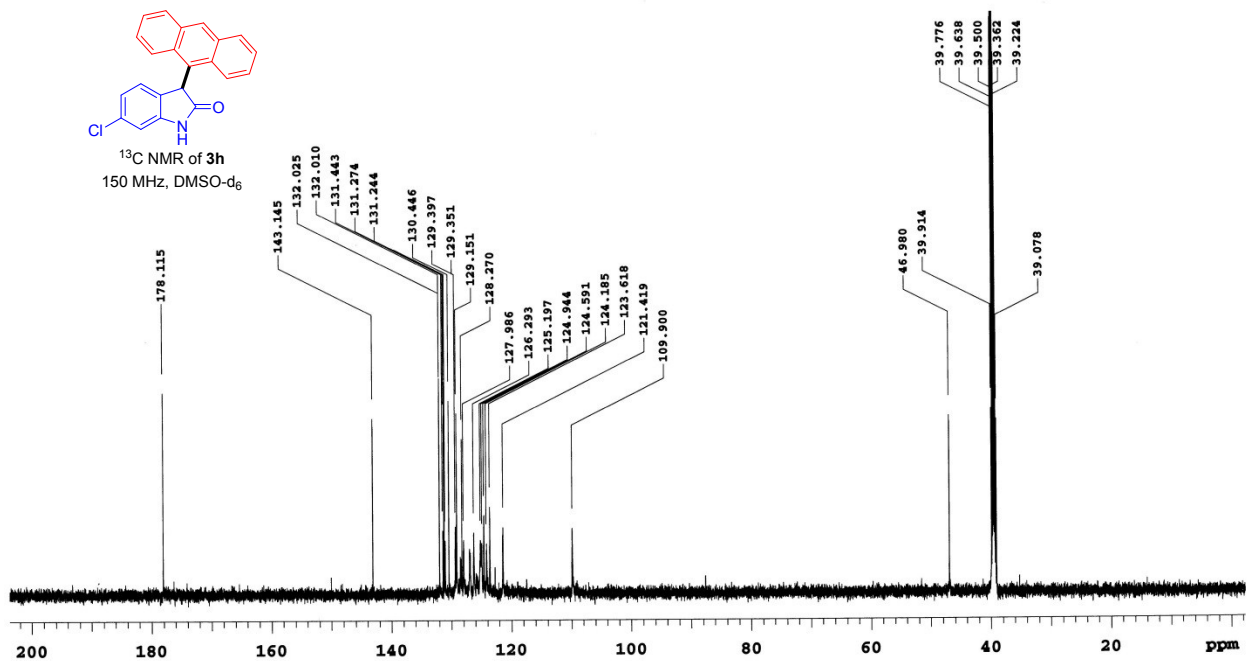
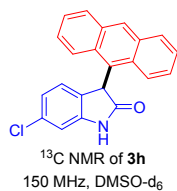
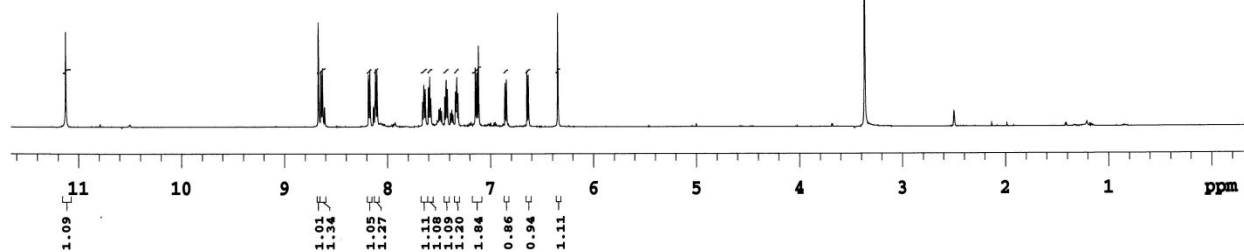
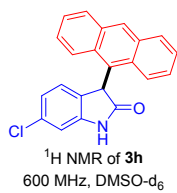


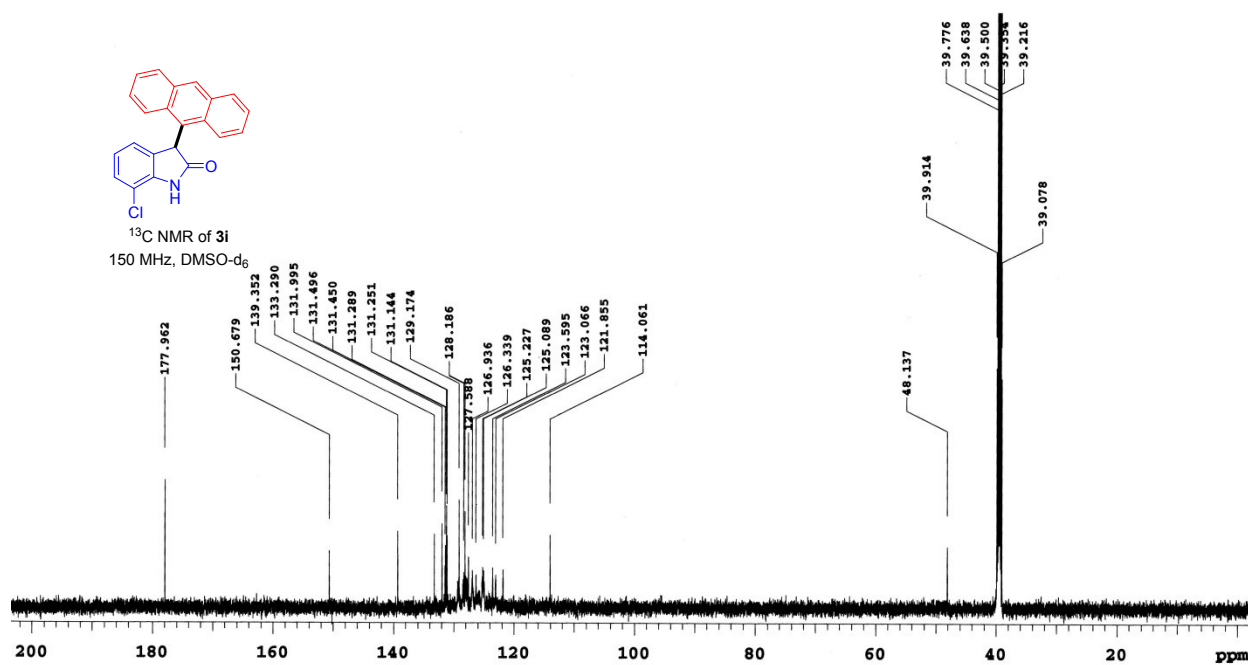
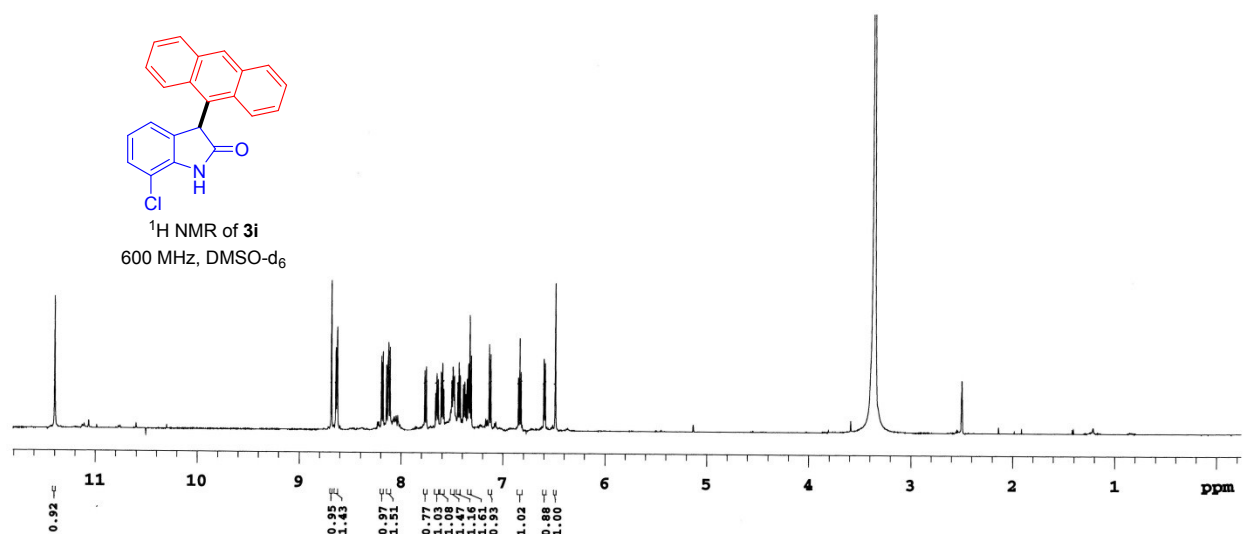
¹H NMR of **3g**
600 MHz, CDCl₃

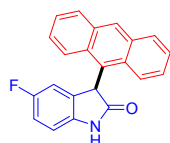


¹³C NMR of **3g**
150 MHz, CDCl₃

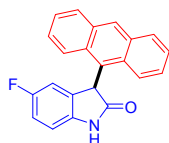
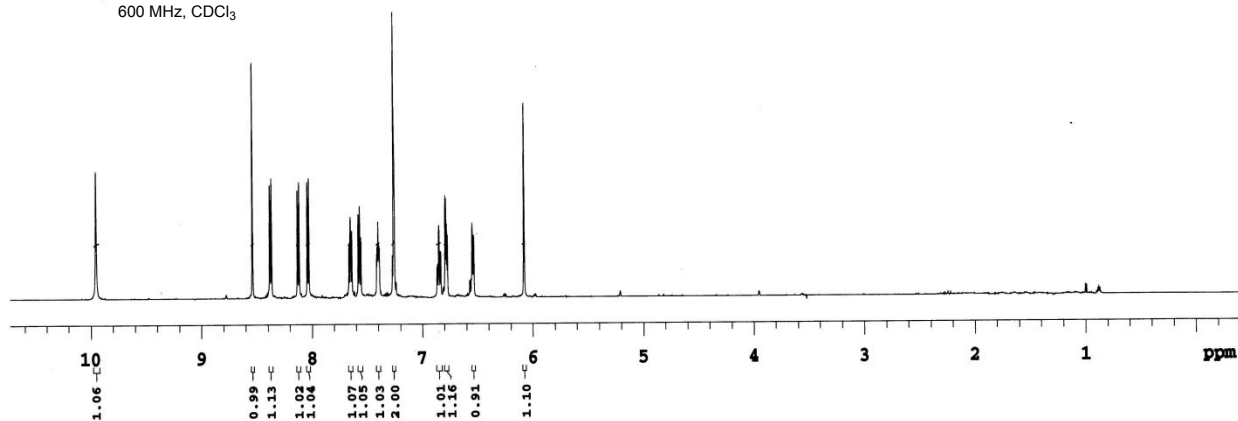




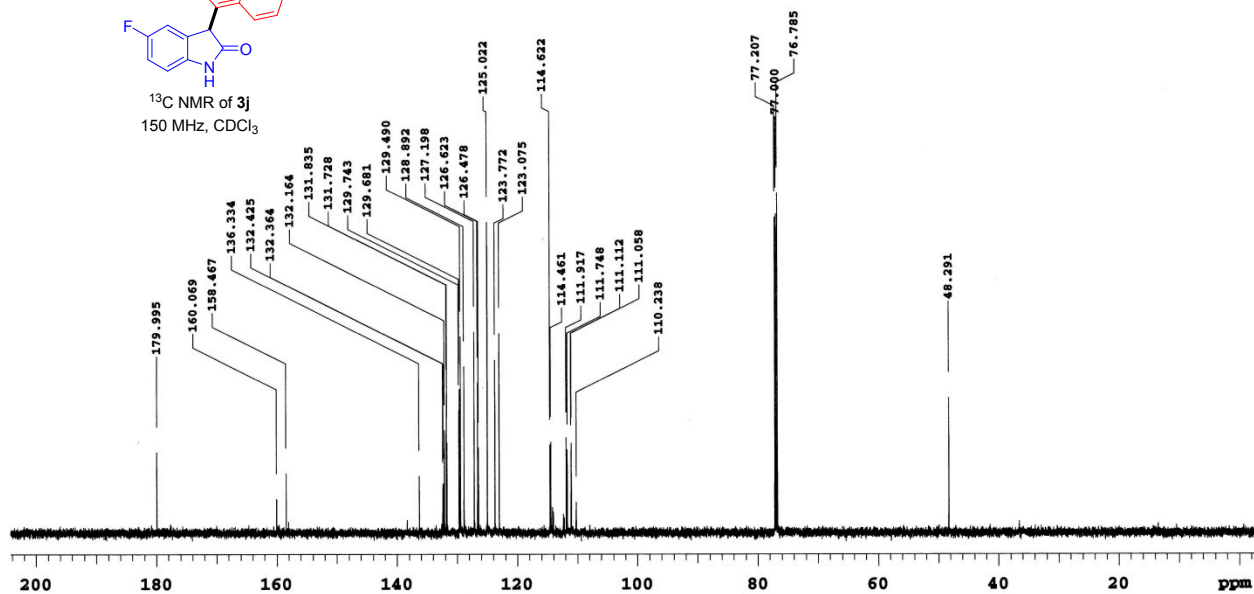


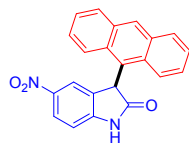


¹H NMR of **3j**
600 MHz, CDCl₃

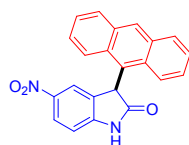
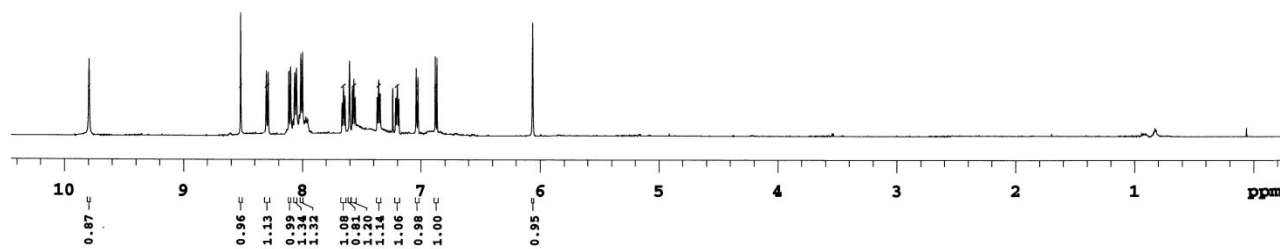


¹³C NMR of **3j**
150 MHz, CDCl₃

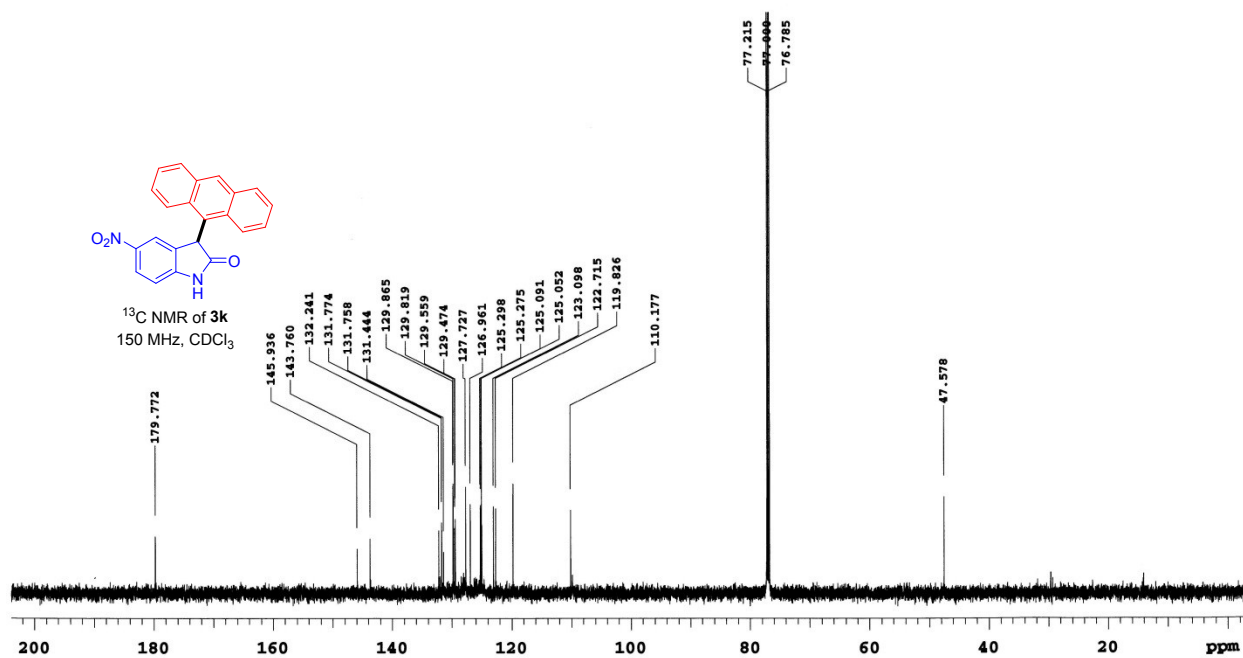


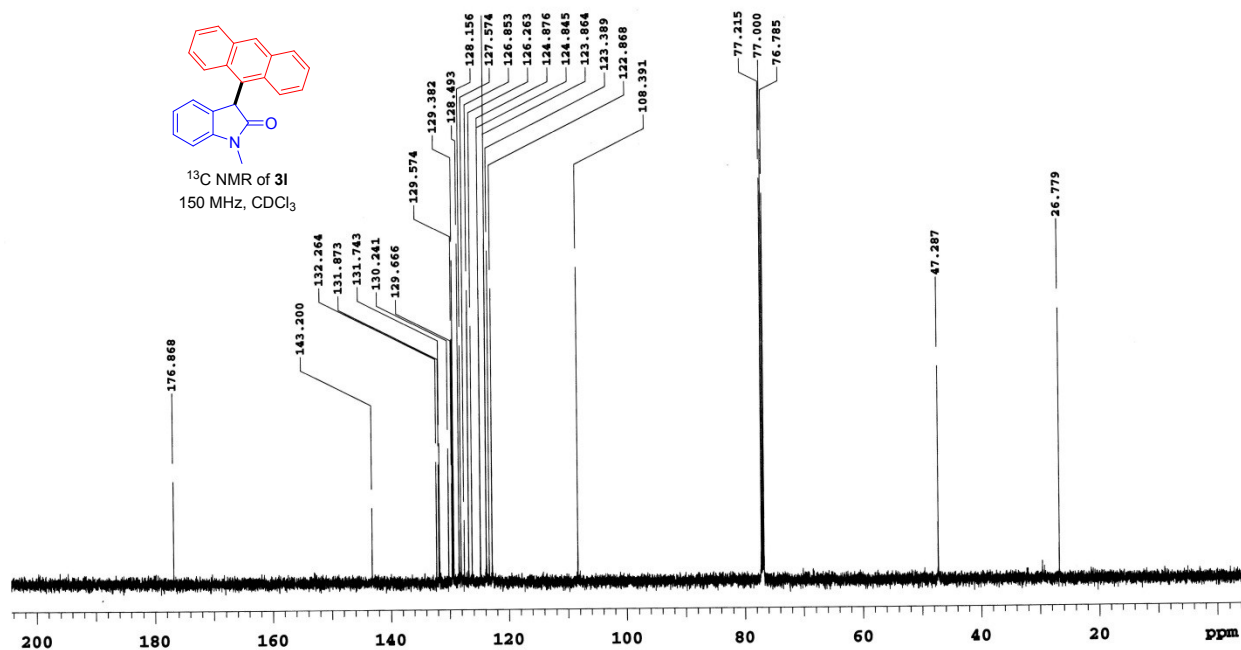
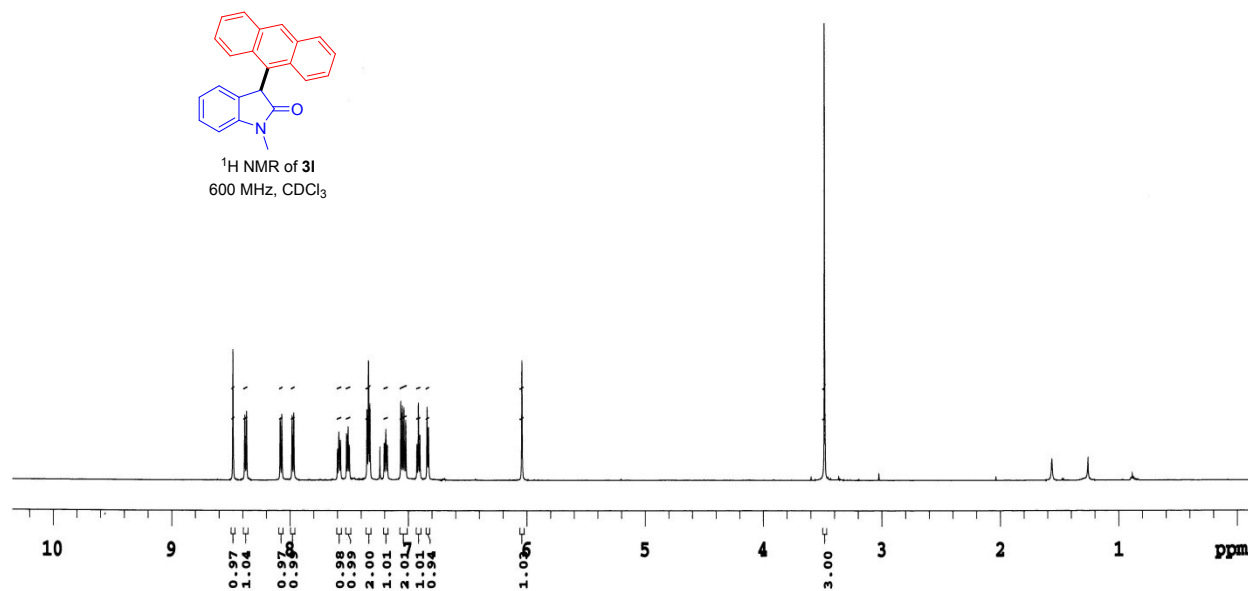


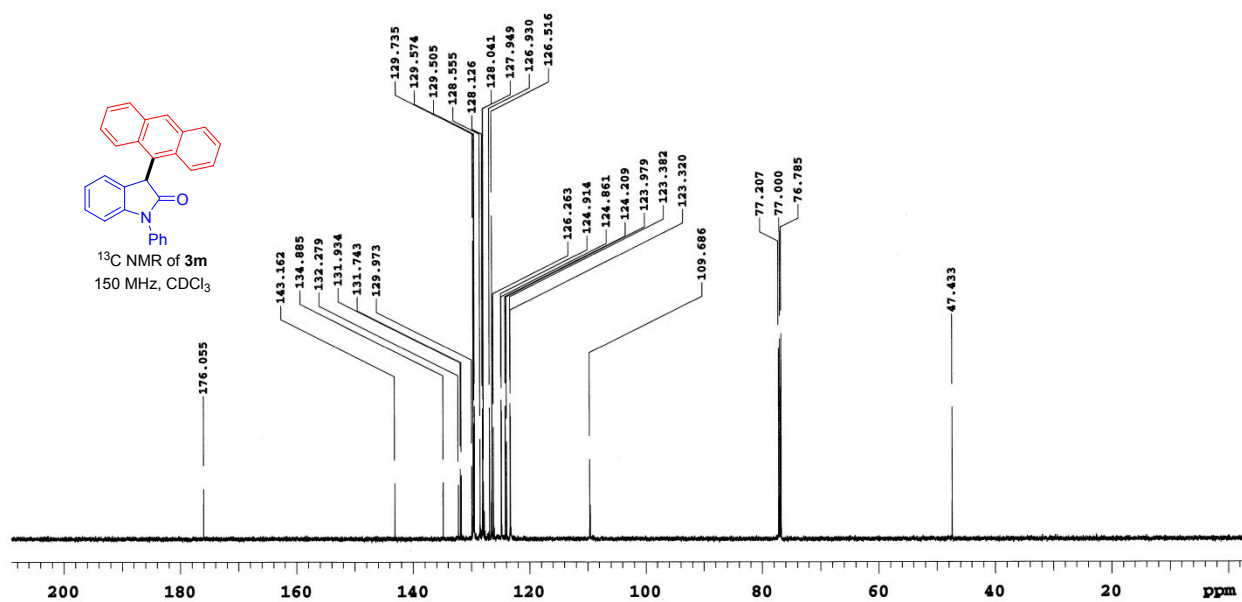
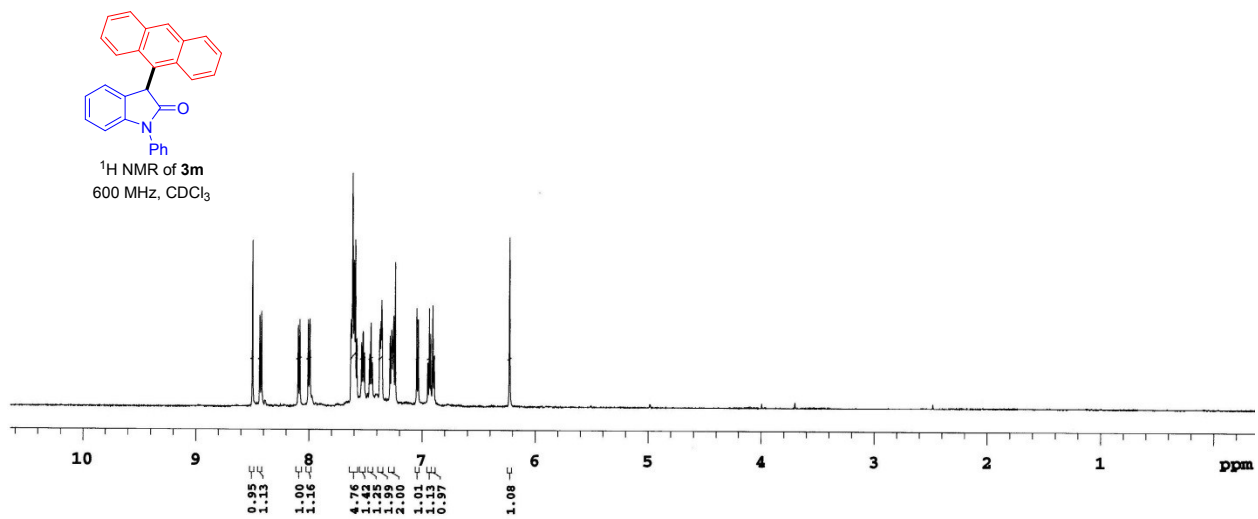
¹H NMR of **3k**
600 MHz, CDCl₃

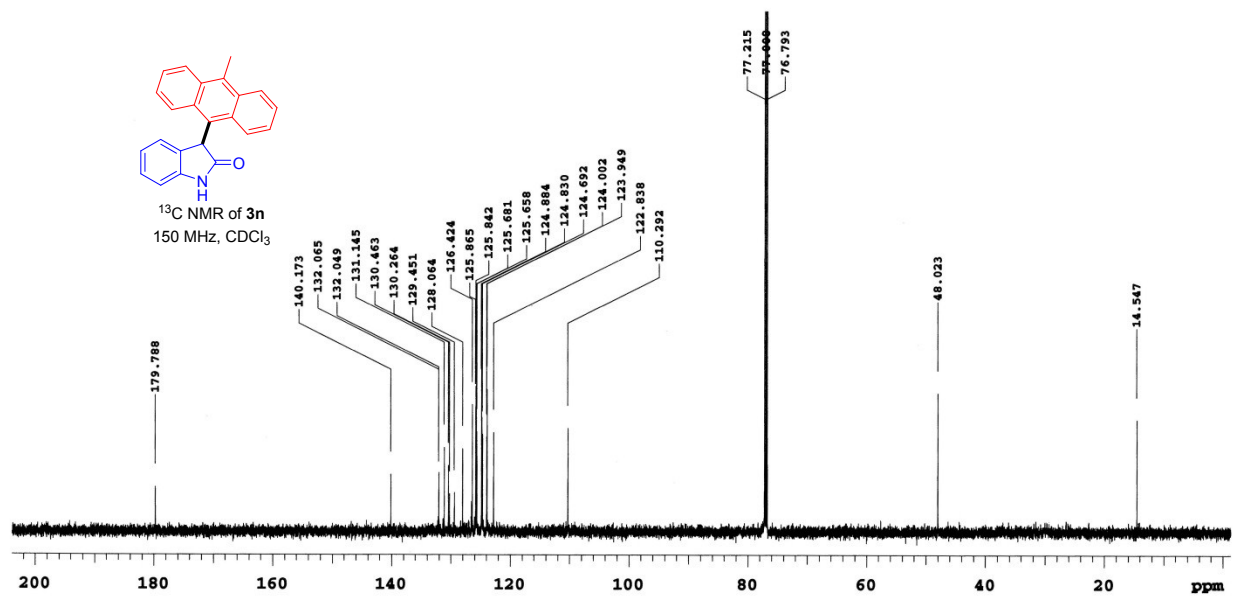
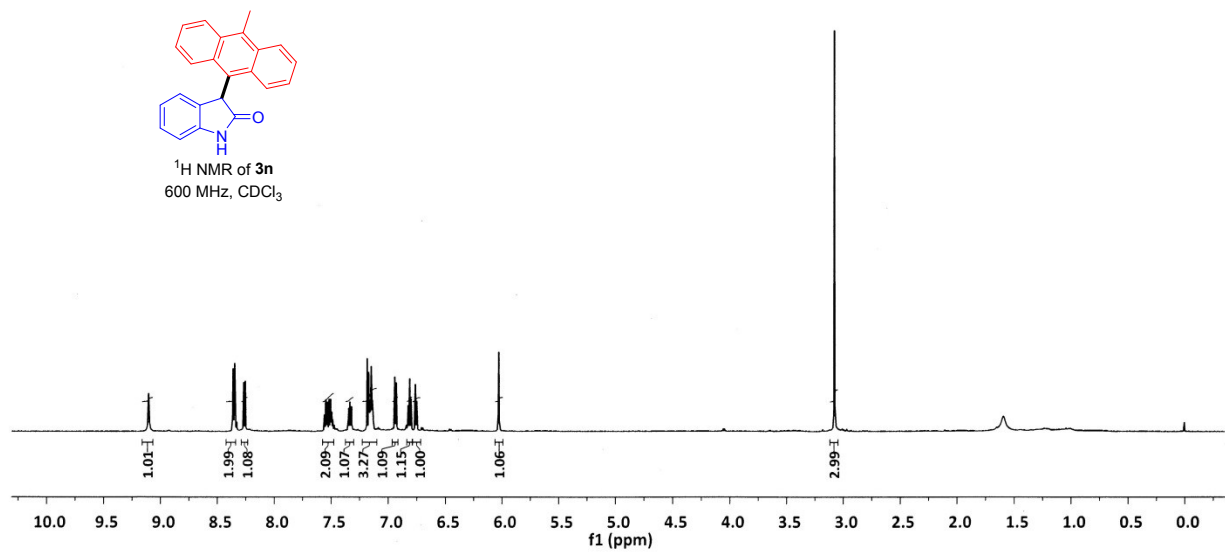


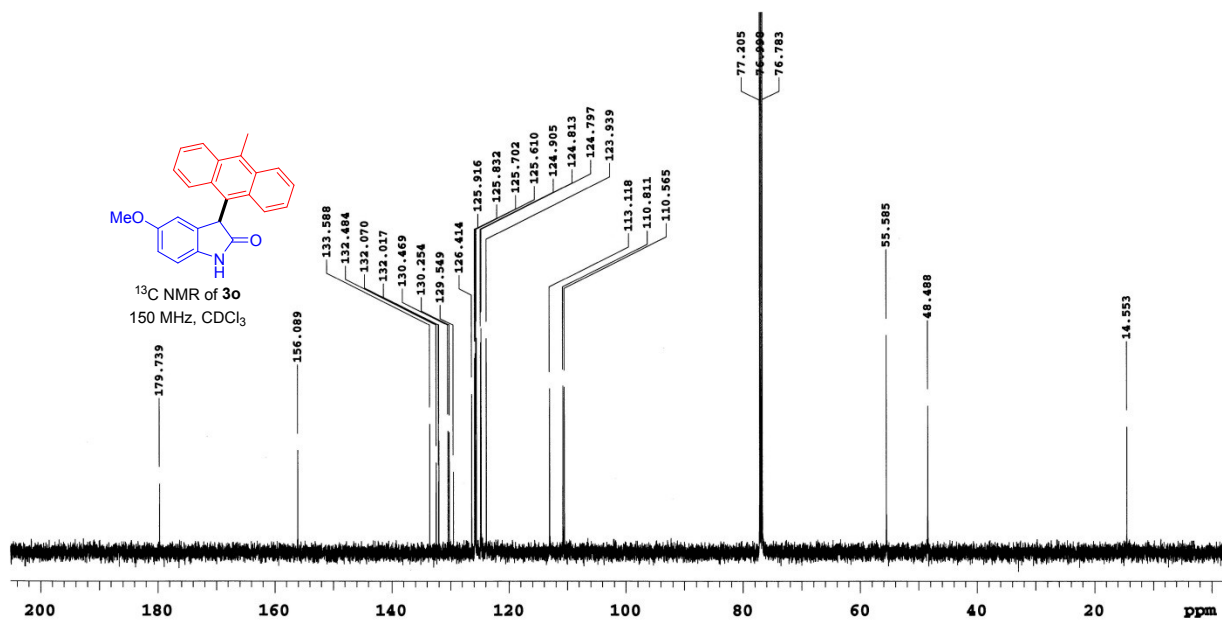
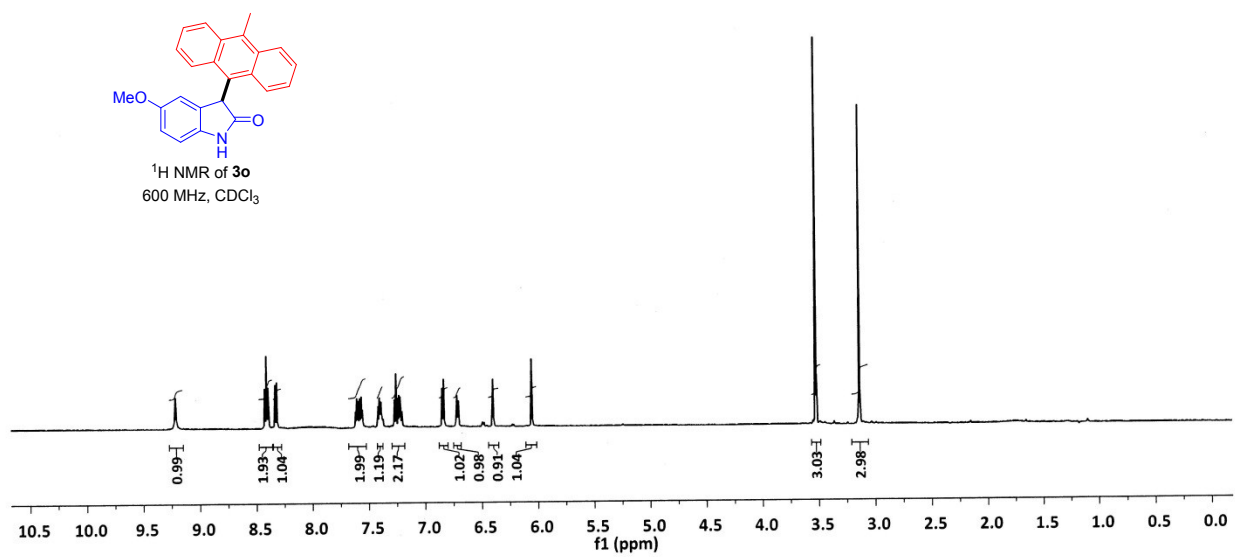
¹³C NMR of **3k**
150 MHz, CDCl₃

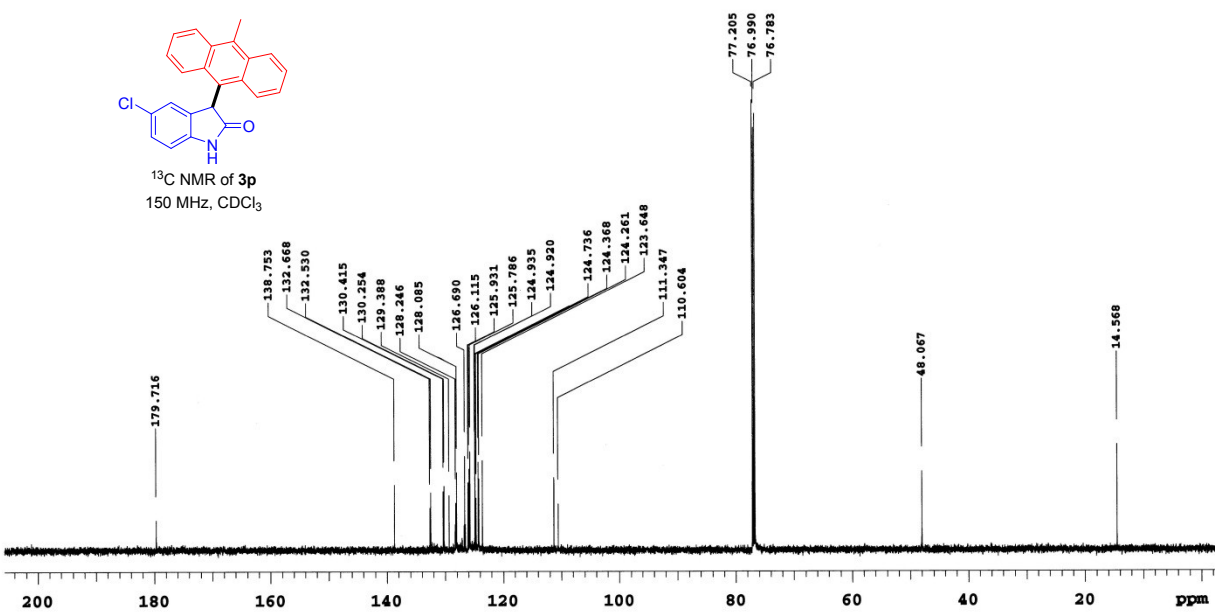
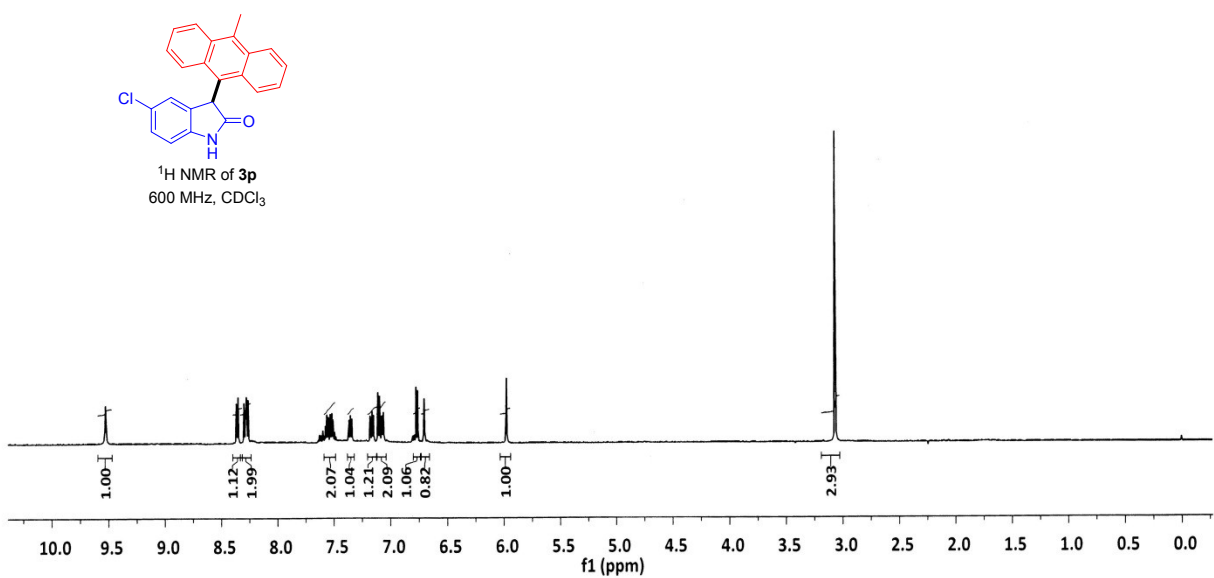


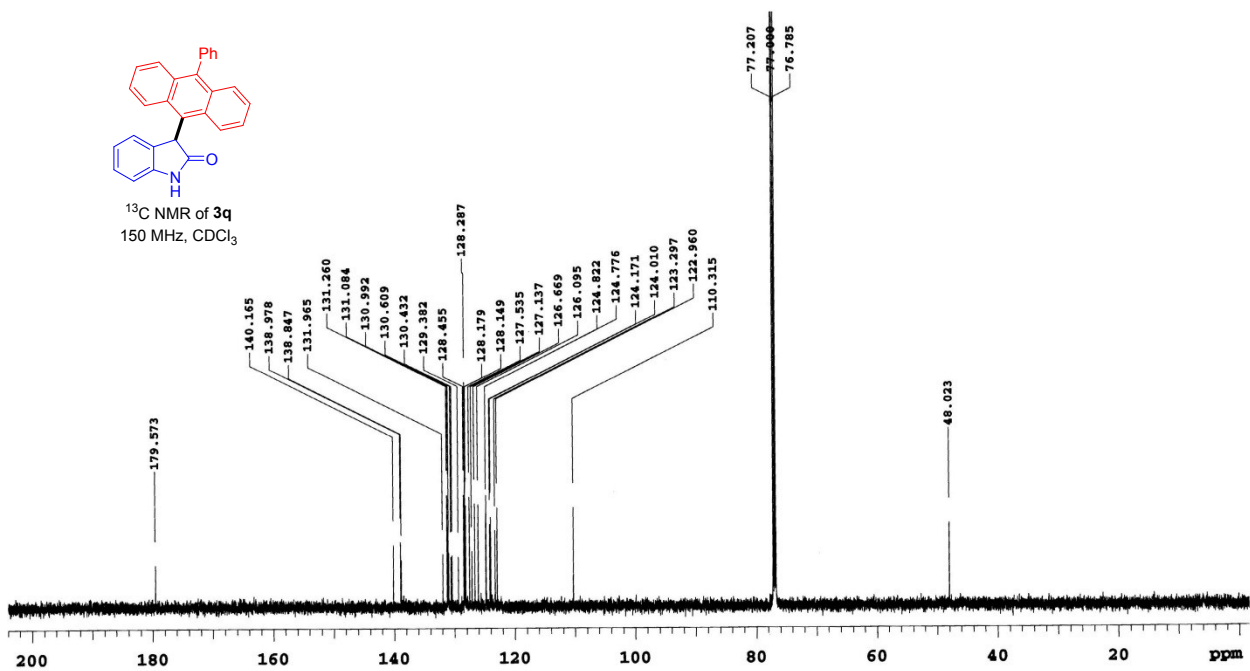
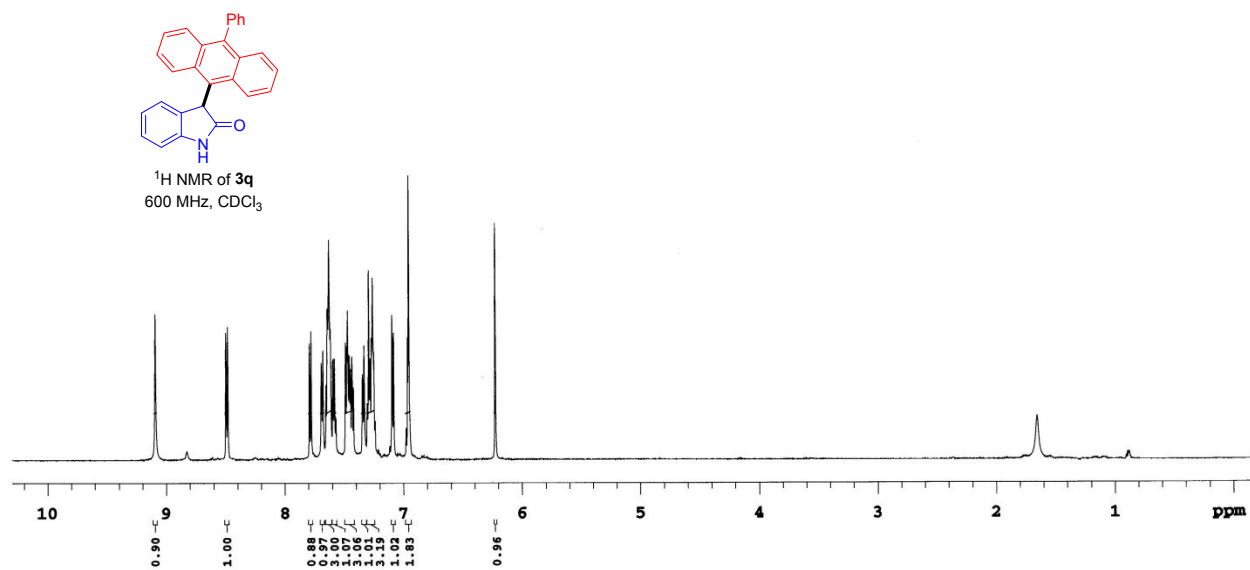


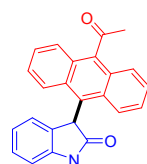




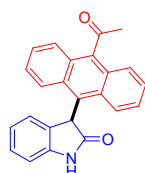
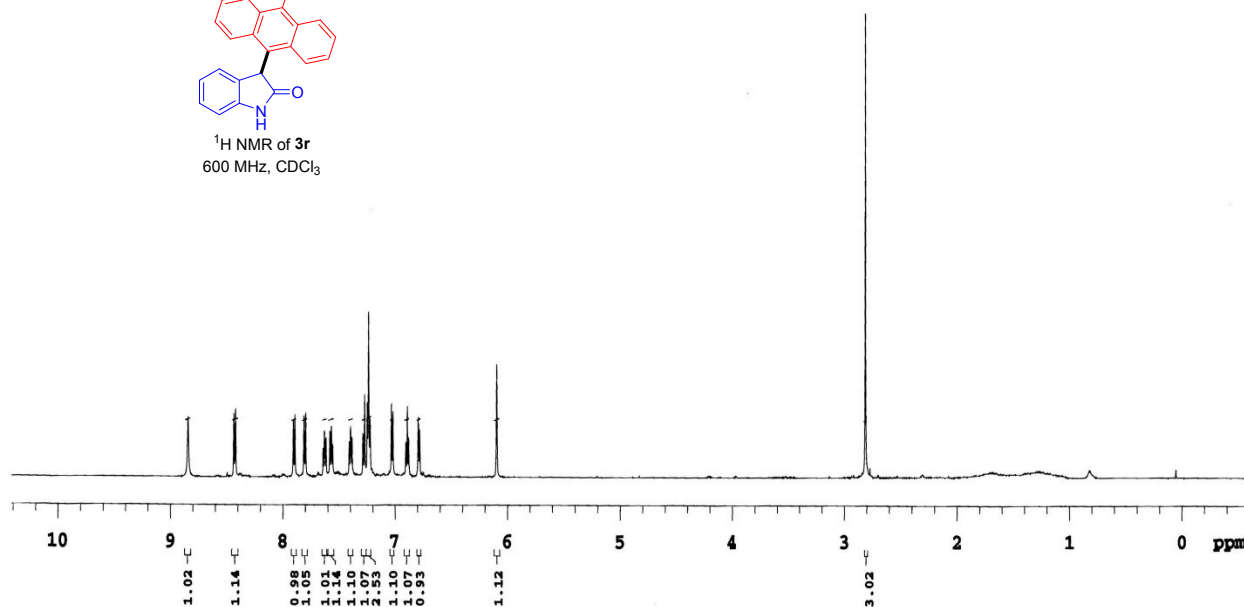




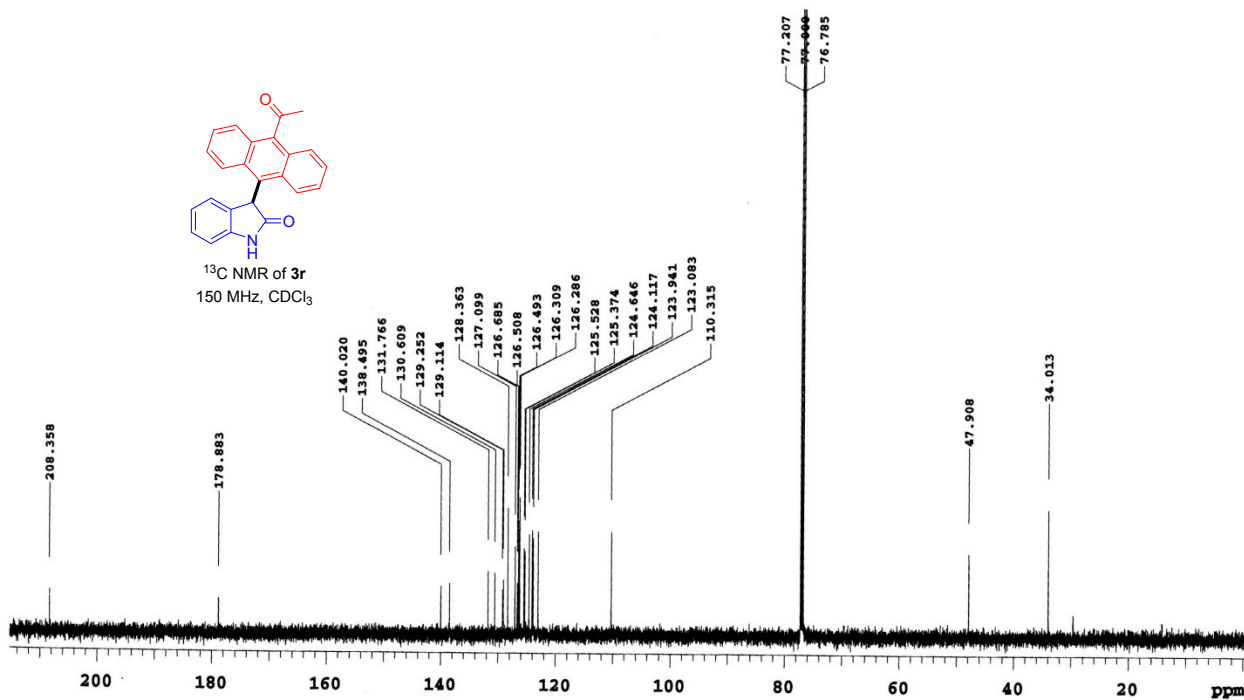


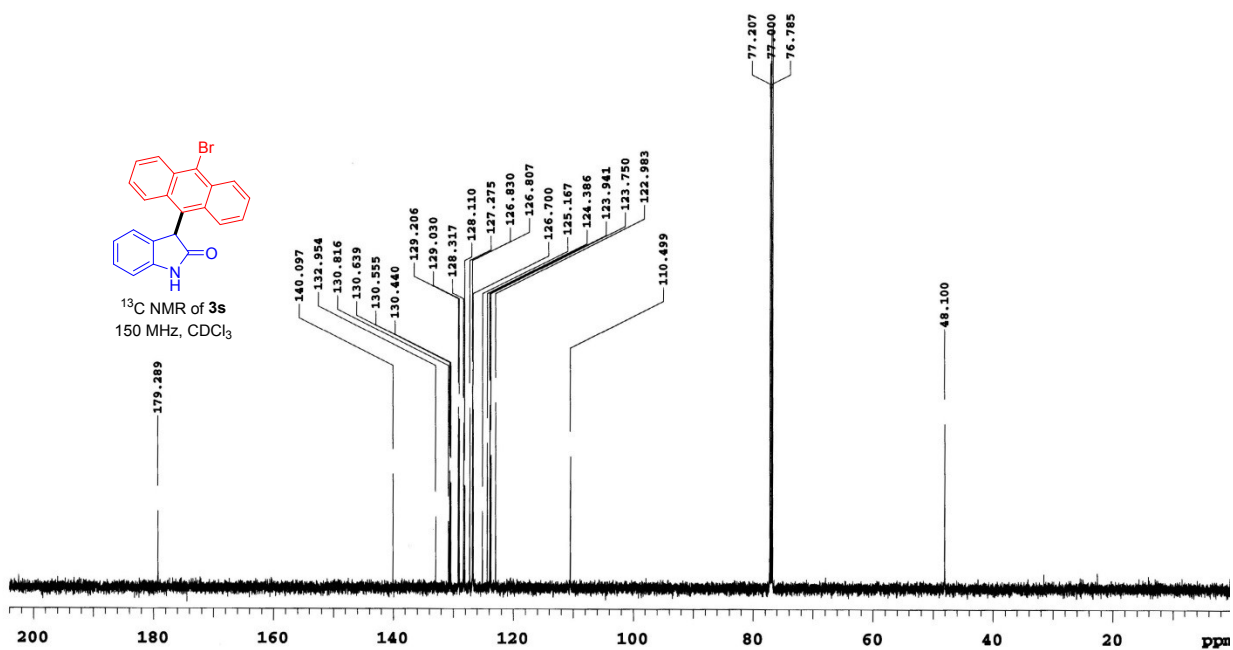
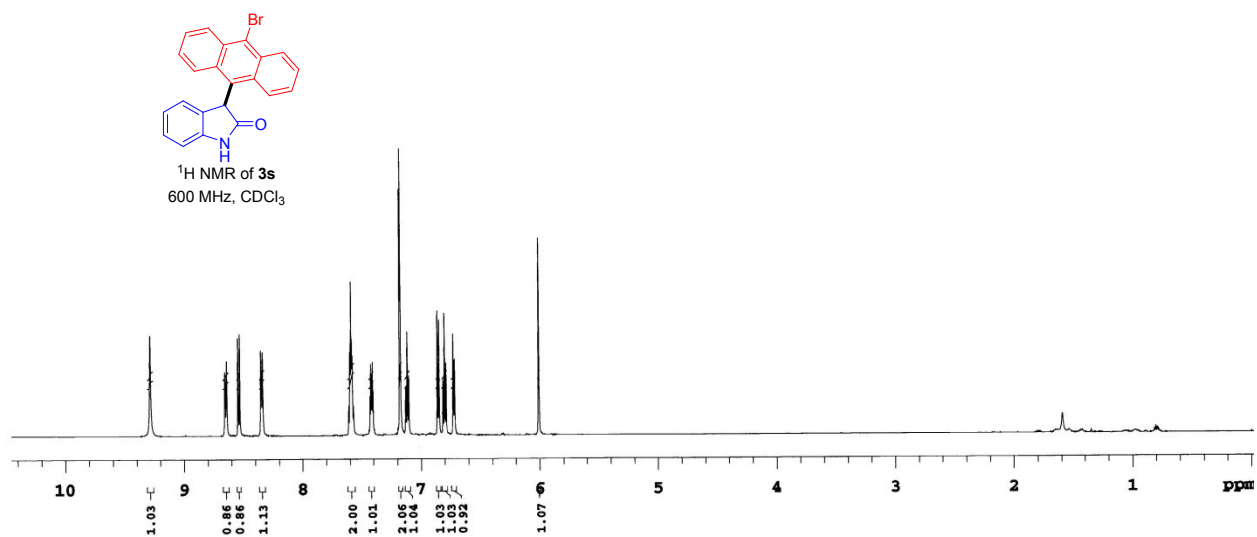


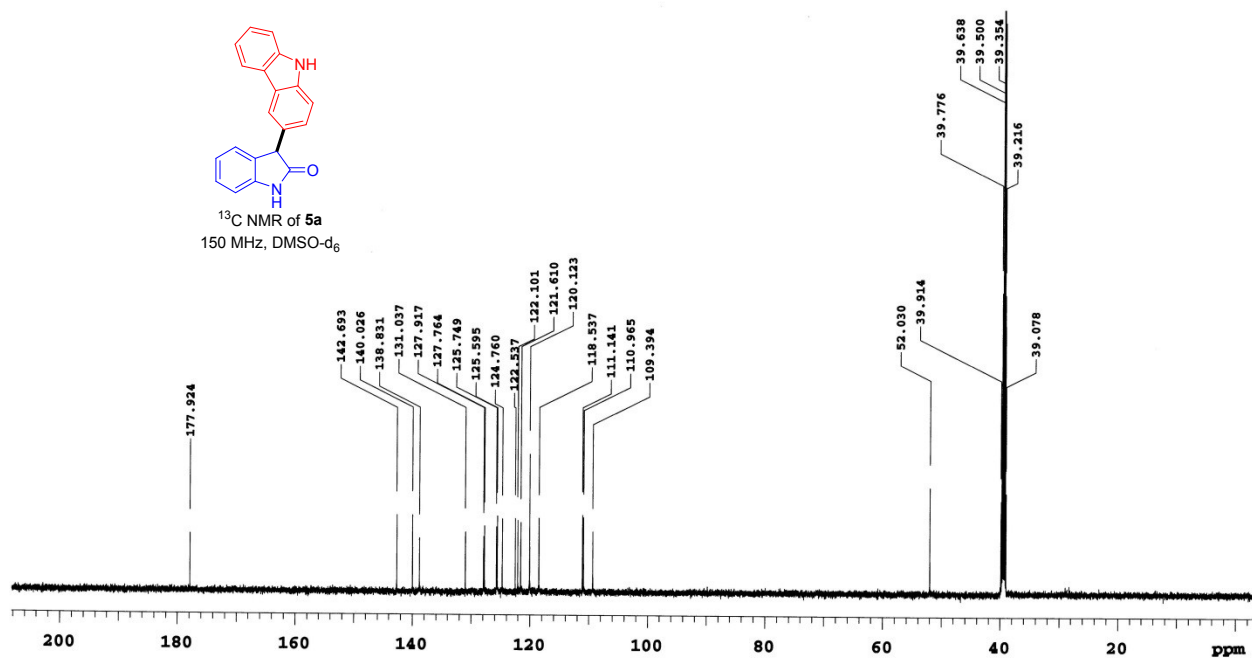
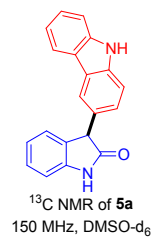
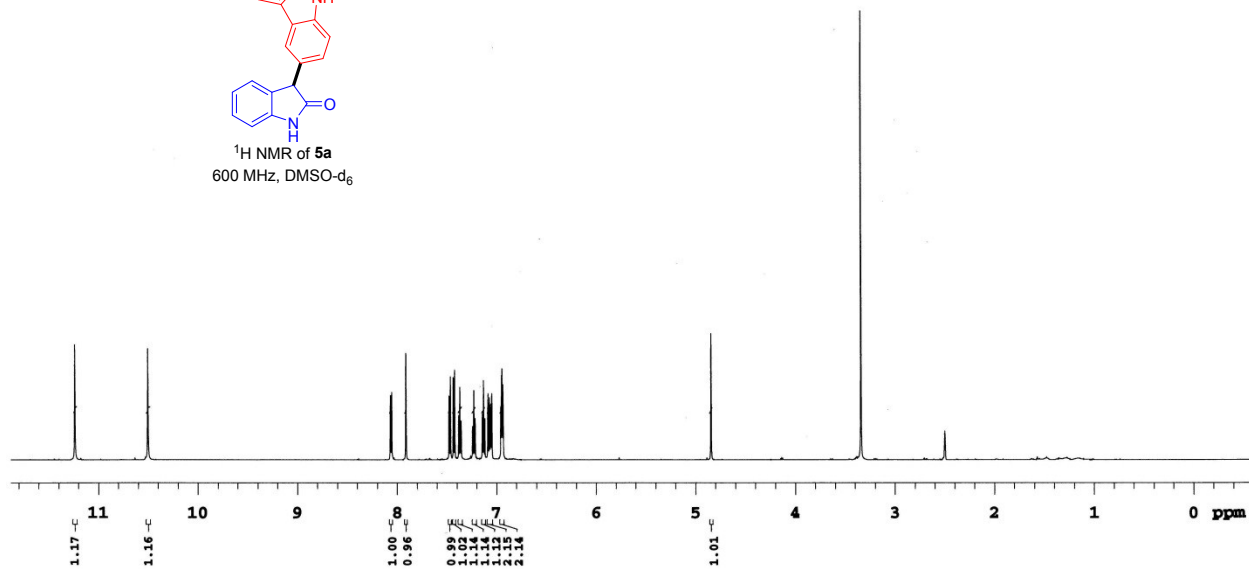
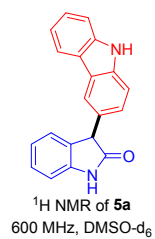
¹H NMR of **3r**
600 MHz, CDCl₃

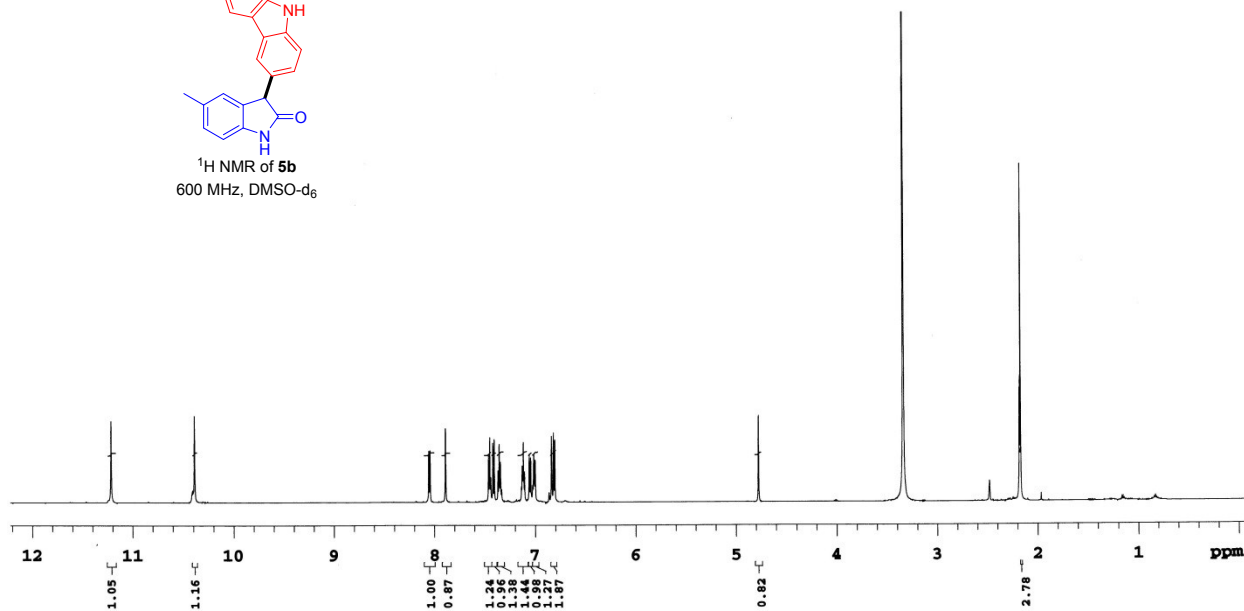


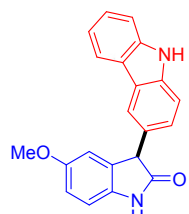
¹³C NMR of **3r**
150 MHz, CDCl₃



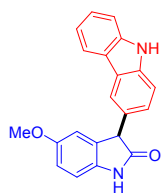
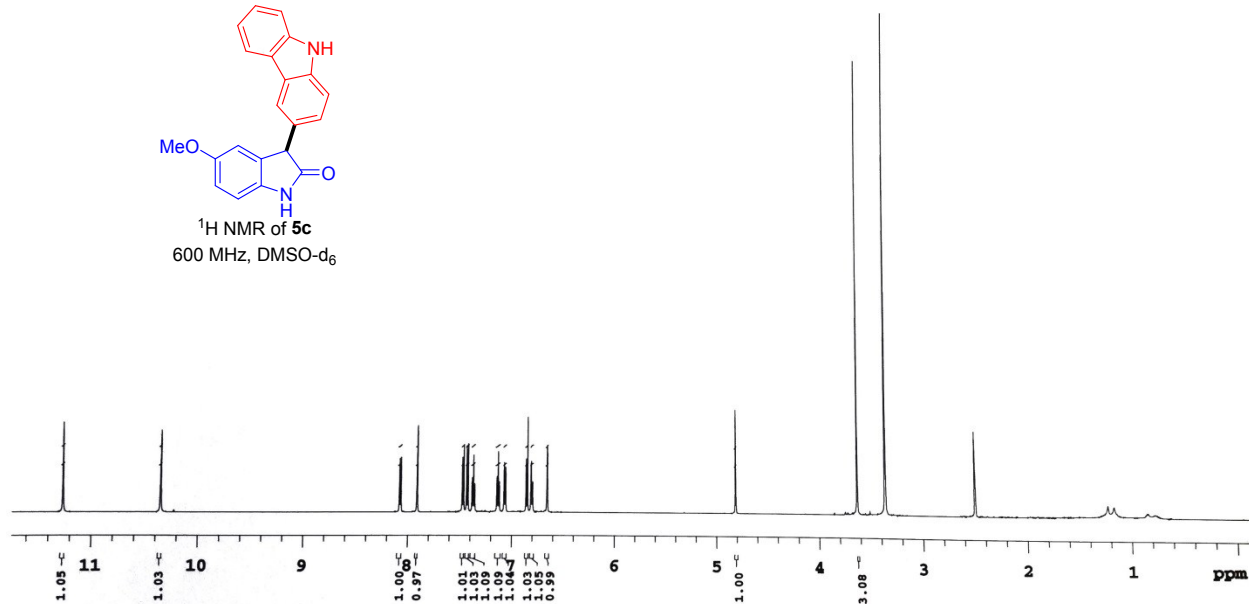




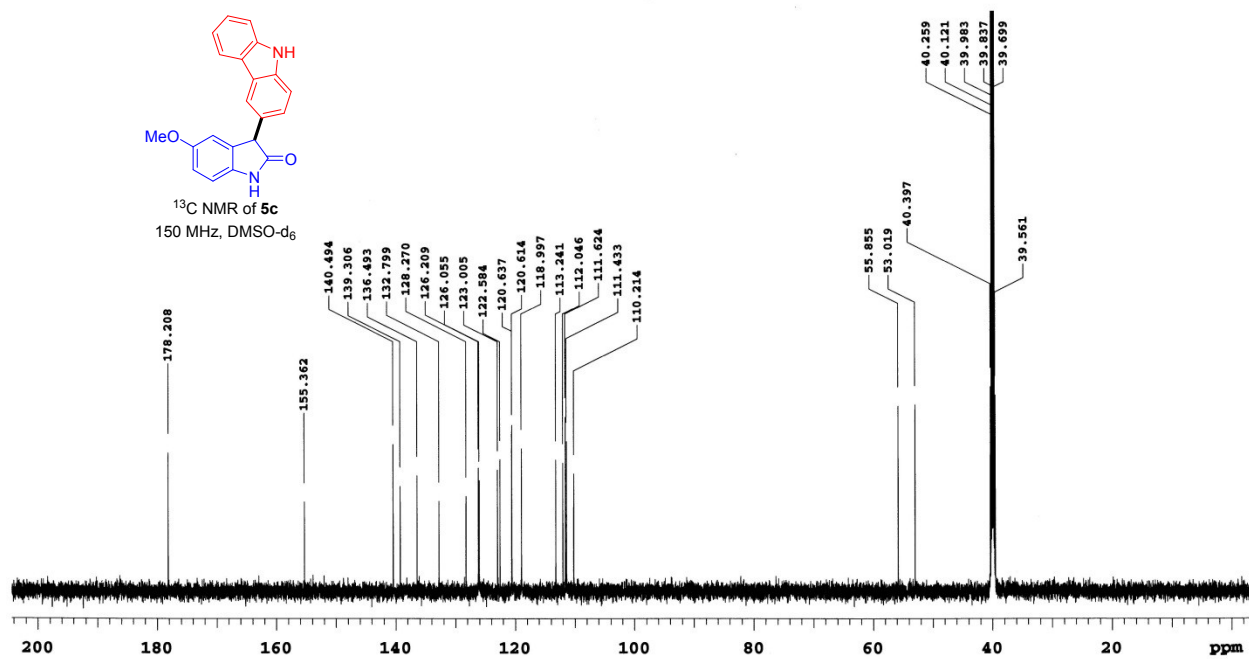


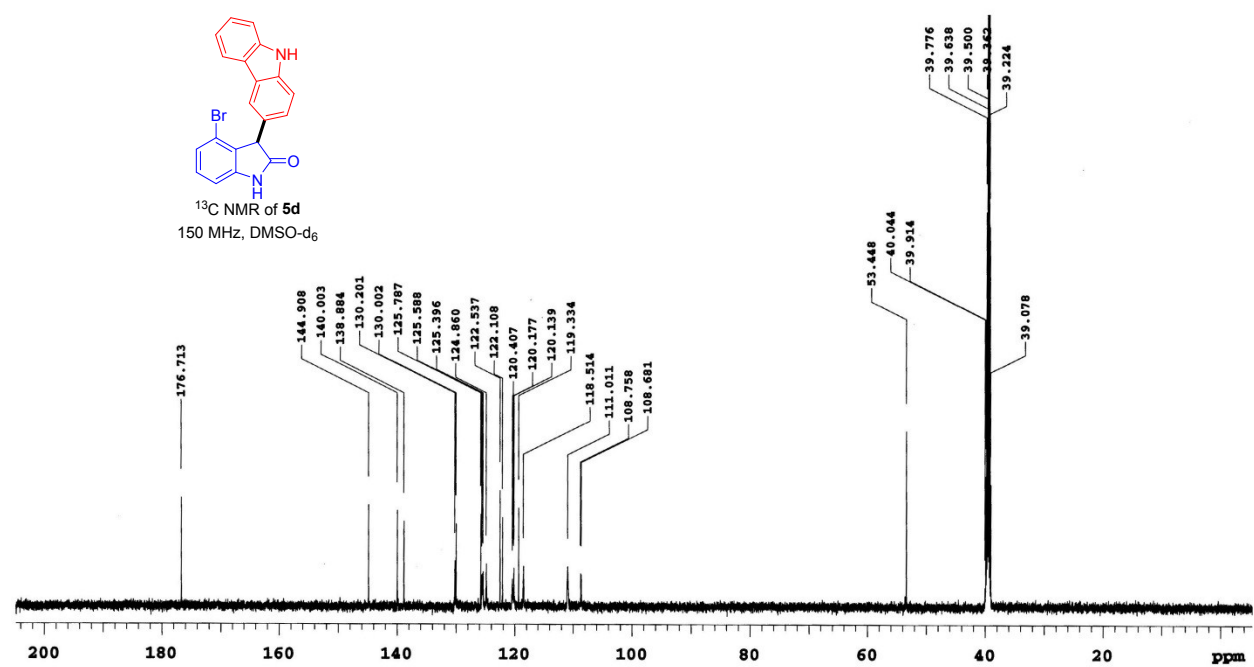
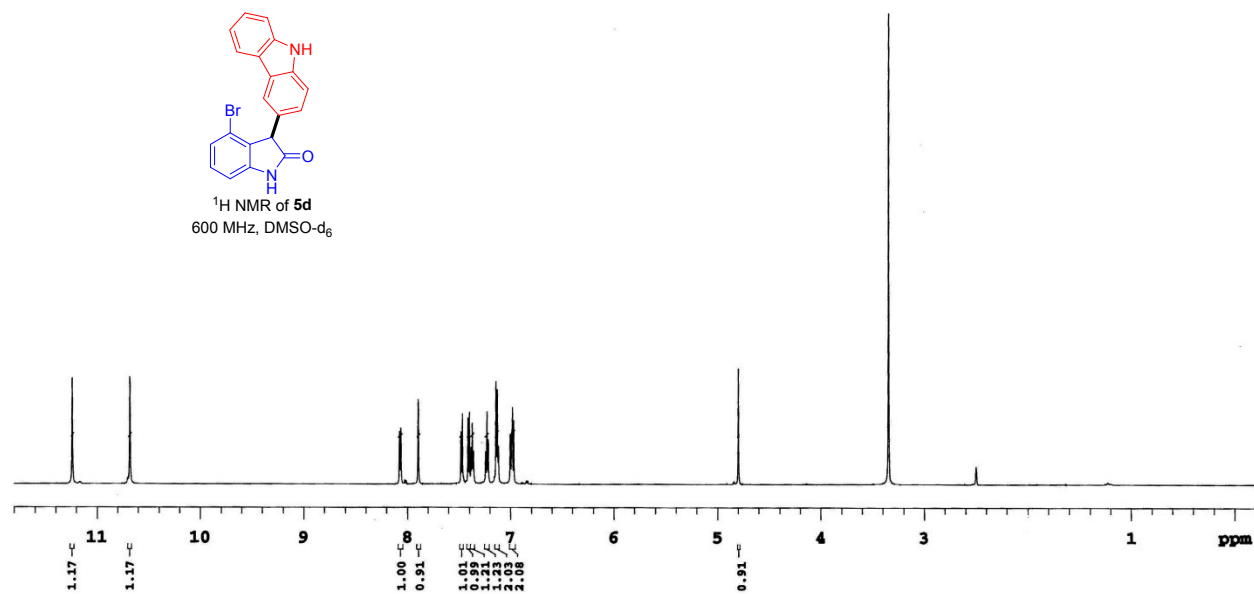


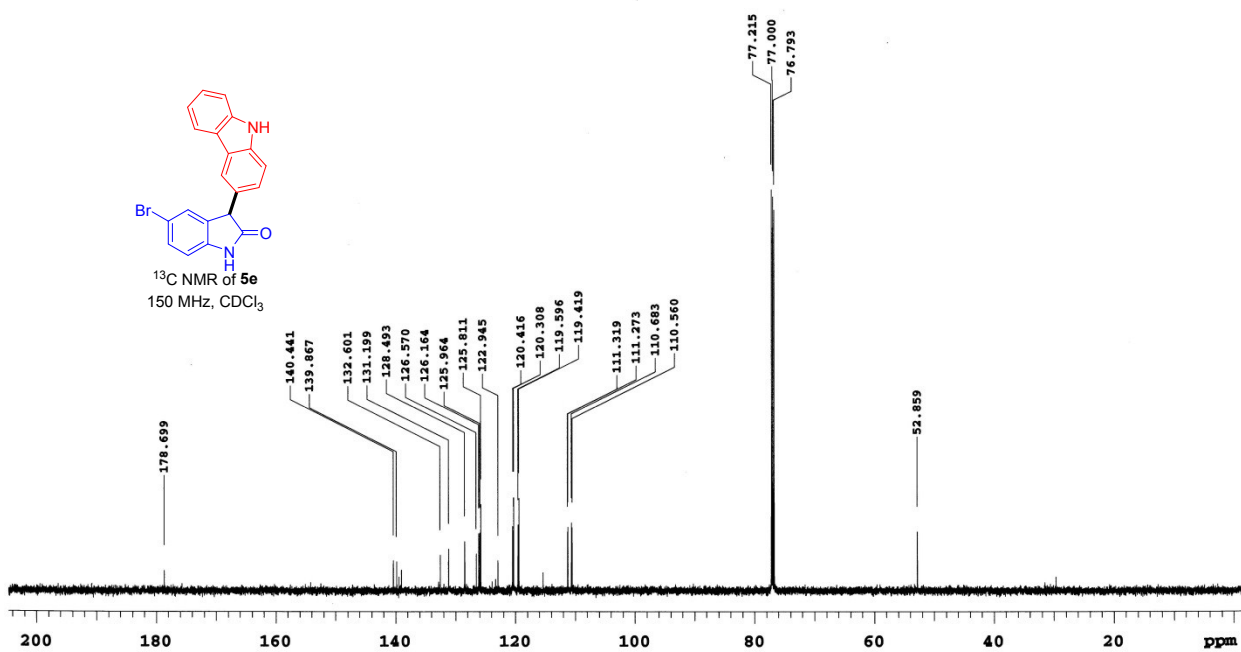
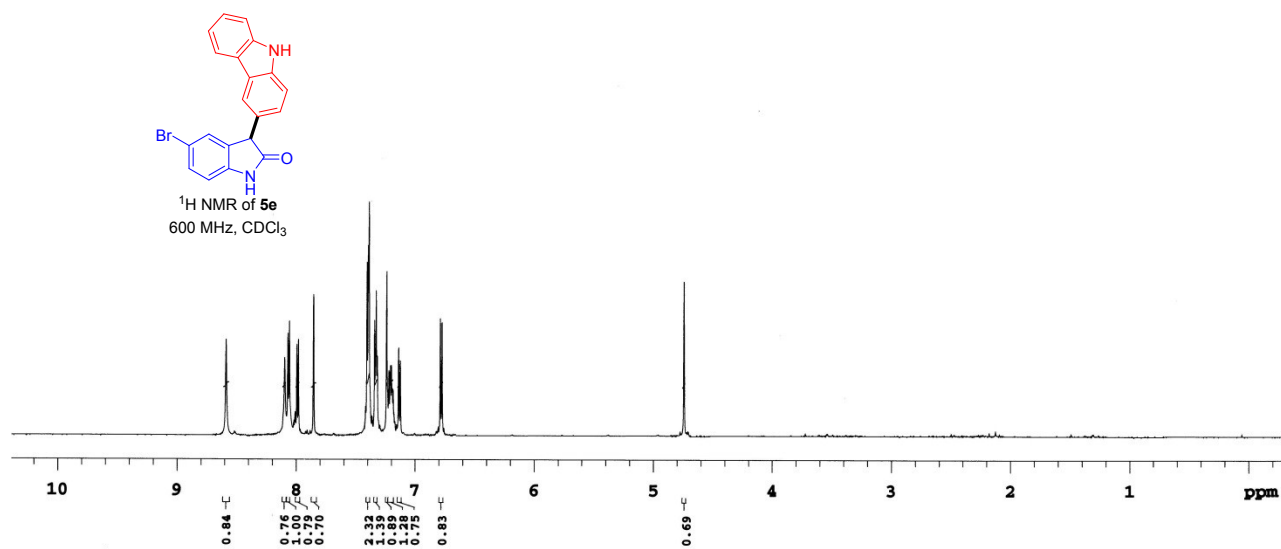
^1H NMR of **5c**
600 MHz, DMSO- d_6

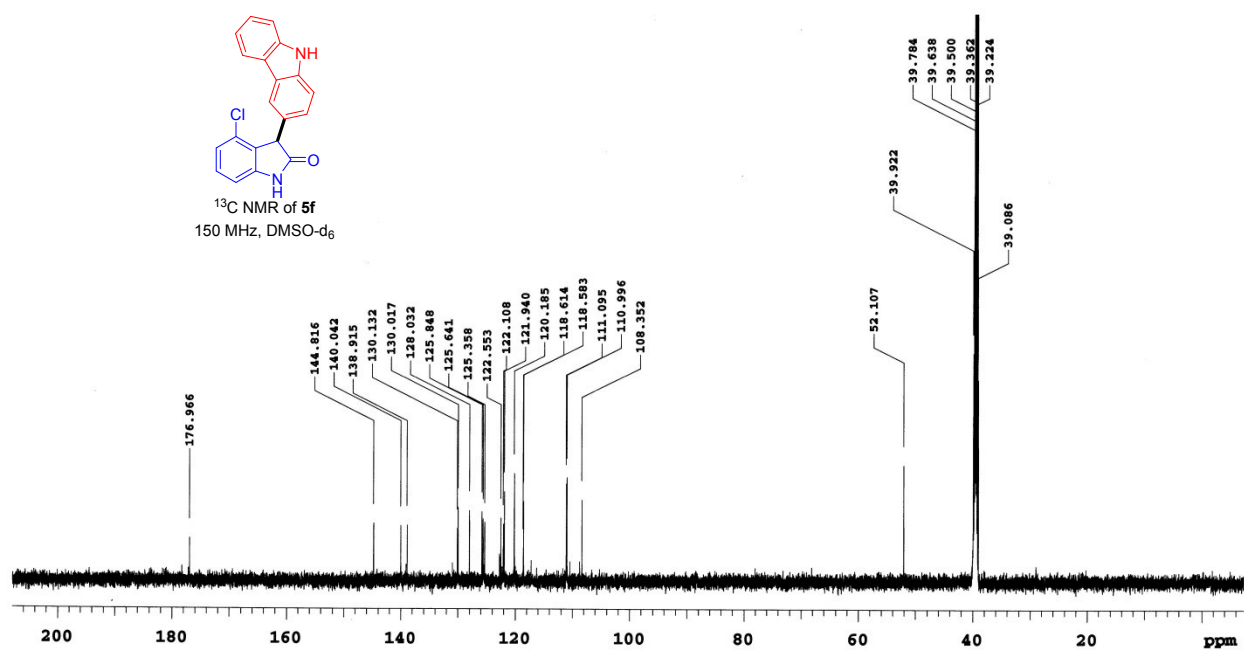
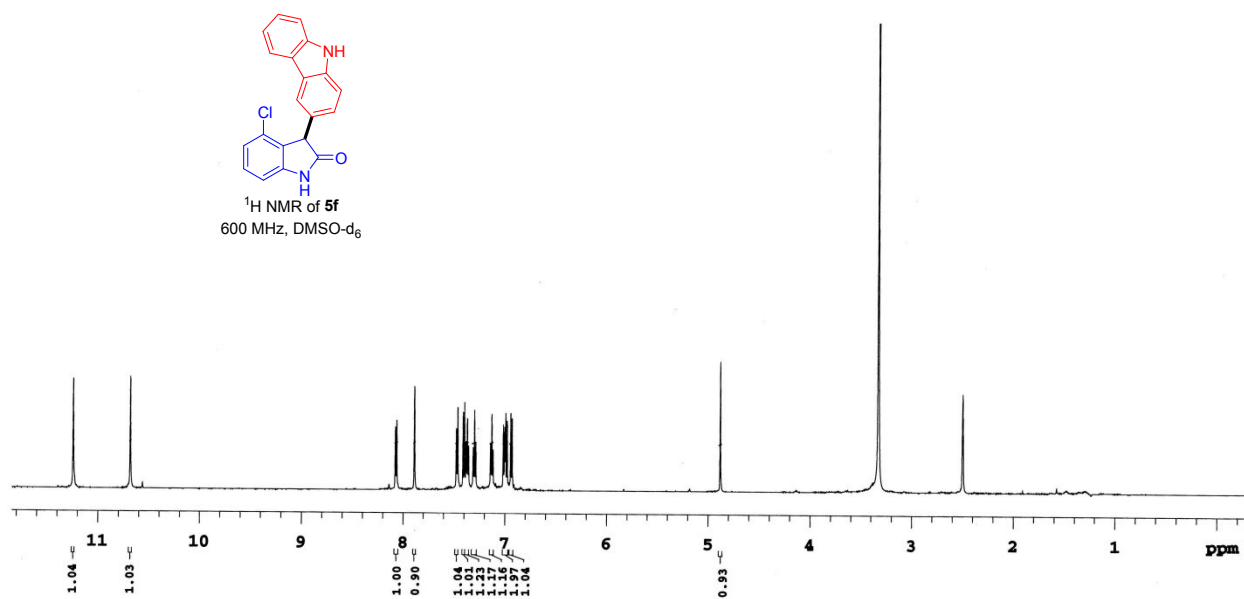


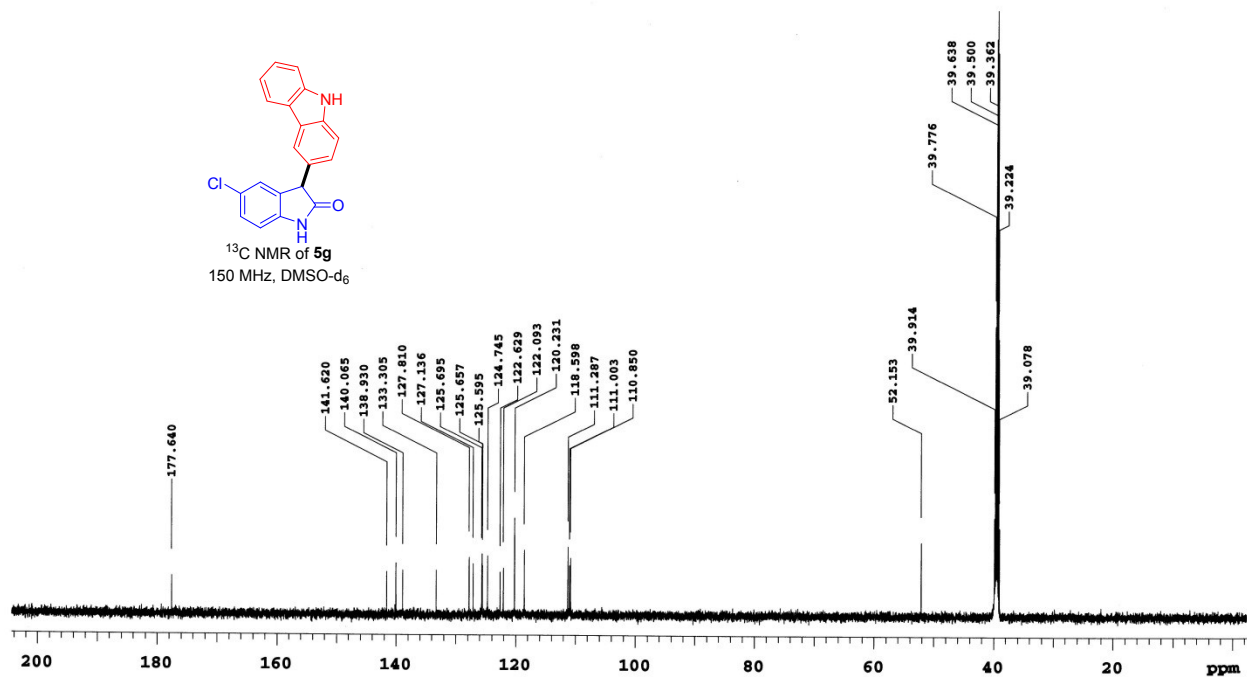
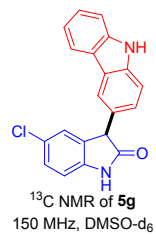
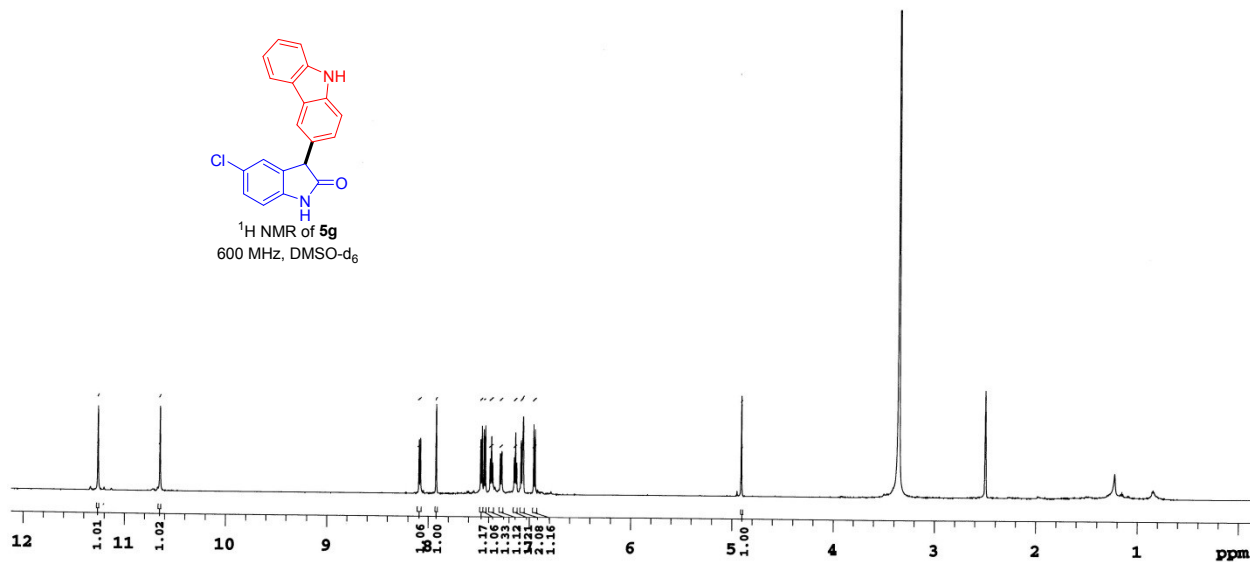
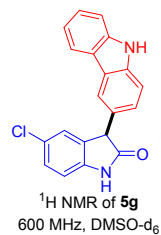
^{13}C NMR of **5c**
150 MHz, DMSO- d_6

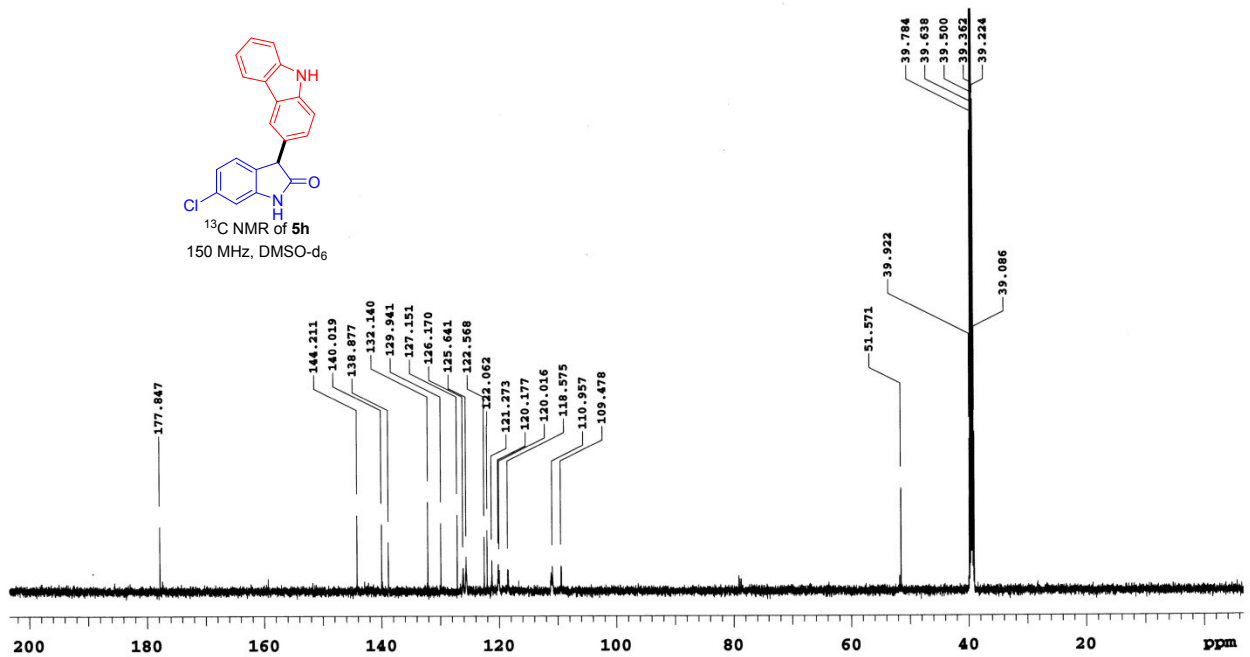
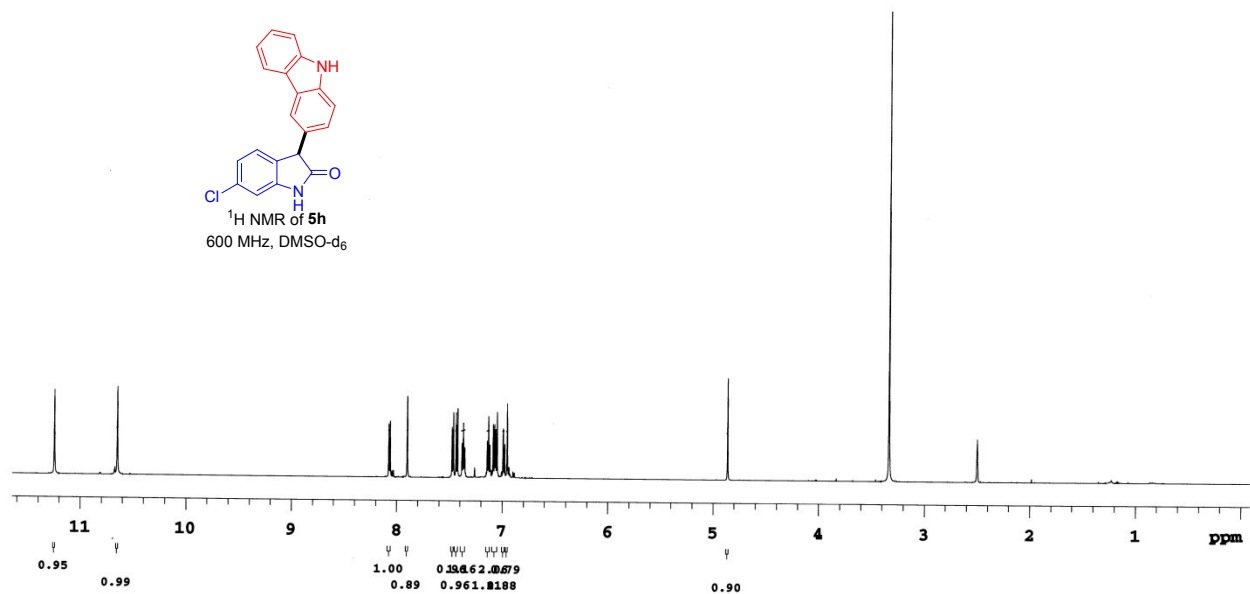


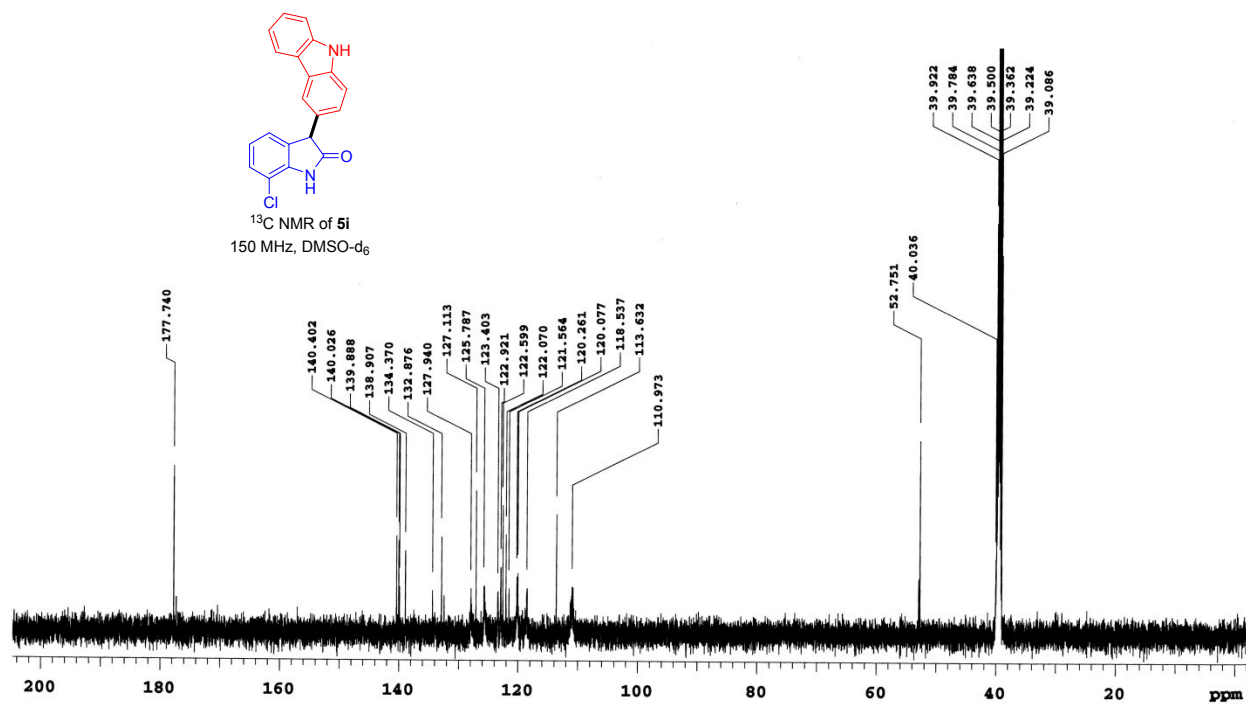
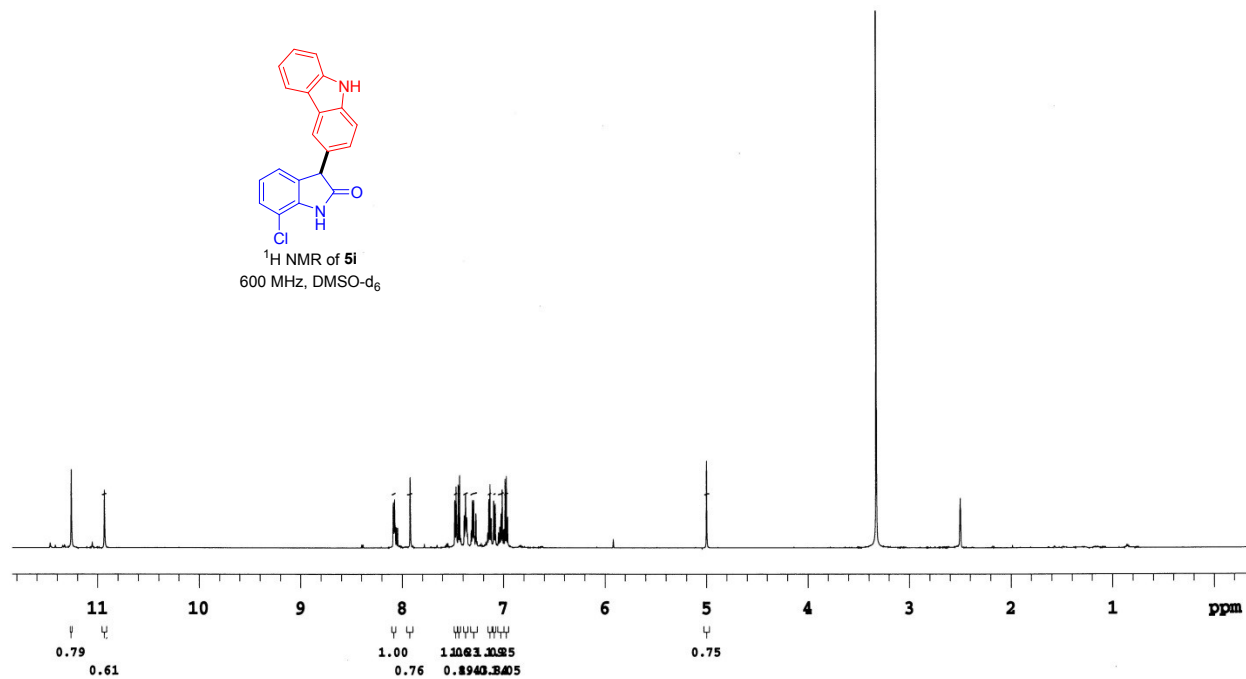


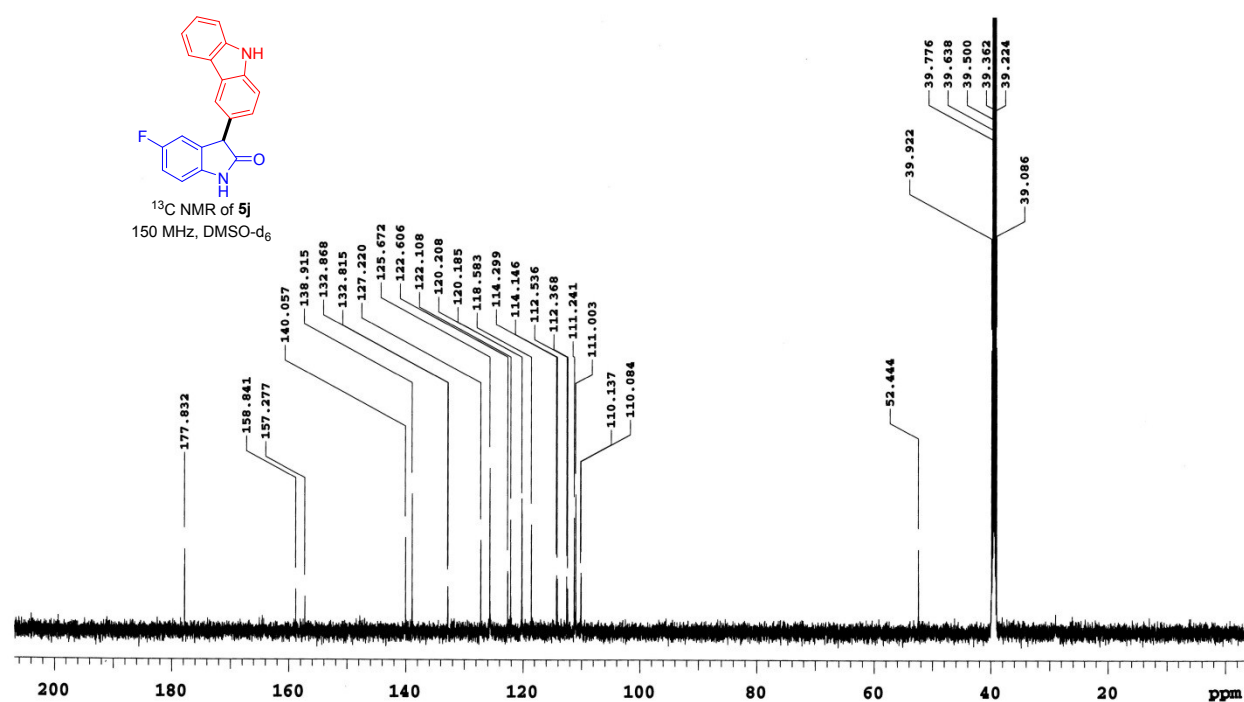
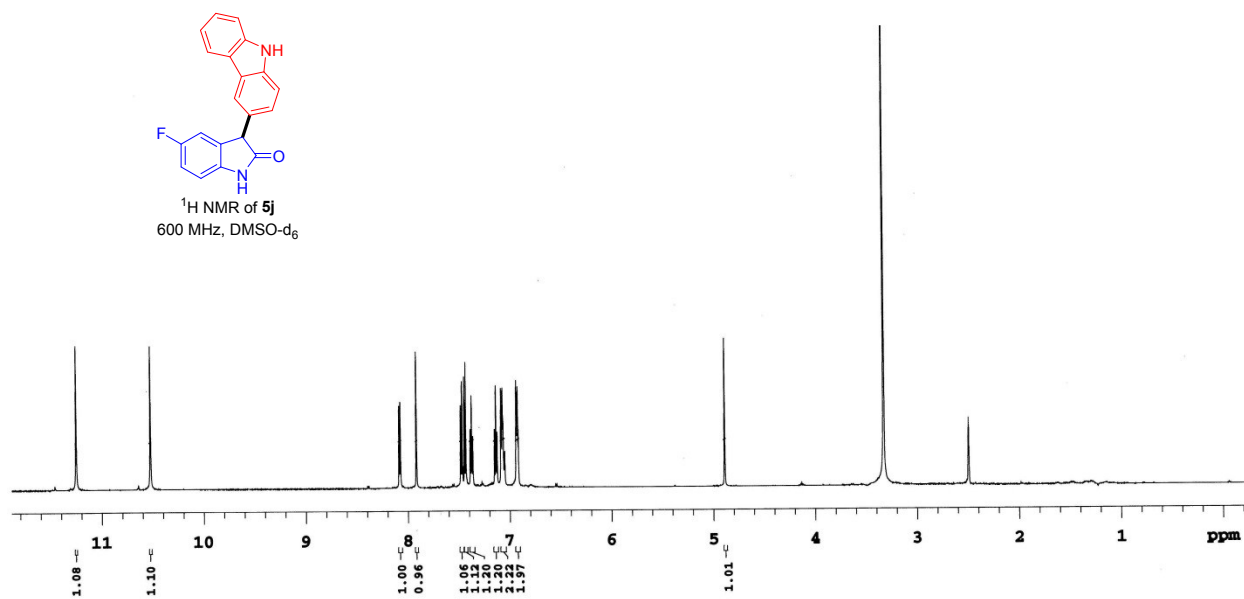


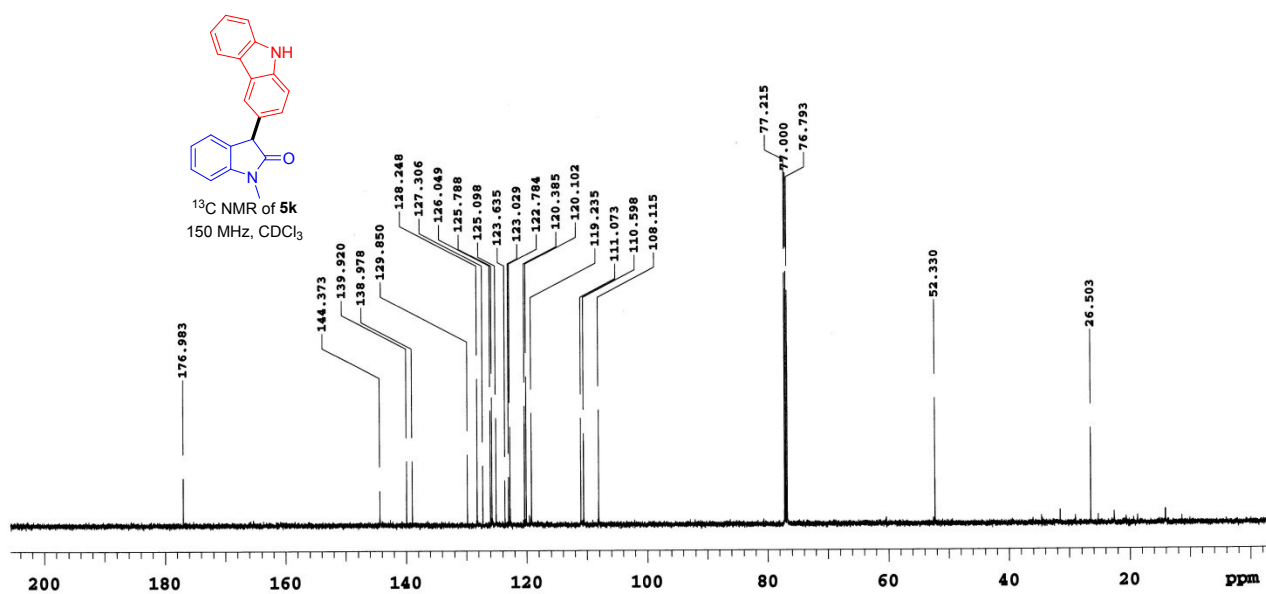
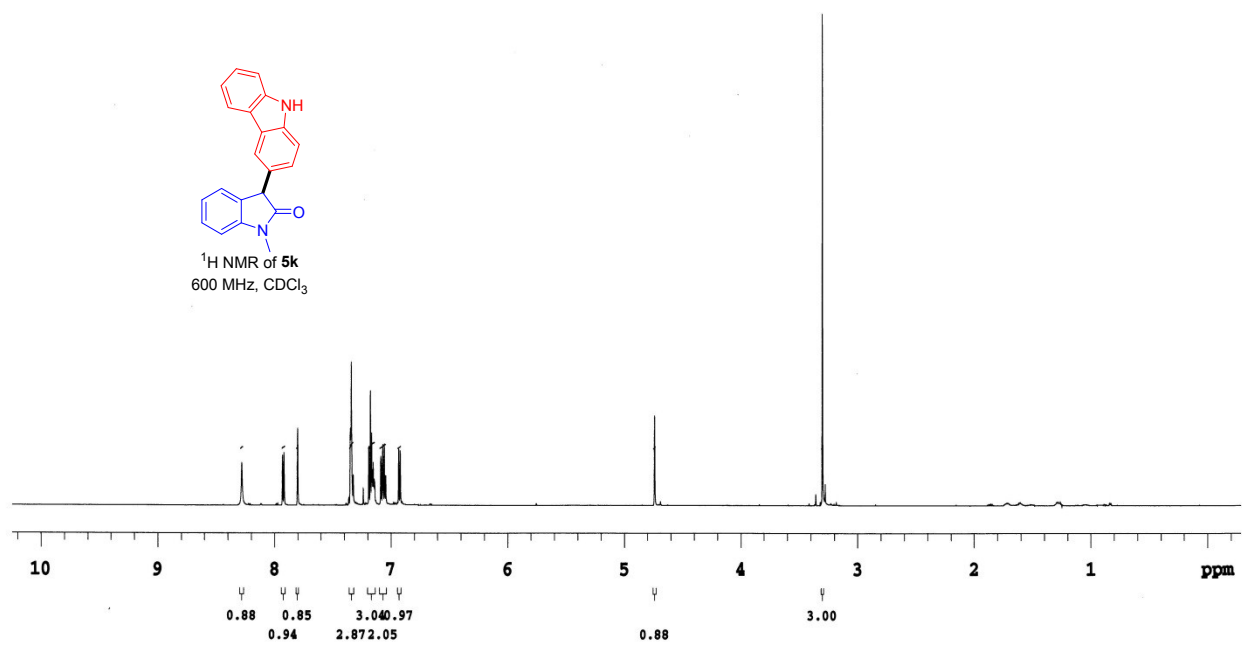


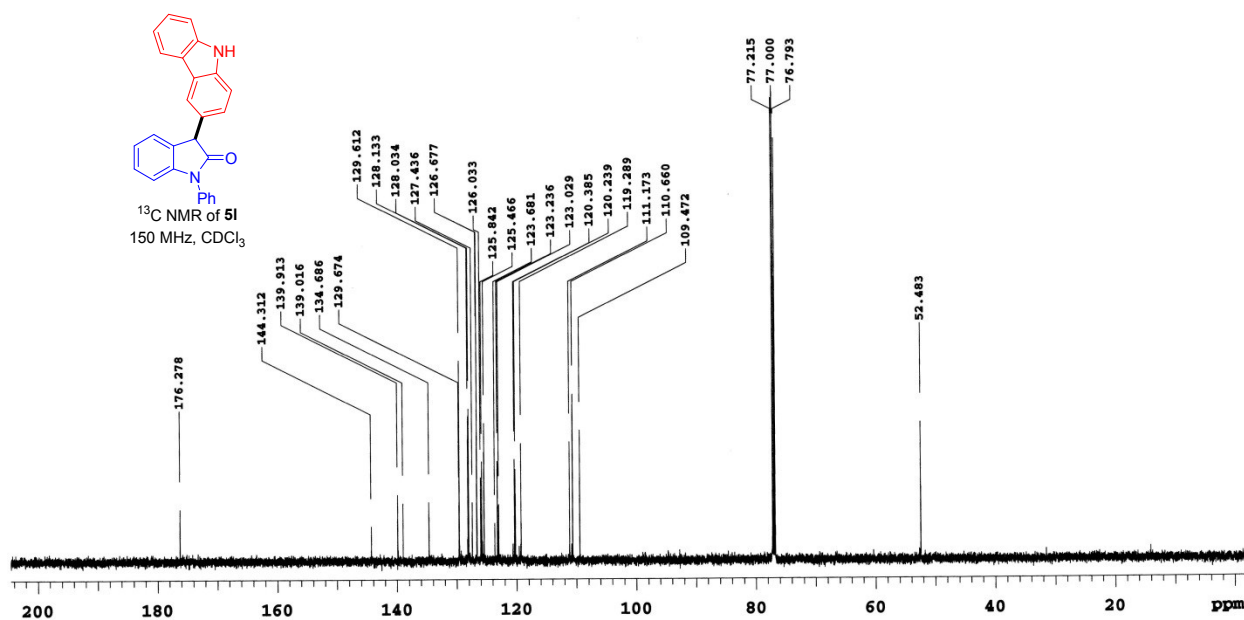
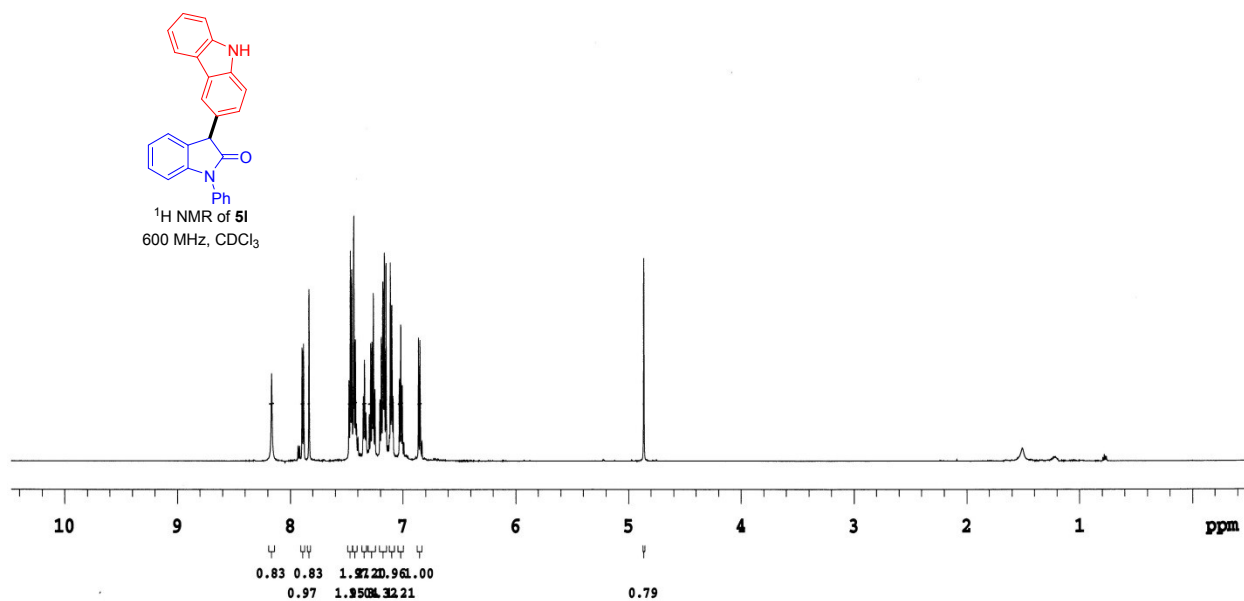


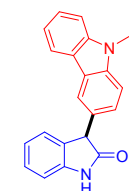




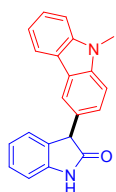
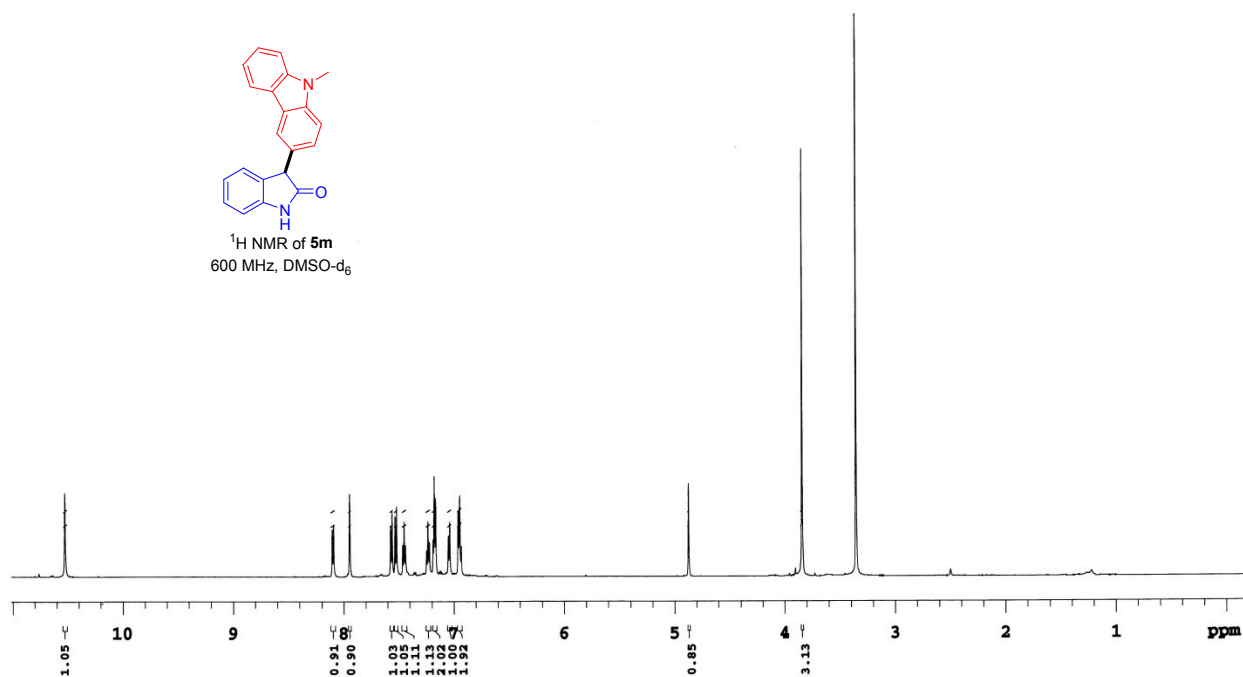




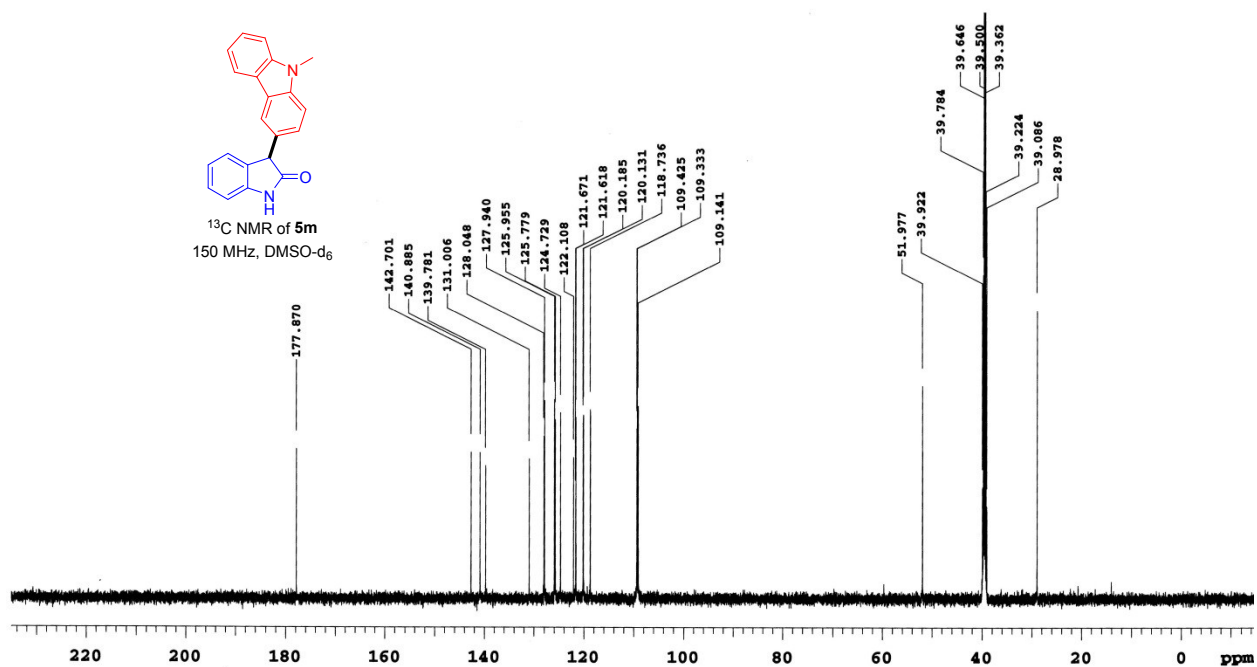


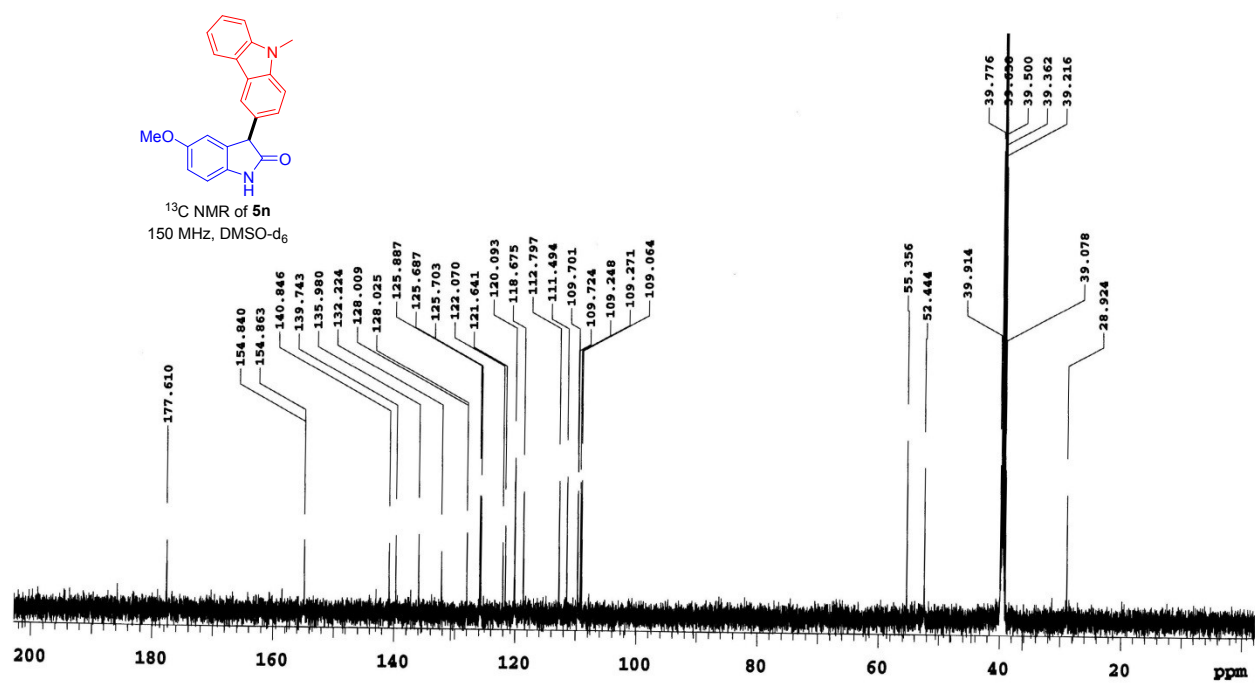
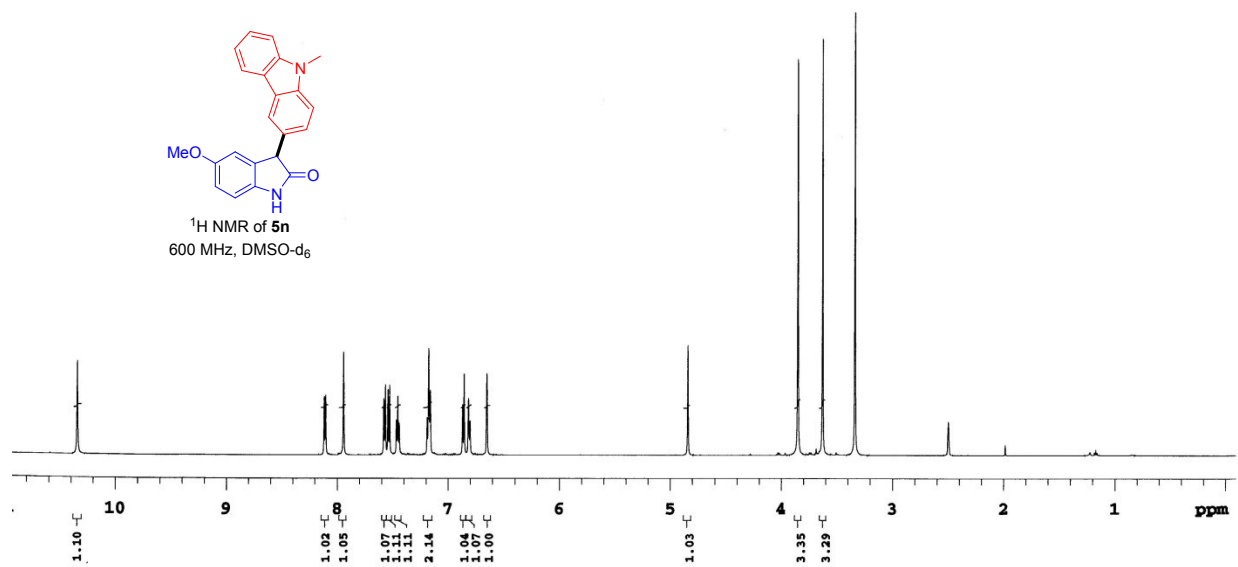


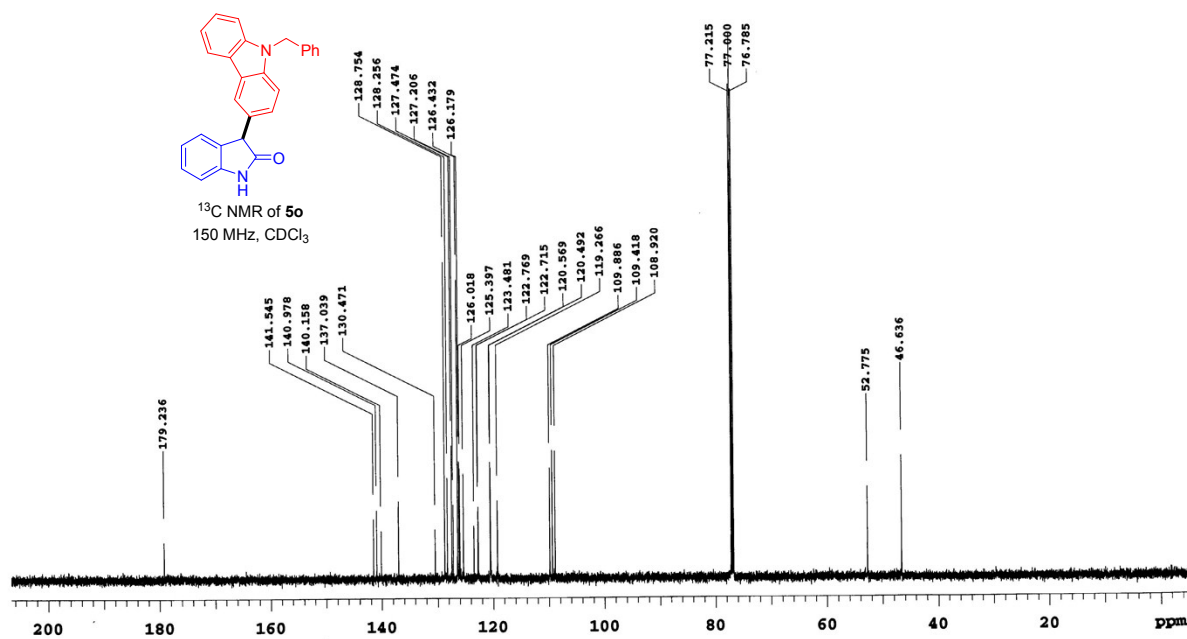
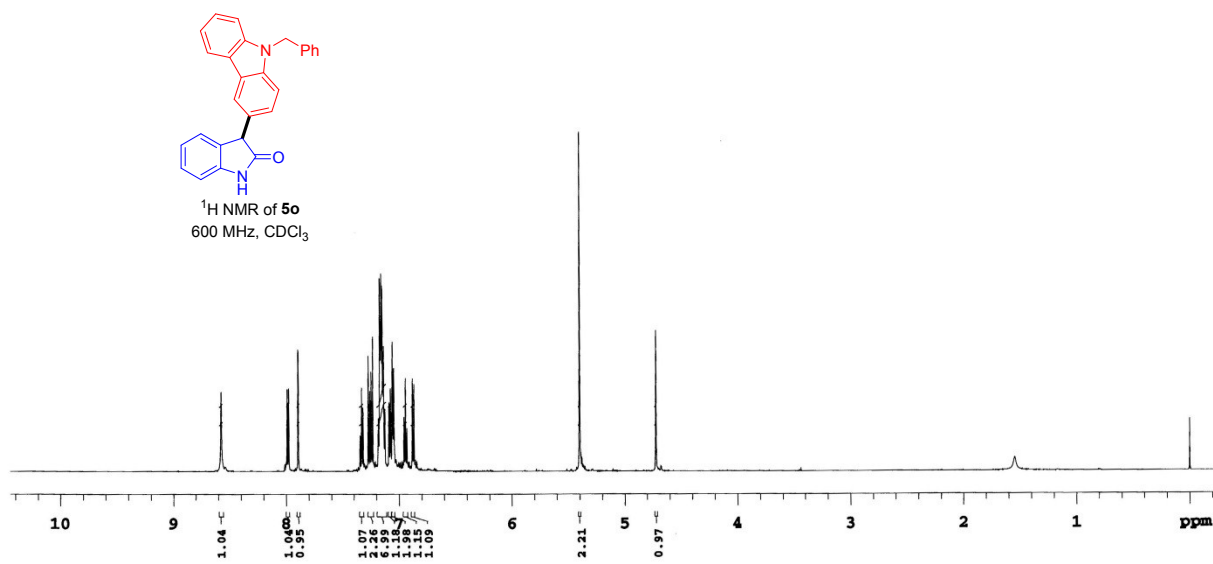
¹H NMR of 5m
600 MHz, DMSO-d₆



¹³C NMR of 5m
150 MHz, DMSO-d₆







2. Experimental Section for Fluorescence Sensing of Compound **3a** on Hg^{2+}

Materials

The chloride salts of Cu^{2+} , Zn^{2+} , Ni^{2+} , Hg^{2+} , Fe^{2+} , Fe^{3+} , Co^{2+} , Ca^{2+} , Cr^{3+} , and Al^{3+} ; lead nitrate (Pb^{2+}), and cadmium acetate (Cd^{2+}) were purchased from Sigma-Aldrich and used as received.

Fluorescence Sensing of Hg^{2+} ions

0.50 mL of compound **3a** (0.0001 M) in acetonitrile was taken in a 4 mL quartz cuvette as a fluorescent probe and was titrated with 0.50 mL (100 μM) of various metal ions in water for selectivity studies and corresponding control titration was carried out using 0.50 mL of water. Further, the fluorescence sensitivity of compound **3a** (0.0001 M) was studied towards different concentrations of Hg^{2+} in water. All the fluorescence (Hitachi-7000 F) measurements were carried out after 5 min of incubation at room temperature at 366 nm (excitation wavelength) with 5 nm of slit width, 250 V of photomultiplier tube voltage and a scan speed of 240 nm/min.

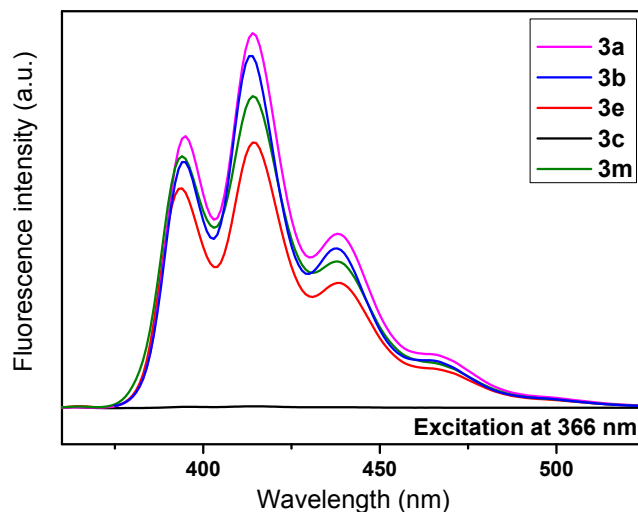


Figure S1 The fluorescence spectra of compounds **3a**, **3b**, **3c**, **3e** and **3m** measured in acetonitrile (1 mM) at room temperature, excitation wavelength at 366 nm.