# Supporting Information

## Environmentally Benign Synthesis of Tetra-Substituted Imidazoles through 4-Components Strategy Mediated by (*S*)-3-Methyl-1, 1-Diphenylbutane-1, 2-Diamine

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## 1. General Methods and Experimental Procedures:

All of the reagents and solvents are commercially available and were used as purchased without any further purification. Some solvents except laboratory reagent grade were dried and purified, when necessary. Reactions were monitored by thin layer chromatographic (TLC) plates over silica gel (60 $GF_{254,}$ E. Merck). The melting points of the compounds were recorded on electro thermal melting point apparatus (Gallenkamp). NMR ($^{1}H$ & $^{13}C$) spectra were recorded in d- $CDCl_3$ & $d_6$-DMSO using an AC-Bruker 500 MHz spectrometer. Chemical shift ($\delta$) and coupling constant ($J$) are given in ppm and Hz units with respect to TMS as an internal standard.

### General procedure for the preparation of tetra-substituted imidazoles (5)

A mixture of benzil or benzoin (2 mmol), aldehyde (2 mmol), ammonium acetate (5 mmol), aryl amine (2 mmol) and (S)-3-methyl-1, 1-diphenylbutane-1, 2-diamine (10 mol %) in ethanol (2 ml) was stirred at reflux temperature for 2~3 hours. The progress of the reaction was monitored by TLC. After completion of reaction, the mixture was cooled to room temperature, diluted with water and poured on crushed ice. The obtained crude solid product was filtered, dried and finally recrystallized from ethanol to obtain sufficiently pure product **5**.

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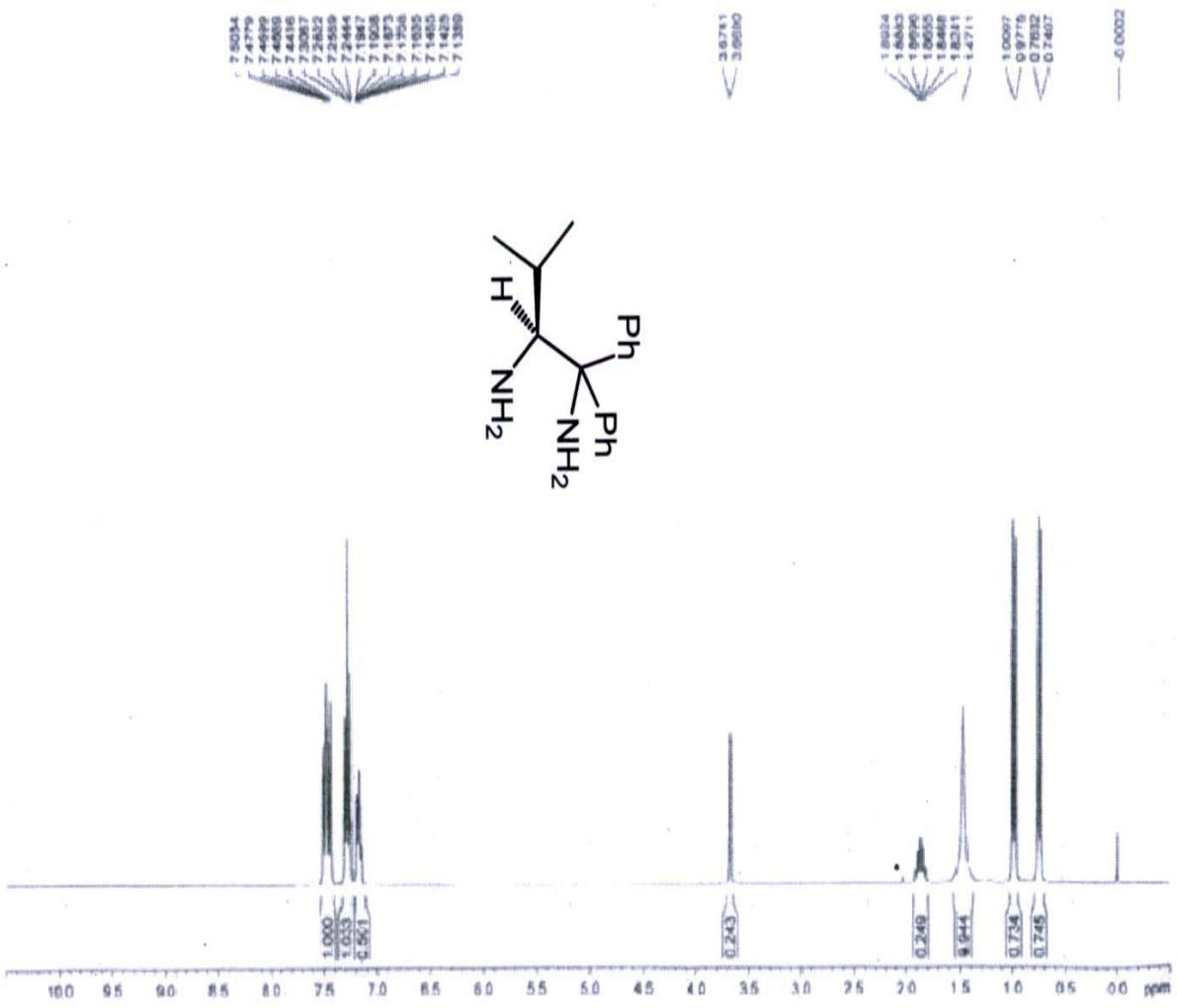
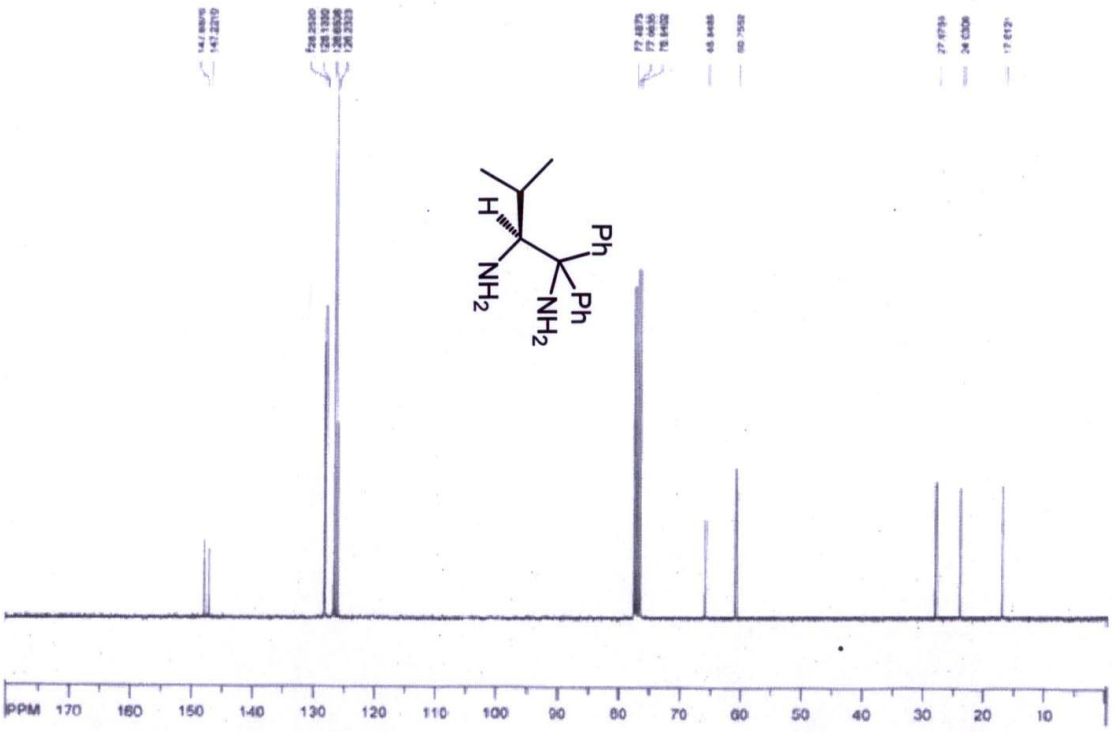
## 2. Copies of NMR ($^{1}$H &$^{13}$C) spectra:

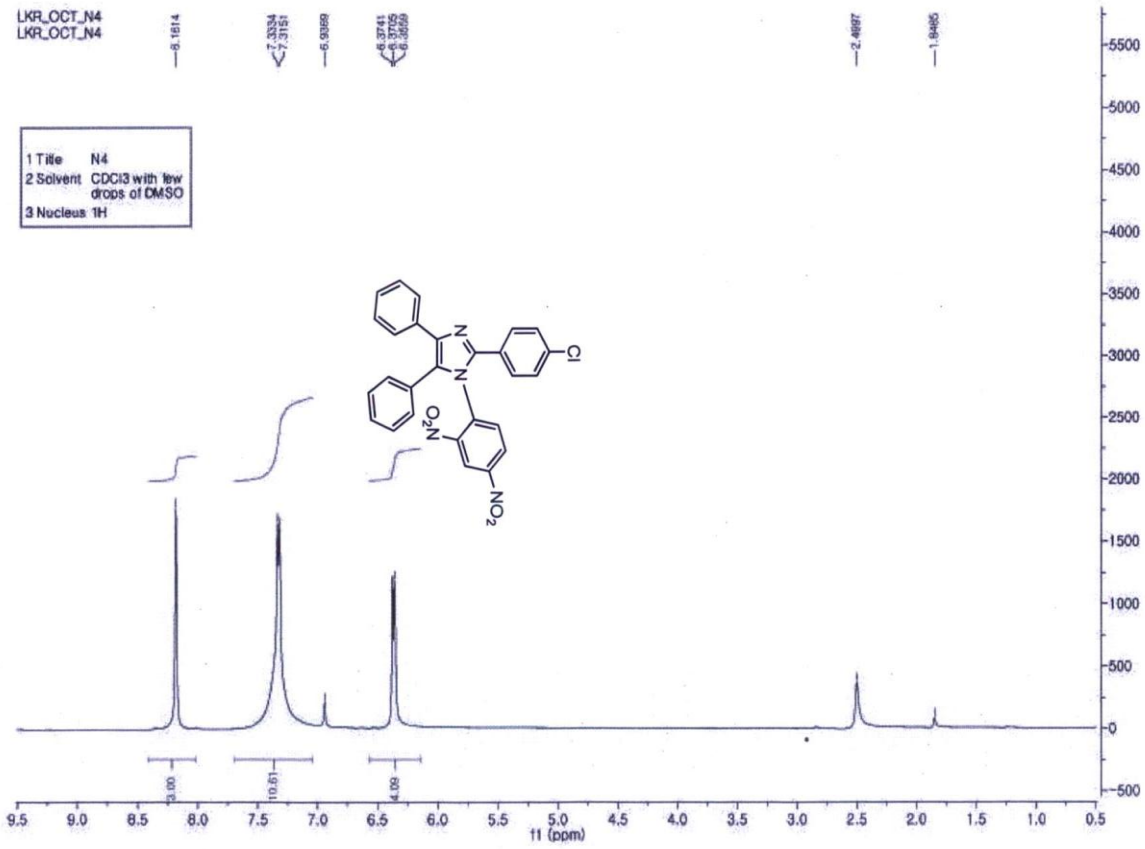
### $^{1}$H NMR: for **Catalyst**.



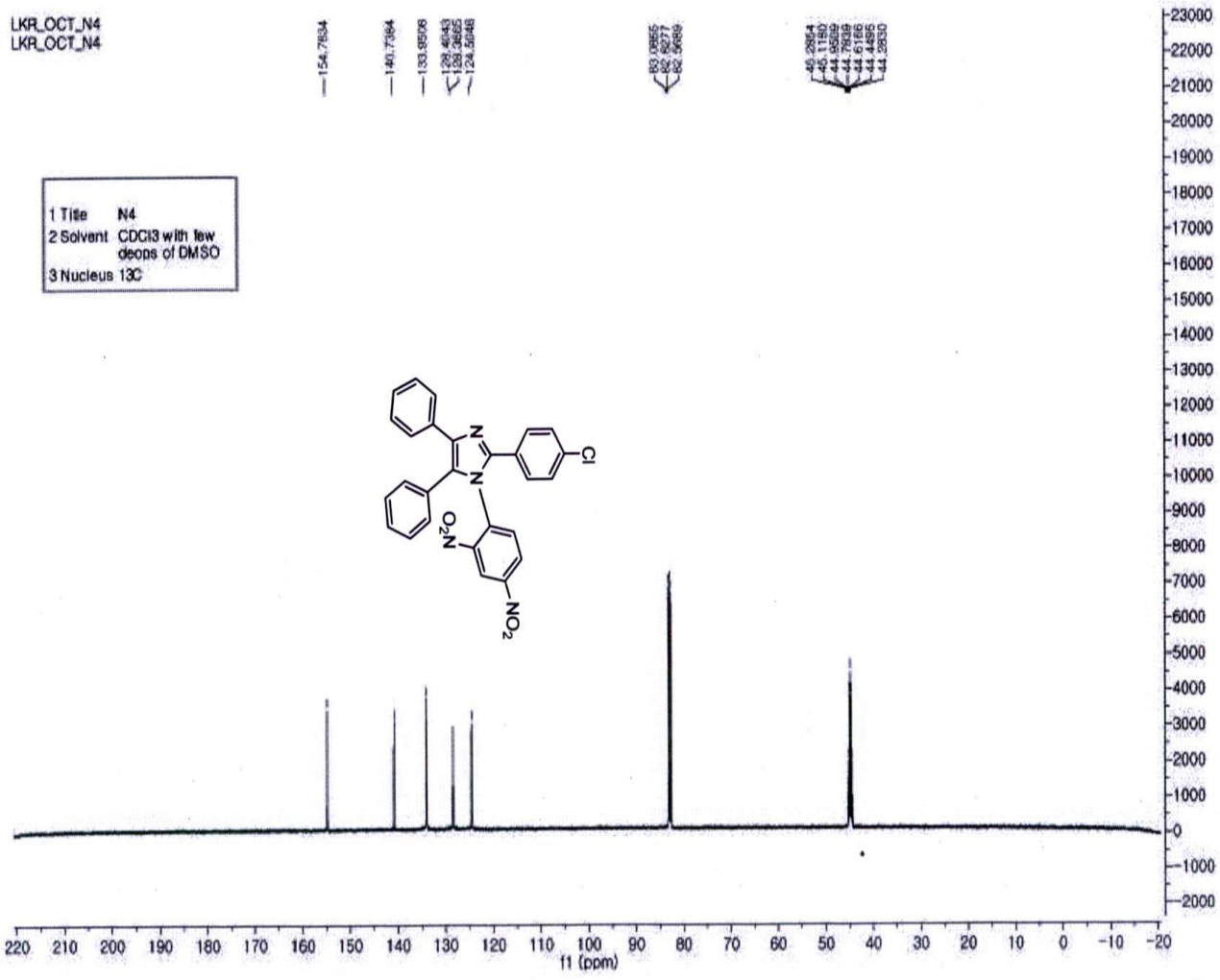
**$^{1}$C NMR:** for **Catalyst**.



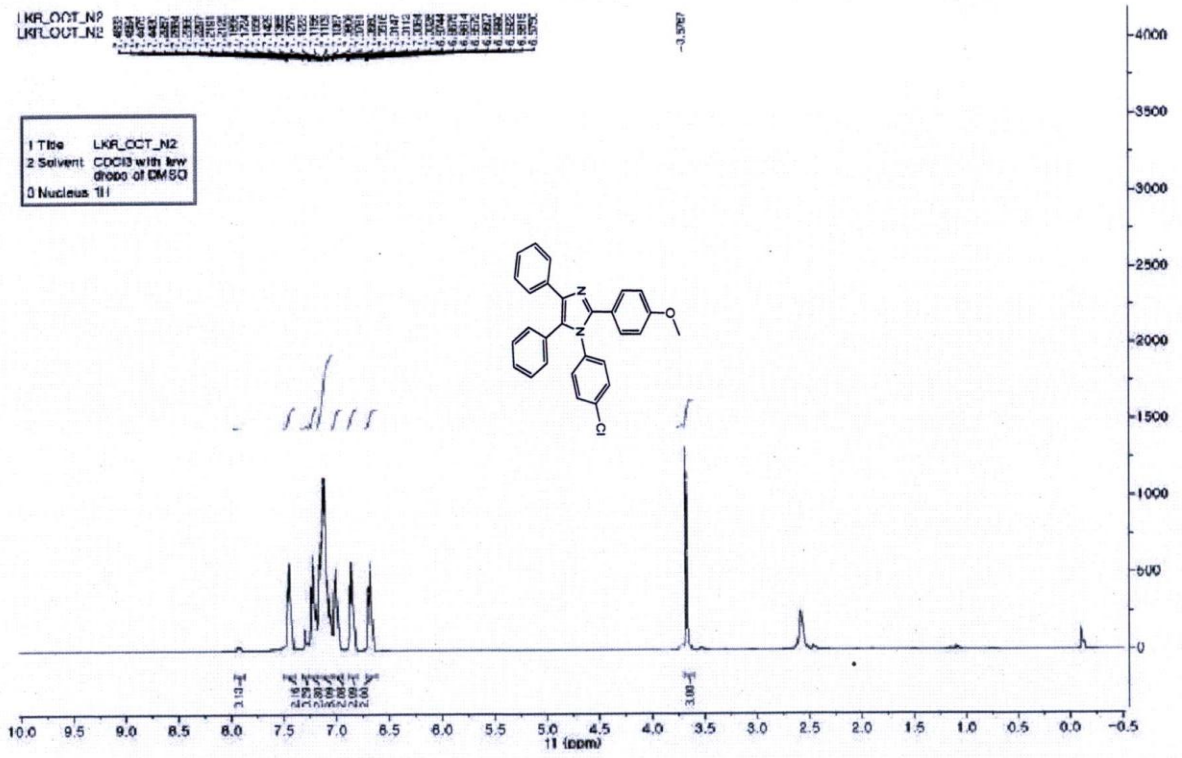
**$^{1}$H NMR:** for compound **1**



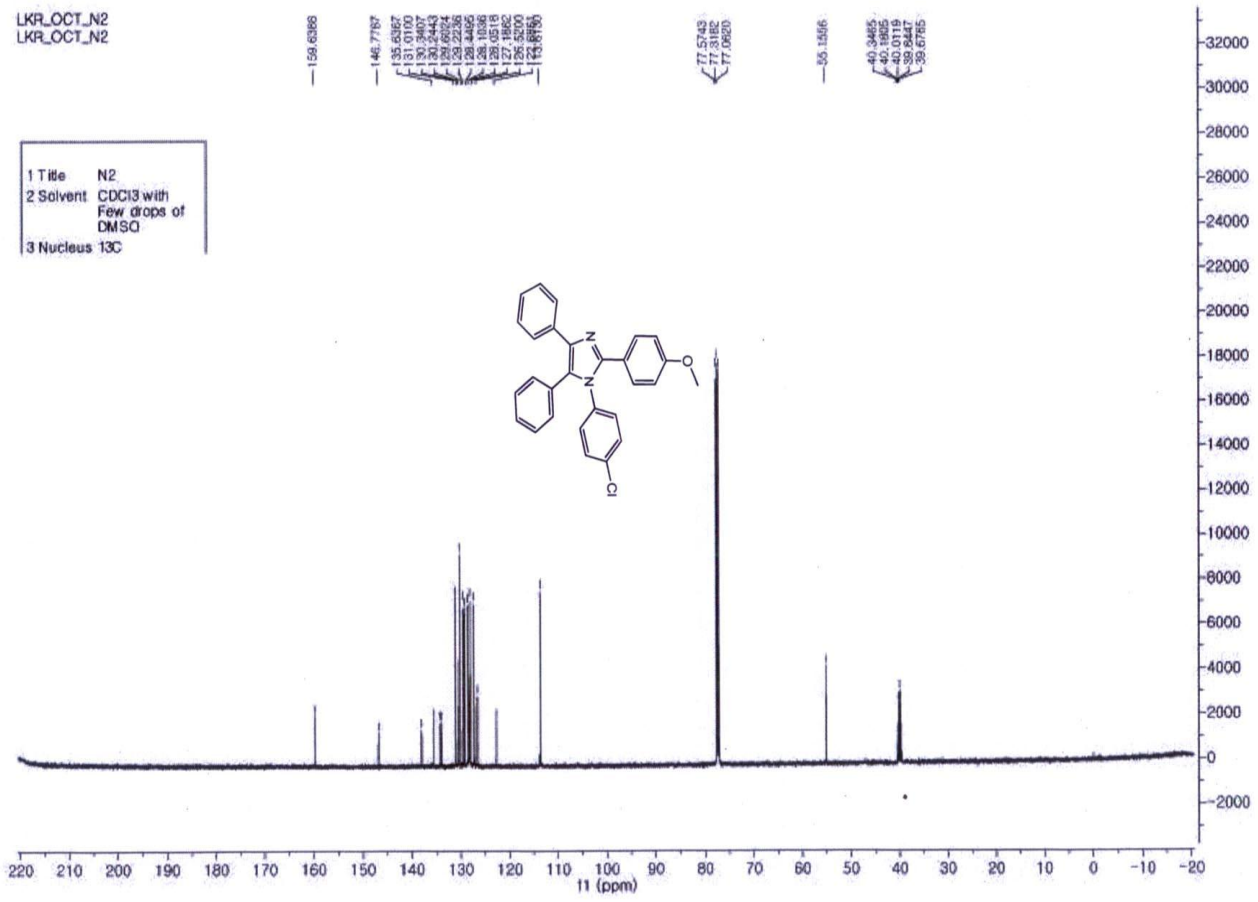
**$^{1}$C NMR:** for compound **1**



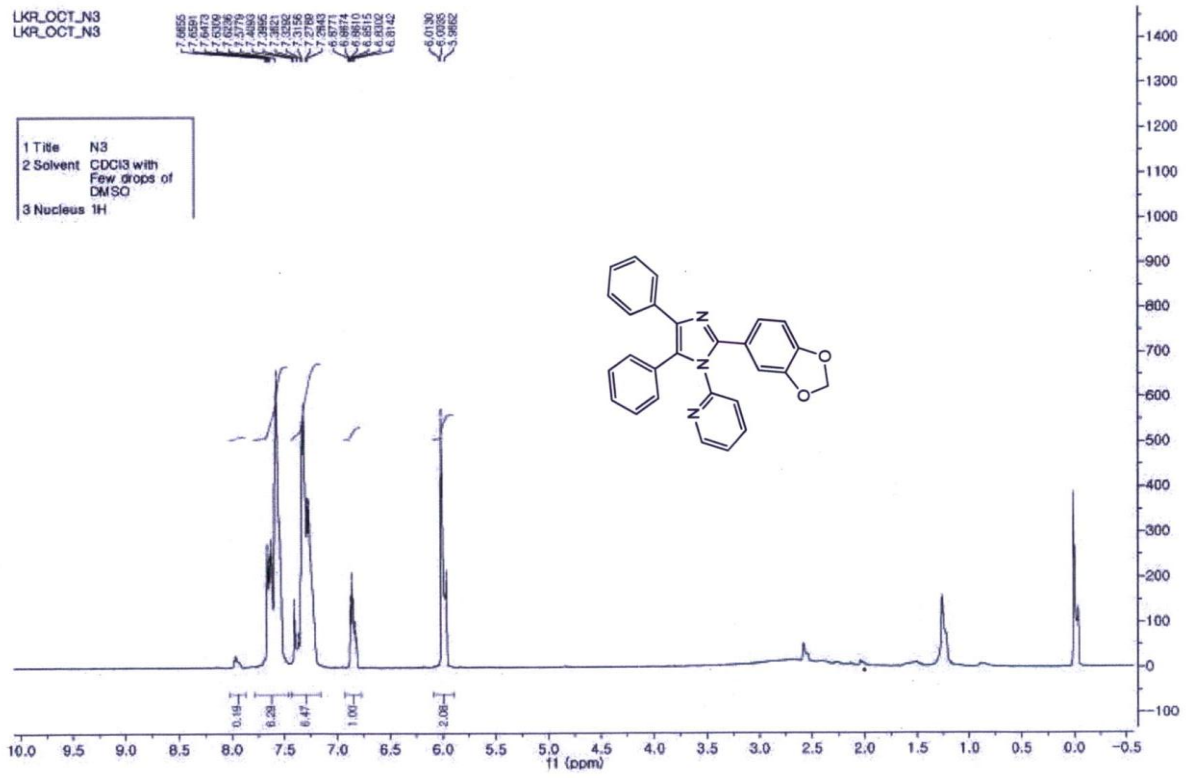
**$^{1}$H NMR:** for compound **2**



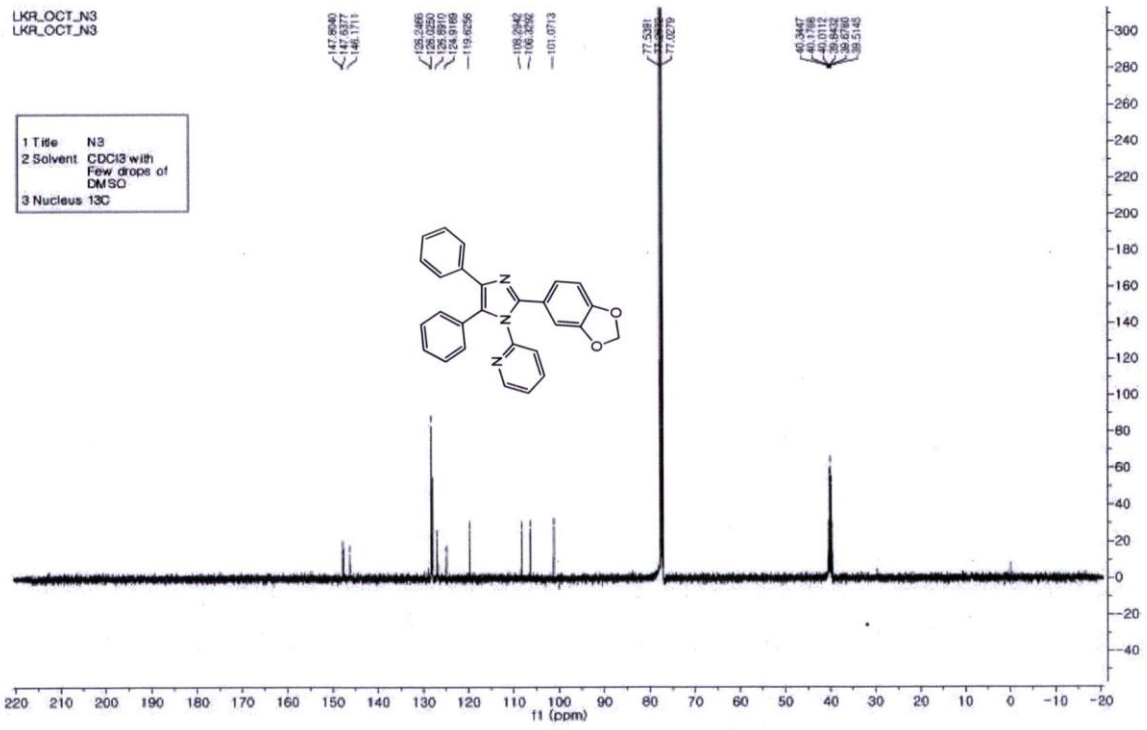
**$^{1}$C NMR:** for compound **2**



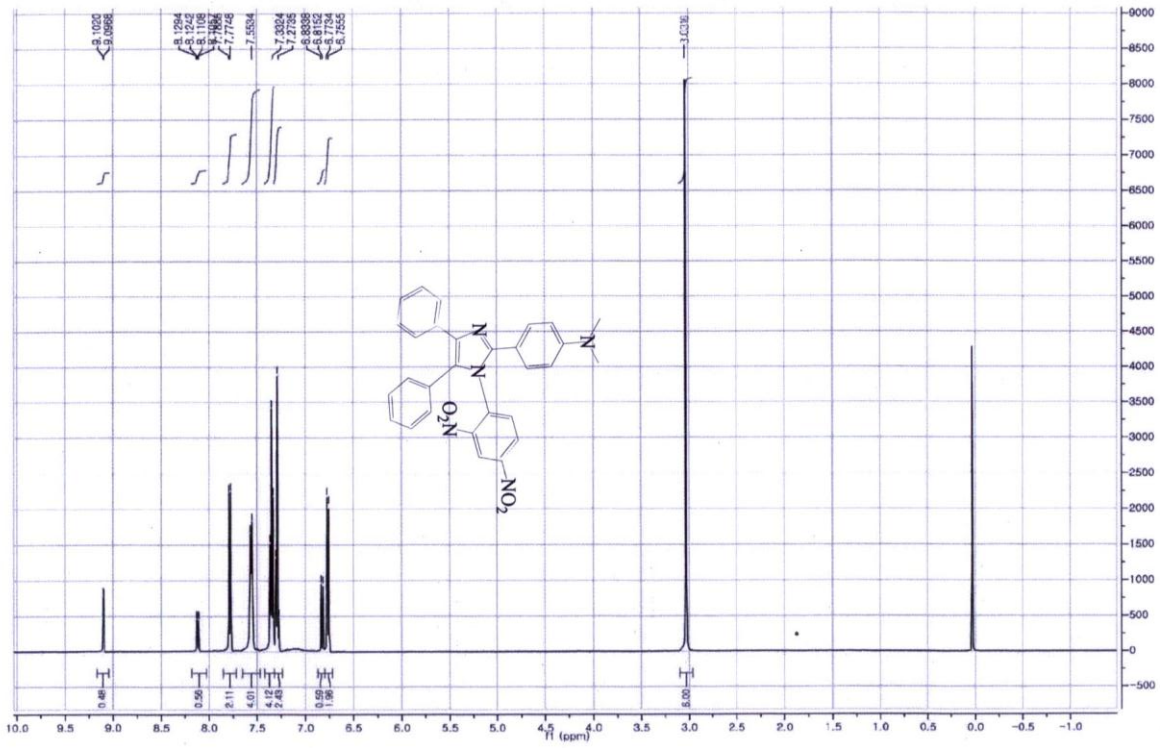
**$^{1}$H NMR:** for compound **3**



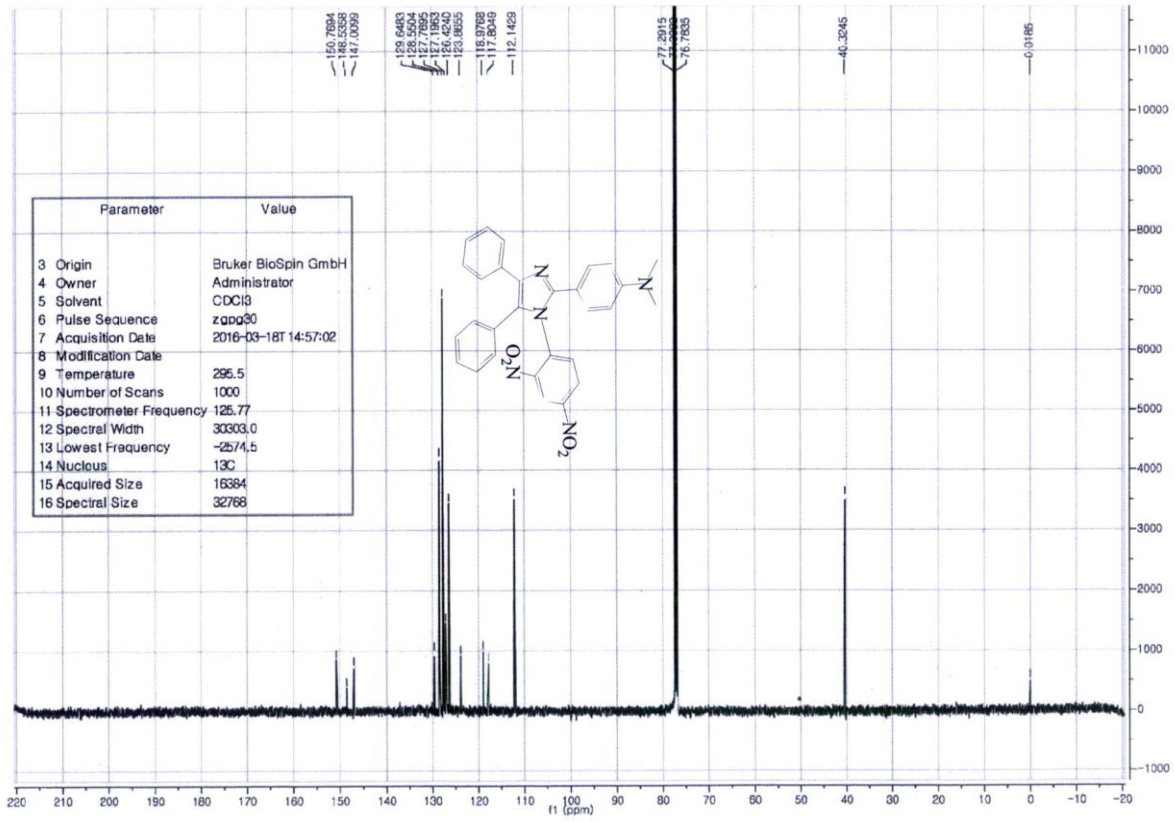
**$^{1}$C NMR:** for compound **3**



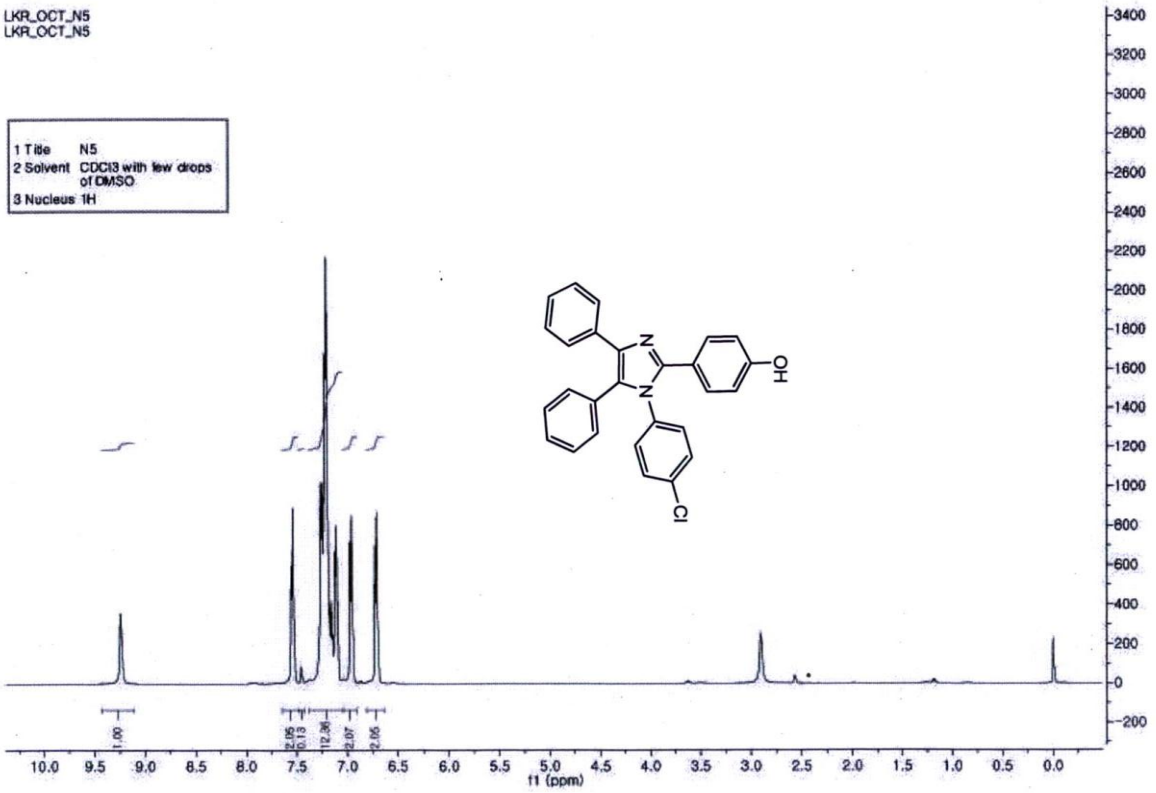
**$^{1}$H NMR:** for compound **4**



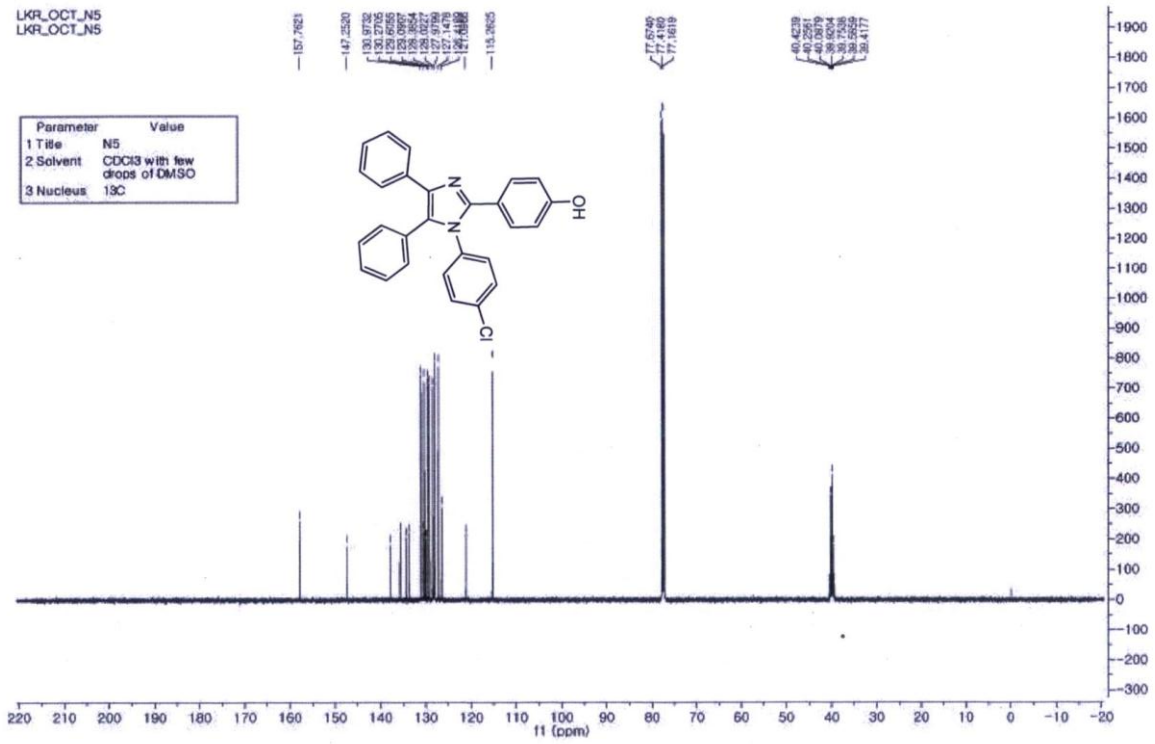
**$^{1}$C NMR:** for compound **4**



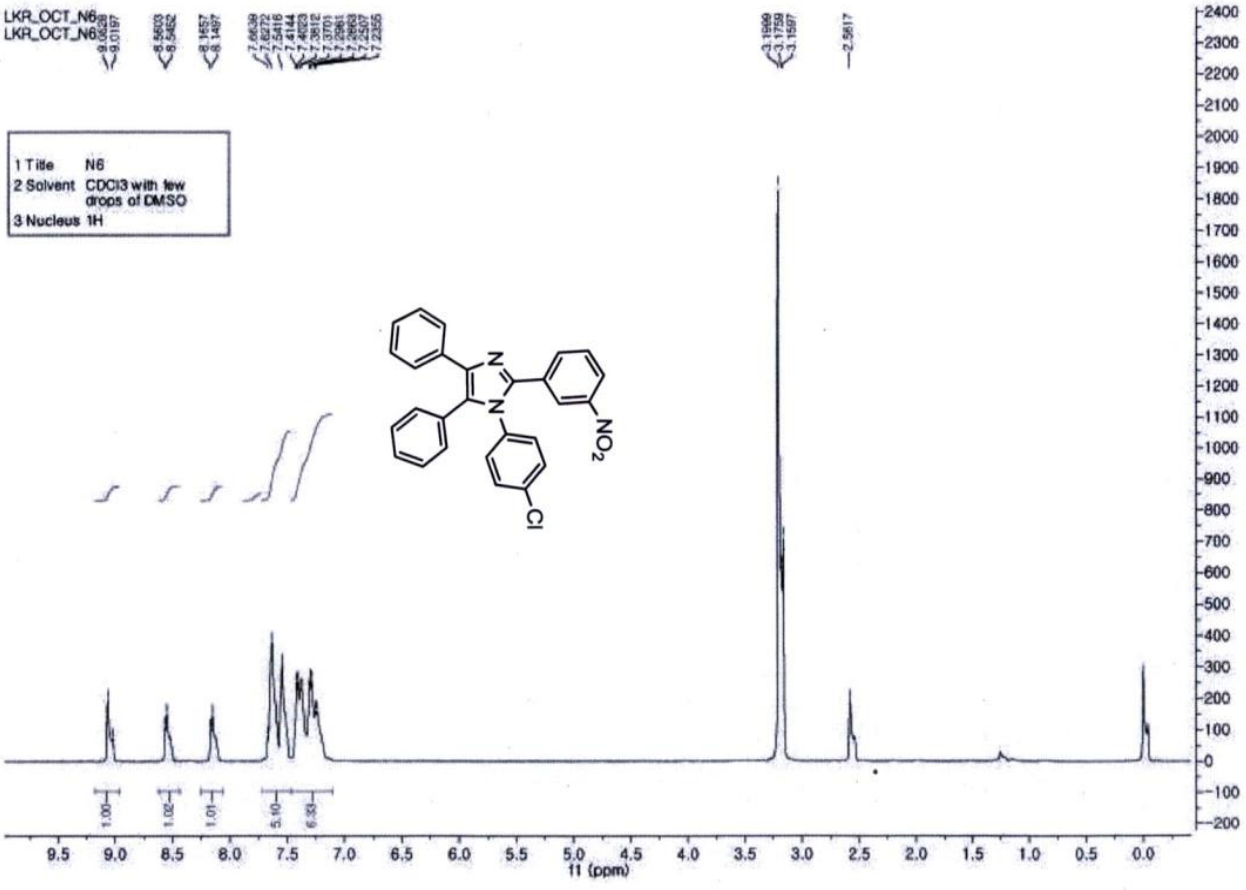
**$^{1}$H NMR:** for compound **5**



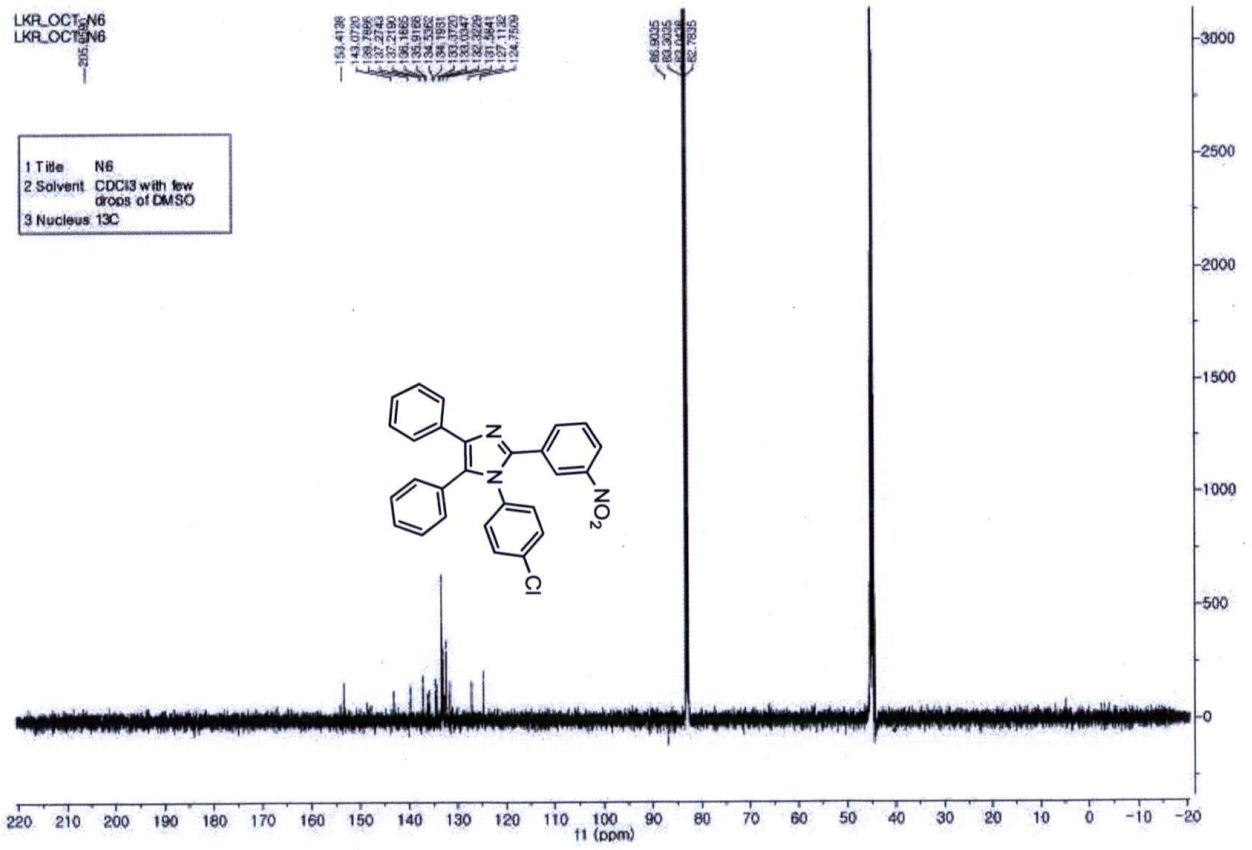
**$^{1}$C NMR:** for compound **5**



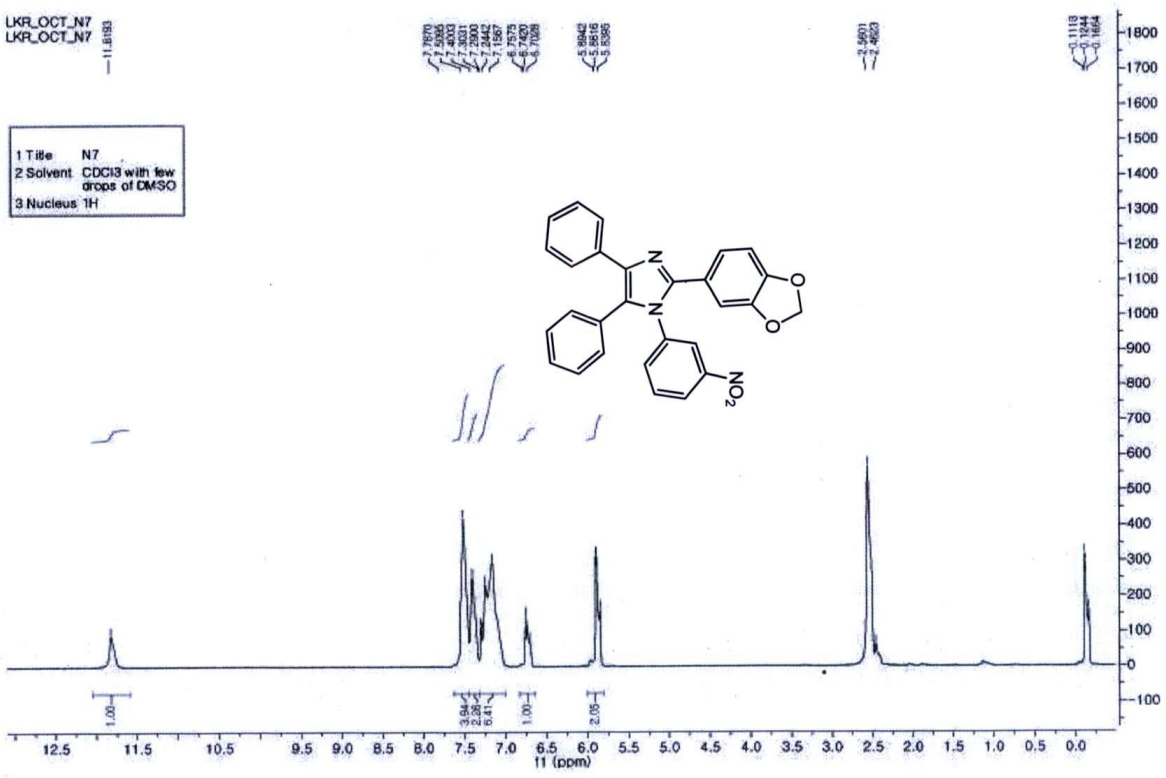
**$^{1}$H NMR:** for compound **6**



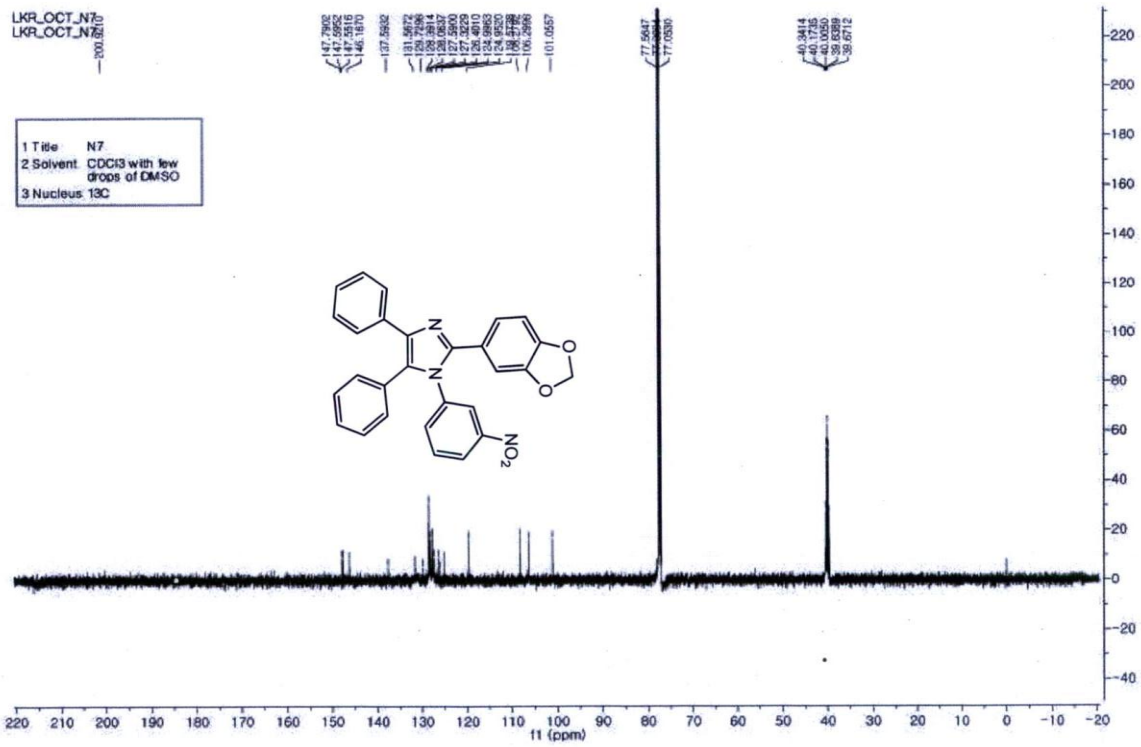
**$^{1}$C NMR:** for compound **6**



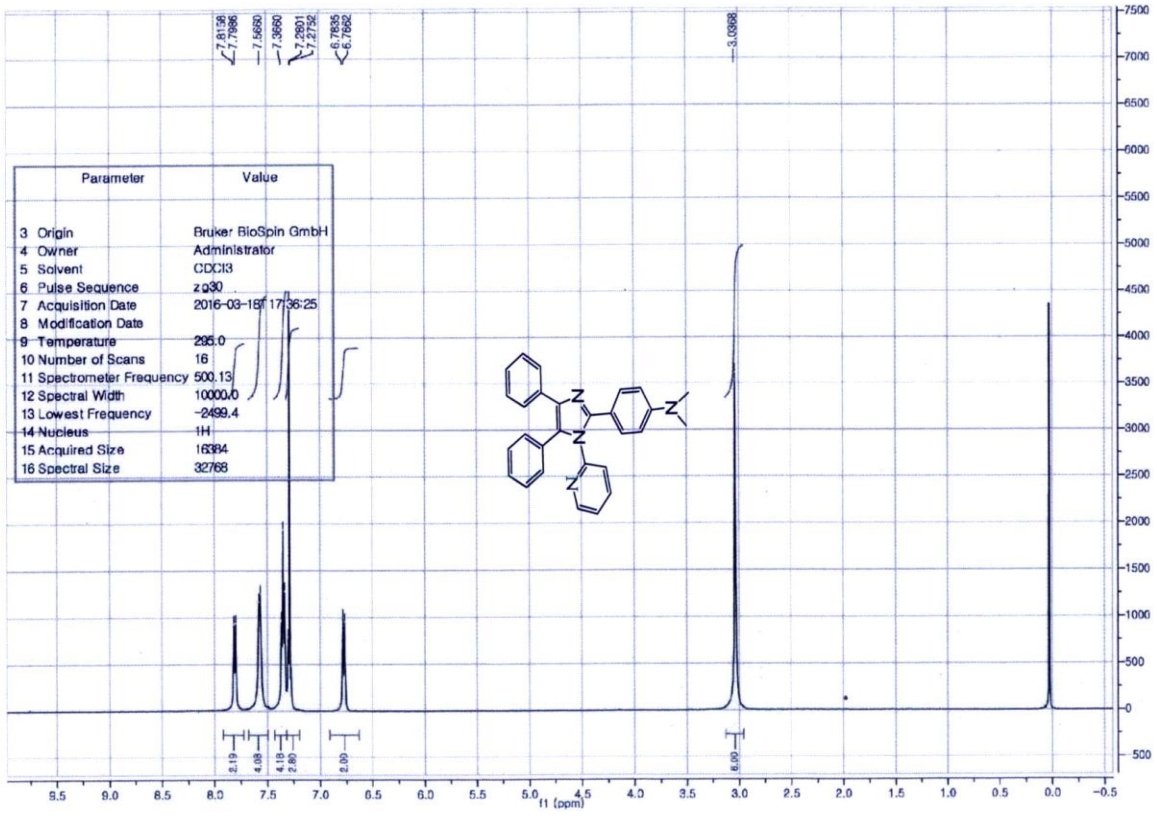
**$^{1}$H NMR:** for compound **7**



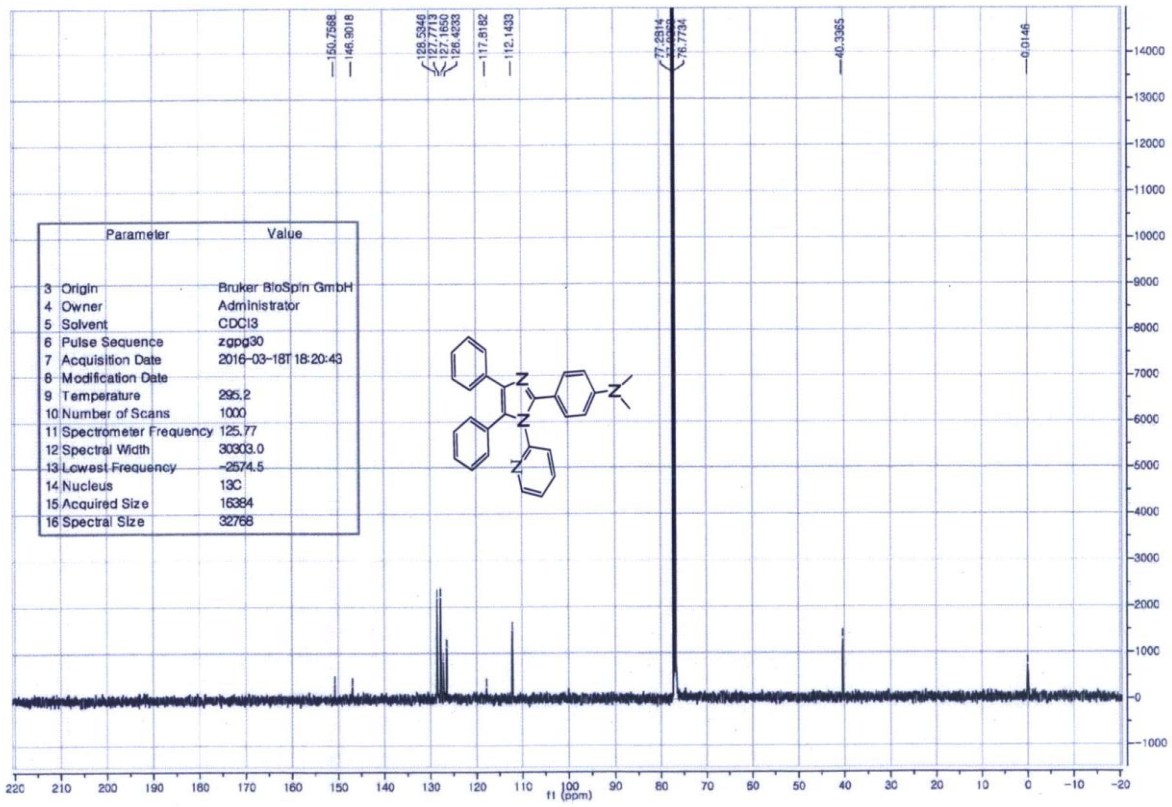
**$^{1}$C NMR:** for compound **7**



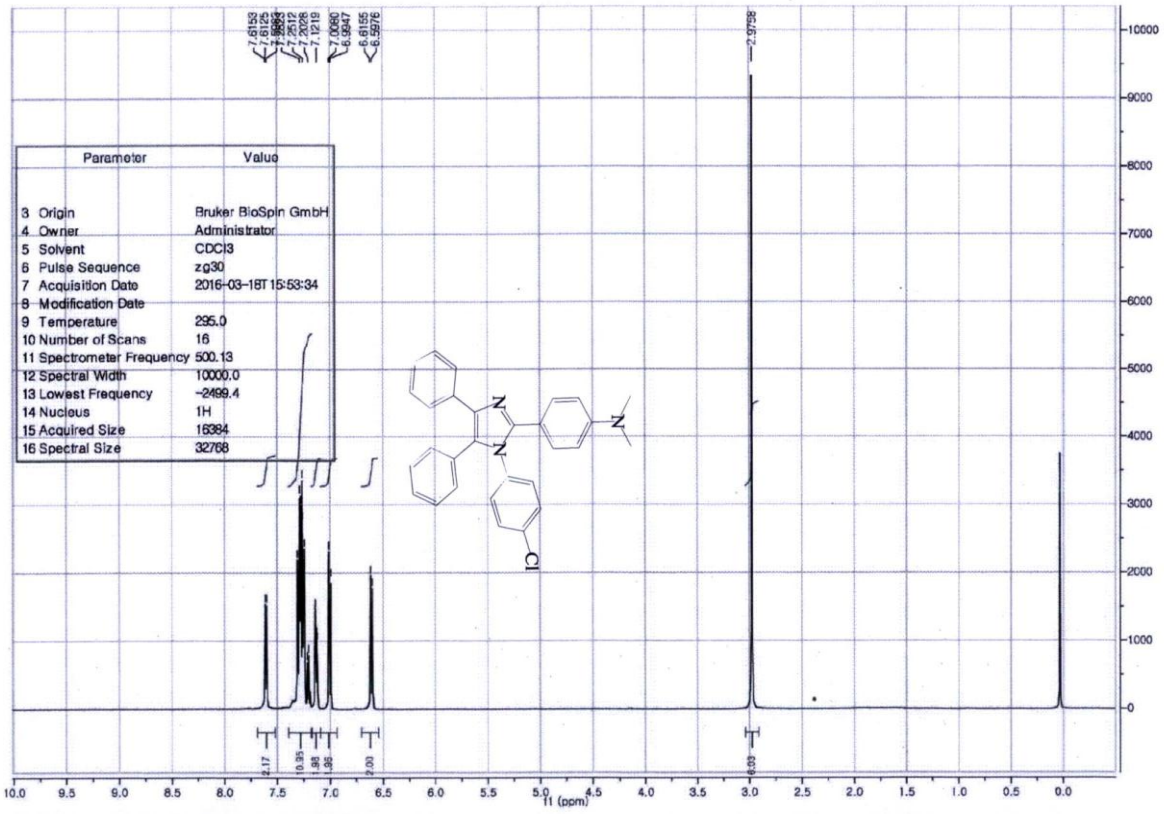
**$^{1}$H NMR:** for compound **8**



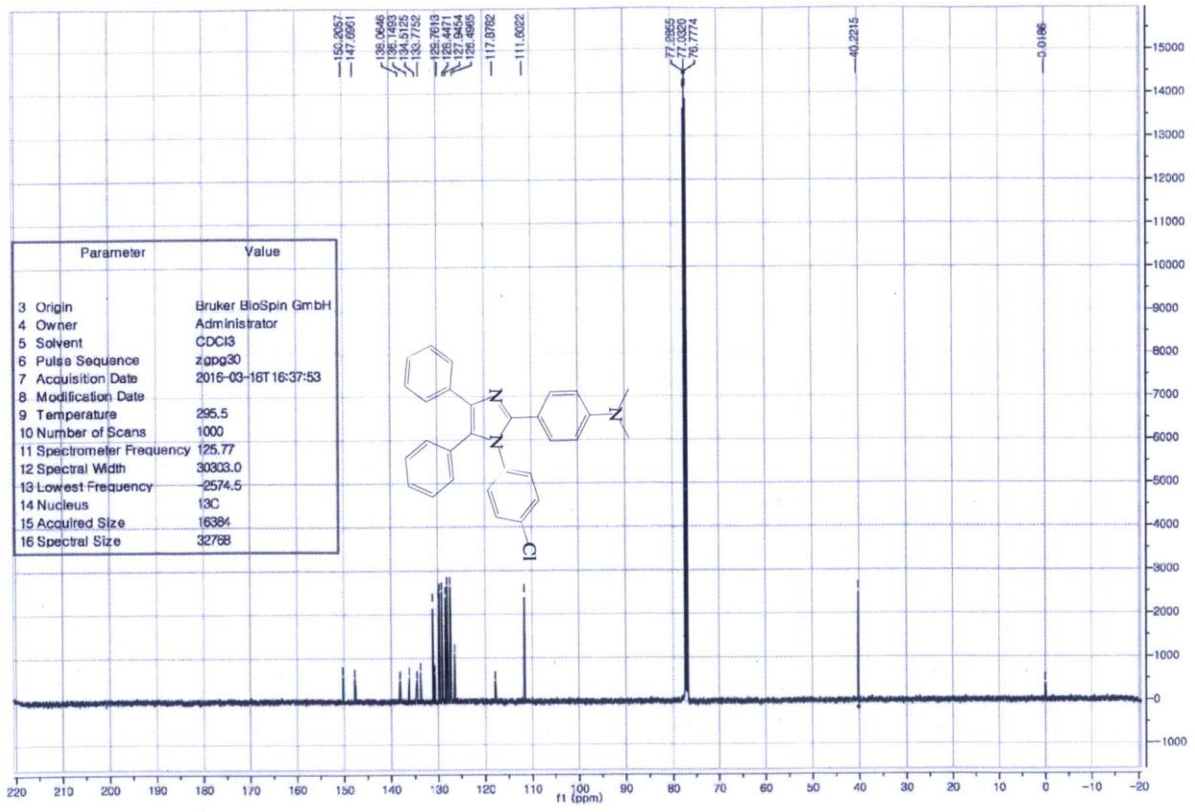
**$^{1}$C NMR:** for compound **8**



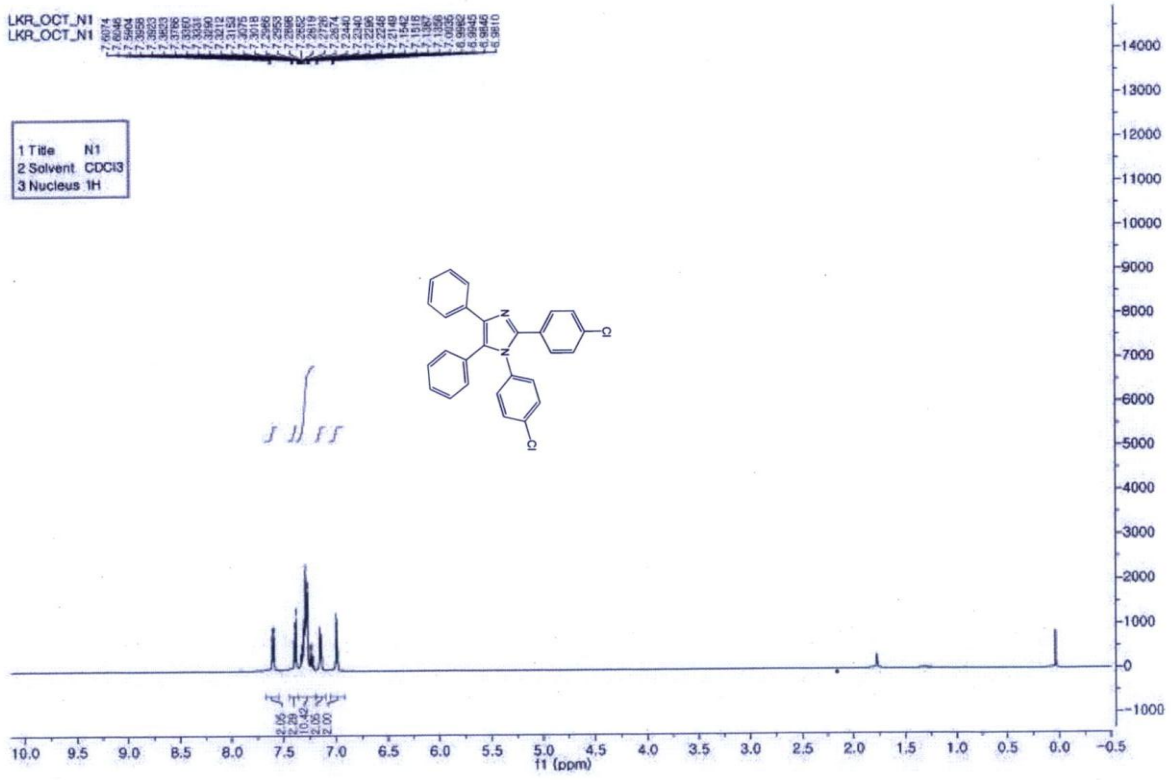
**$^{1}$H NMR:** for compound **9**



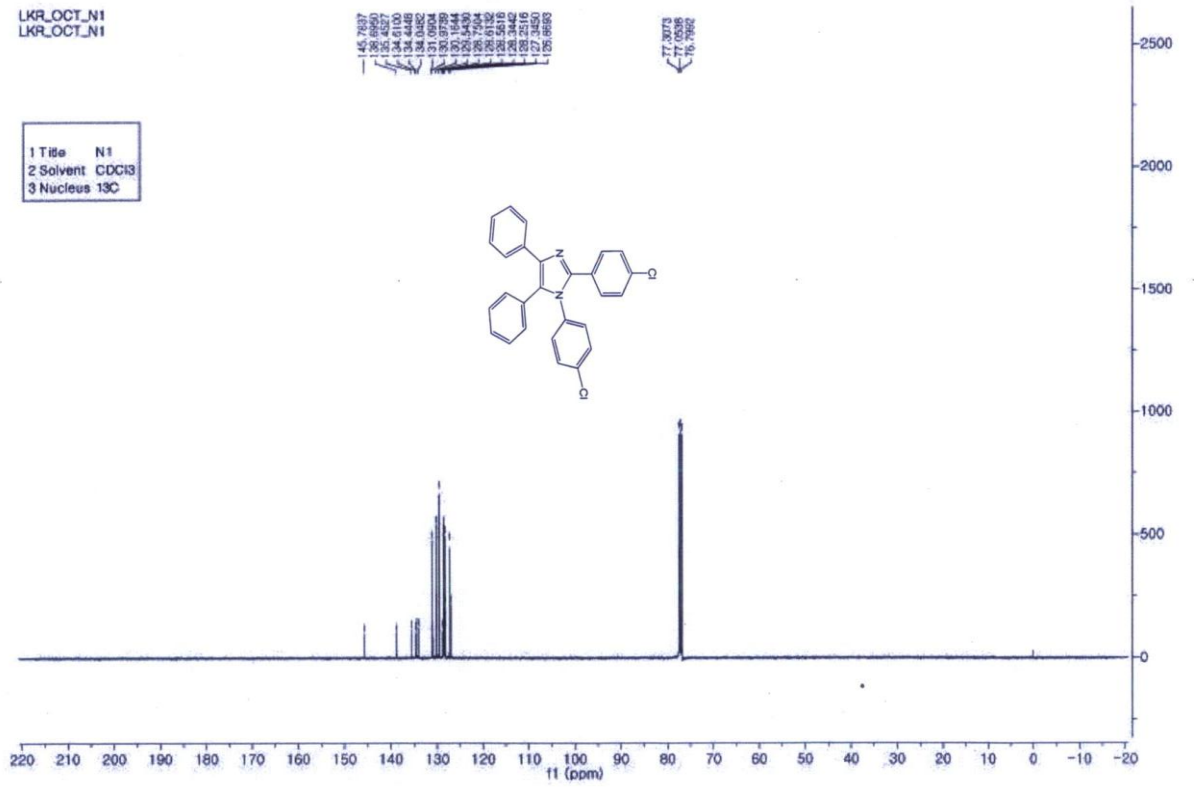
**$^{1}$C NMR:** for compound **9**



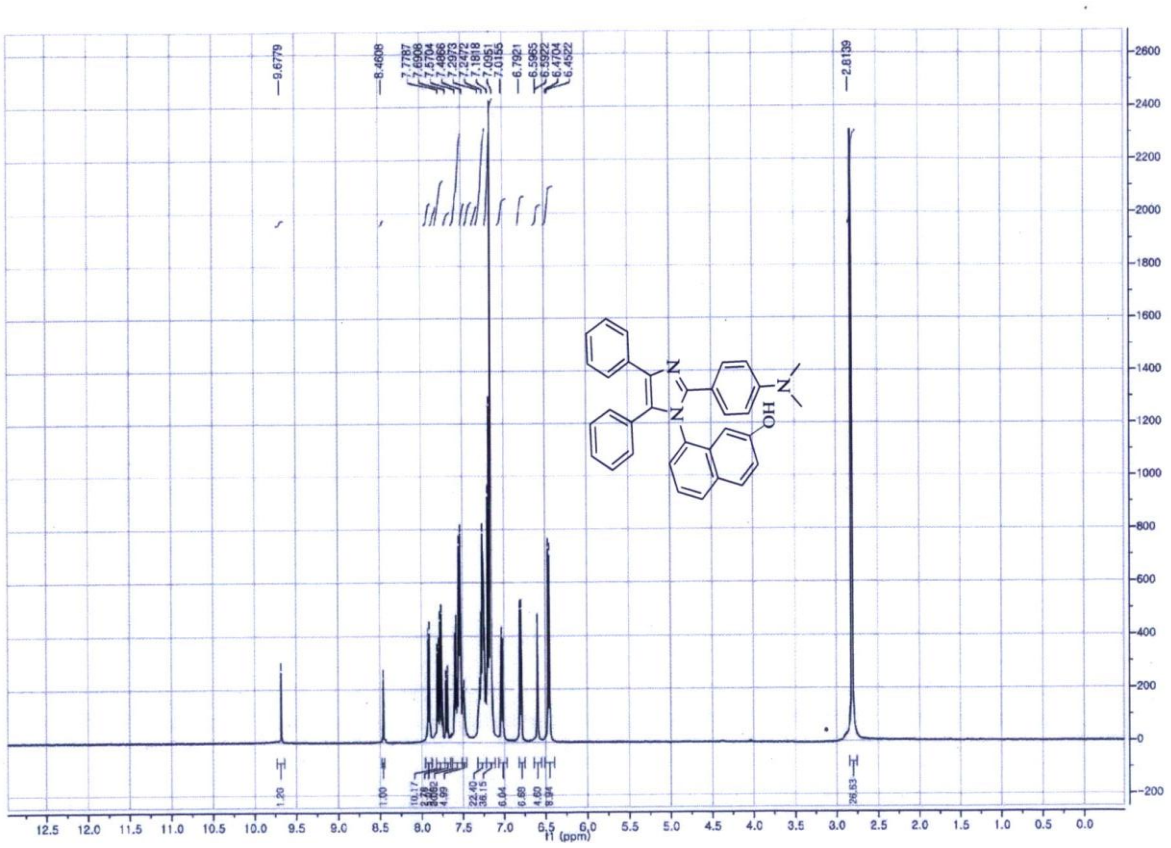
**$^{1}$H NMR:** for compound **10**



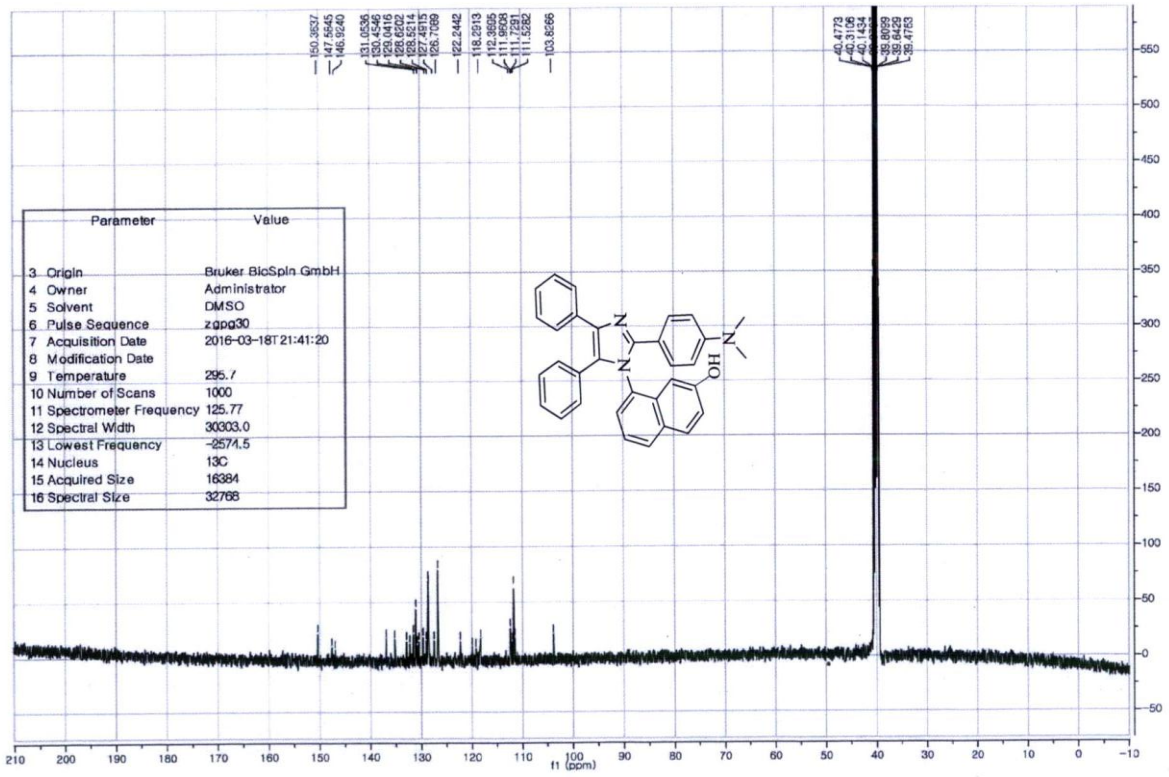
**$^{1}$C NMR:** for compound **10**



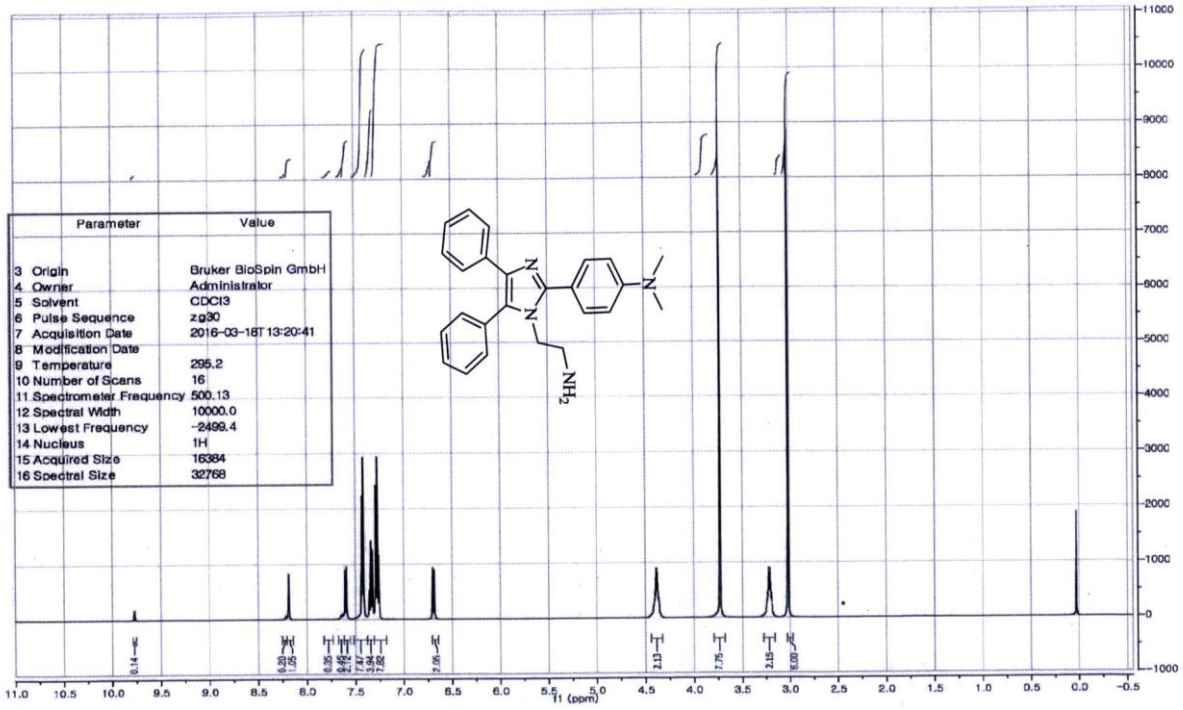
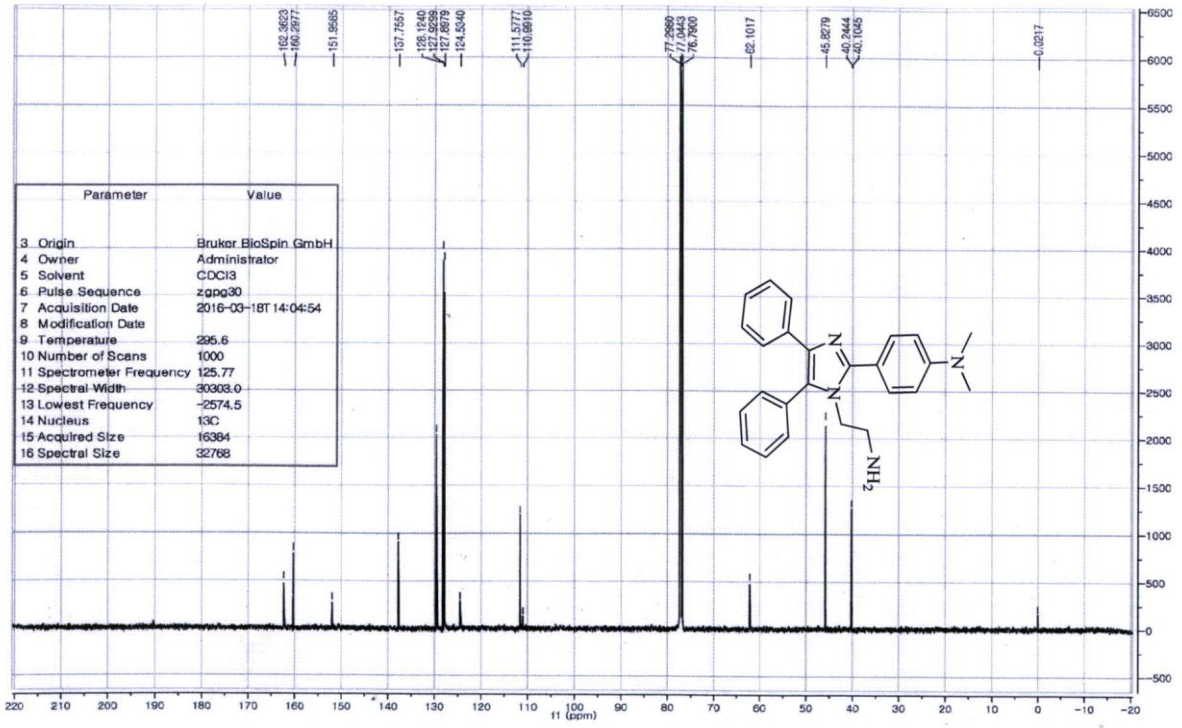
**$^{1}$H NMR:** for compound **11**



**$^{1}$C NMR:** for compound **11**



**$^{1}$H NMR:** for compound **12**



**$^{1}$C NMR:** for compound **12**