

Ag₂O on ZrO₂ as a Recyclable Catalyst for Multicomponent**Synthesis of Indenopyrimidine Derivatives**

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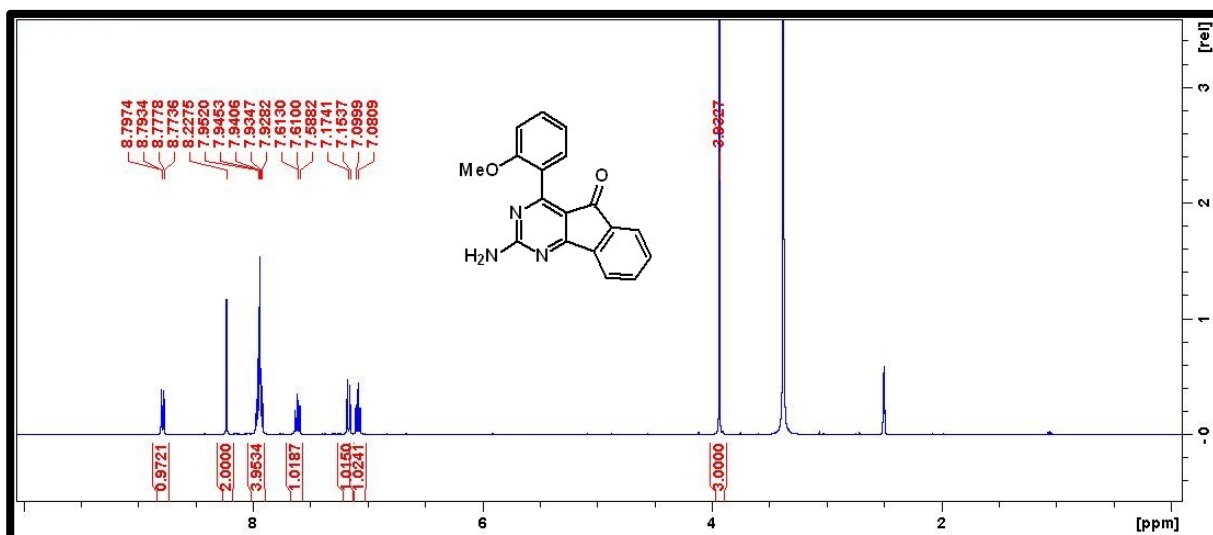
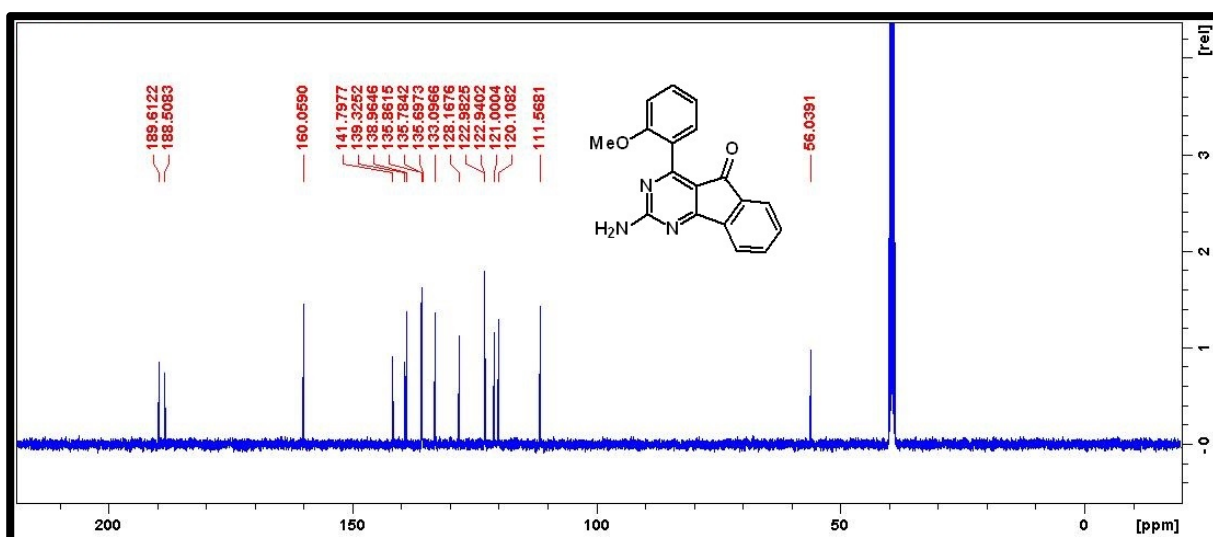
Catalyst Instrumentation Details [Supporting Information (SI-I)]

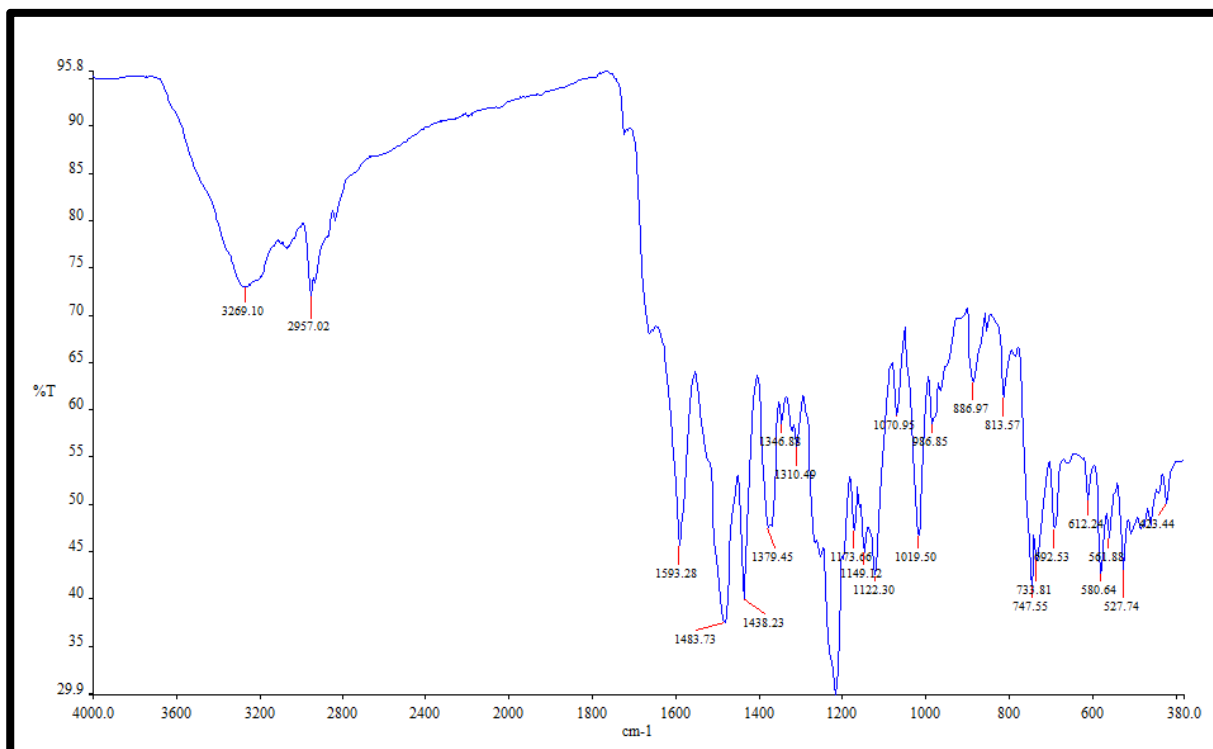
Employing a Bruker D8 Advance instrument (Cu K radiation source with a wave length of 1.5406 Å), the X-ray diffraction data related to the structural phases of the catalyst were acquired. Using a Jeol JEM-1010 electron microscope and a JEOL JSM-6100 microscope, the TEM and SEM analysis data were recorded. iTEM software was used to analyse the TEM data and images. Employing an X-ray analyser (energy-dispersive), EDX analysis on the SEM images was conducted.

Experimental Section [Supporting Information (SI-I)]

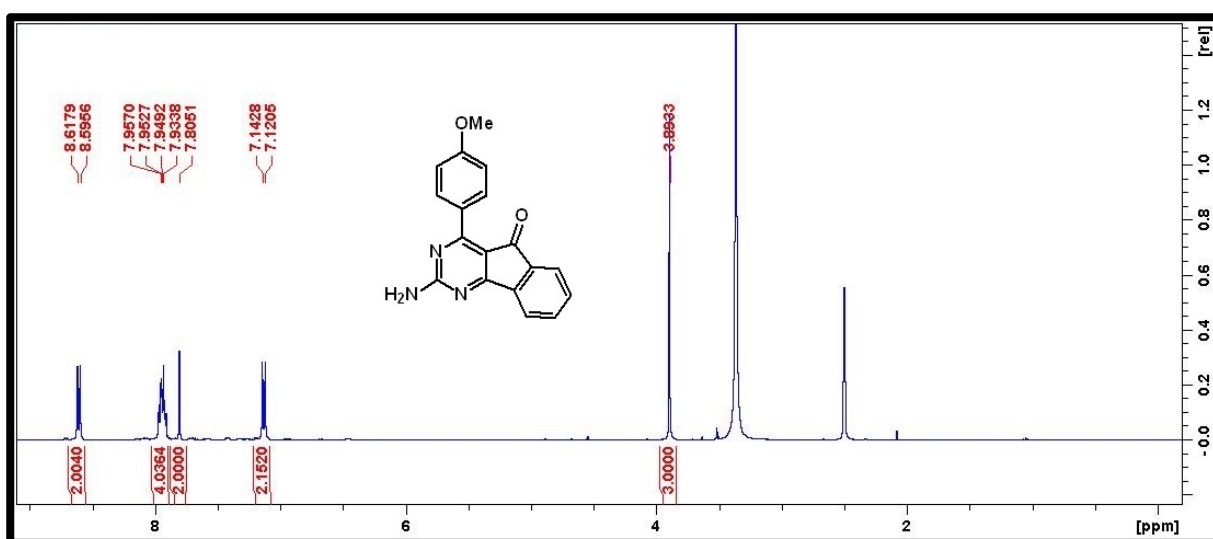
All chemicals and reagents required for the reaction were of analytical grade and were used without any further purification. A Bruker AMX 400 MHz NMR spectrometer was used to record the ^1H NMR, and ^{13}C NMR spectral values. Top spin 3.5 software was used to analyse the ^1H NMR, and ^{13}C NMR spectral data. Infrared (IR) spectra were recorded on a Perkin Elmer 100 Fourier transform infrared spectrophotometer. High-resolution mass data were obtained using a Bruker micro TOF-Q II ESI instrument operating at ambient temperature. The DMSO- d_6 solution was utilized for this while TMS served as the internal standard. TMS was further used as an internal standard for reporting the all chemical shifts in δ (ppm). The purity of all the reaction products was confirmed by TLC using aluminum plates coated with silica gel (Merck Kieselgel 60 F254).

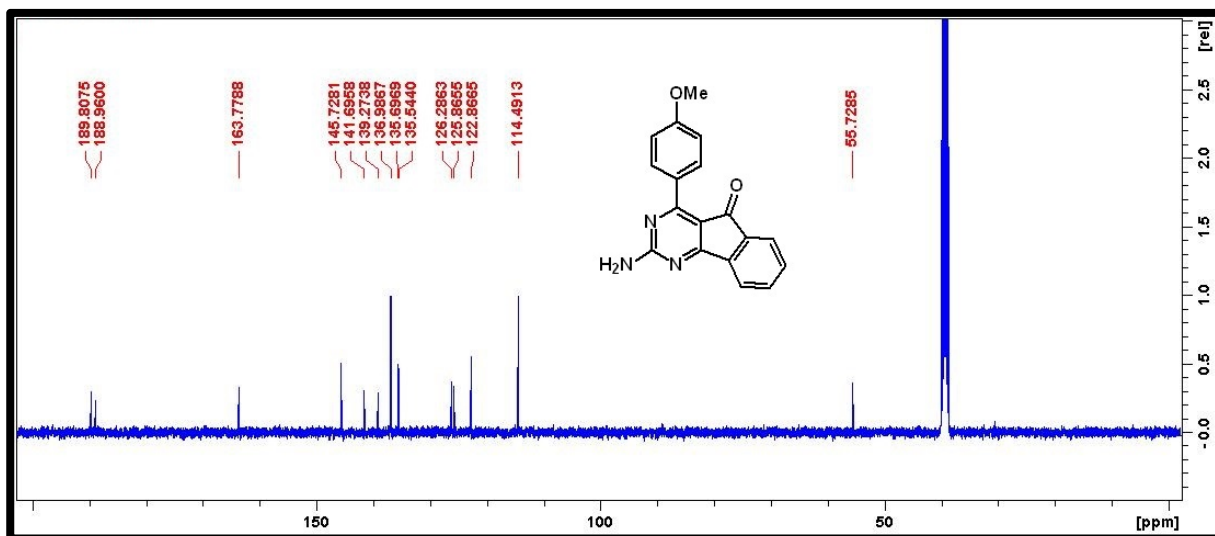
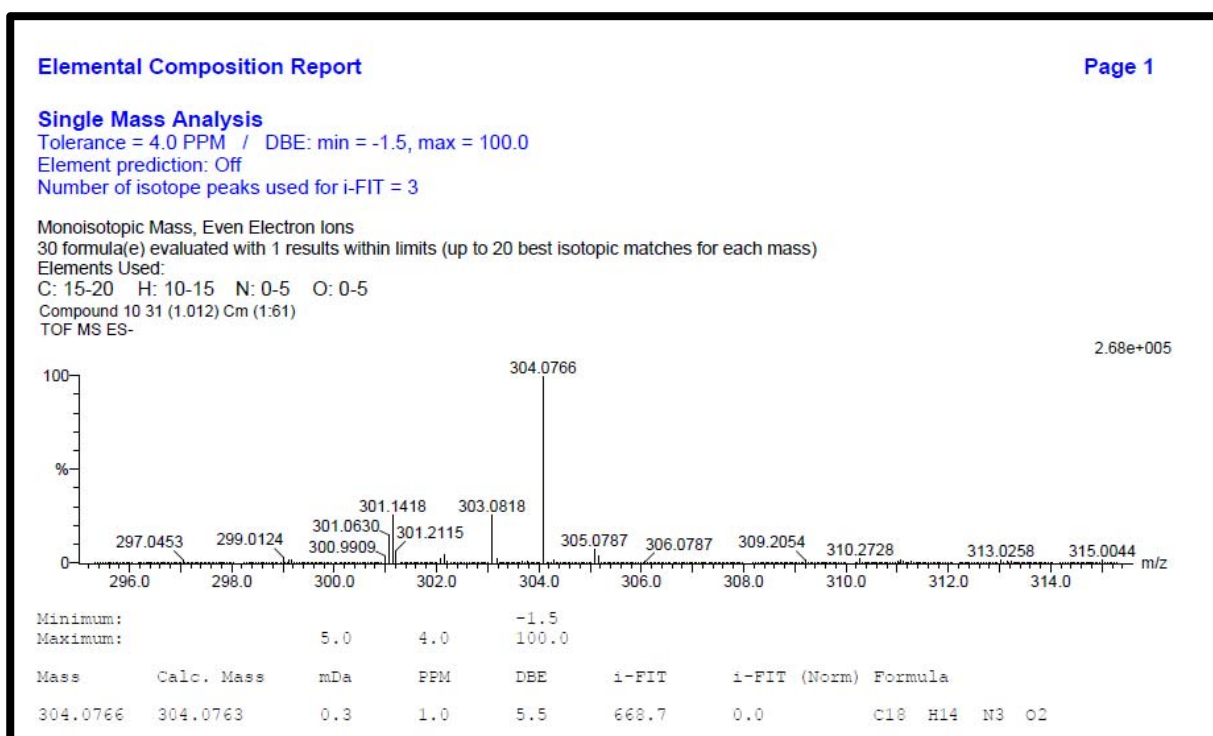
Synthesized Spectral Information [Supporting Information SI-II]

¹H NMR spectra of compound 4a¹³C NMR spectra of compound 4a

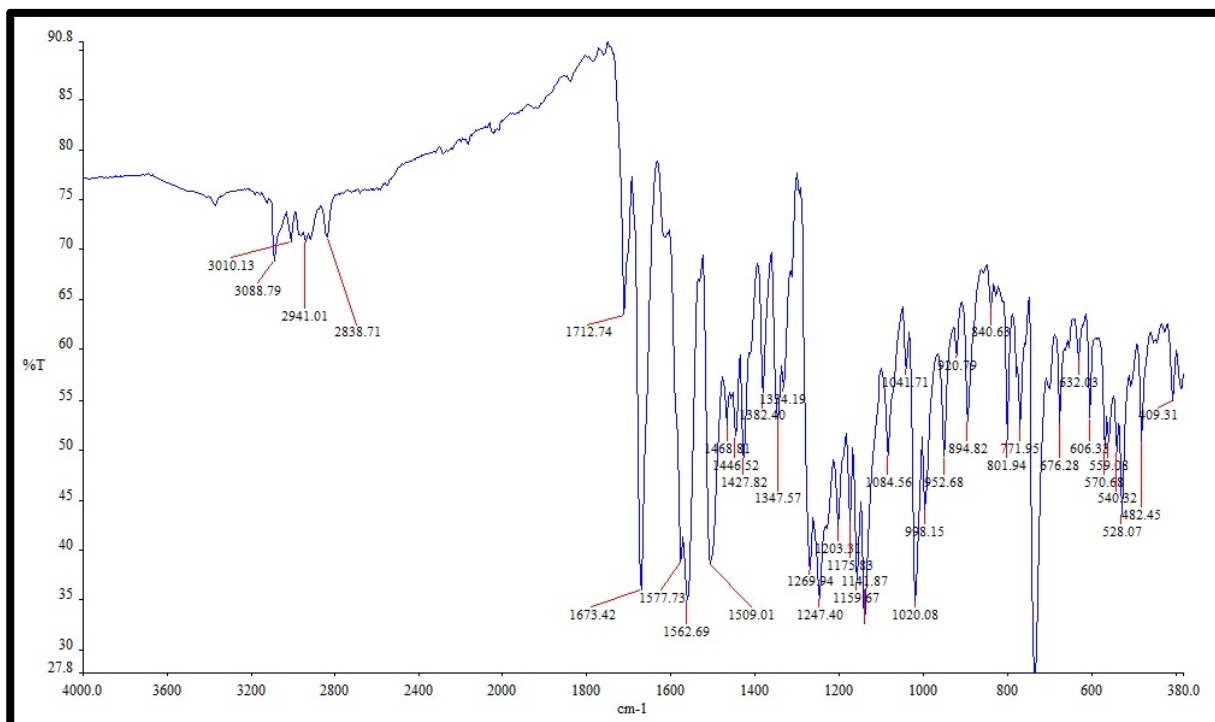
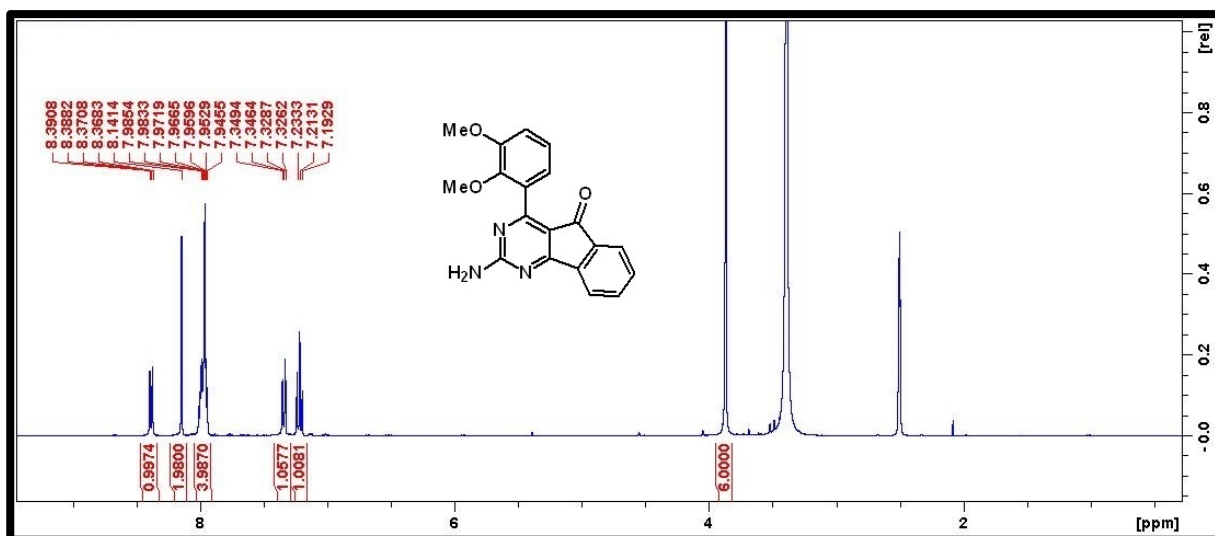


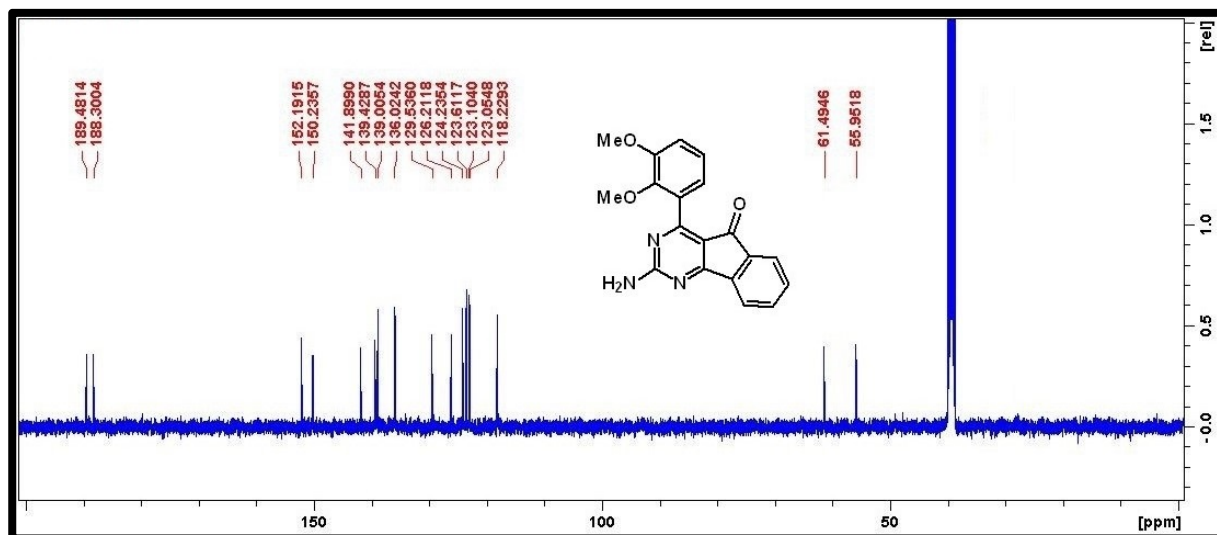
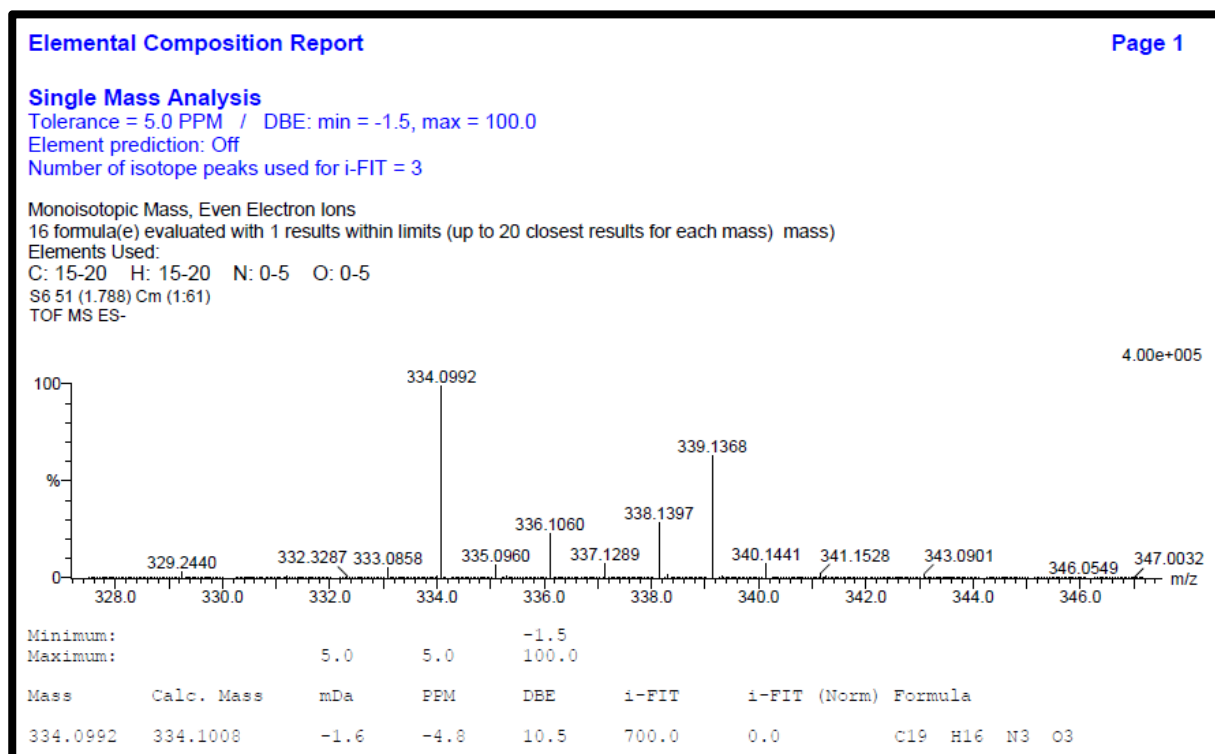
FT-IR spectra of compound 4a

¹H NMR spectra of compound 4b

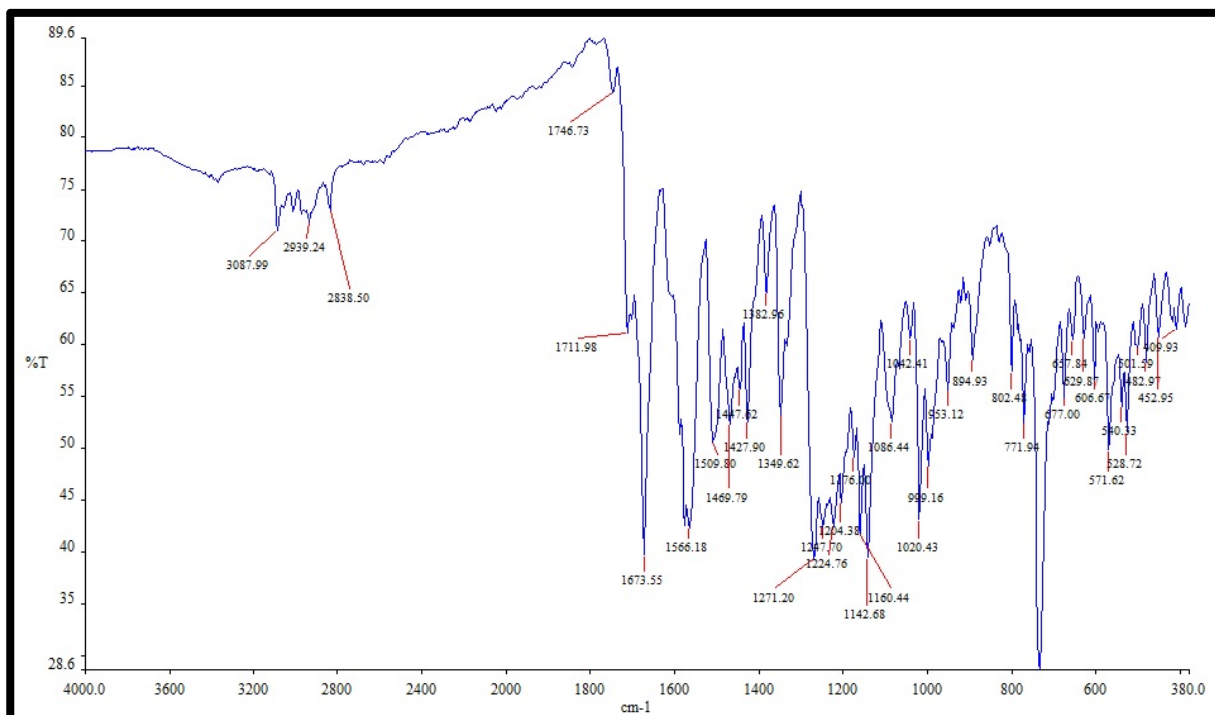
¹³C NMR spectra of compound 4b

HRMS spectra of compound 4b

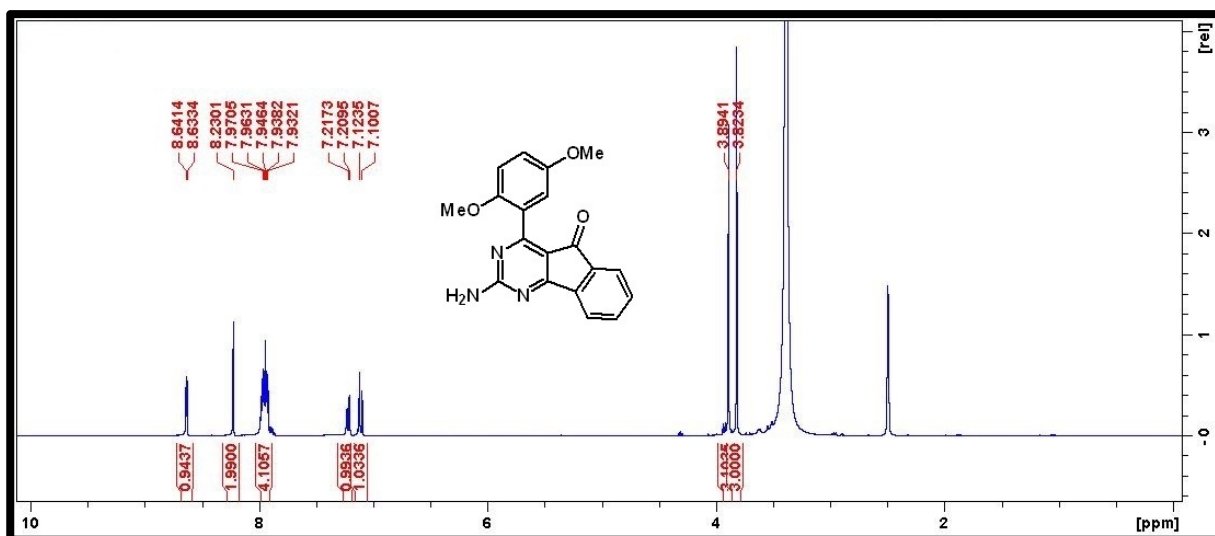
FT-IR spectra of compound **4b**¹H NMR spectra of compound **4c**

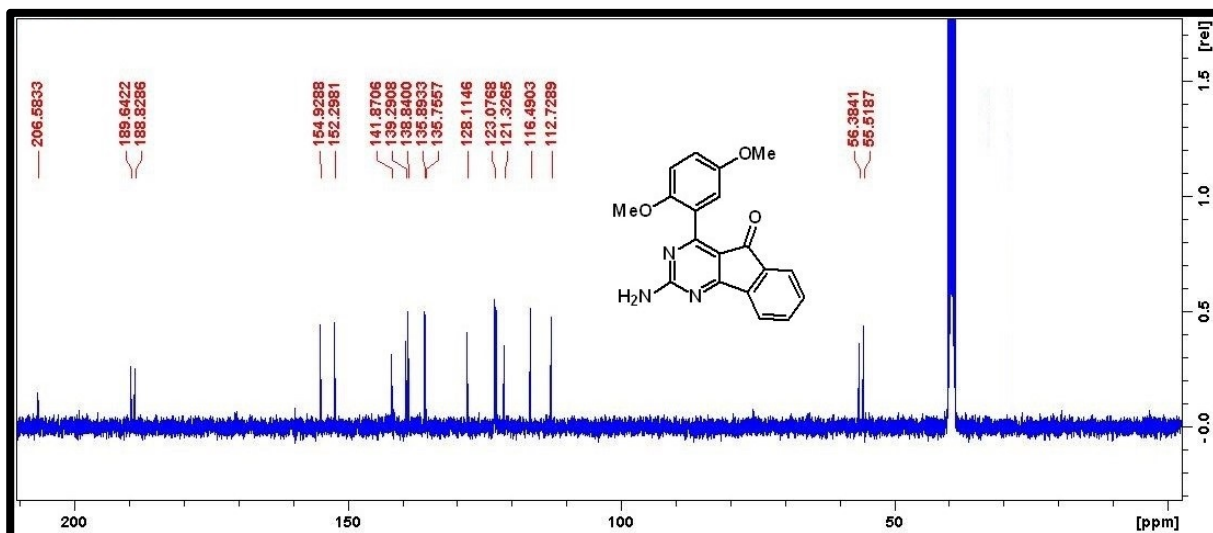
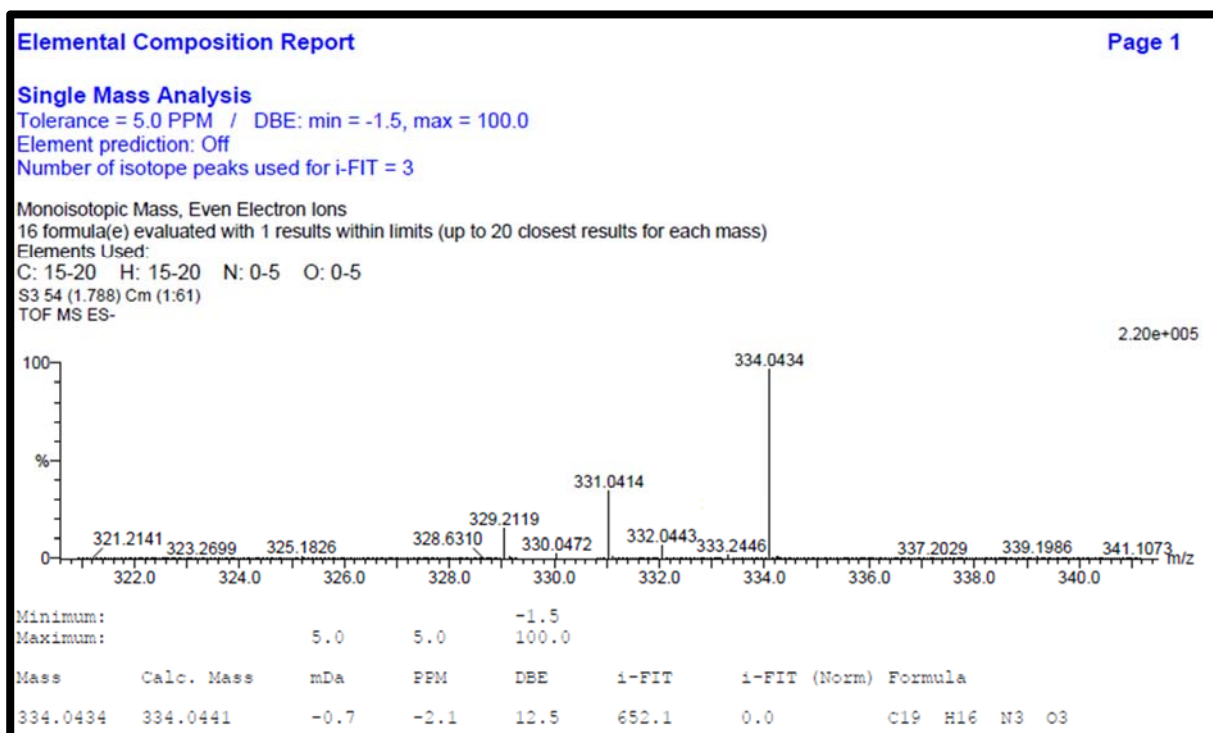
¹³C NMR spectra of compound 4c

HRMS spectra of compound 4c

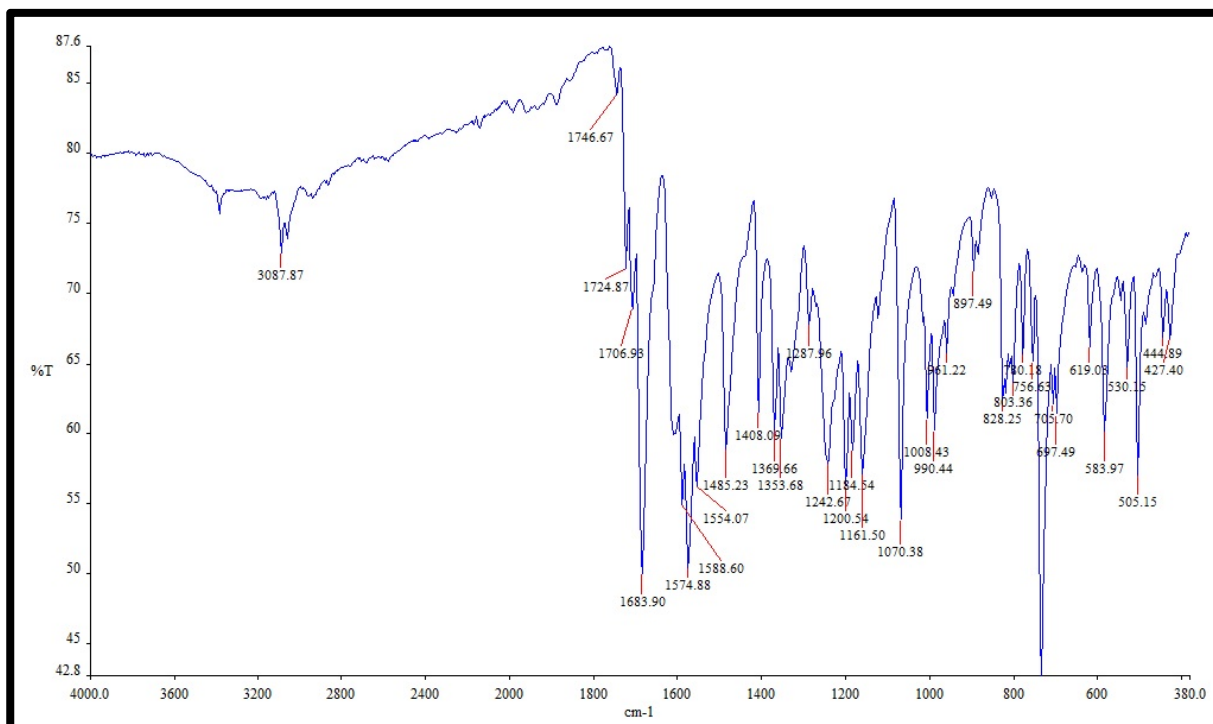


FT-IR spectra of compound 4c

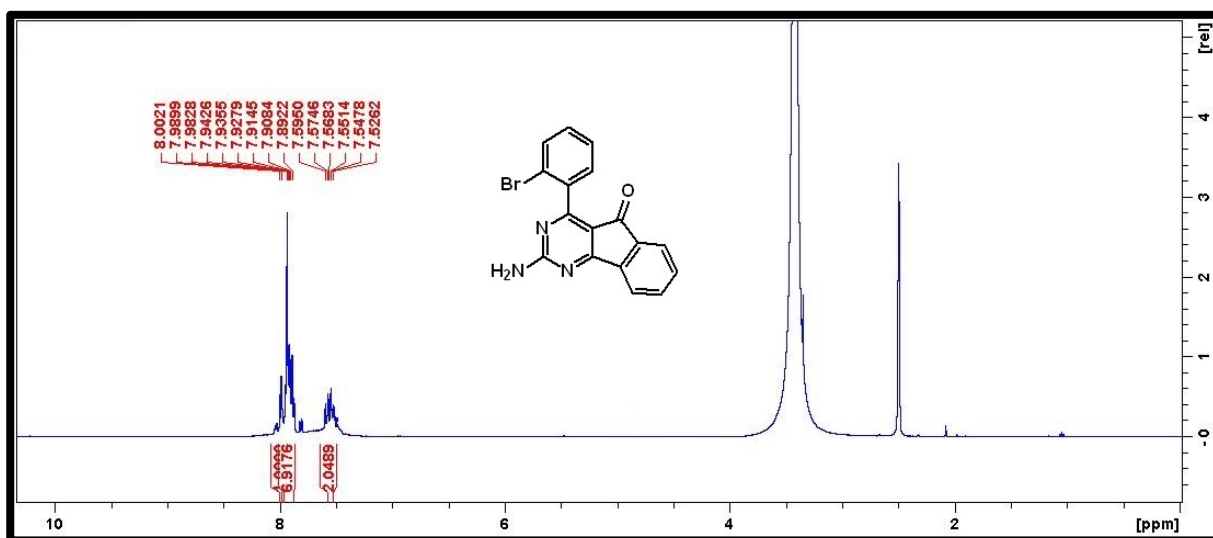
¹H NMR spectra of compound 4d

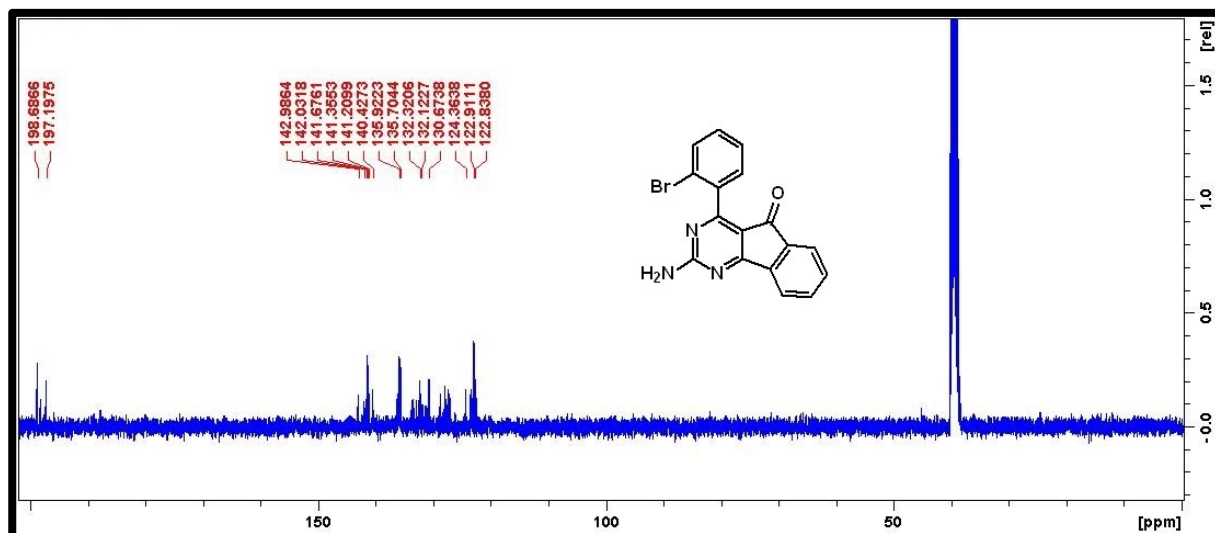
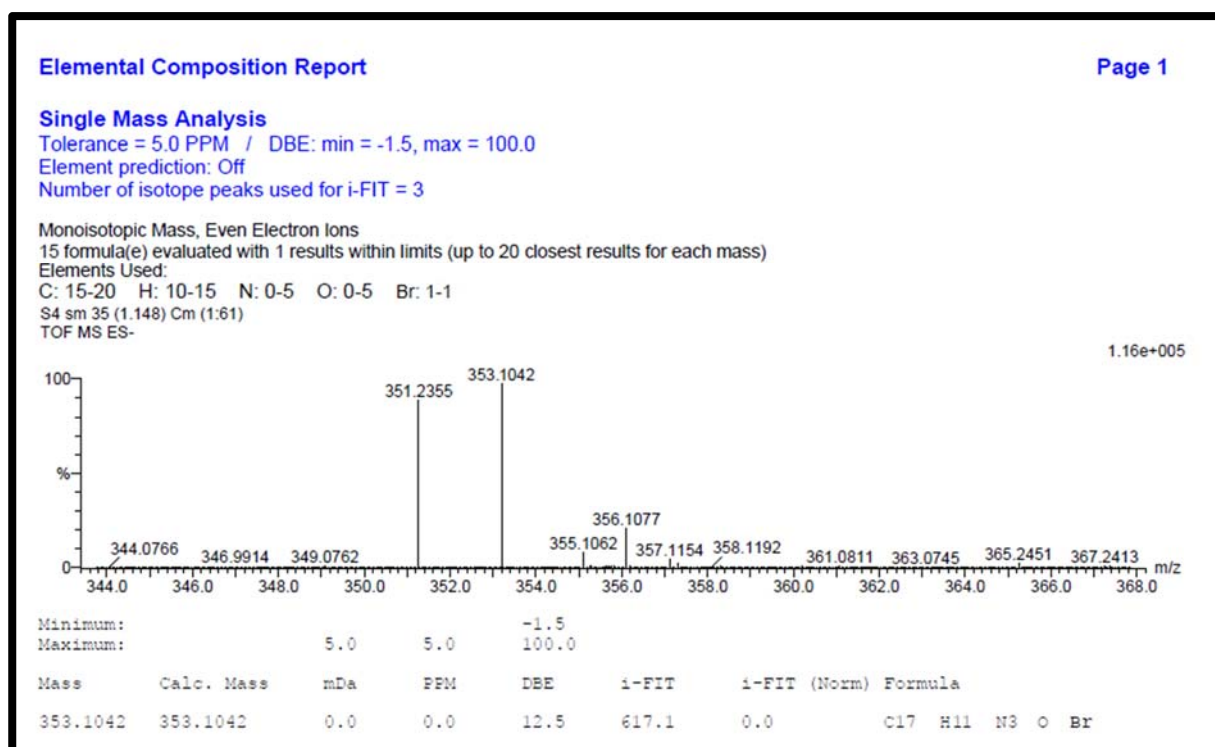
¹³C NMR spectra of compound 4d

HRMS spectra of compound 4d

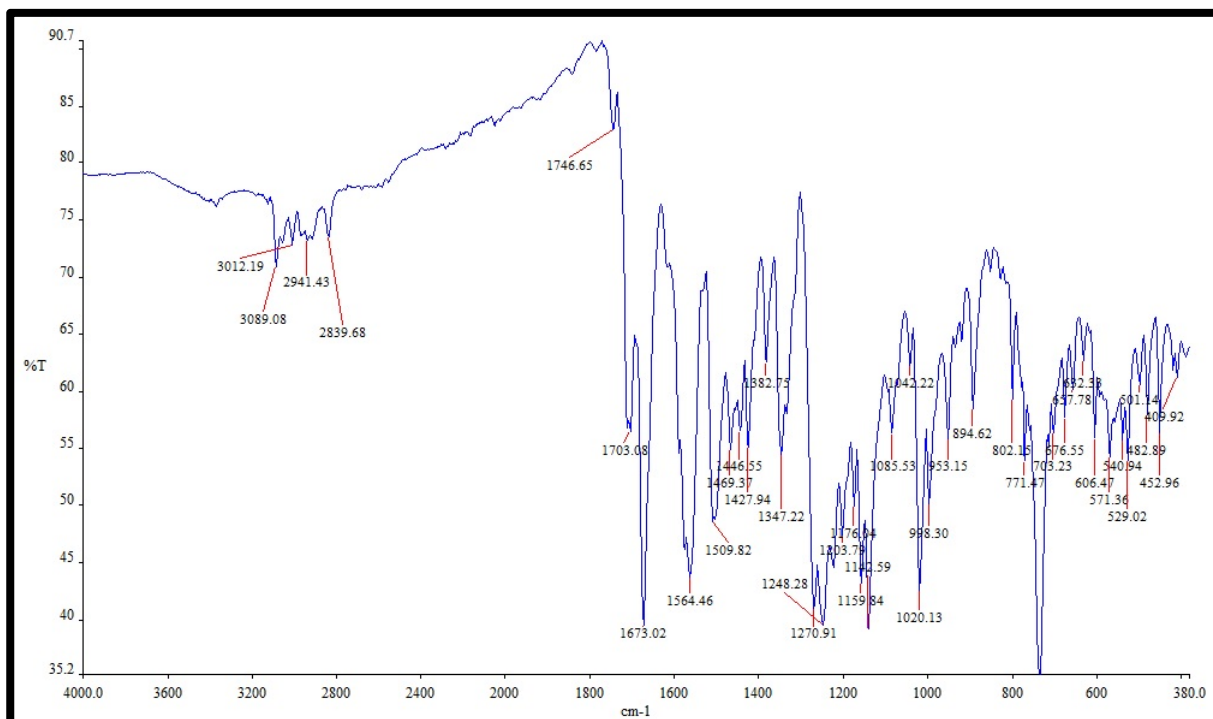


FT-IR spectra of compound 4d

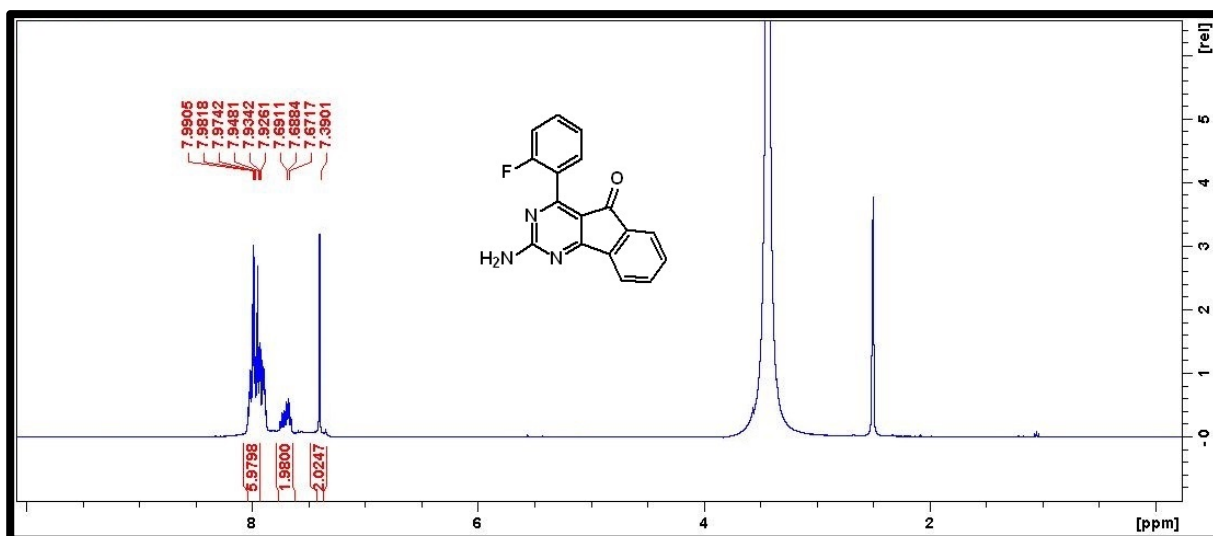
¹H NMR spectra of compound 4e

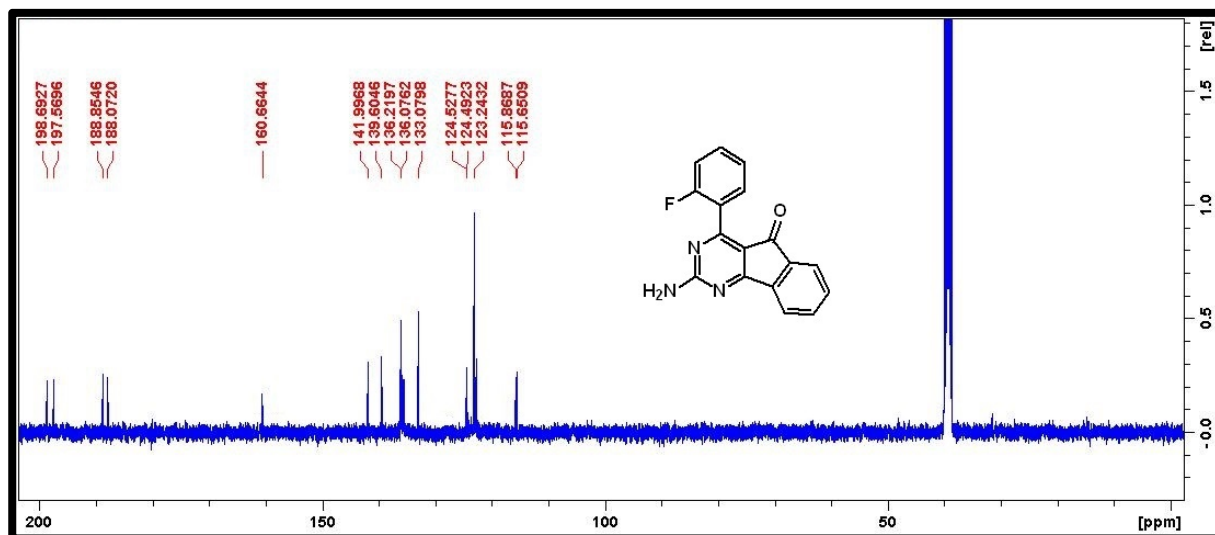
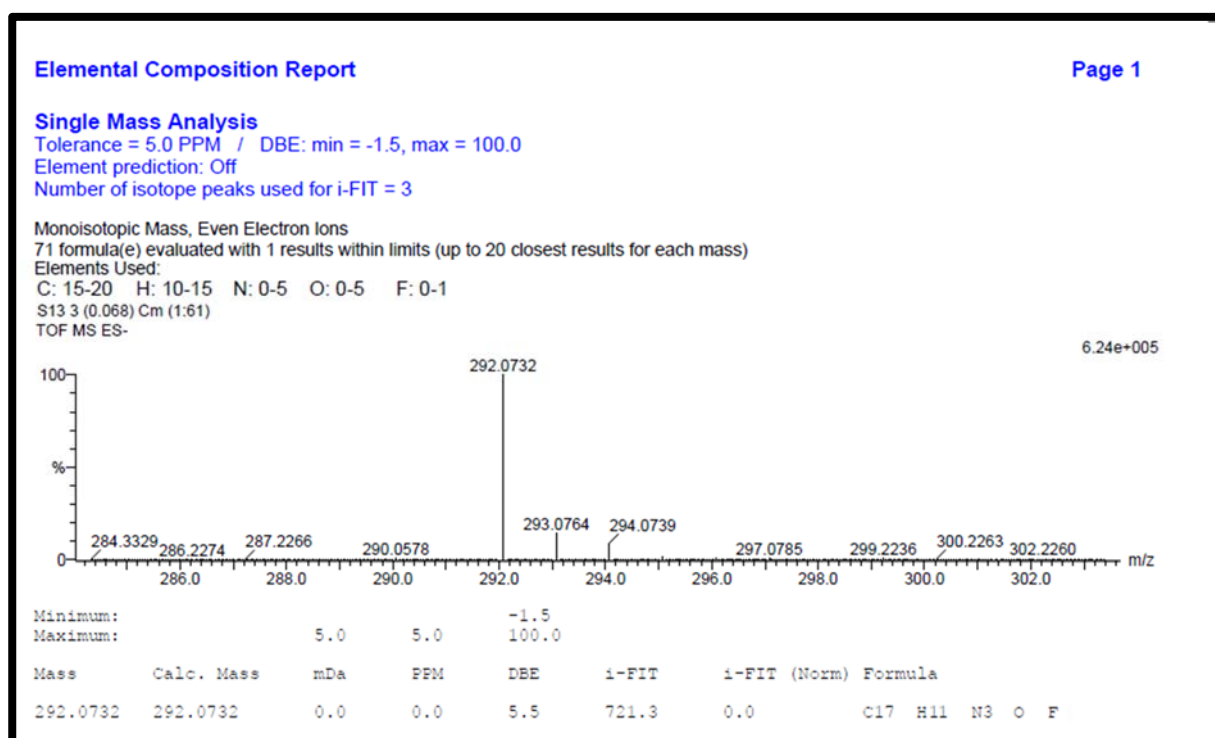
¹³C NMR spectra of compound 4e

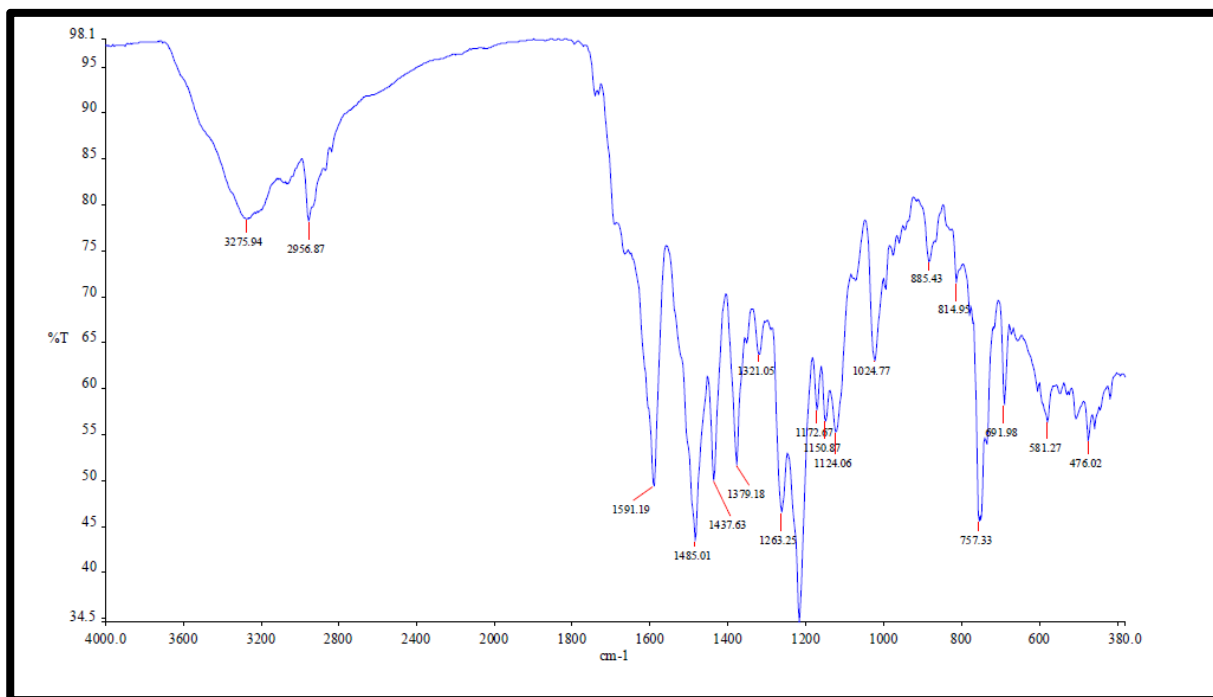
HRMS spectra of compound 4e



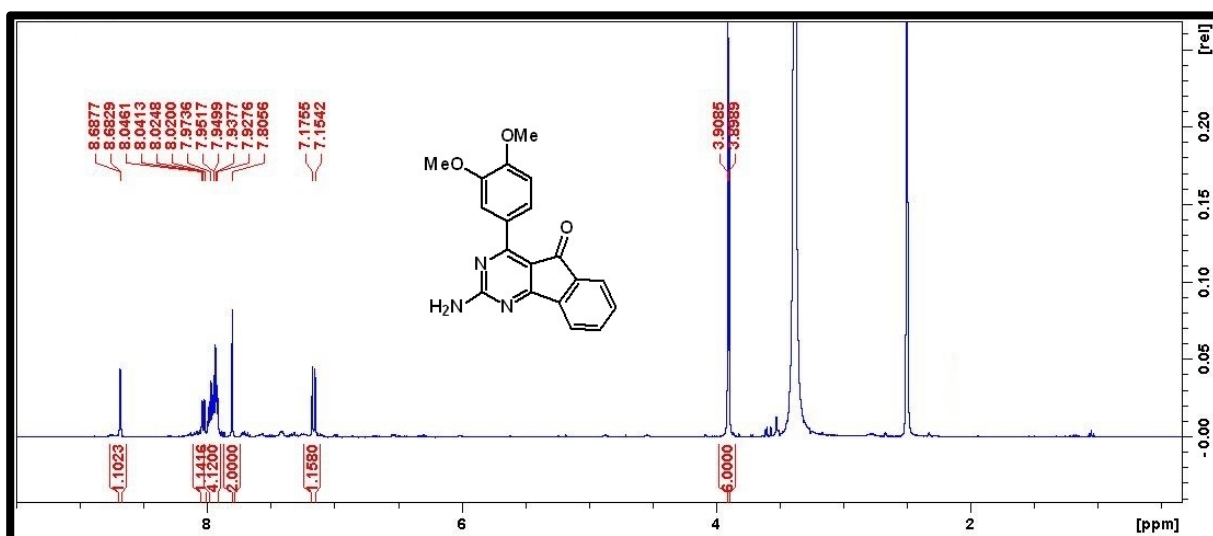
FT-IR spectra of compound 4e

¹H NMR spectra of compound 4f

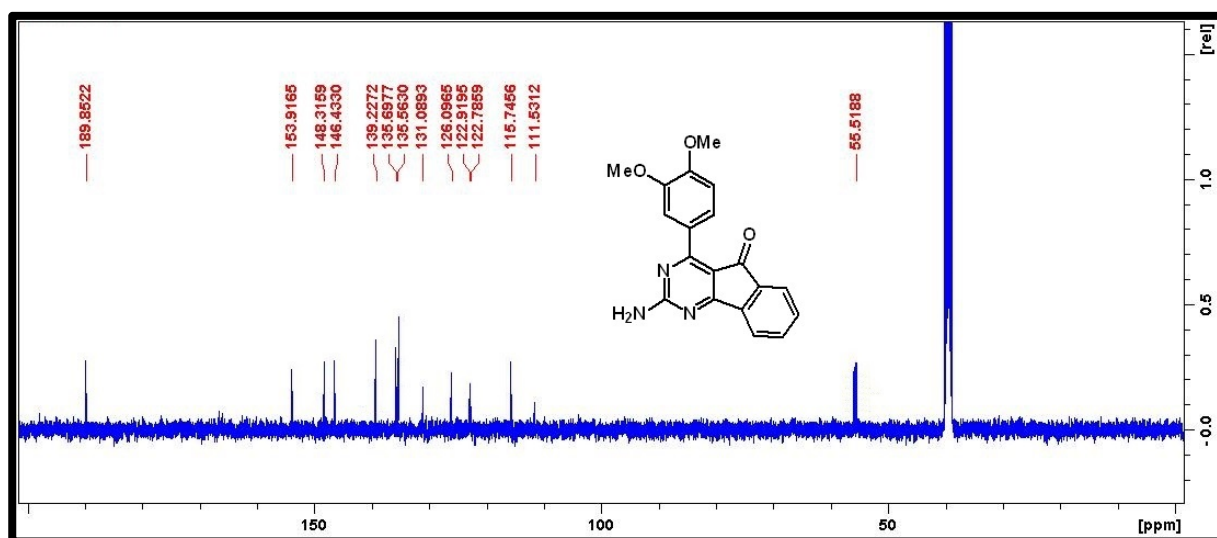
¹³C NMR spectra of compound **4f**HRMS spectra of compound **4f**



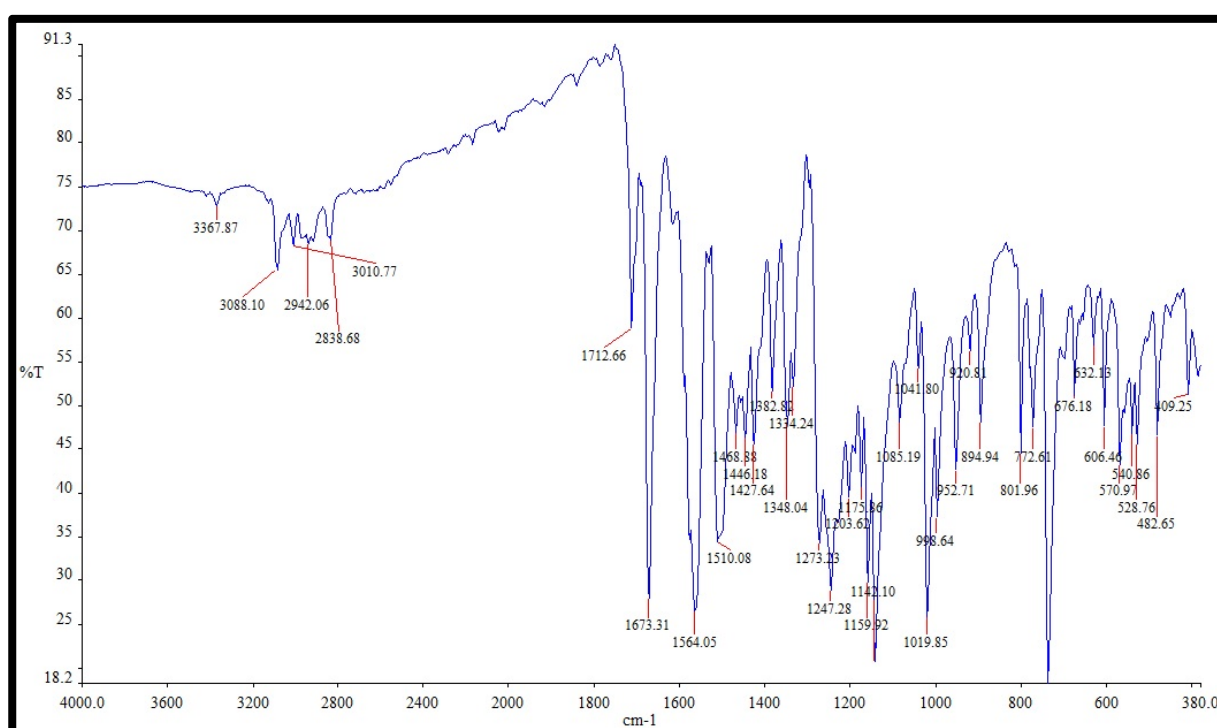
FT-IR spectra of compound 4f



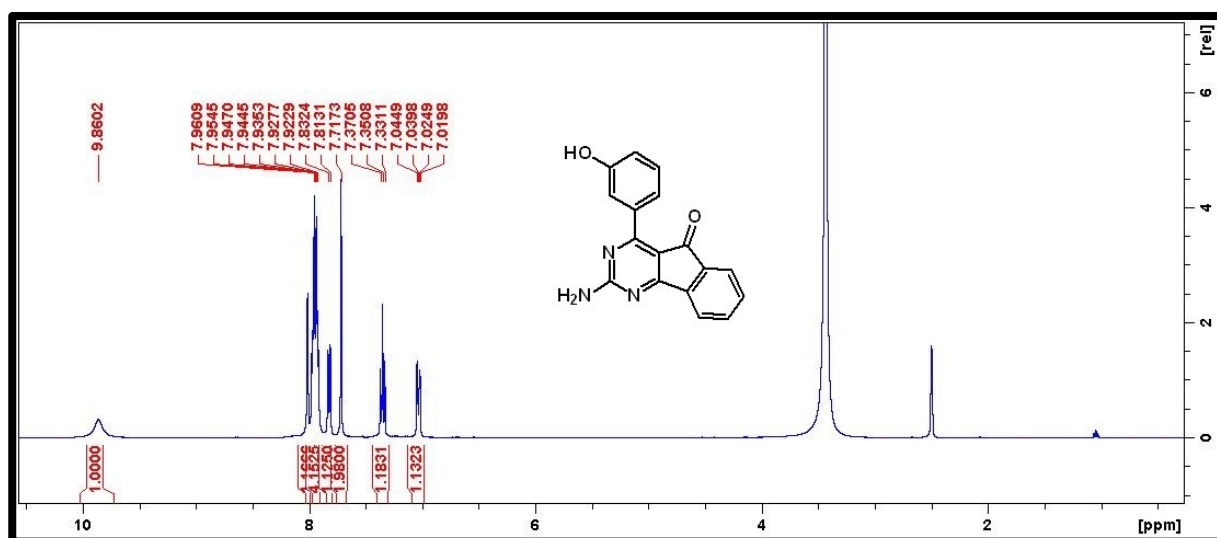
FT-IR spectra of compound 4g



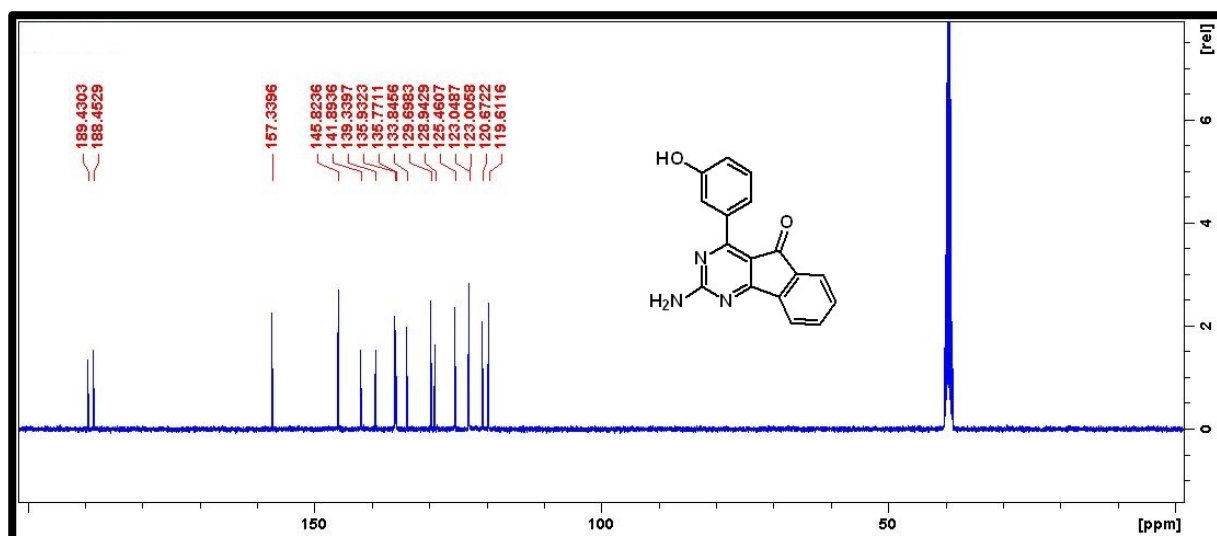
¹³C NMR spectra of compound 4g



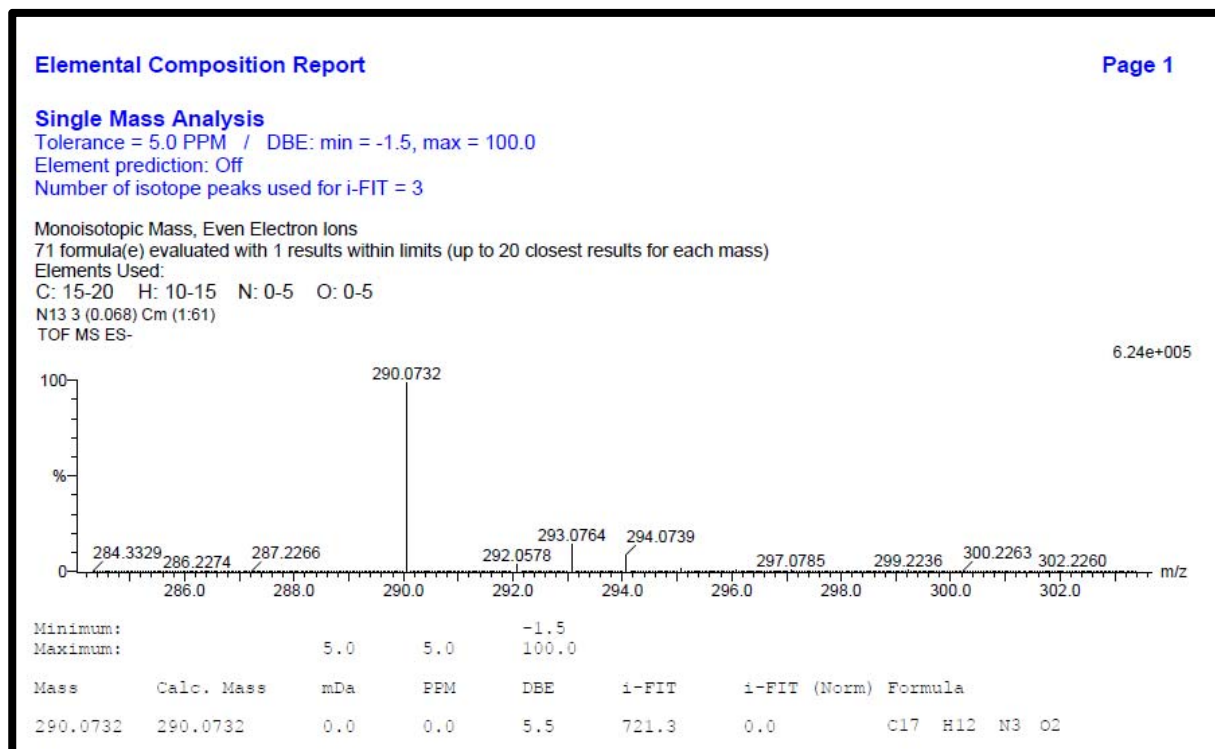
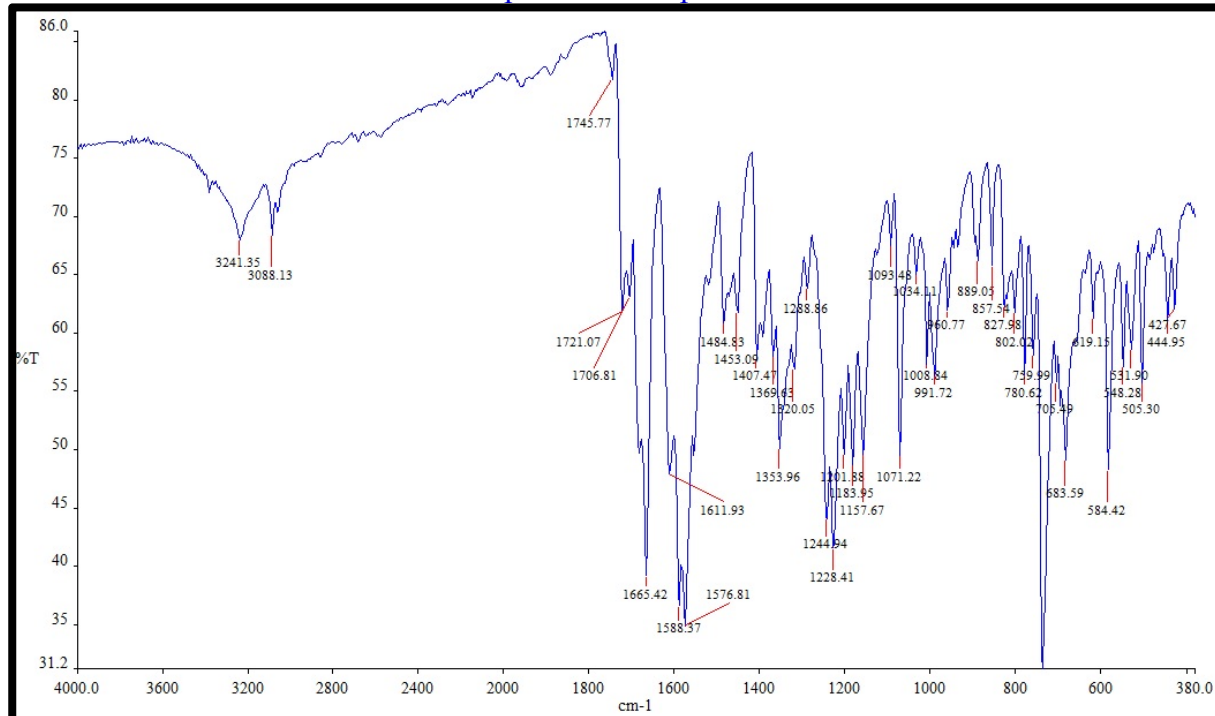
FT-IR spectra of compound 4g

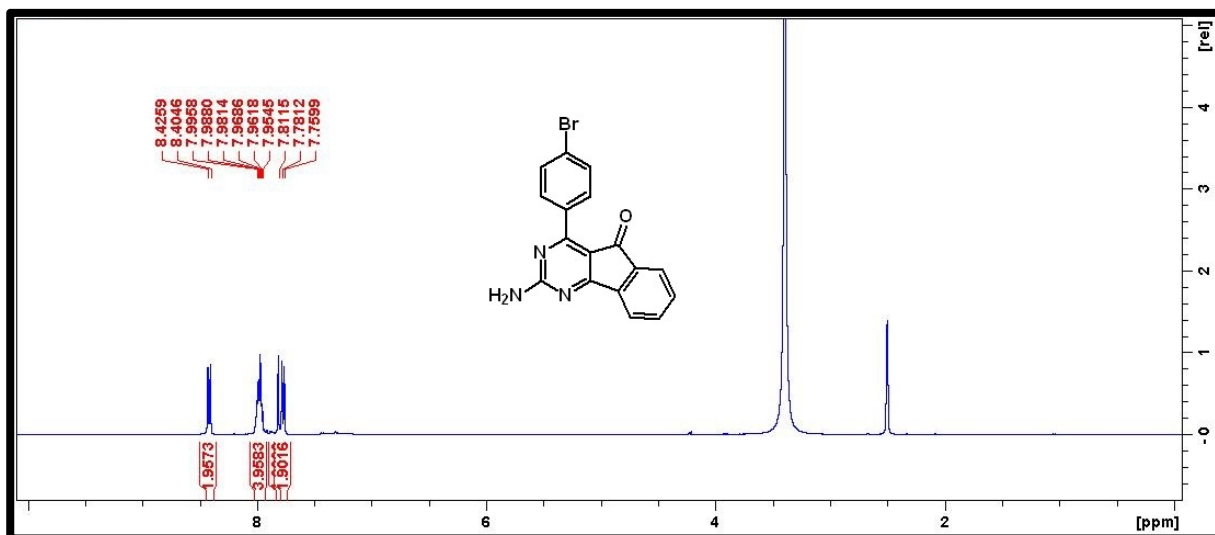
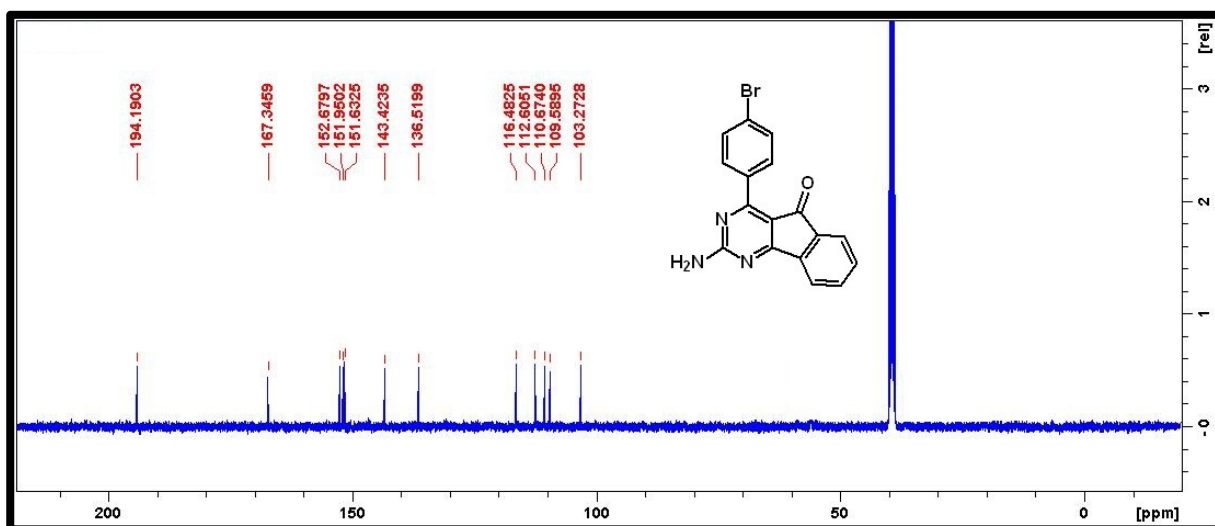


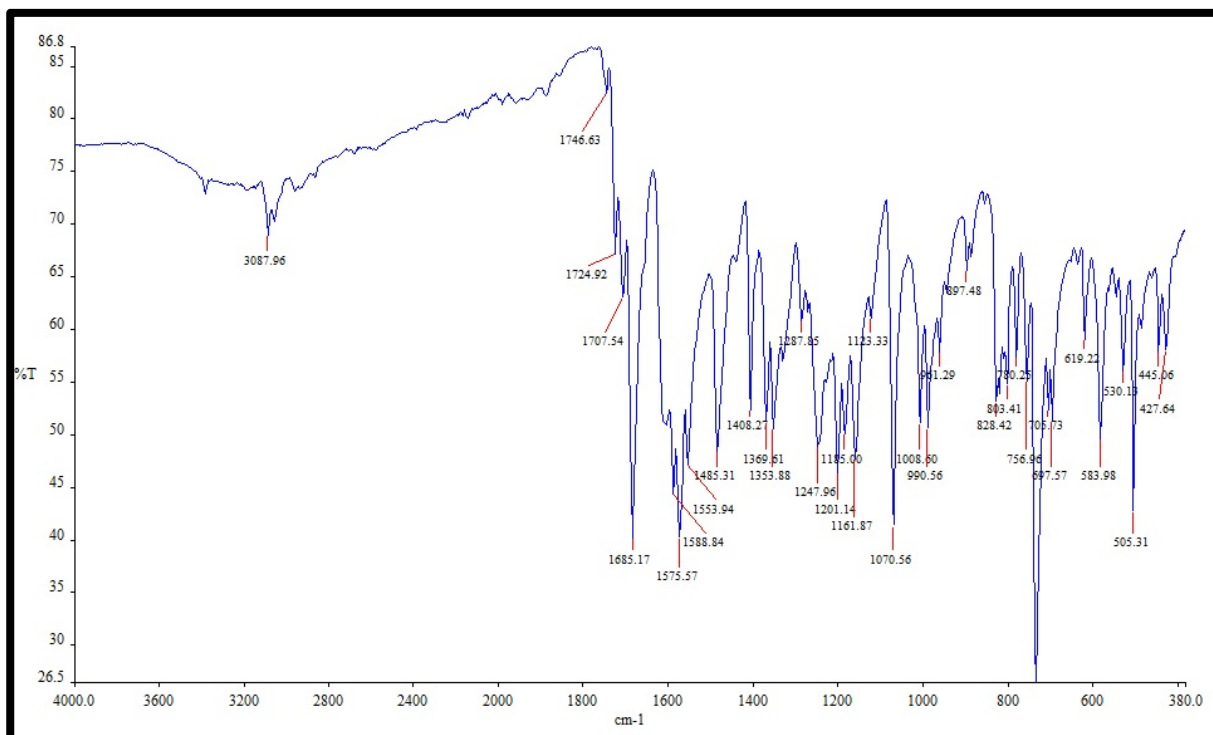
¹H NMR spectra of compound **4h**



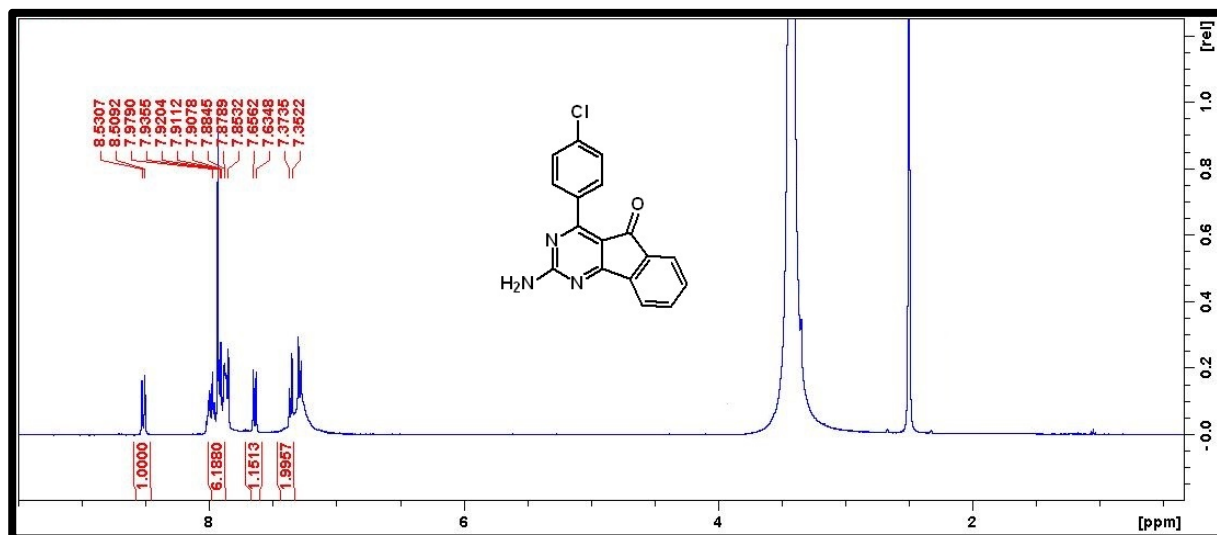
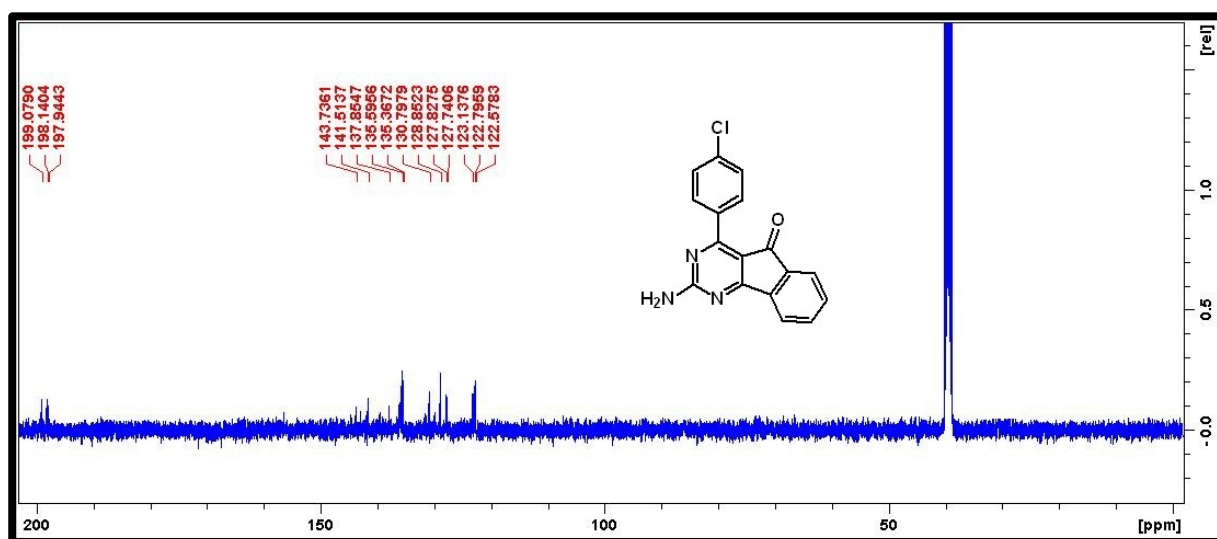
¹³C NMR spectra of compound **4h**

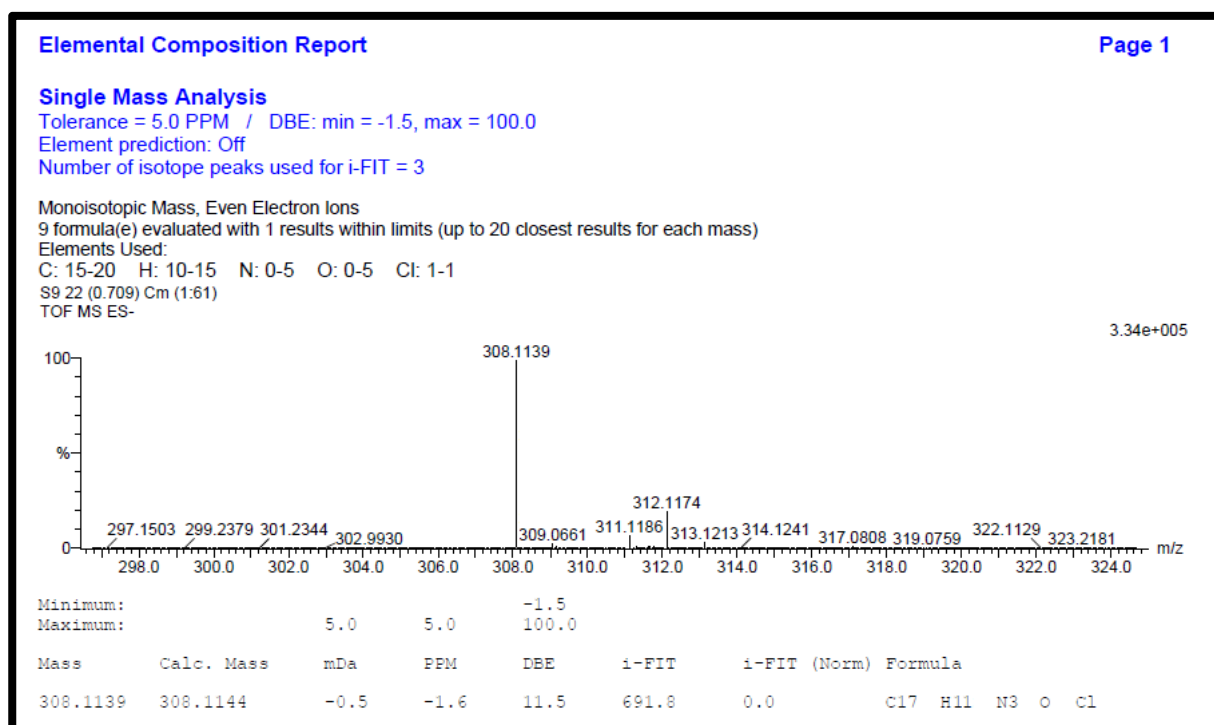
HRMS spectra of compound **4h**FT-IR spectra of compound **4h**

¹H NMR spectra of compound **4i**¹³C NMR spectra of compound **4i**

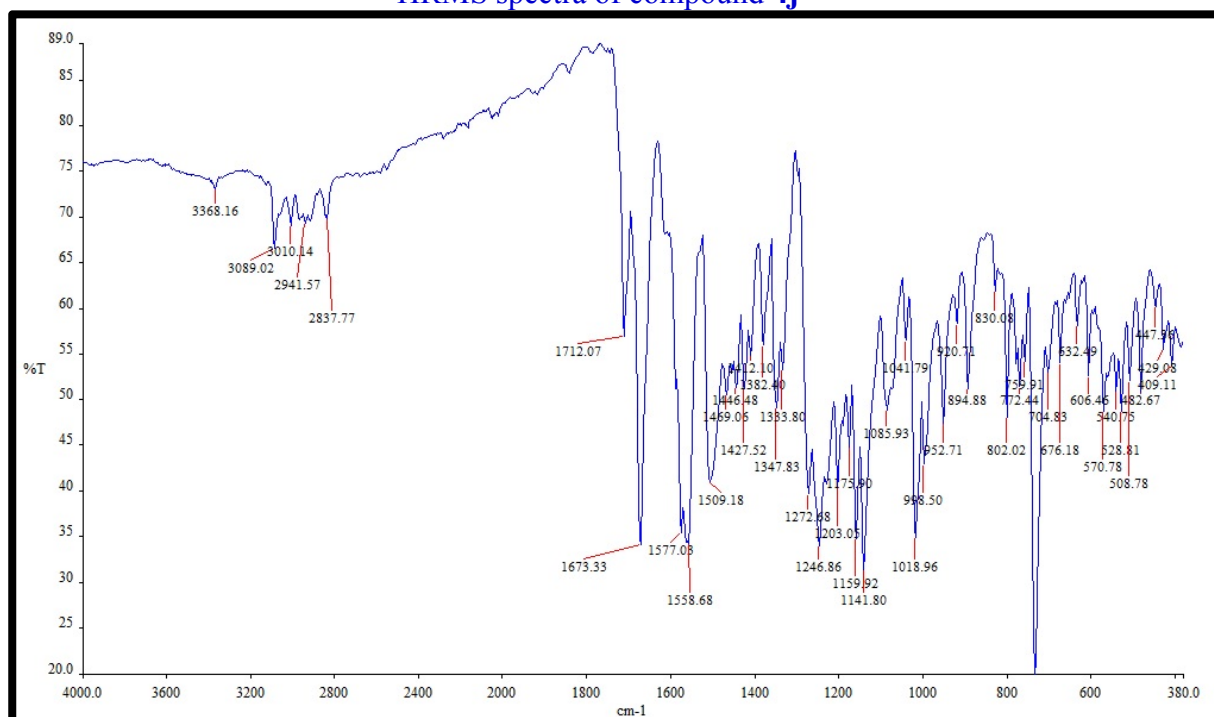


FT-IR spectra of compound 4i

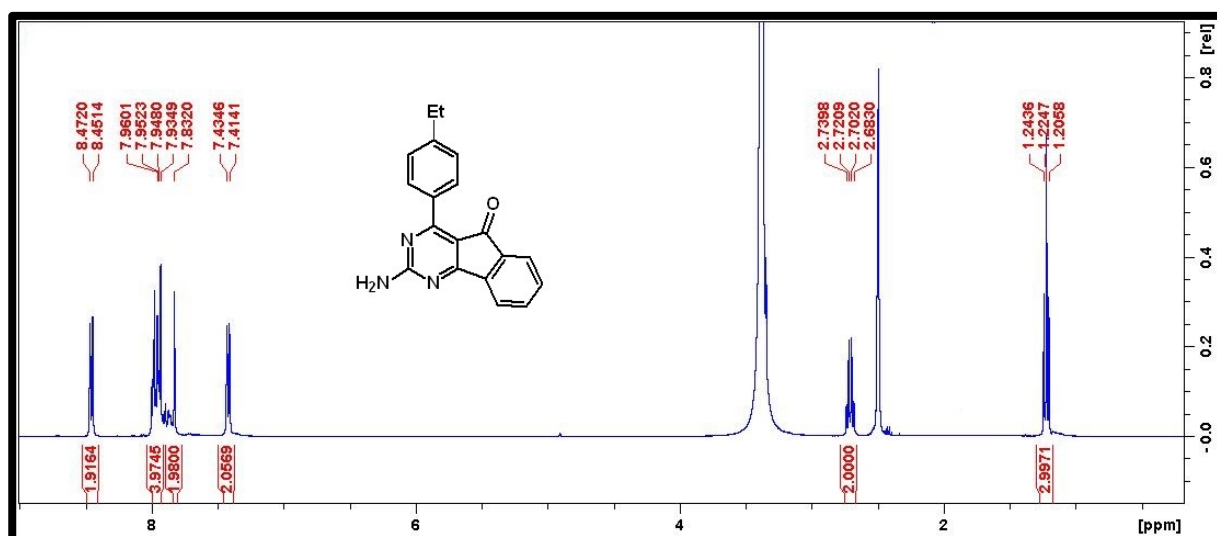
¹H NMR spectra of compound **4j**¹³C NMR spectra of compound **4j**



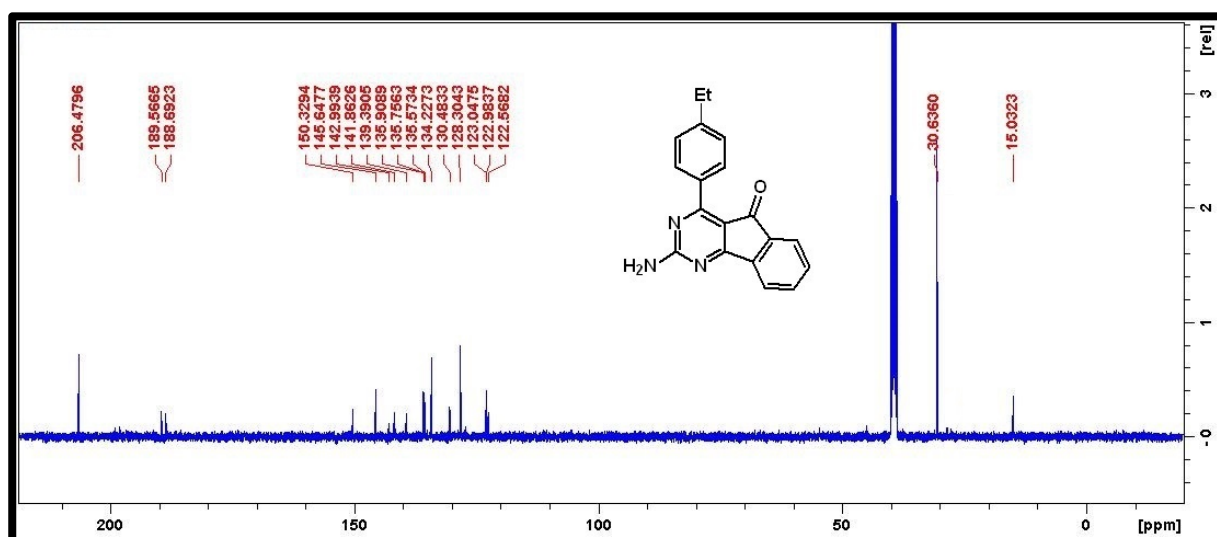
HRMS spectra of compound 4j



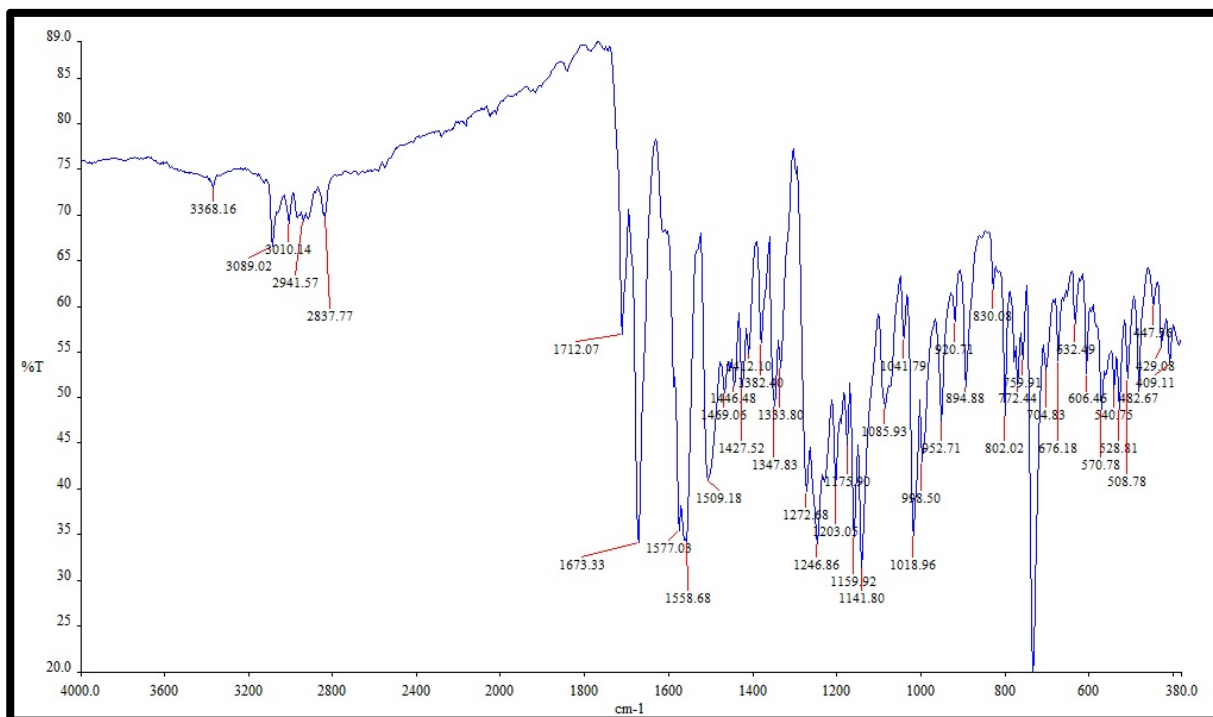
FT-IR spectra of compound 4j



¹H NMR spectra of compound **4k**



¹³C NMR spectra of compound **4k**



FT-IR spectra of compound 4k