Supplementary Material

Visible light-induced metal-free synthesis of quinoxalines using Rose Bengal as a photocatalyst

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General Information

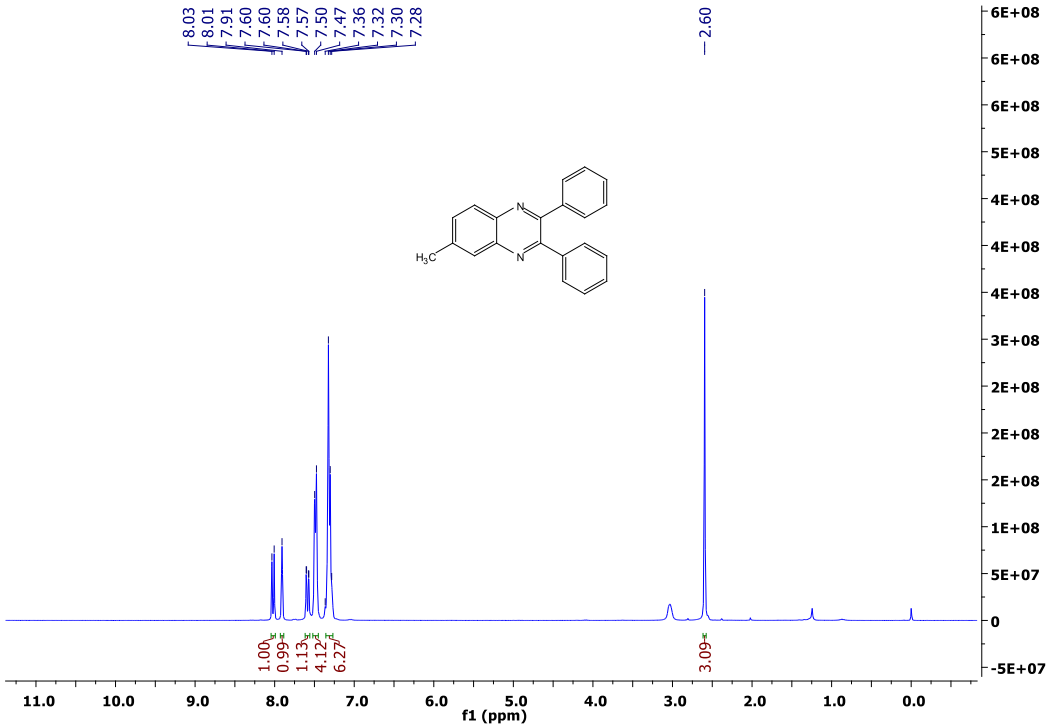
All chemicals, reagents and photocatalysts were purchased from the commercial sources and were used without further purification. Reactions were monitored by TLC on silica gel glass plate containing 60 GF-254, and visualization was done by UV light and iodine vapor. ^{1}H and ^{13}C NMR spectra were recorded on Bruker UXNMR/XWIN-NMR (300 MHz) or InovaVarian-VXR-unity (400, 500 MHz) instruments. Chemical shifts were expressed in parts per million (δ in ppm) downfield from TMS expressed as internal standard and coupling constants are expressed in Hz. ^{1}H NMR spectral data were reported in the following order: multiplicity (s, singlet; brs, broad singlet; d, doublet; dd, doublet of doublets; t, triplet; m, multiplet), coupling constants in Hz, and number of protons. ESI mass spectra were recorded on a Micromass Quattro LC using ESI+ software with capillary voltage 3.98 kV and an ESI mode positive ion trap detector. High resolution mass spectra were recorded on a QSTAR XL Hybrid MS-MS mass spectrometer. Melting points were determined with an electro thermal digital melting point apparatus IA9100 and are uncorrected. All reactions was conducted in glass vials and using the fallowing procedure and LED (15 W) bulb reaction setup.

General procedure for the synthesis of quinoxalines

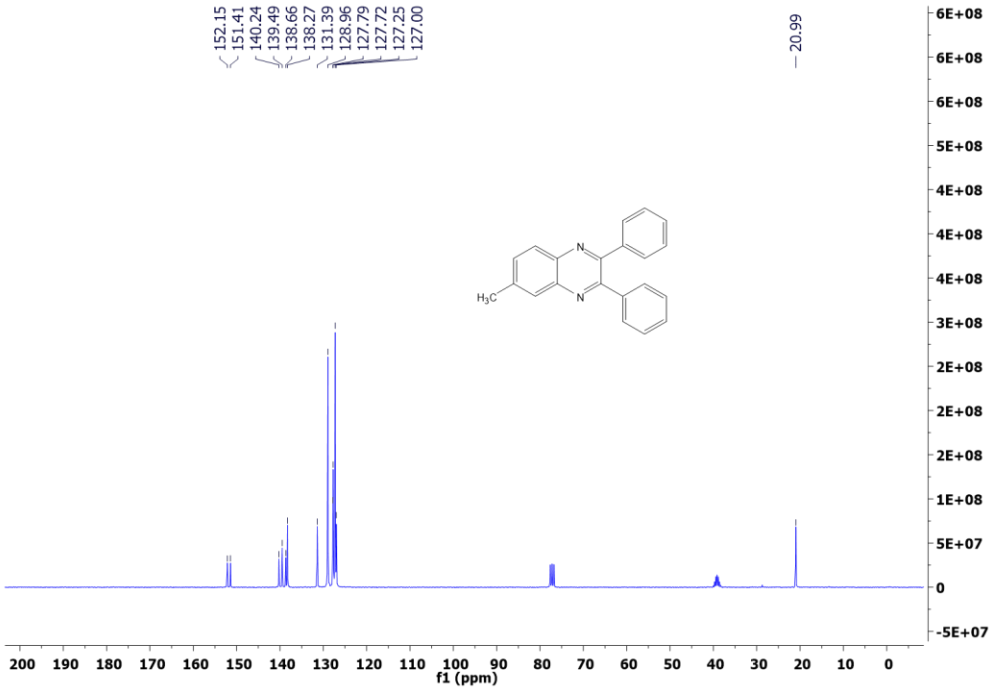
In a 30 mL glass vial with 12 mL of methanol, added *o*-phenylenediamine (1 equiv.), α-hydroxy ketone (1 equiv.) and 2 mol % of Rose Bengal photocatalyst, then the reaction mixture was placed nearby the 15 Watt LED bulb in photochemical reactor box under open air, stirred the reaction until the starting materials were completely consumed, the reaction was monitored by the TLC analysis. After completion of the reaction the solvent was removed by the rota vacuum and the final compound was purified by the column chromatography (silica gel 60:120 mesh) by using ethylacetate and hexane as eluent to afford the desired products in the good to excellent yields. After isolation of the product, The Rose Bengal was eluted by employing chloroform/methanol which can be reused after evaporation of solvent under vacuum.

Figure 5. I) represent the reaction LED bulb setup and II) completion of the reaction indicated by turbidity in the reaction vials.

^{1}H-NMR spectra of compound-3a



^{13}C-NMR spectra of compound-3a



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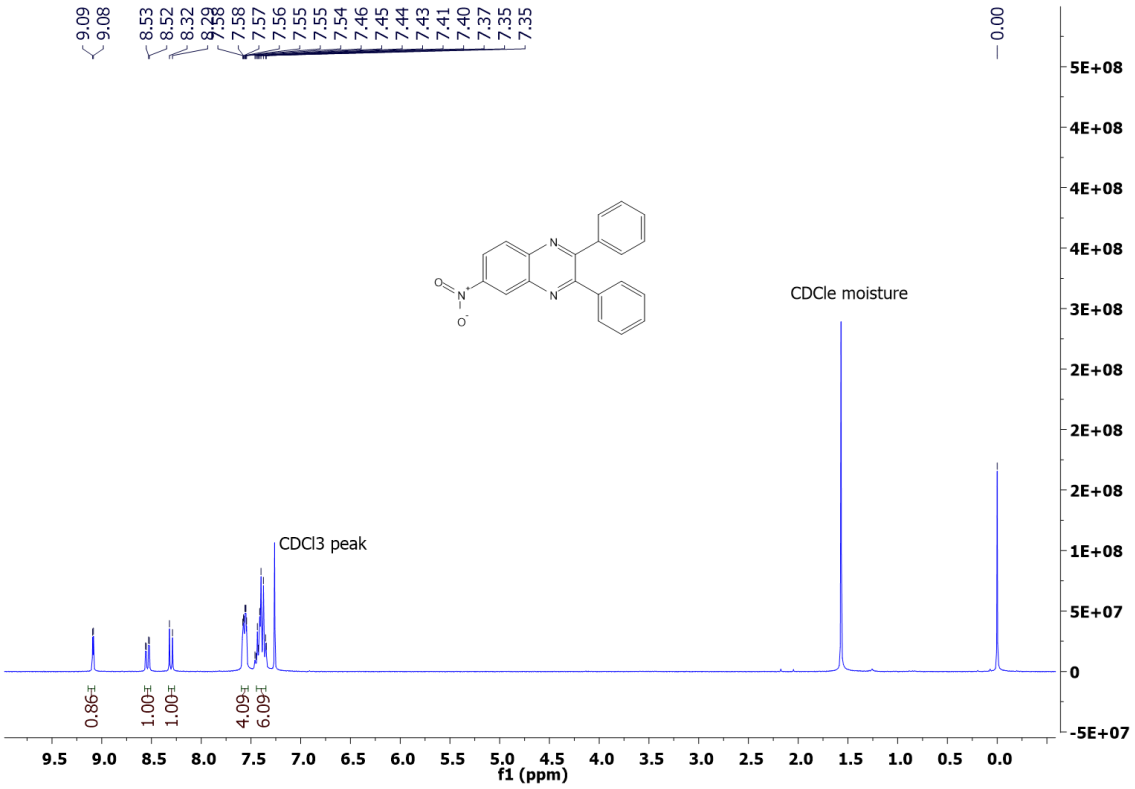

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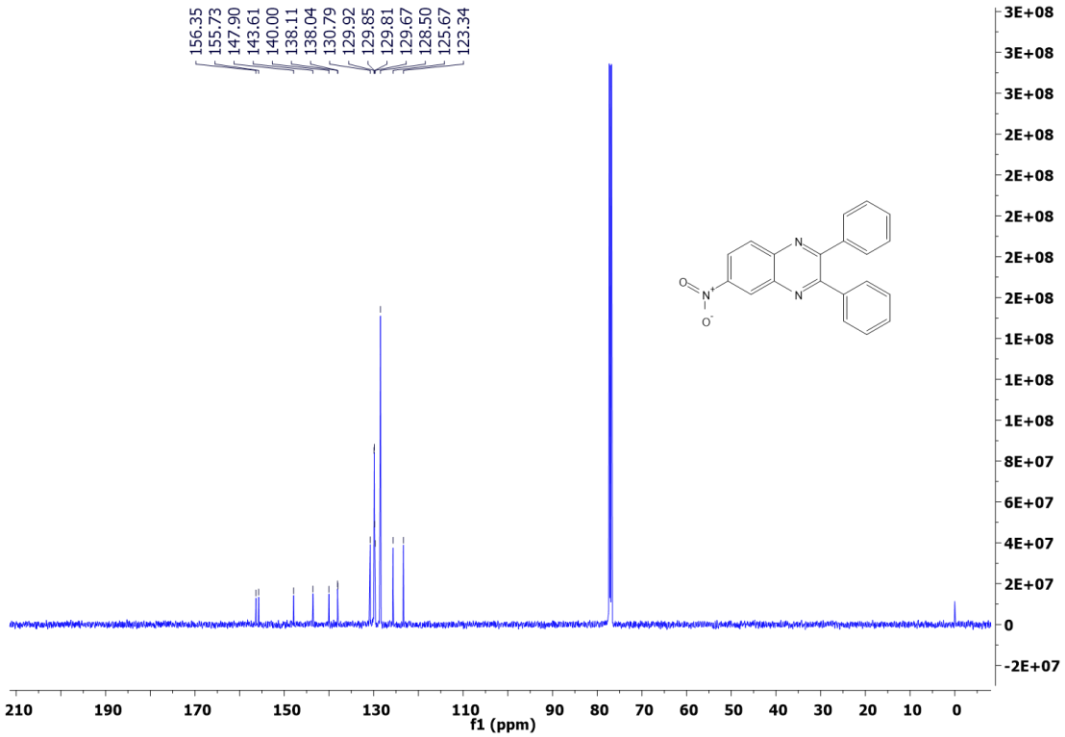

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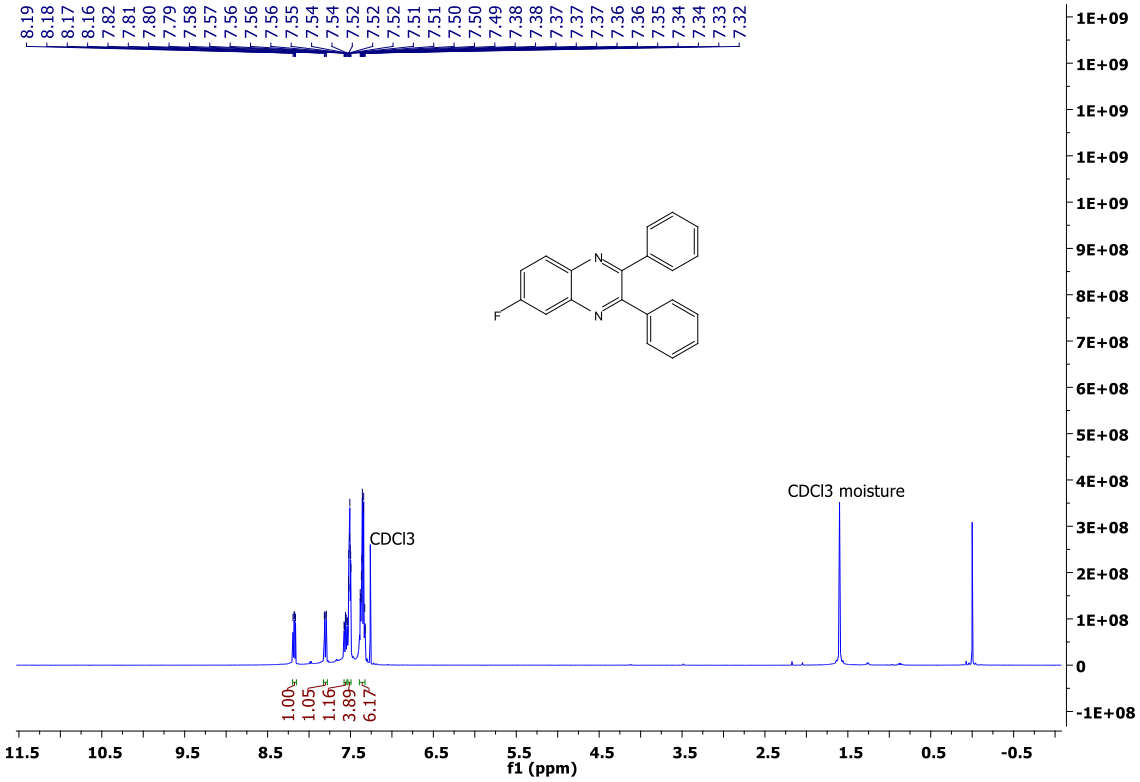

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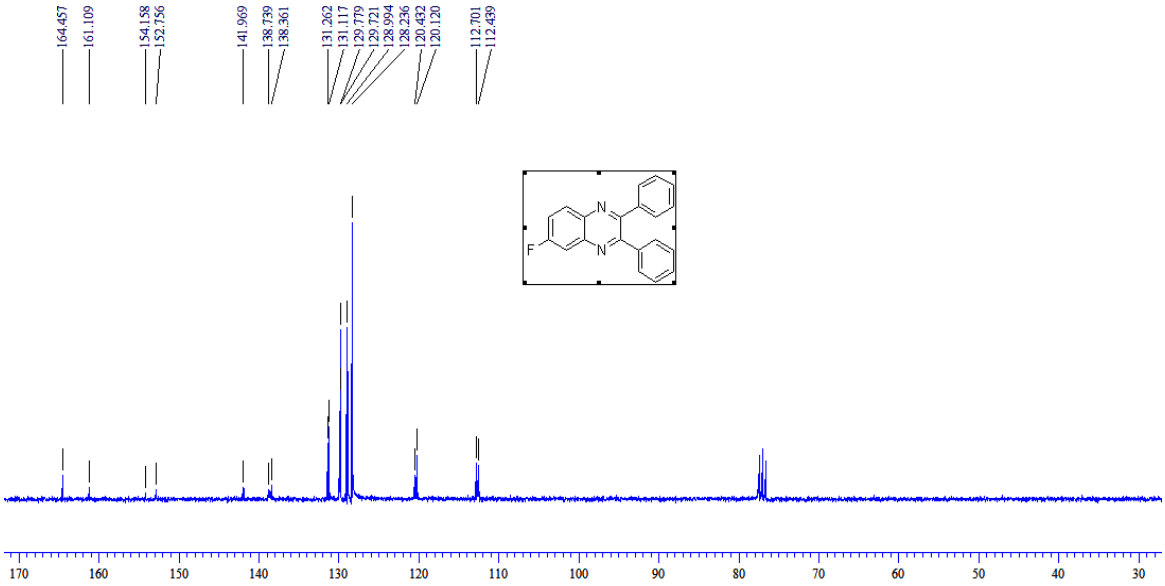

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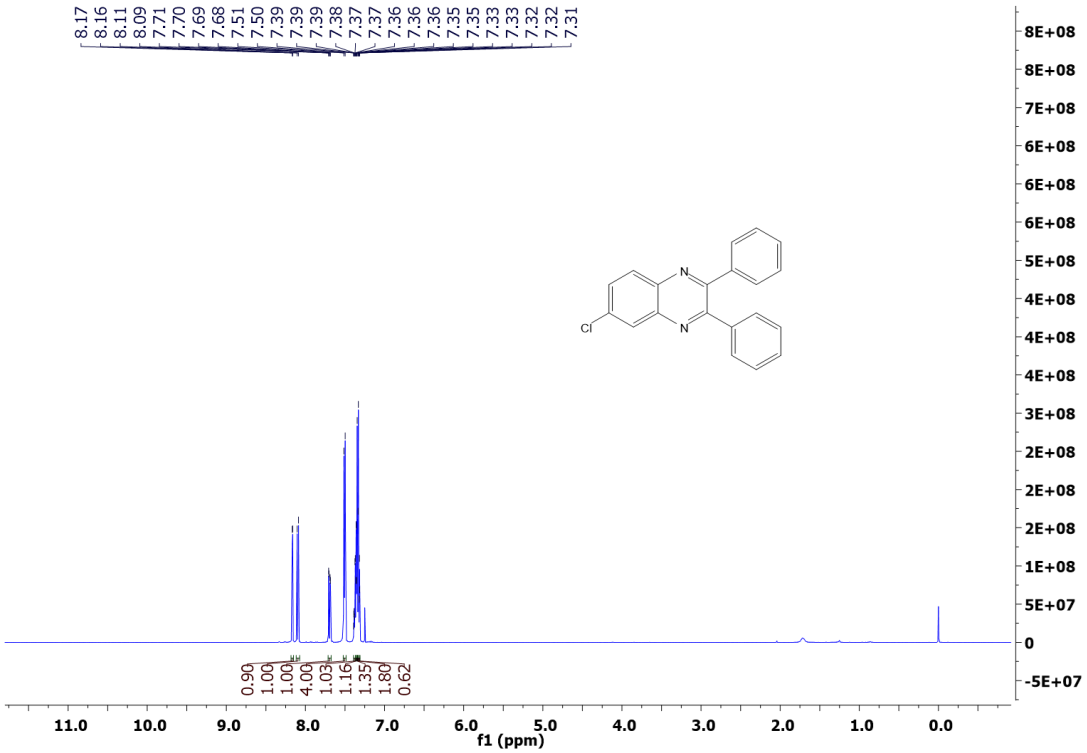

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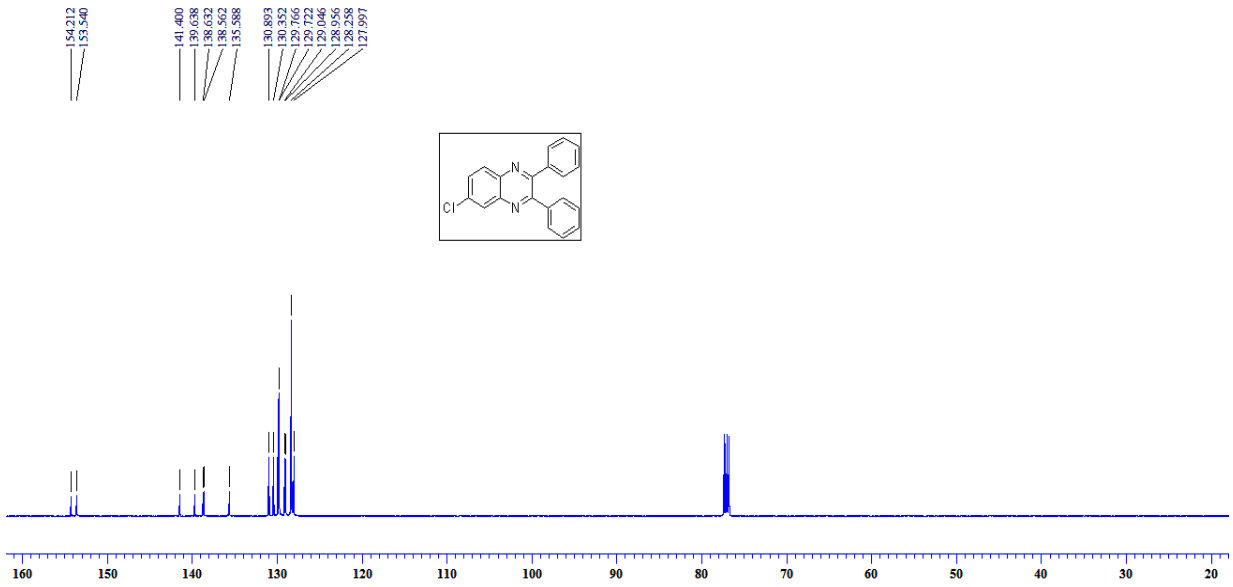

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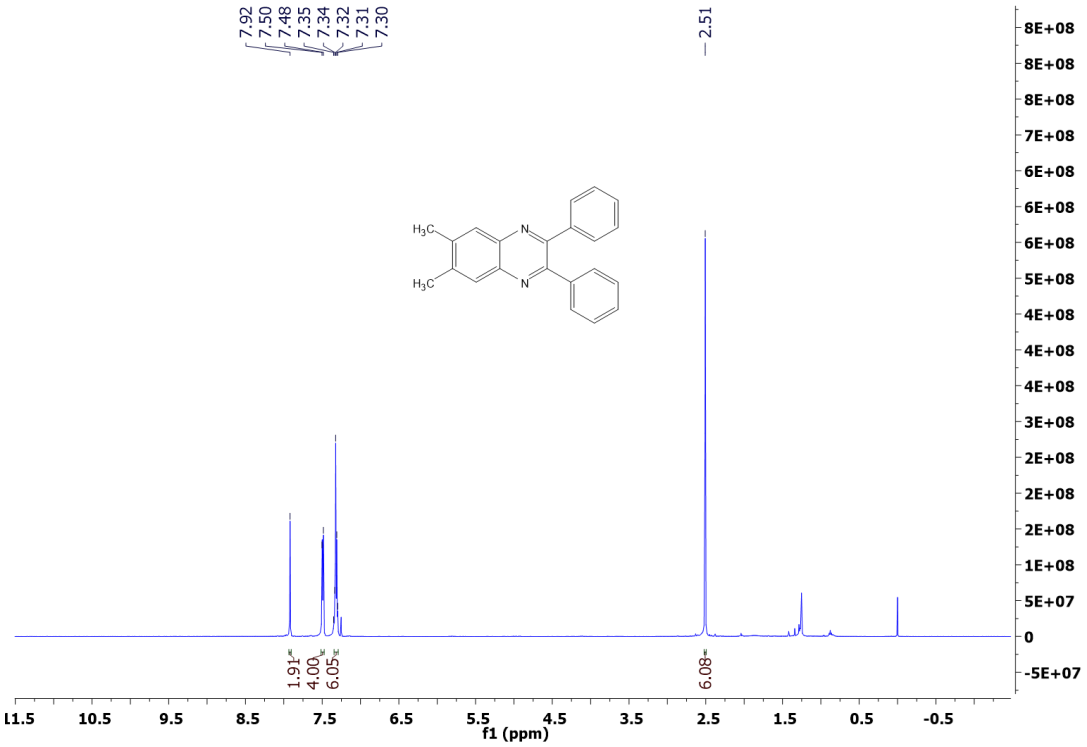

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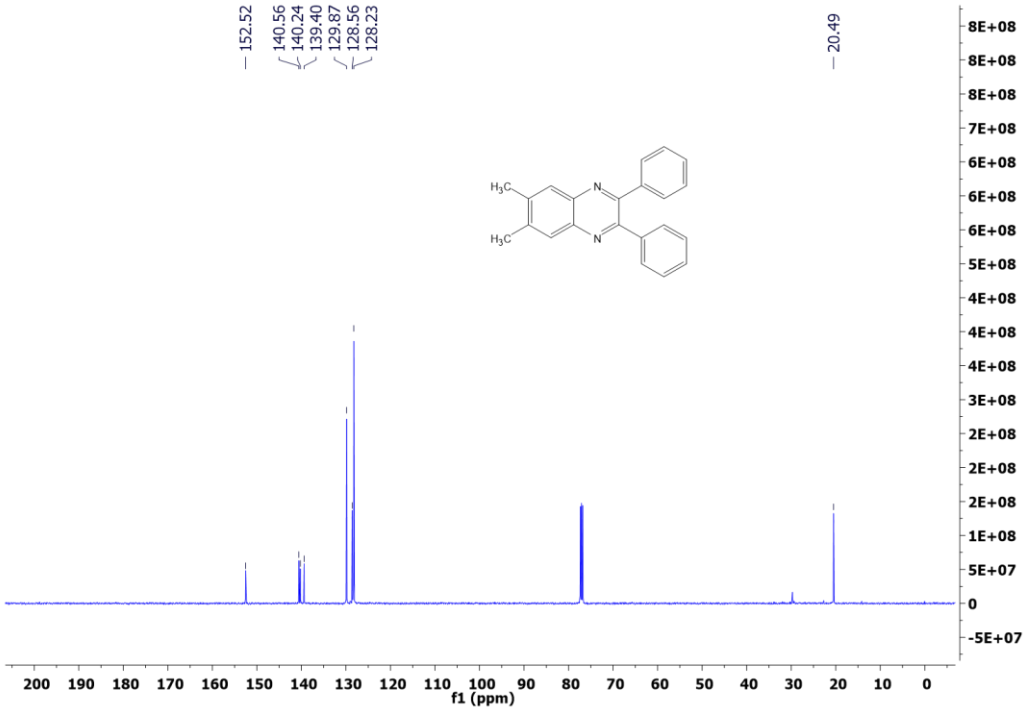

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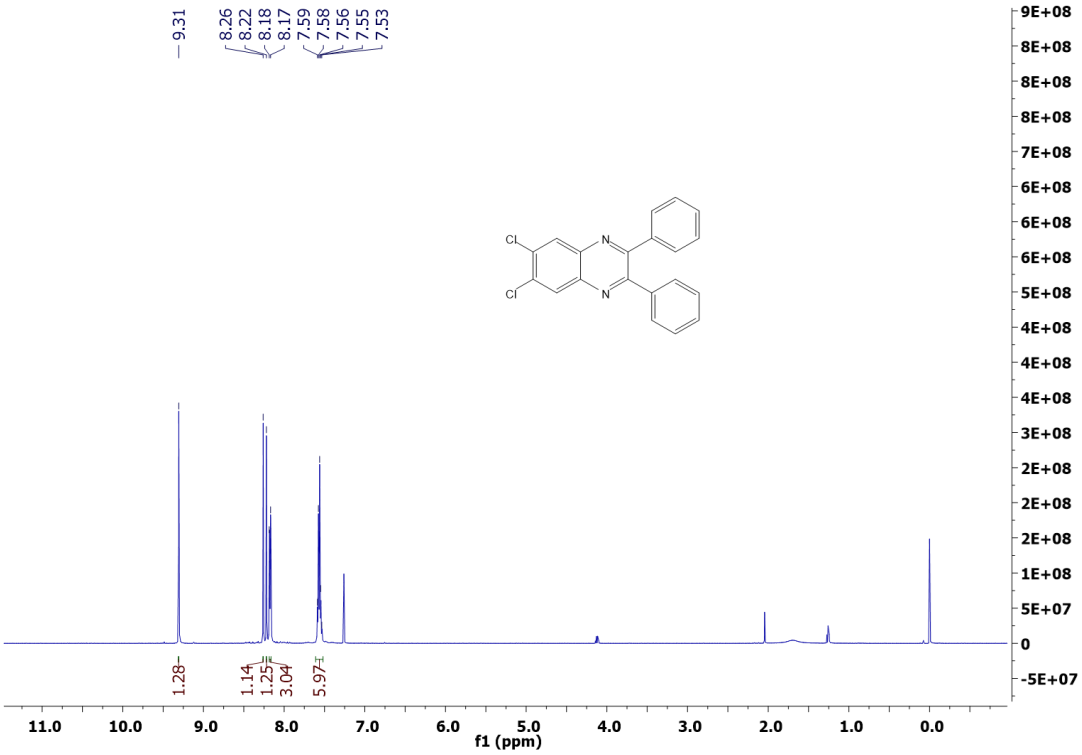

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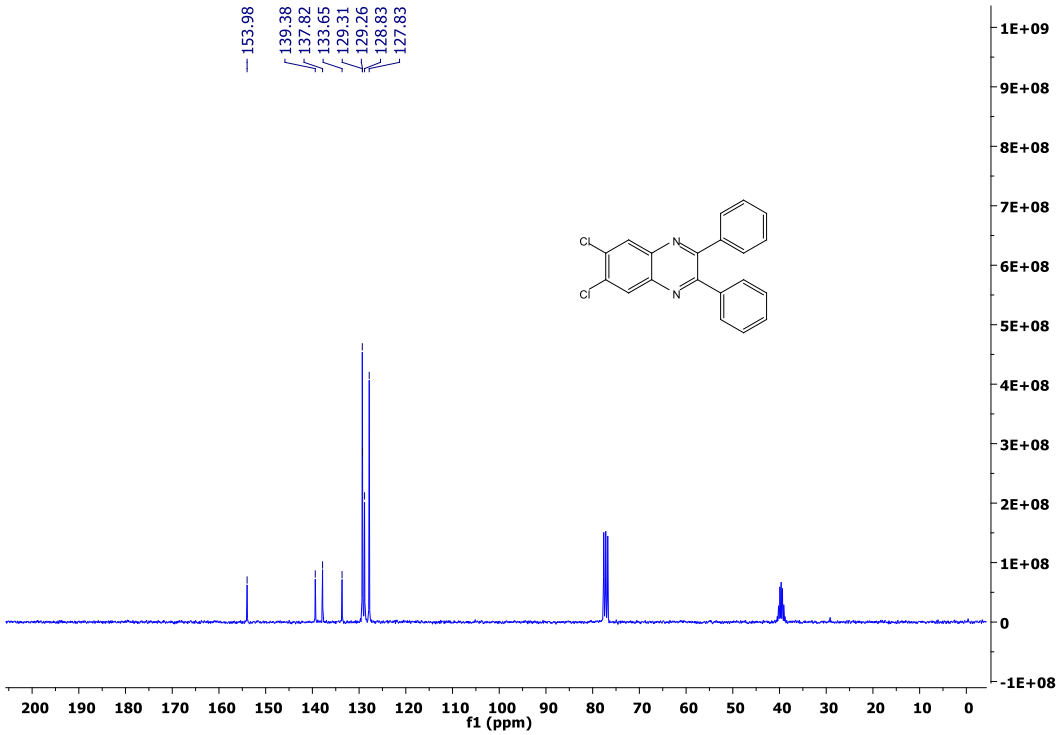

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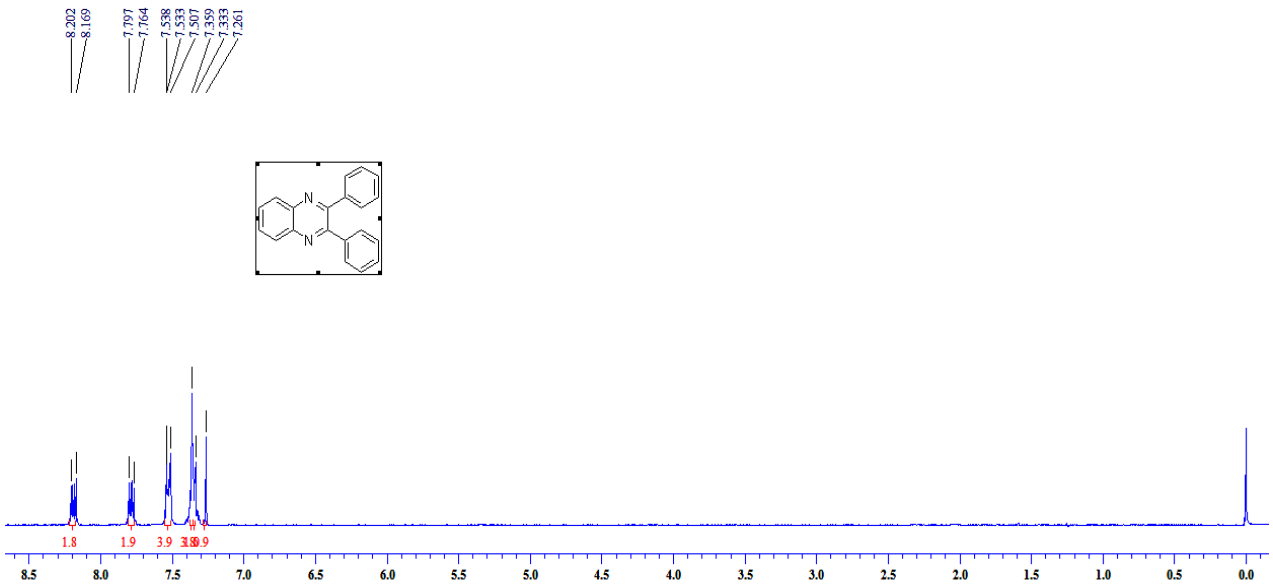

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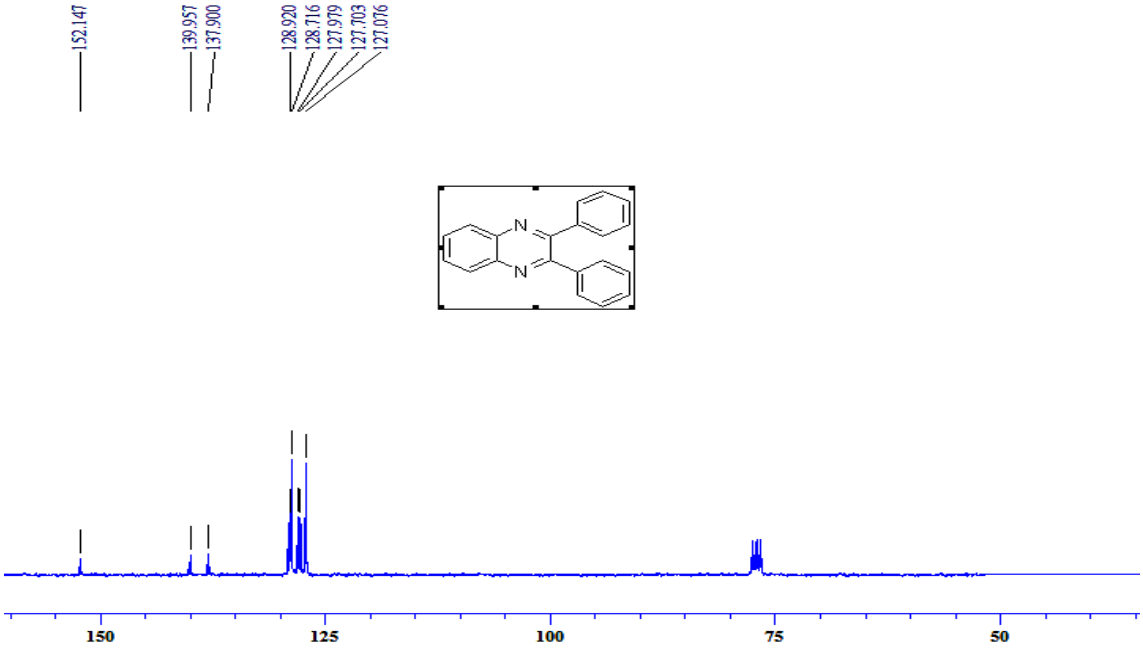

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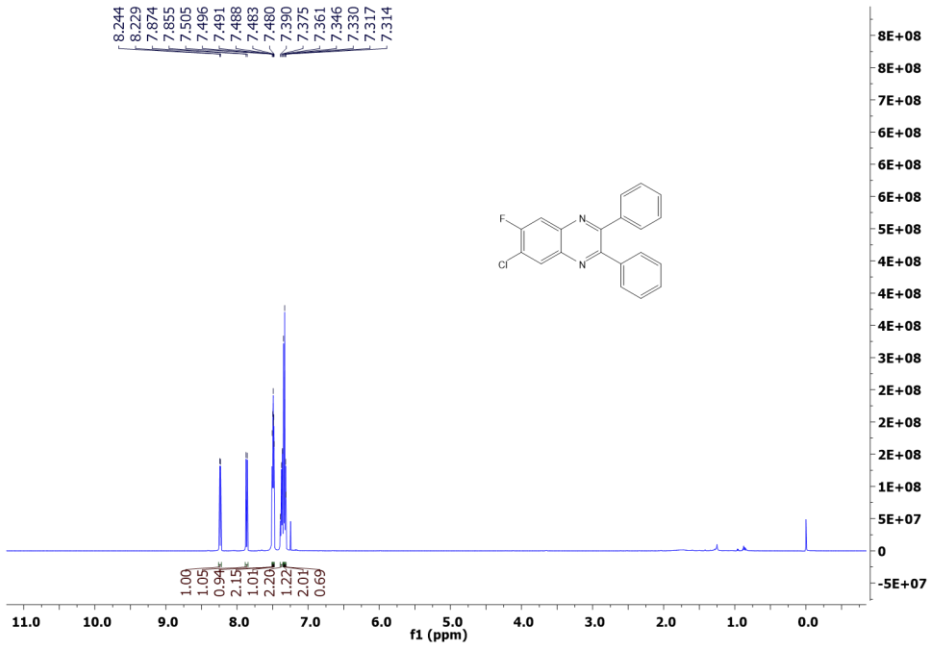

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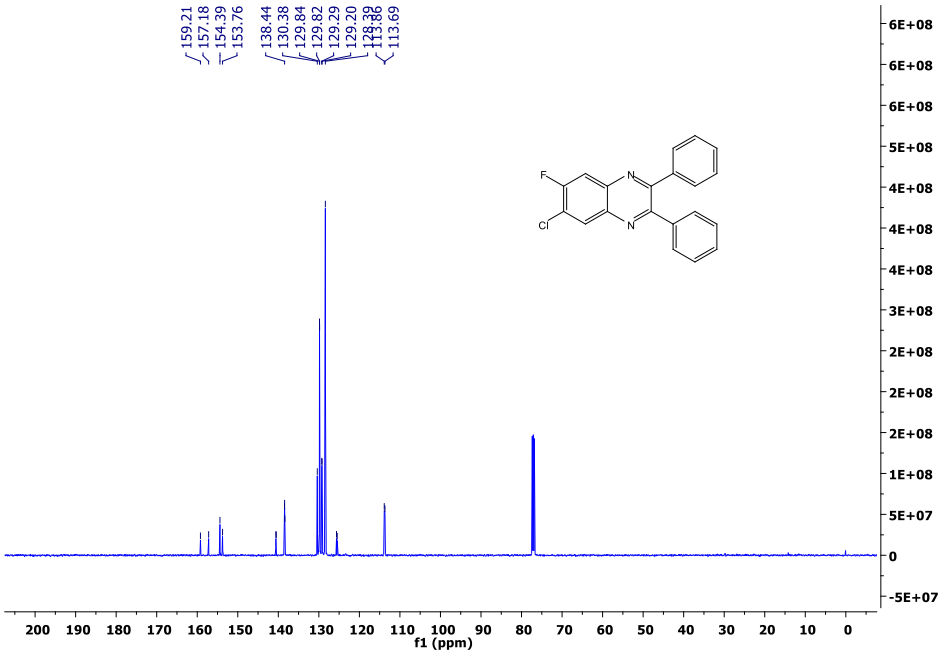

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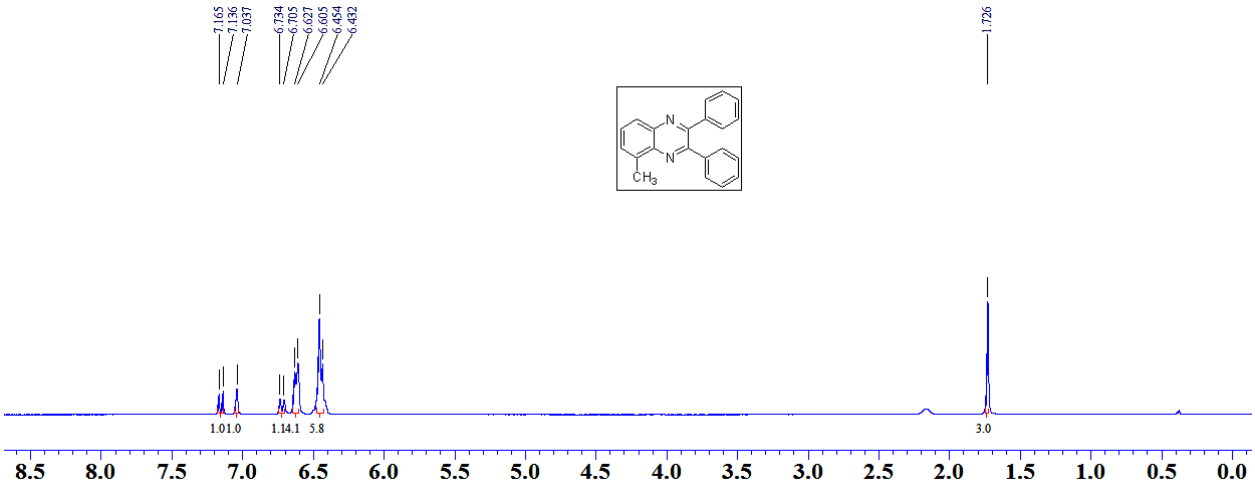

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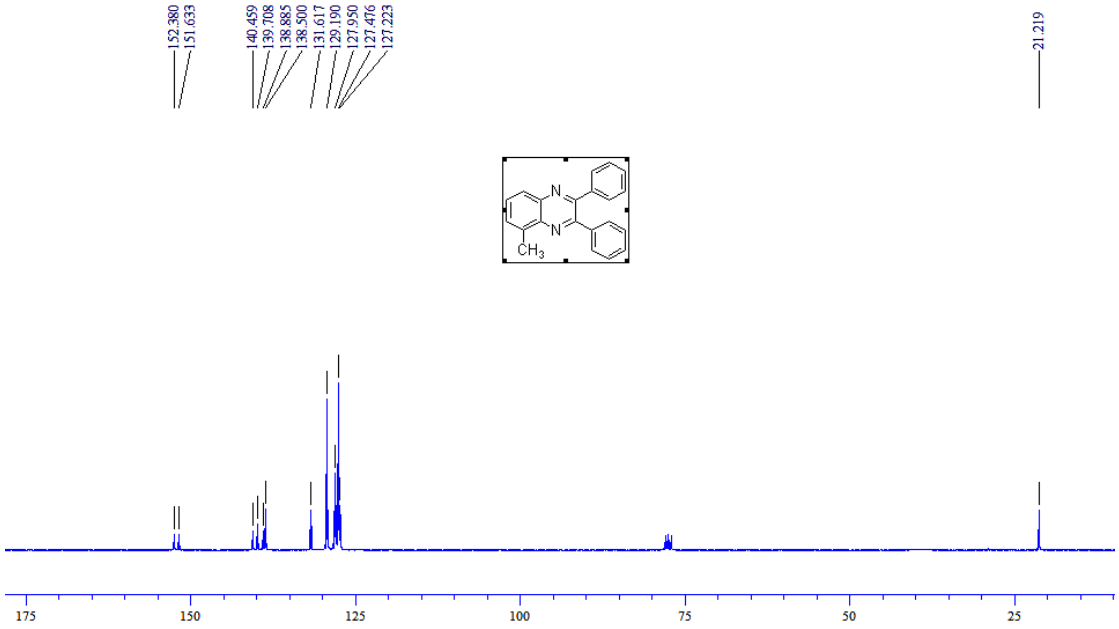

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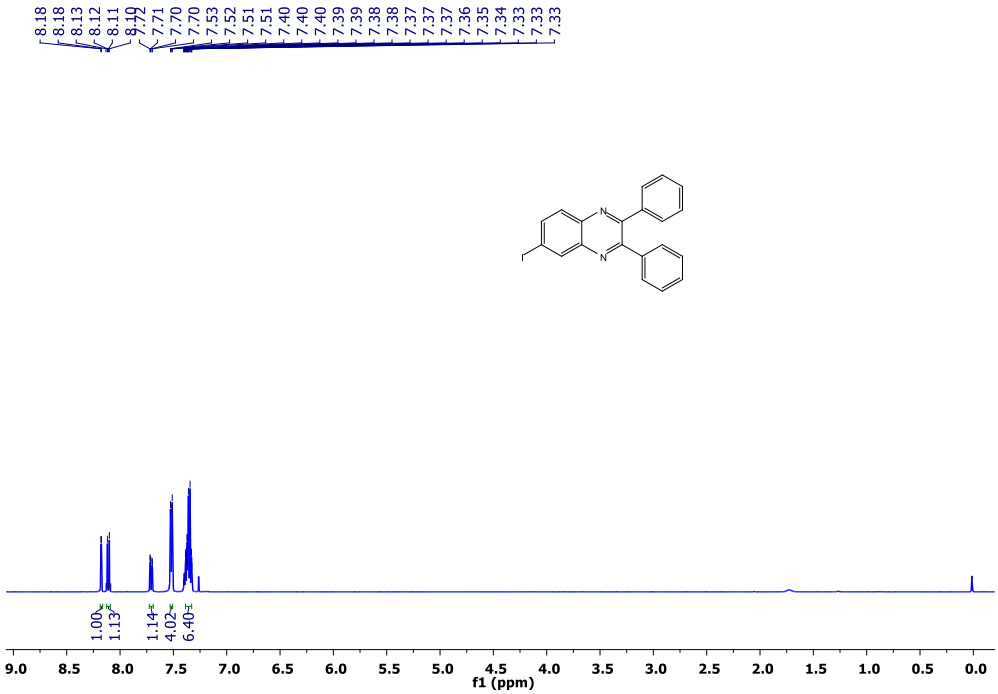

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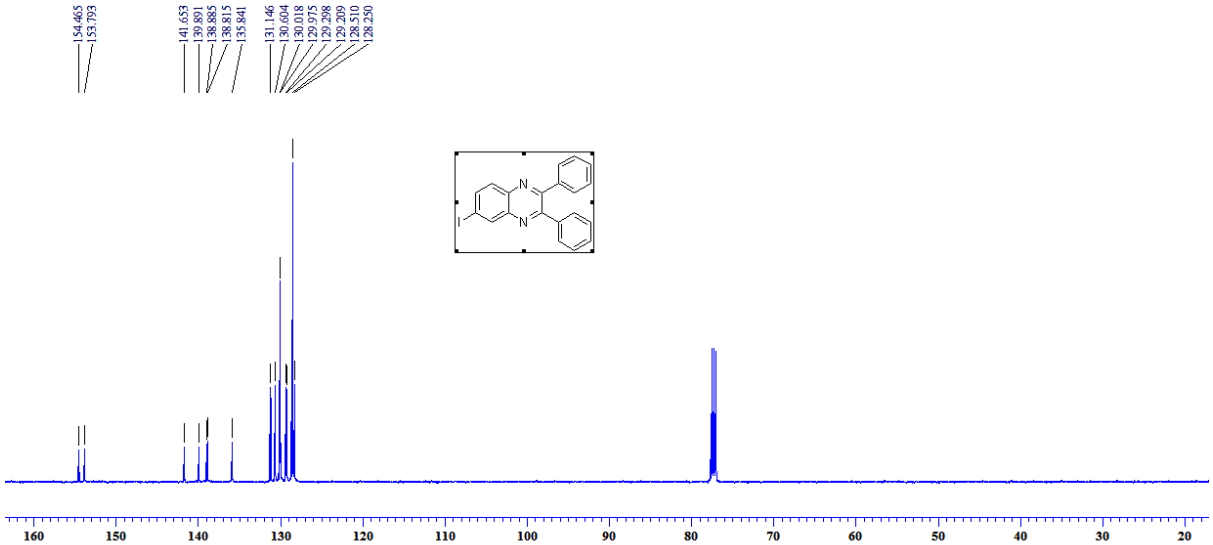

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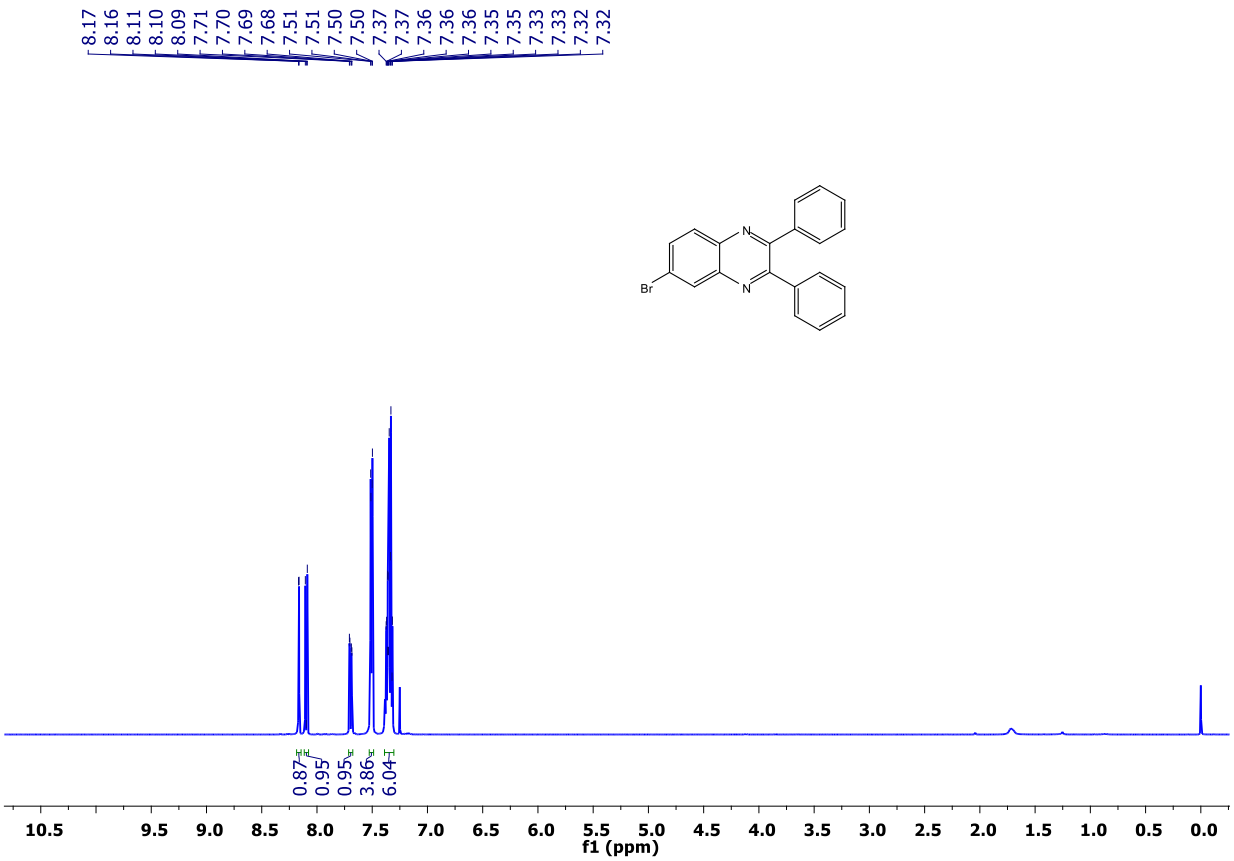

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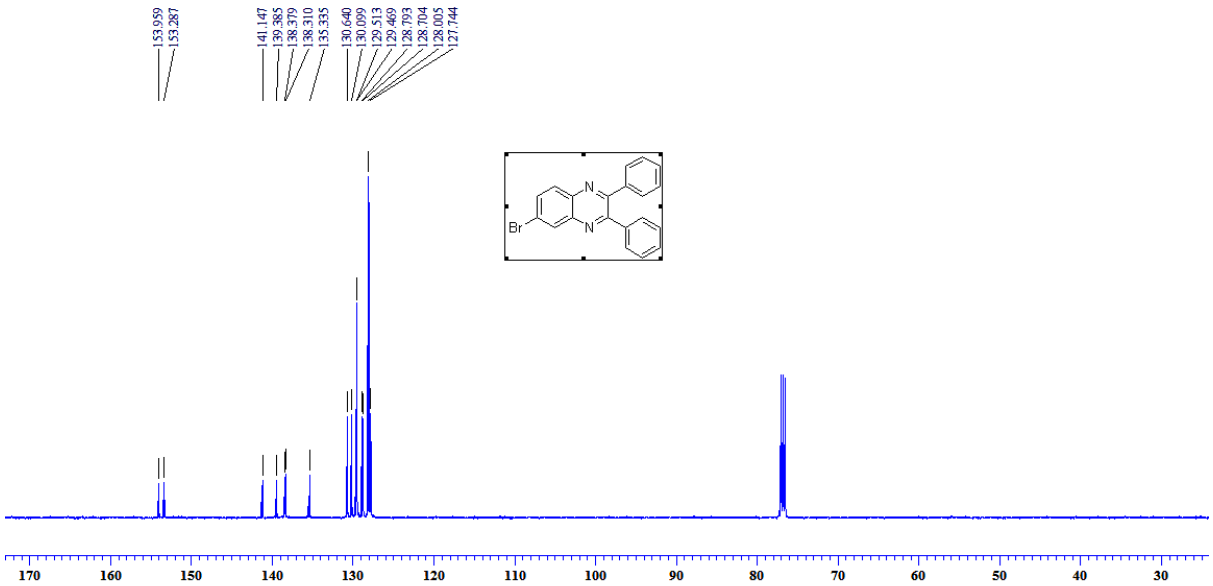

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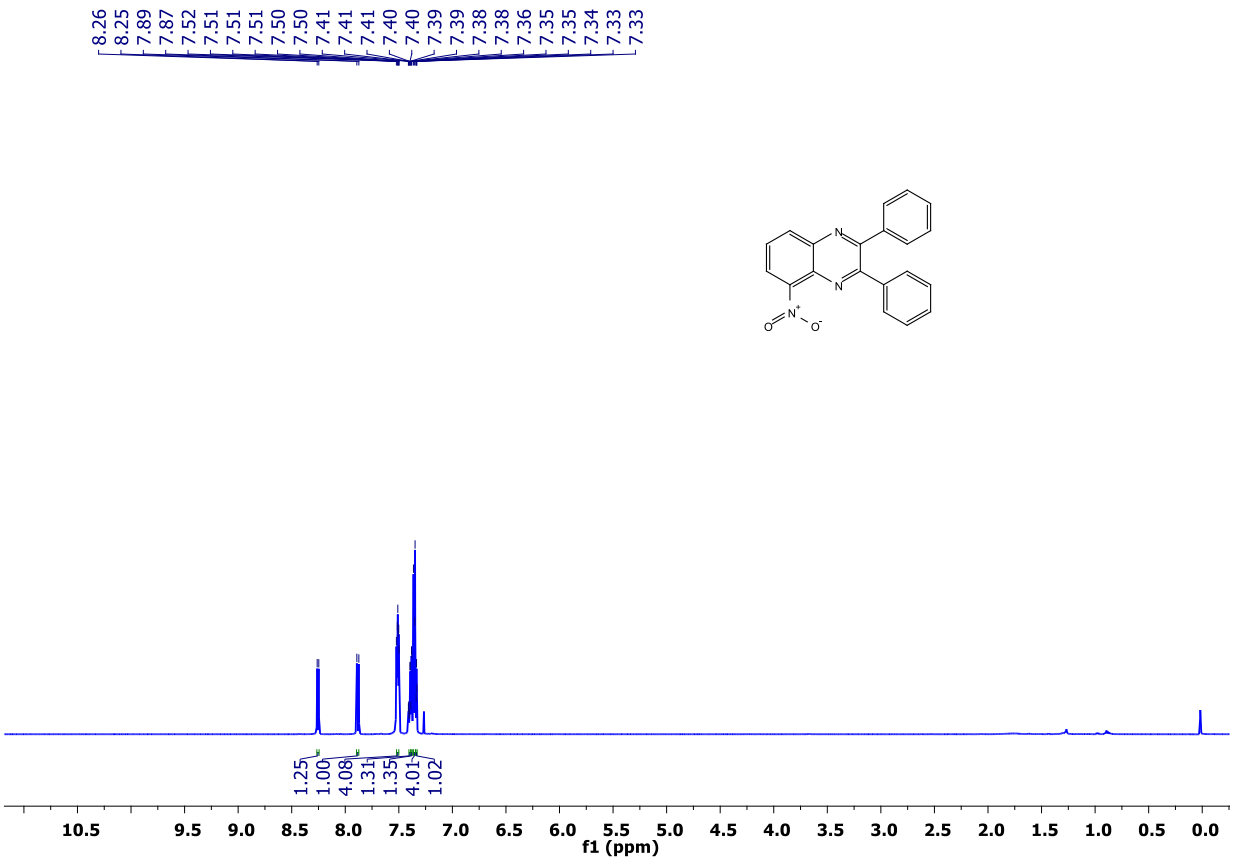

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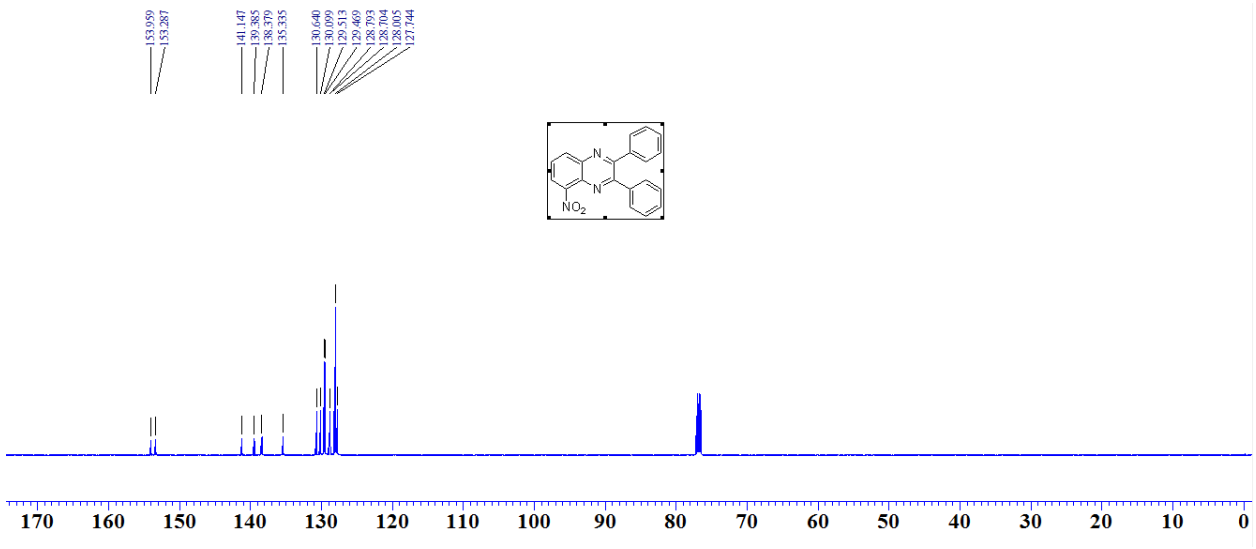

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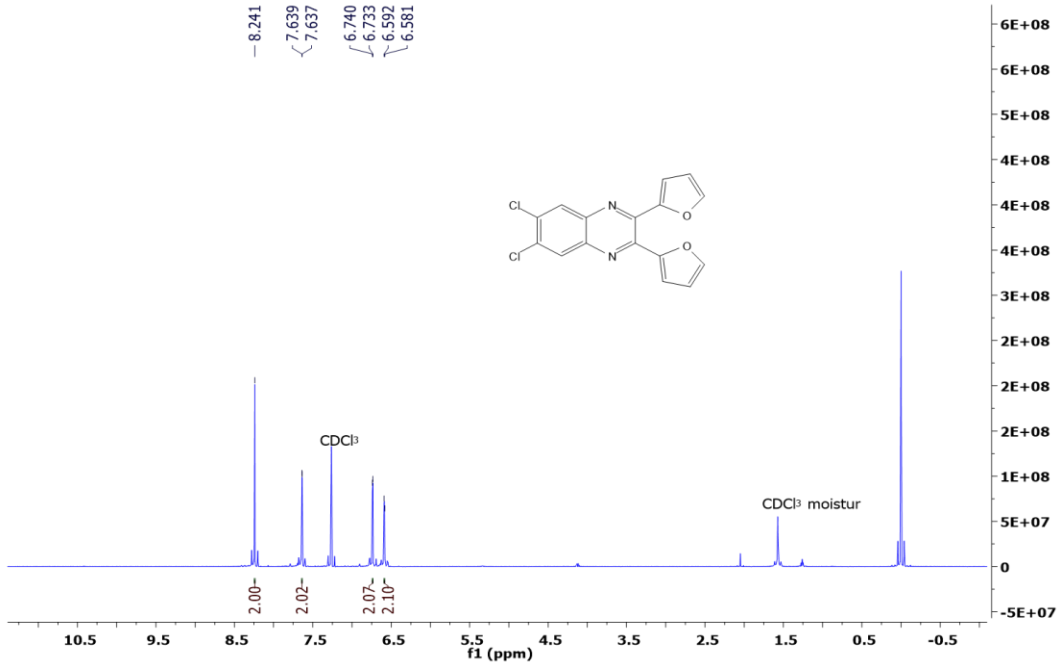

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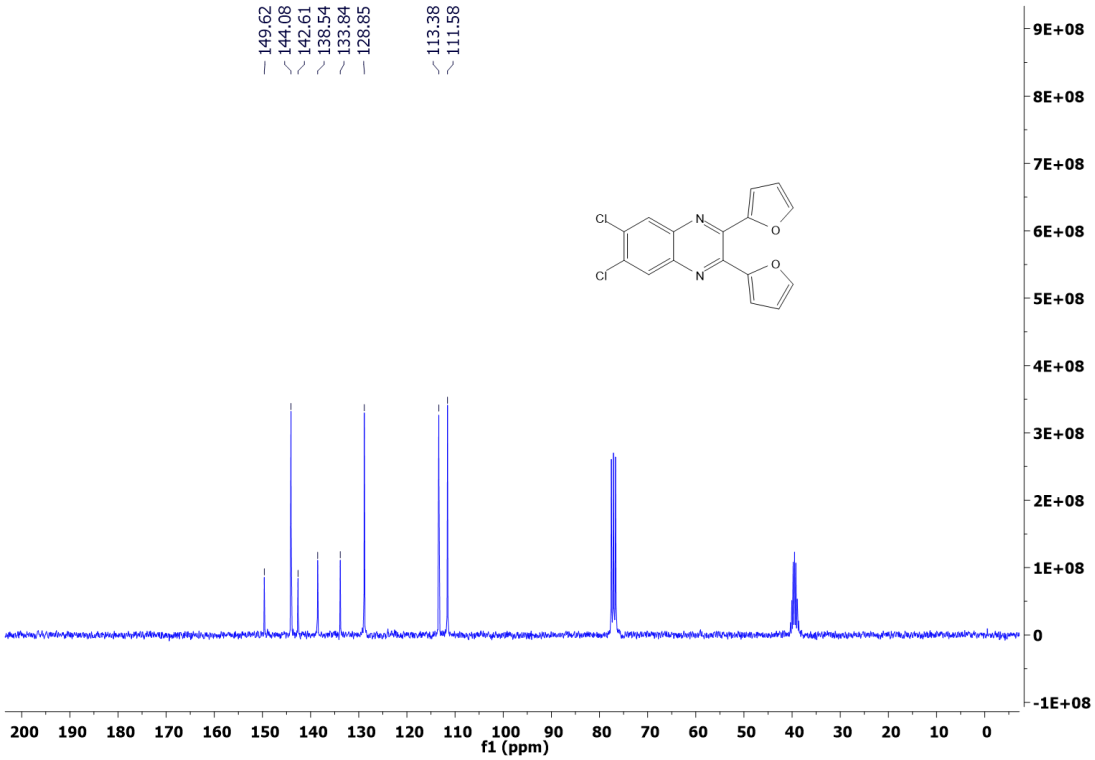

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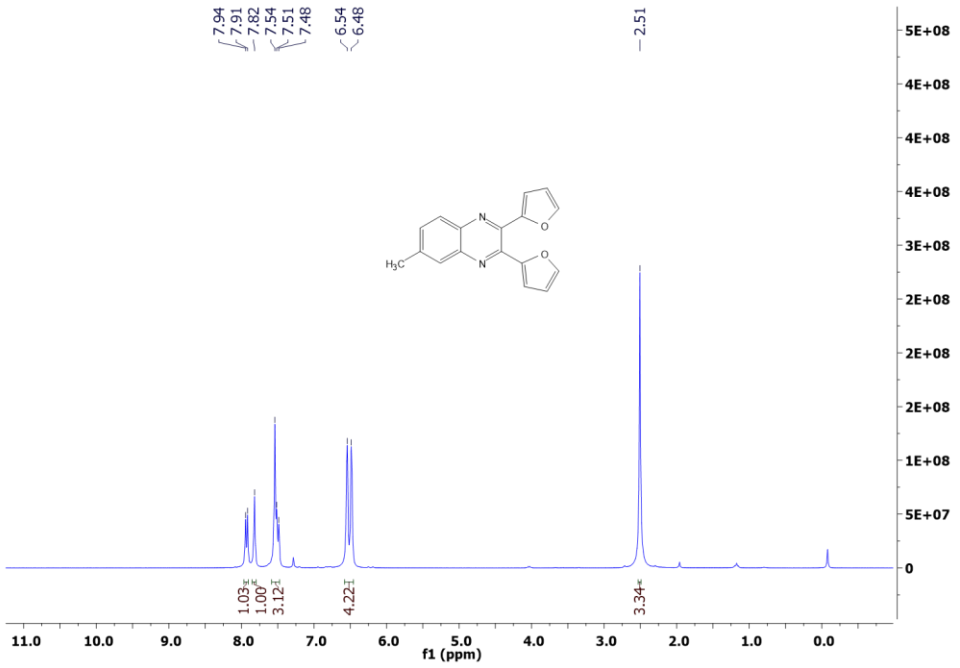

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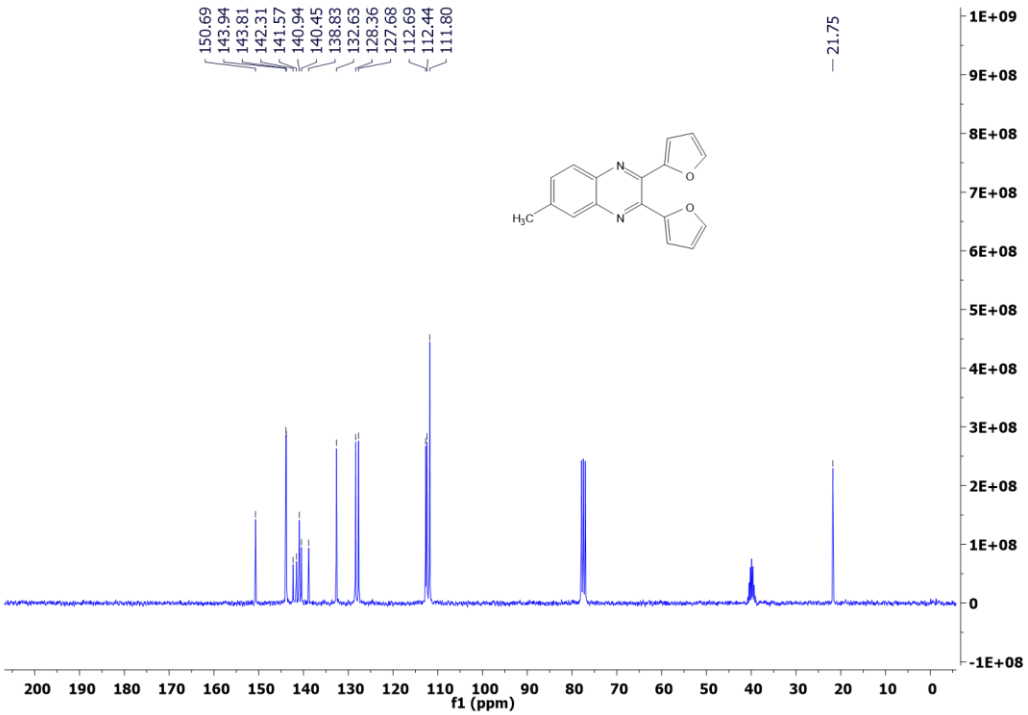

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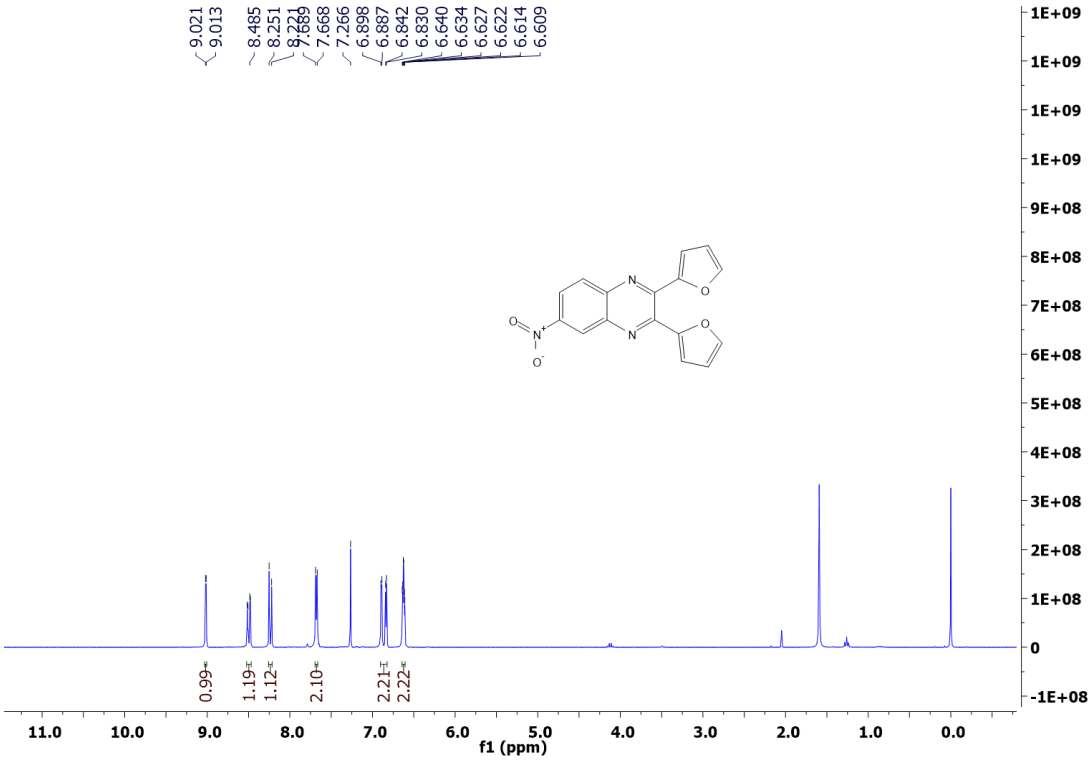

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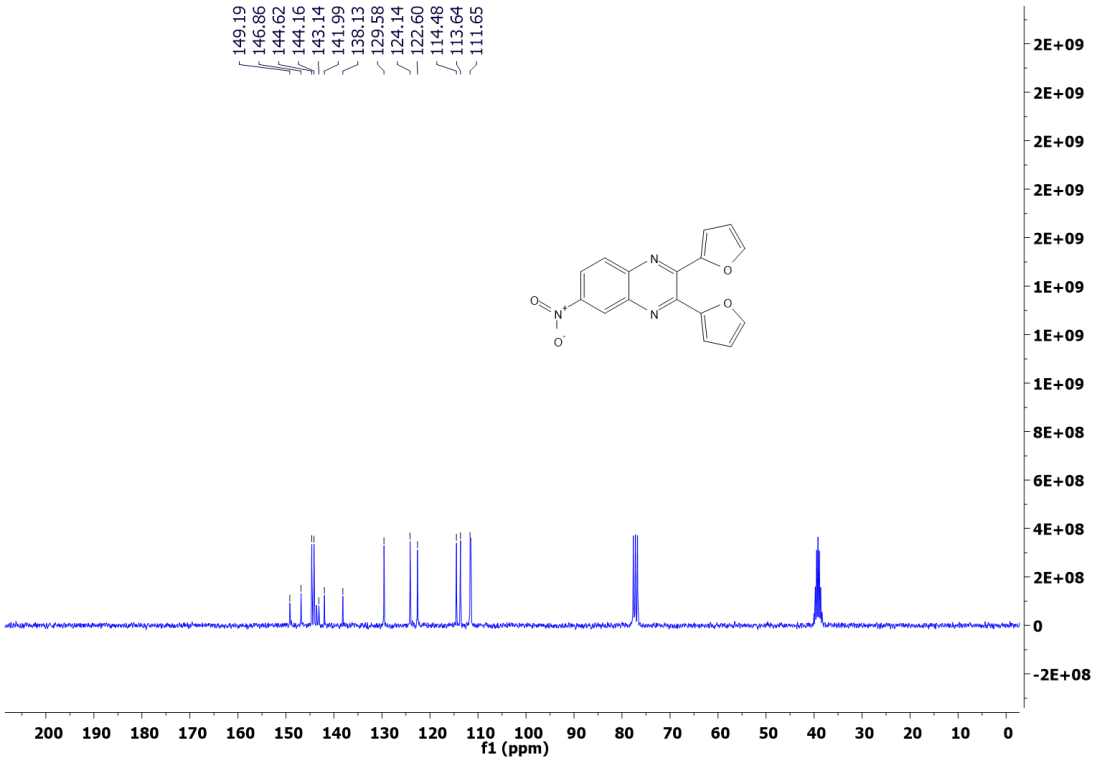

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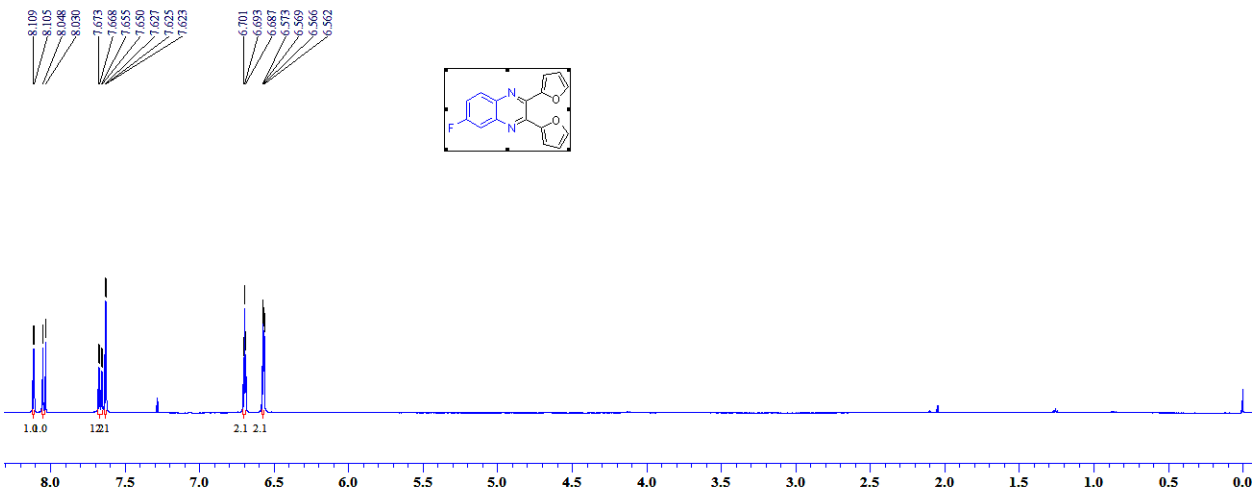

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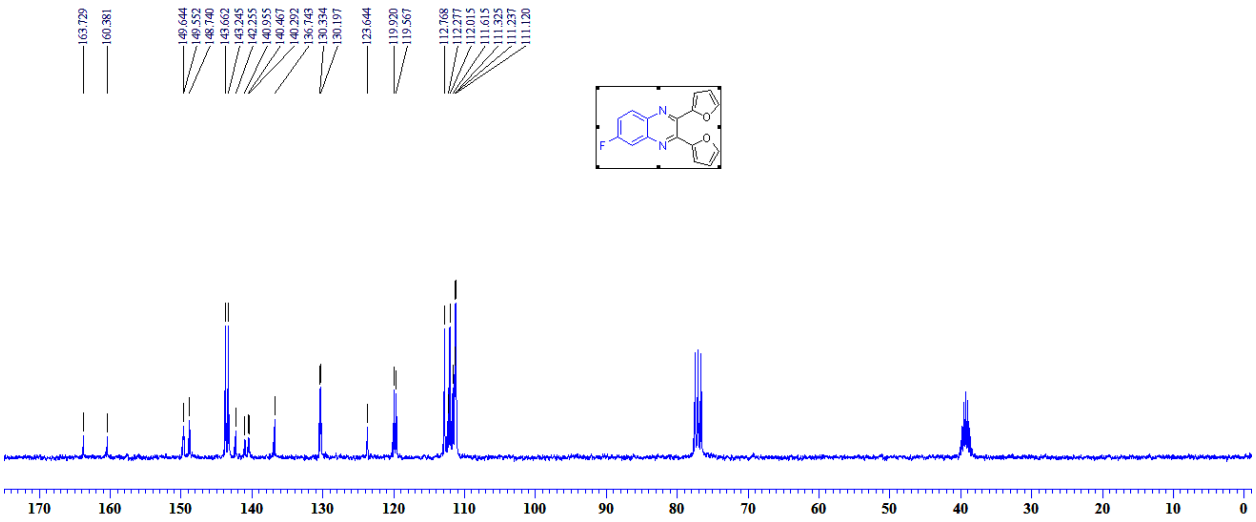

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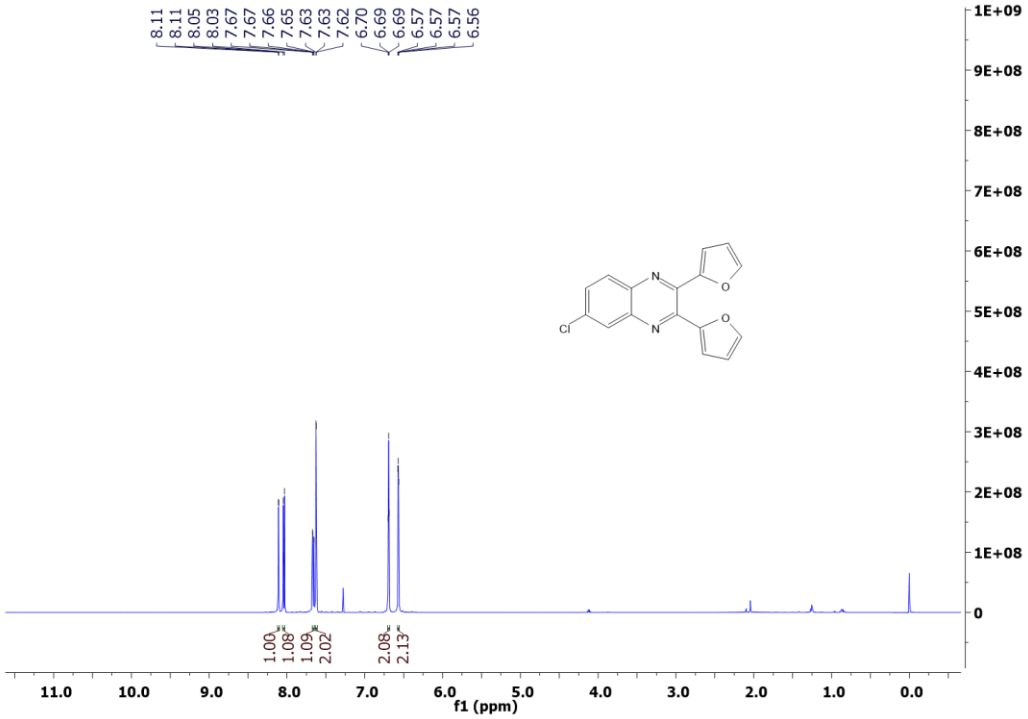

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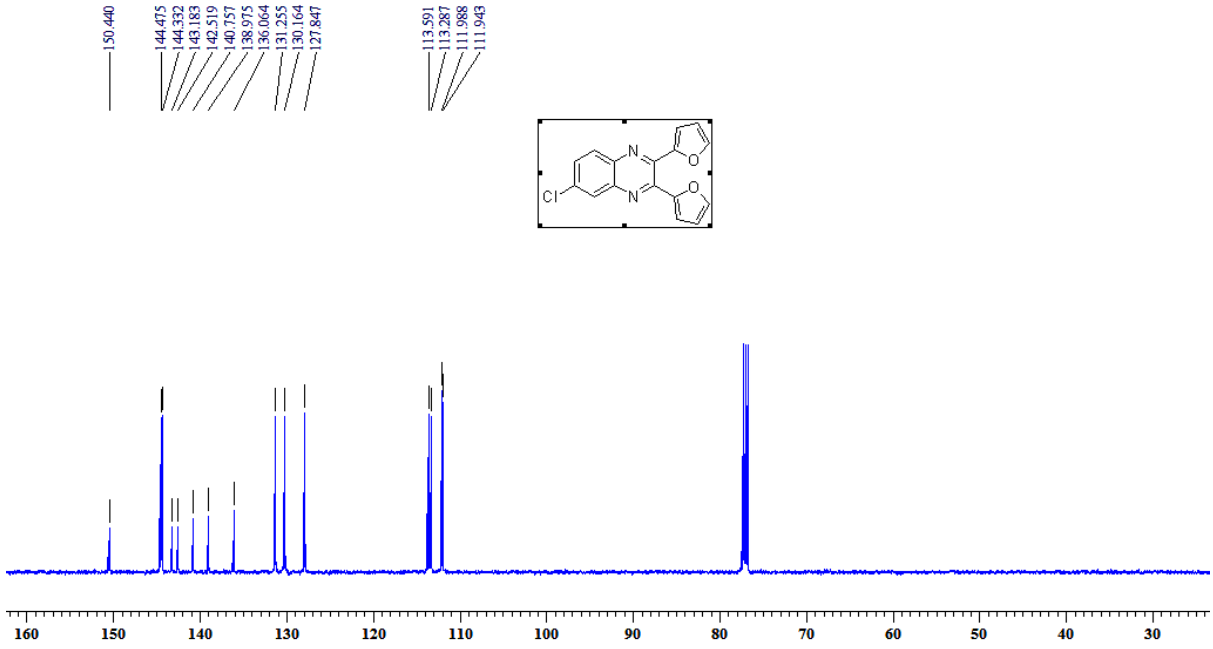

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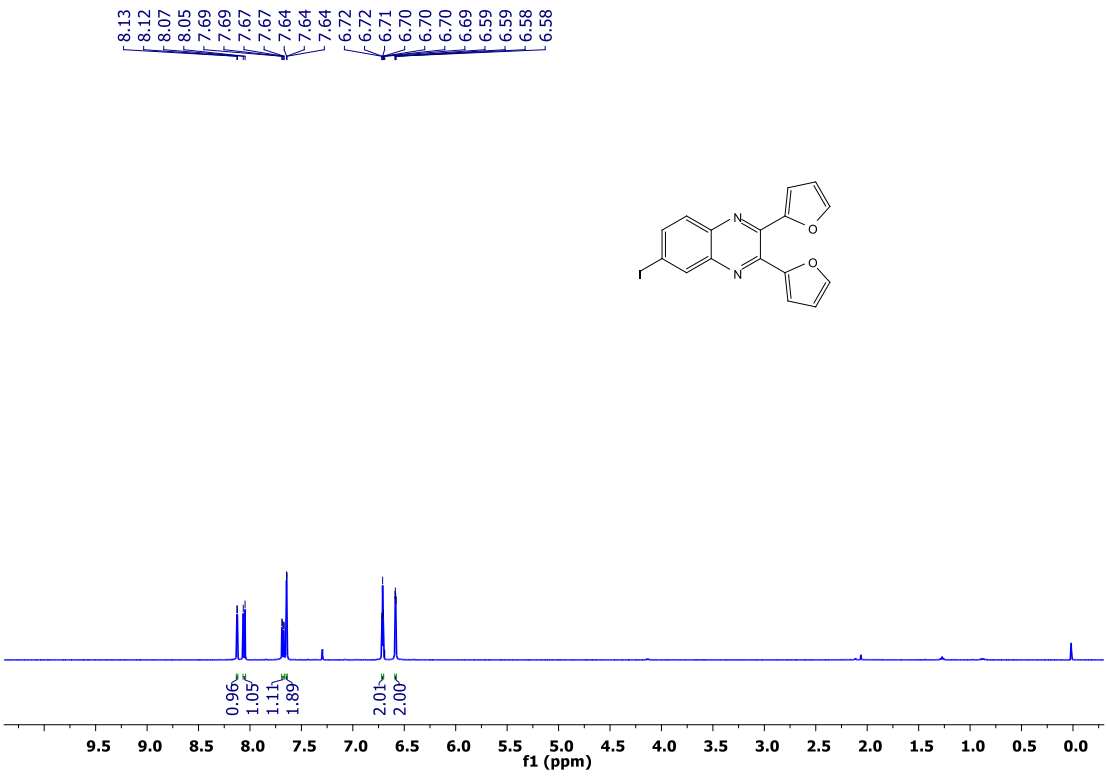

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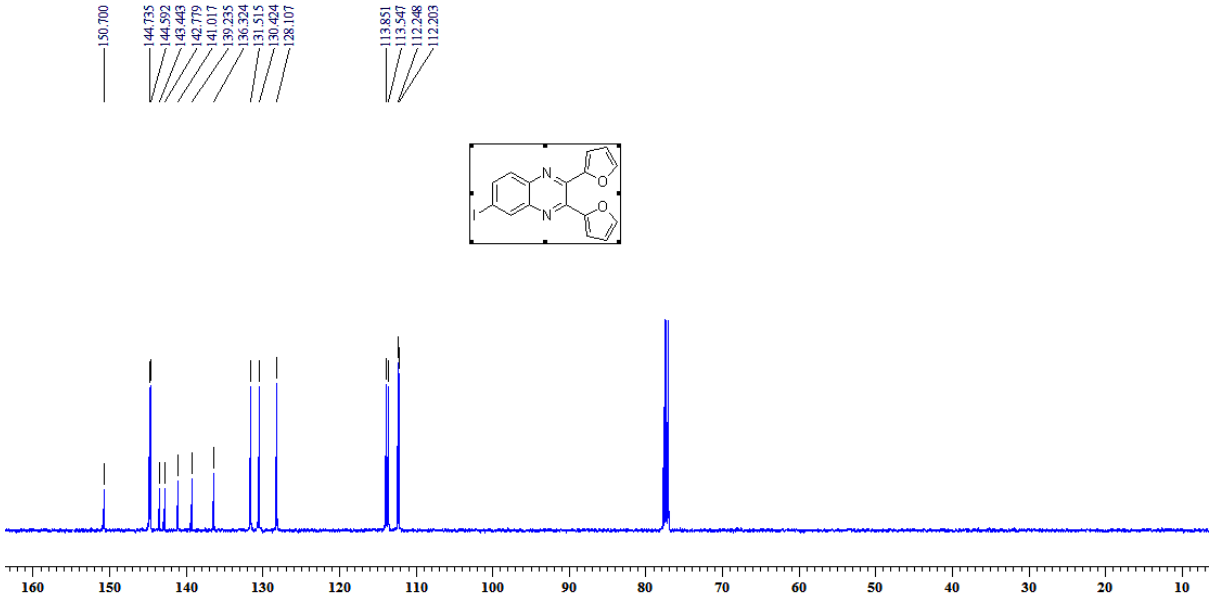

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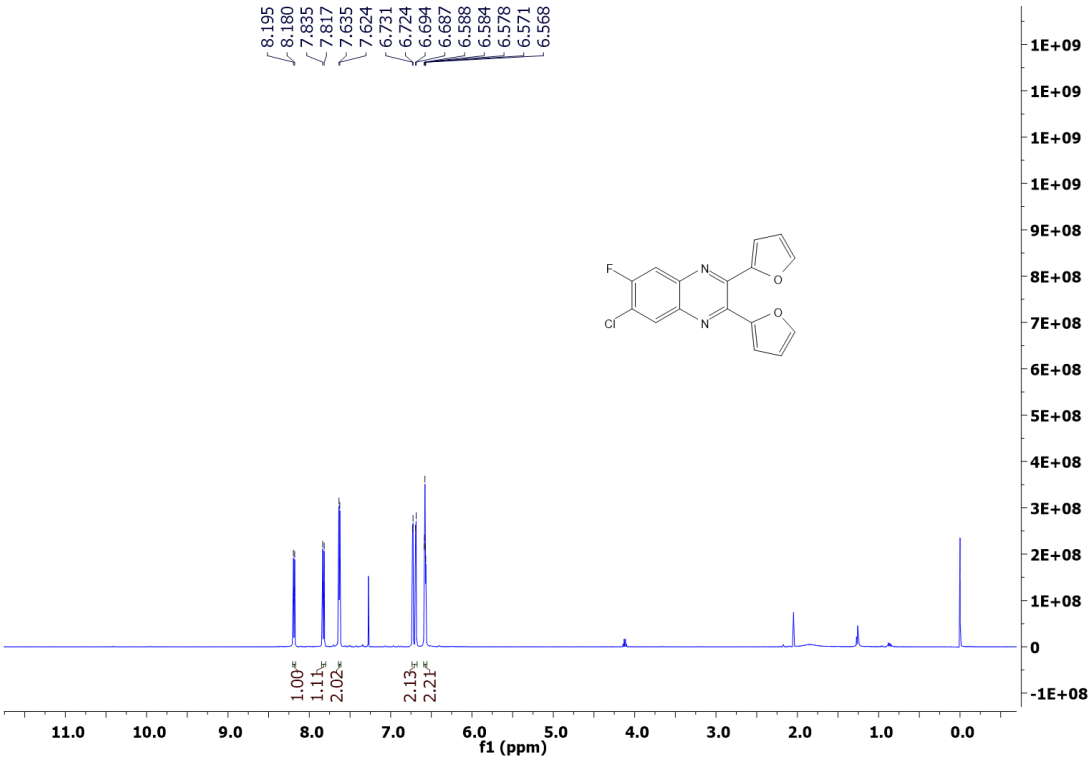

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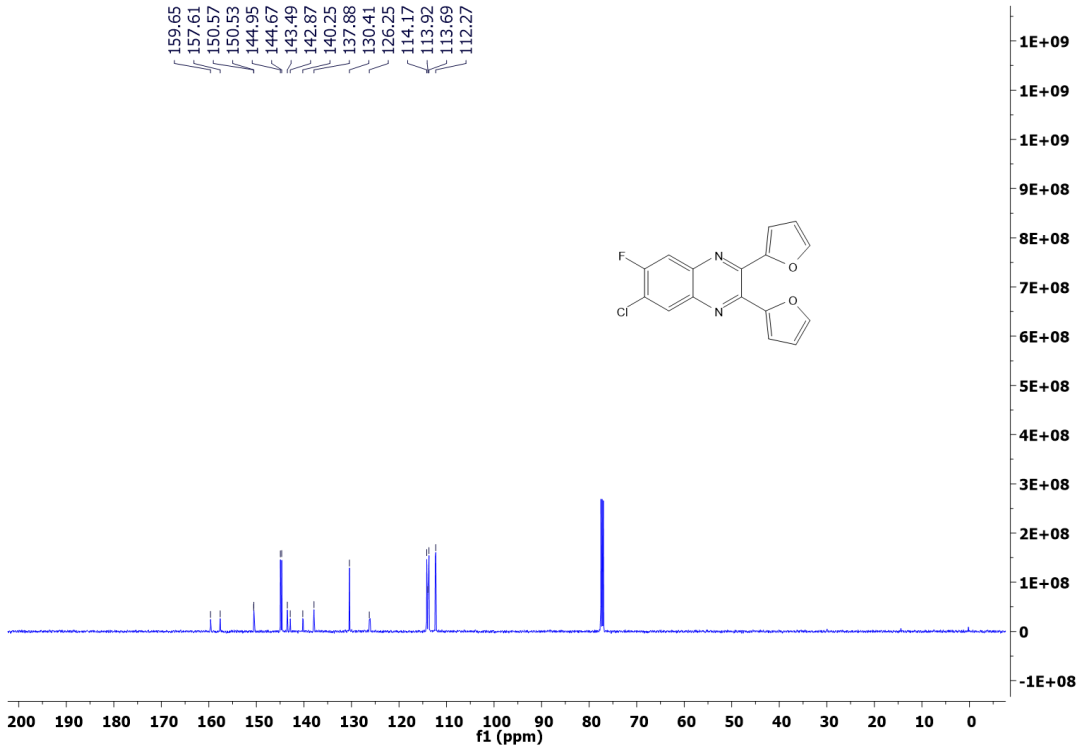

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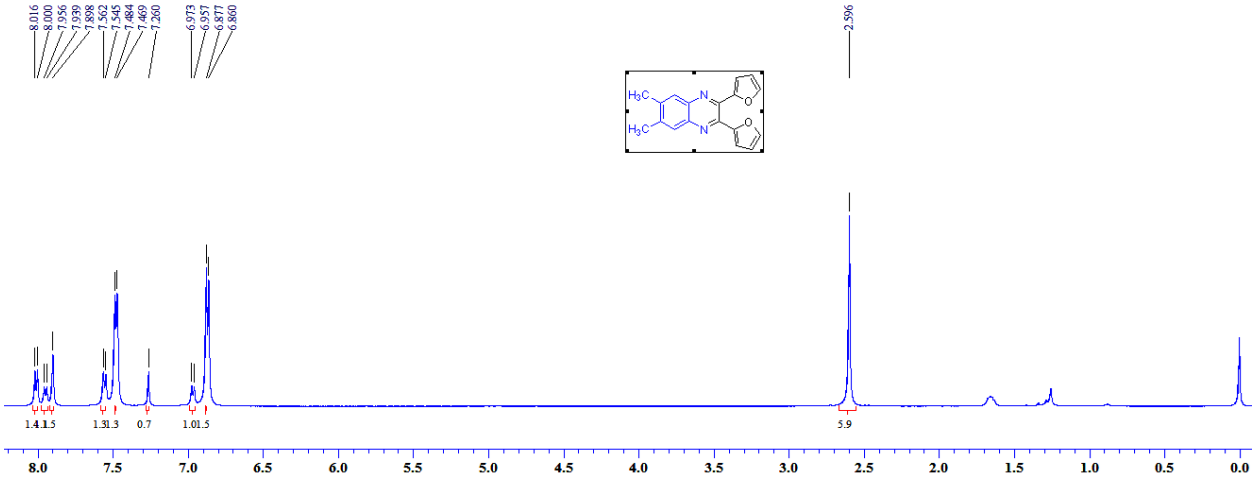

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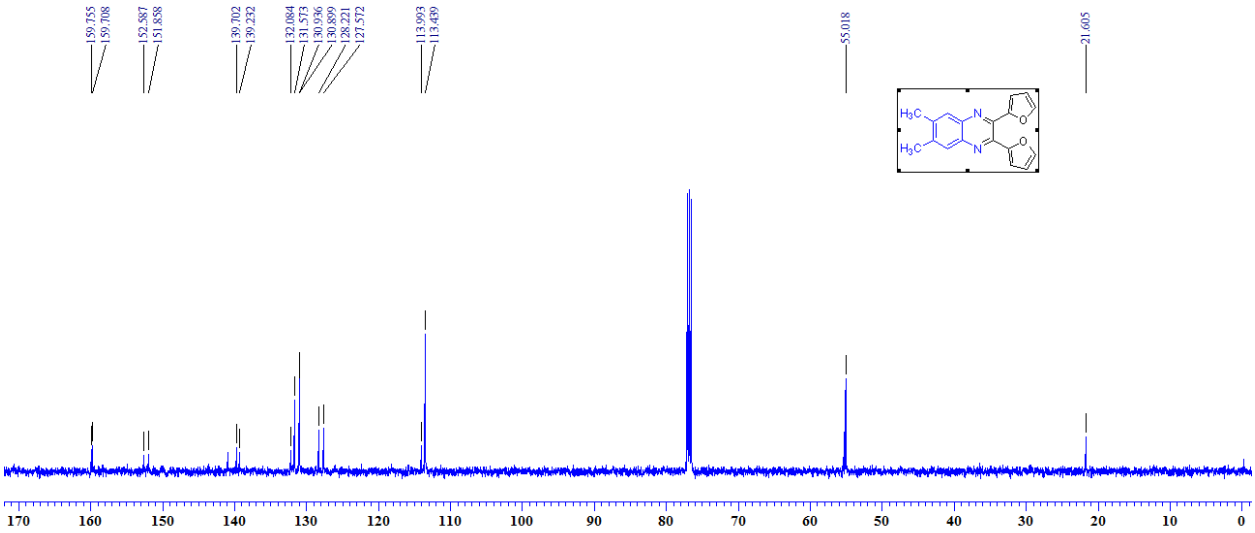

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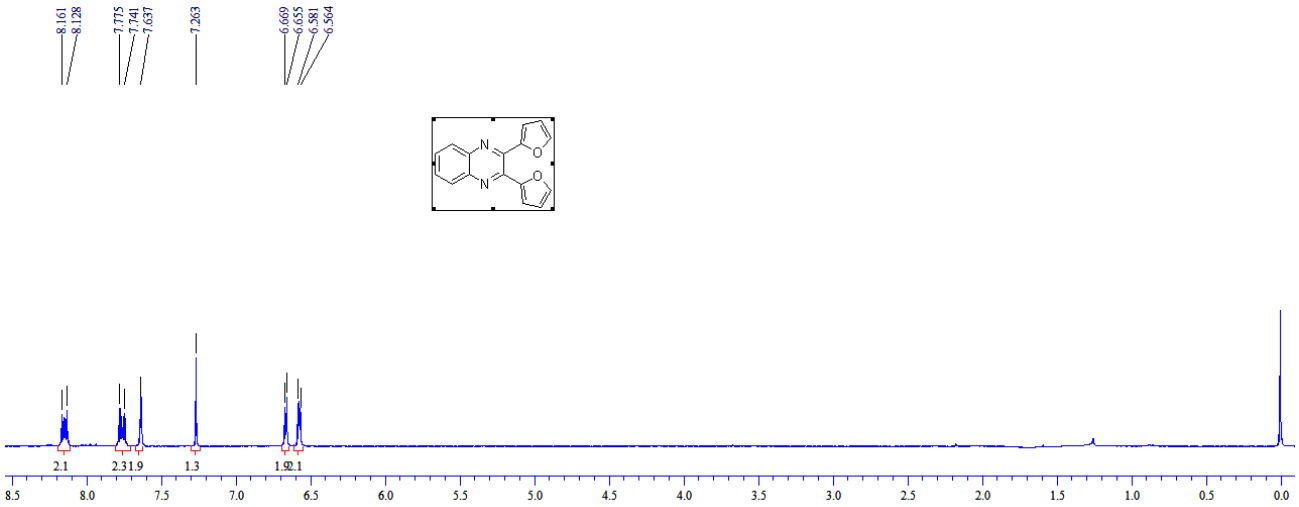

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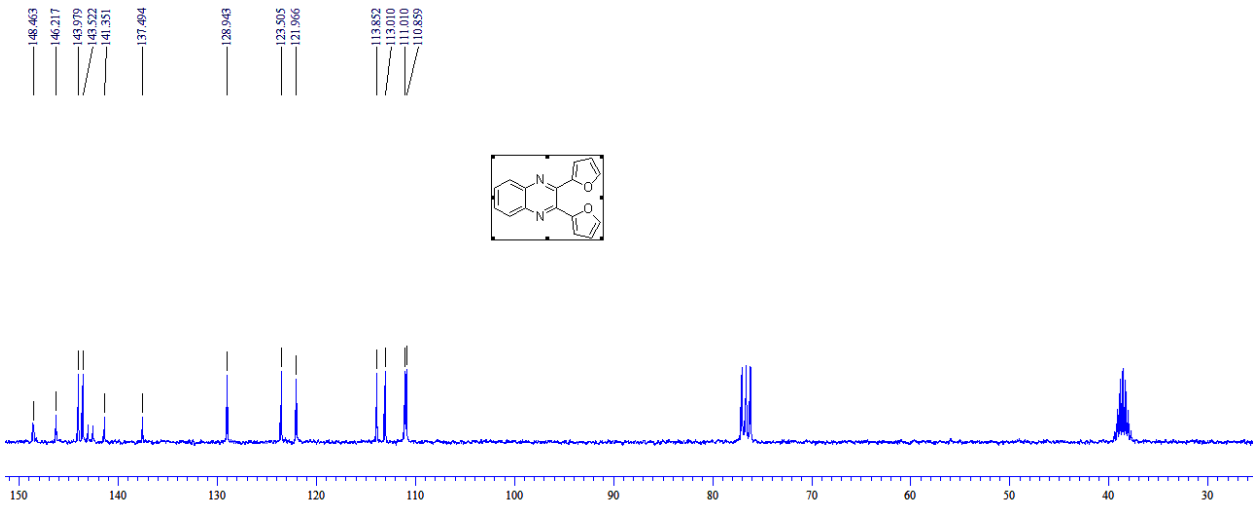

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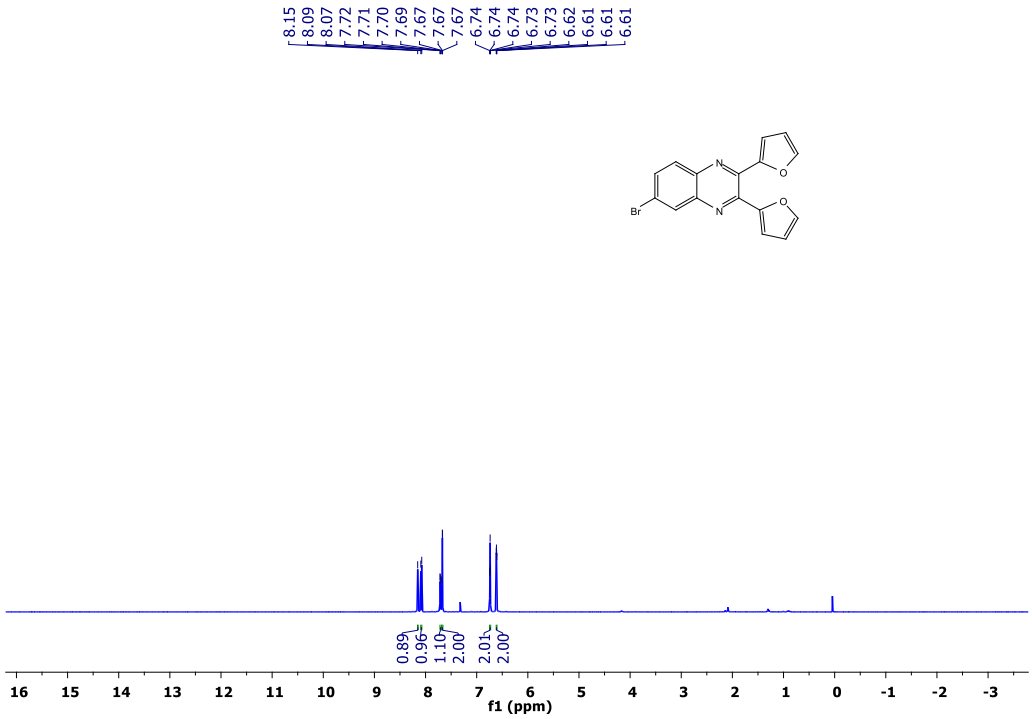

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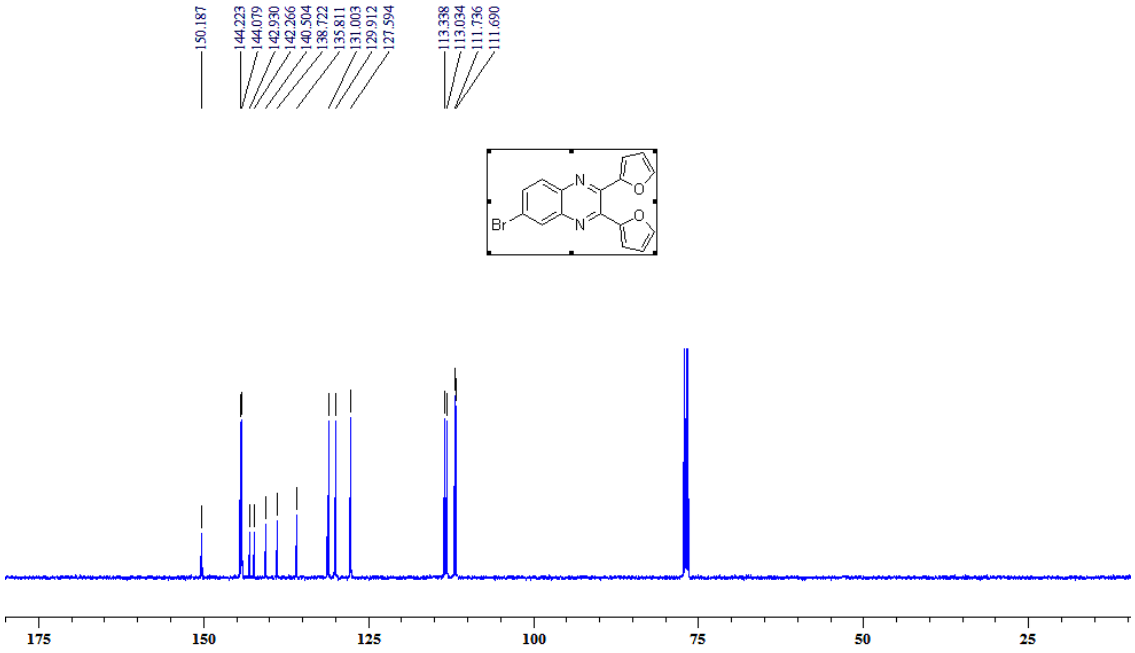

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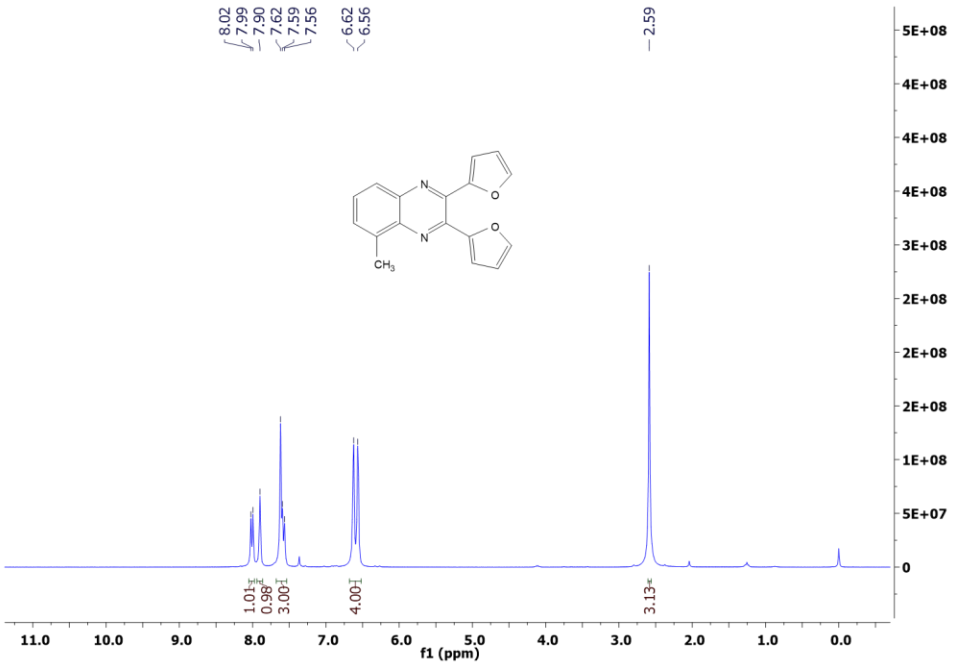

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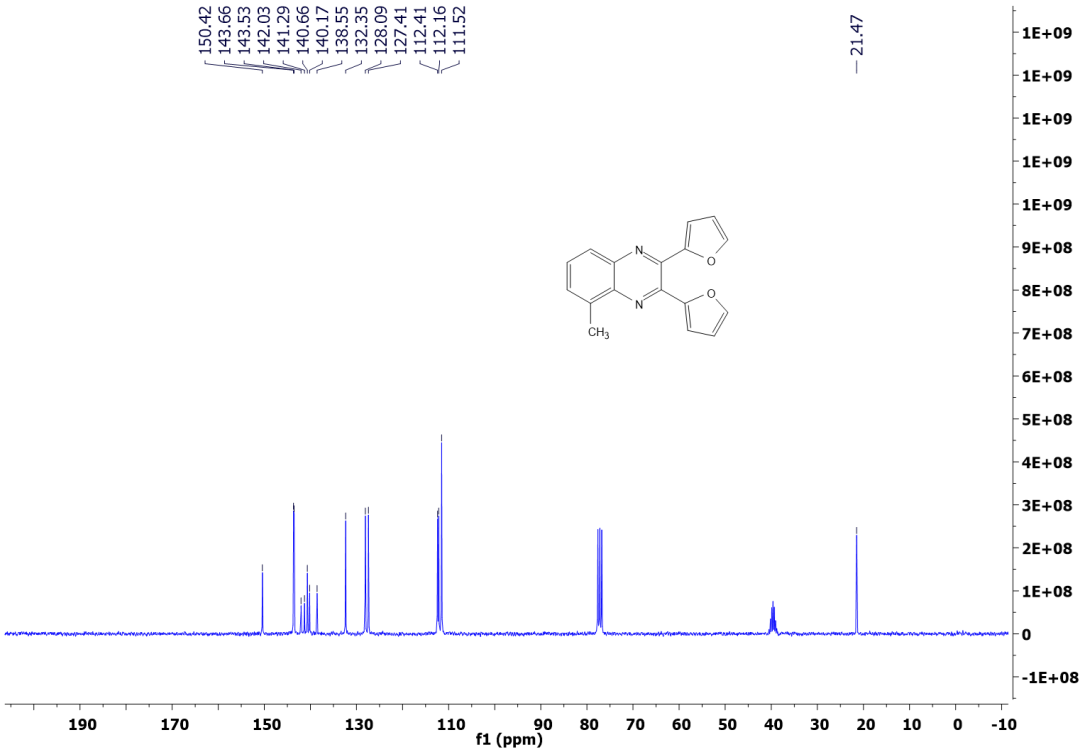

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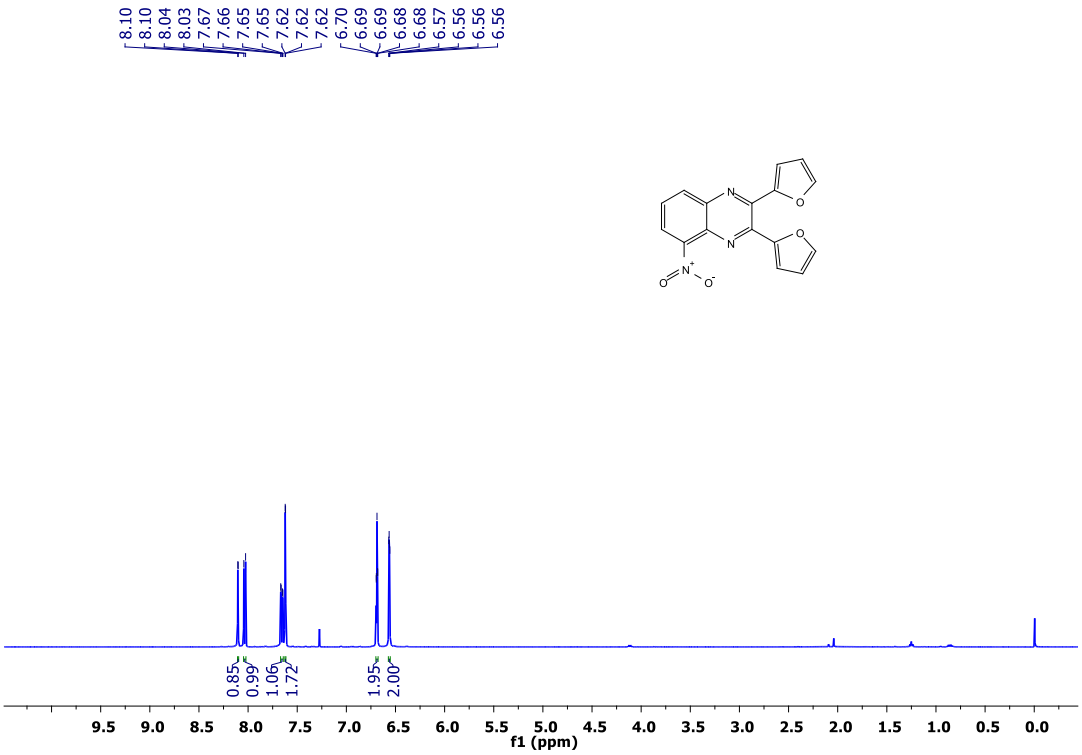

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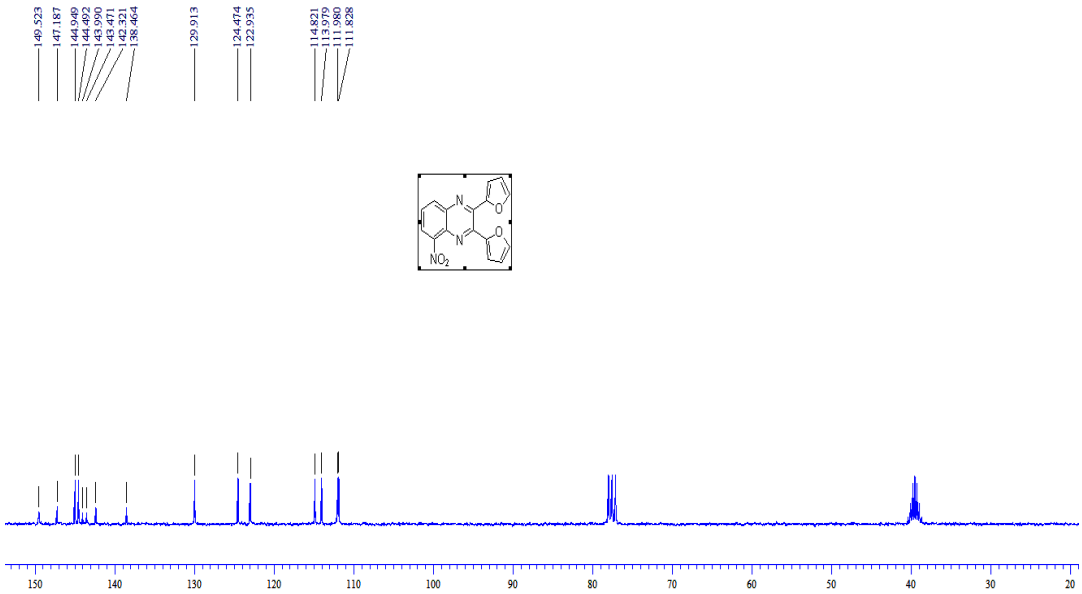

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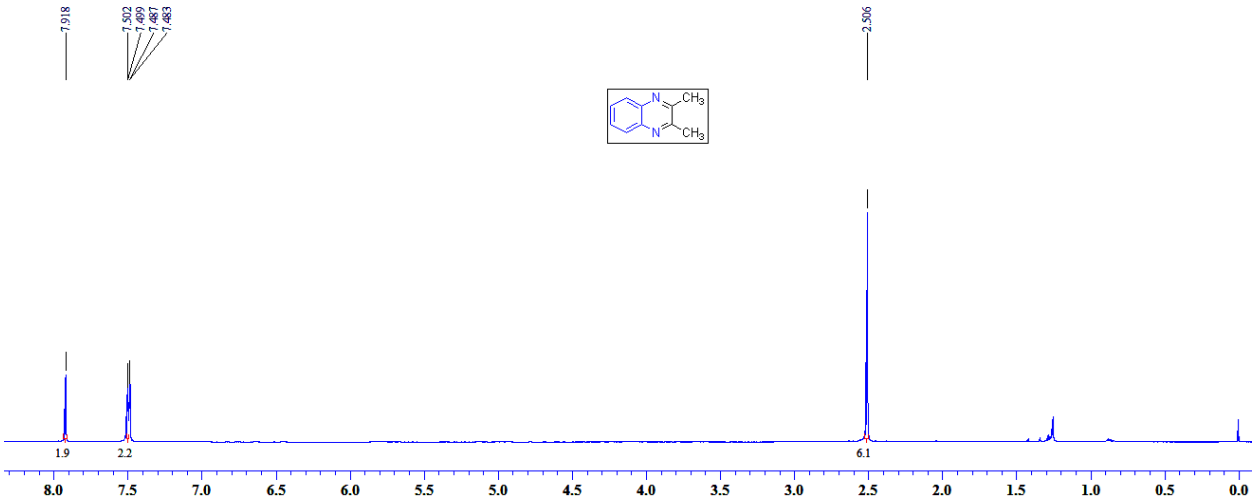

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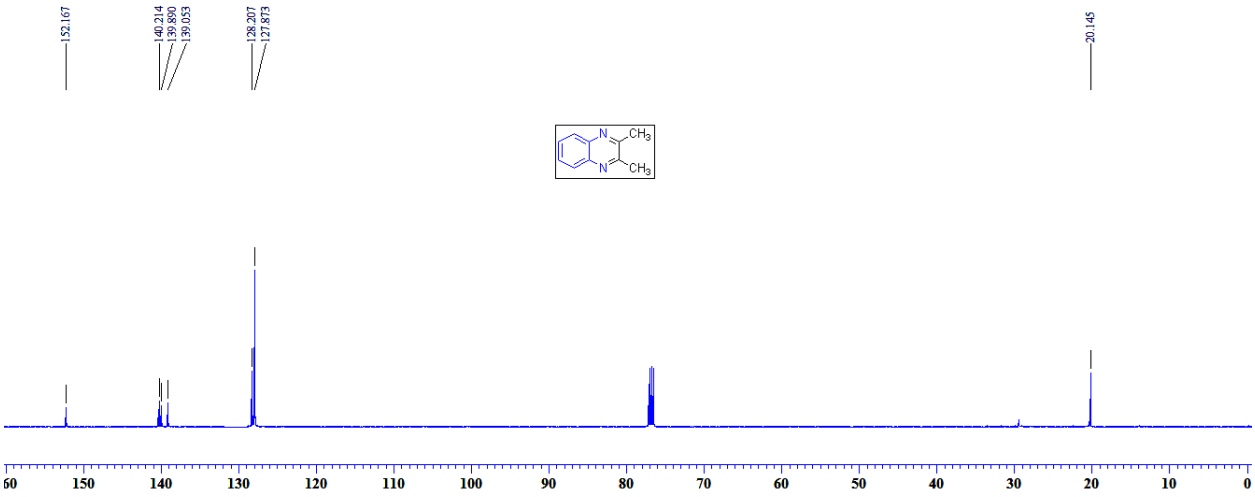

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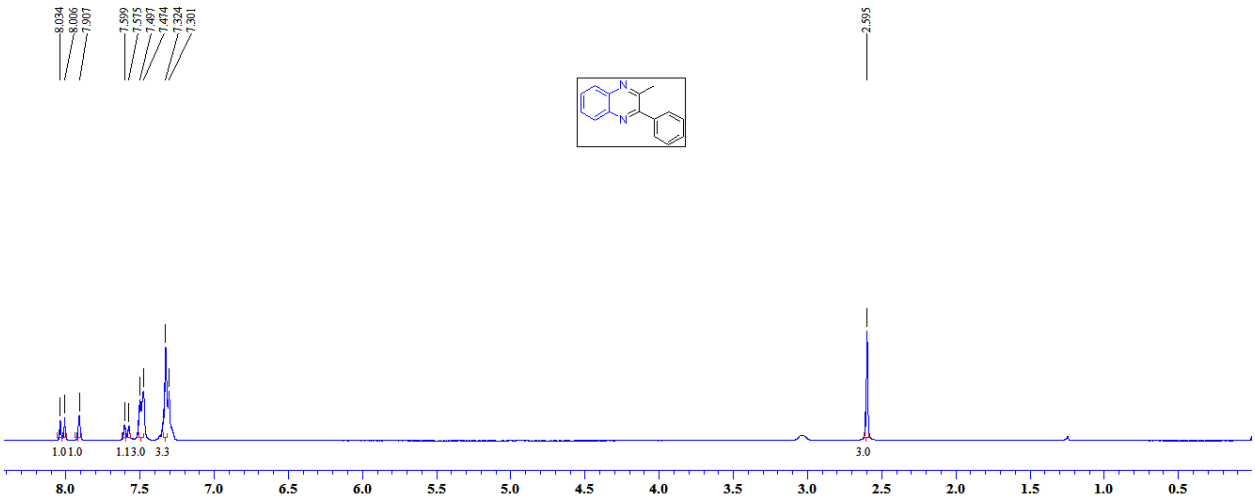

^{13}C-NMR spectra of compound (3z)