

Chapter 7

(References)

7. REFERENCES

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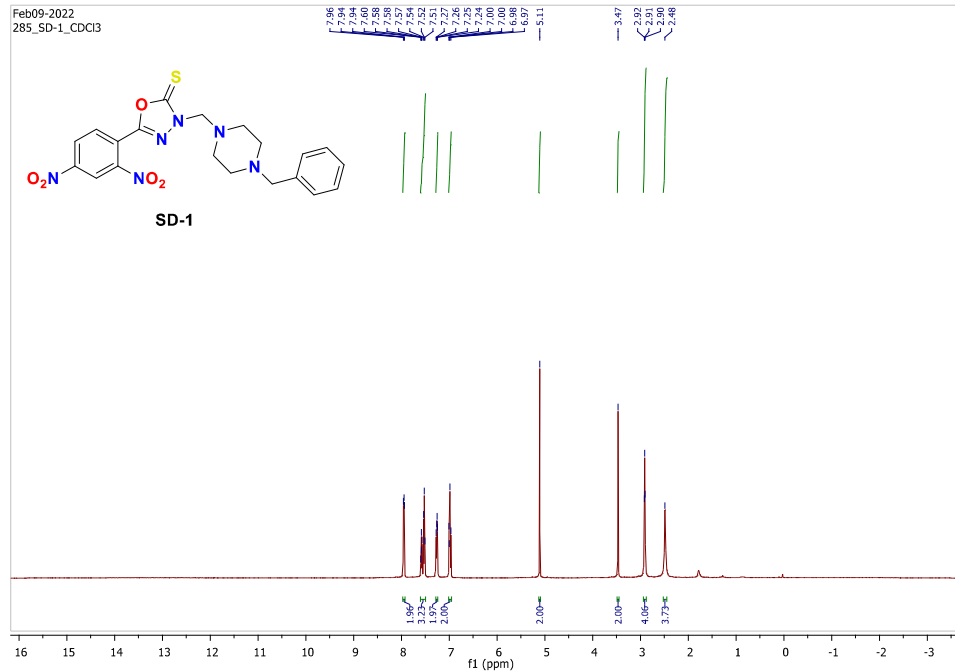
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Chapter 8
(Appendices)

8.1 ^1H and ^{13}C NMR spectra of the representative compounds

3-((4-benzylpiperazin-1-yl)methyl)-5-(4-chlorophenyl)-1,3,4-oxadiazole-2(3H)-thione (SD-1)



3-((4-benzylpiperazin-1-yl)methyl)-5-(4-nitrophenyl)-1,3,4-oxadiazole-2(3H)-thione (SD-2)

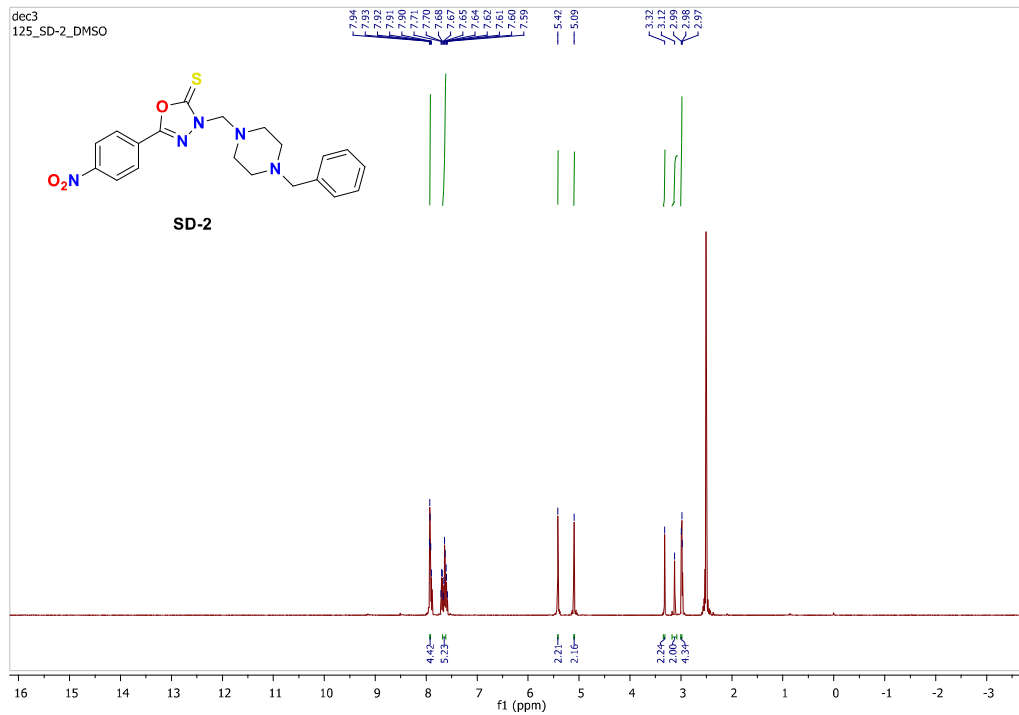


Figure 8.3 ^1H NMR spectrum of the compound **SD-2** in $\text{DMSO-}d_6$

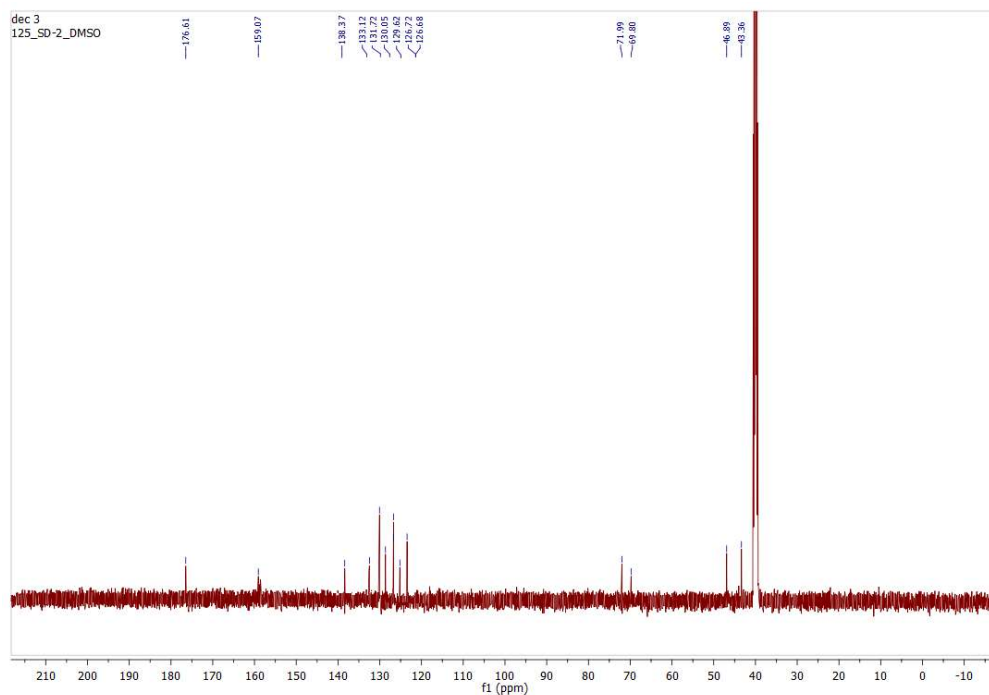
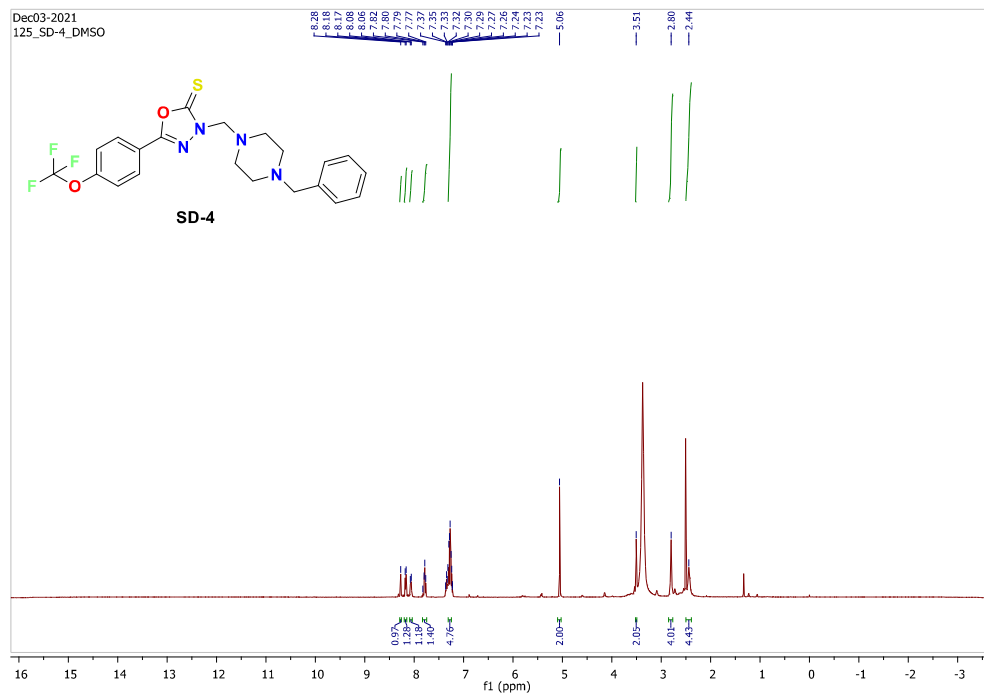
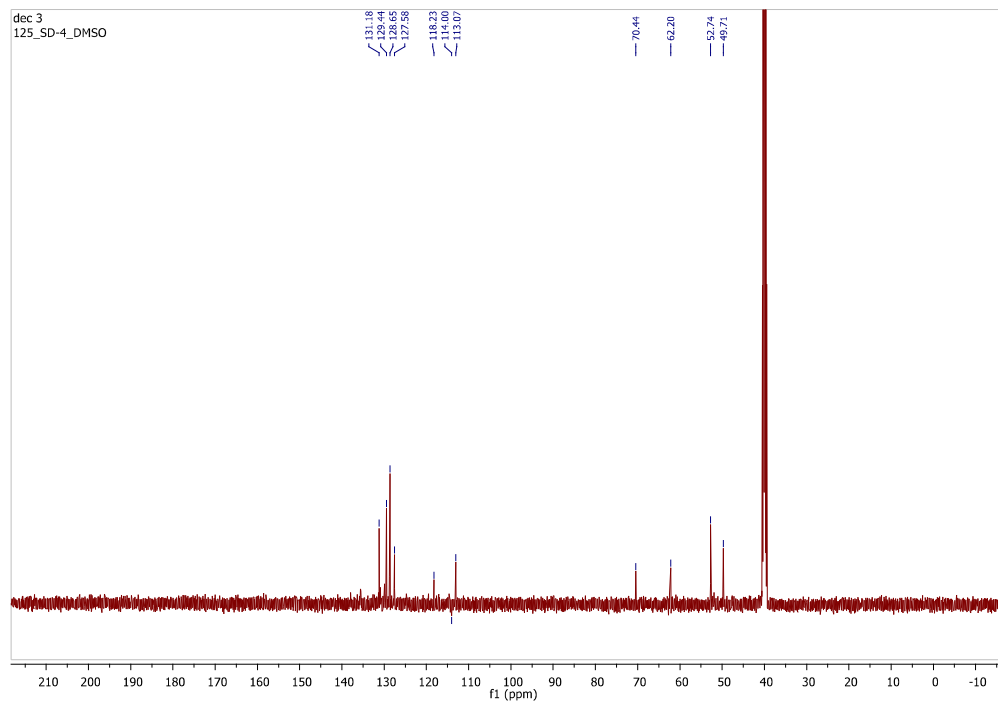
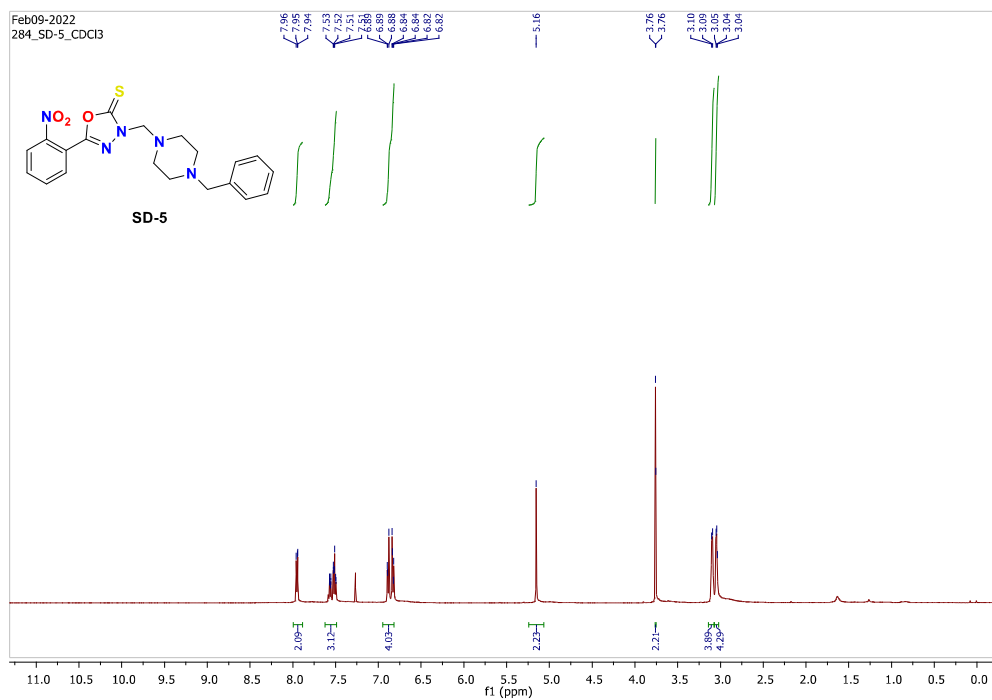
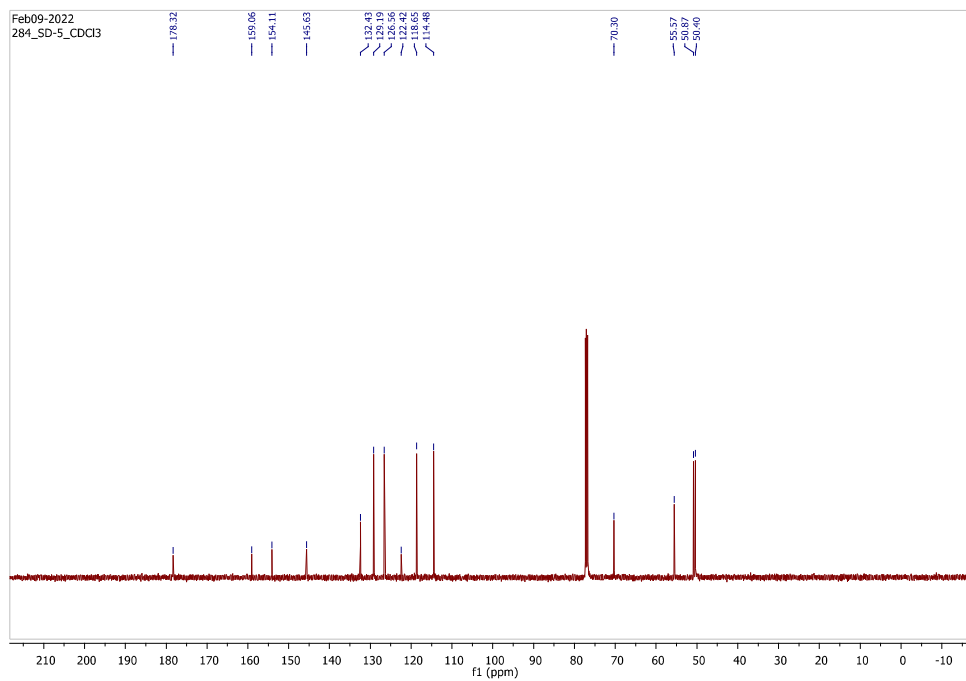
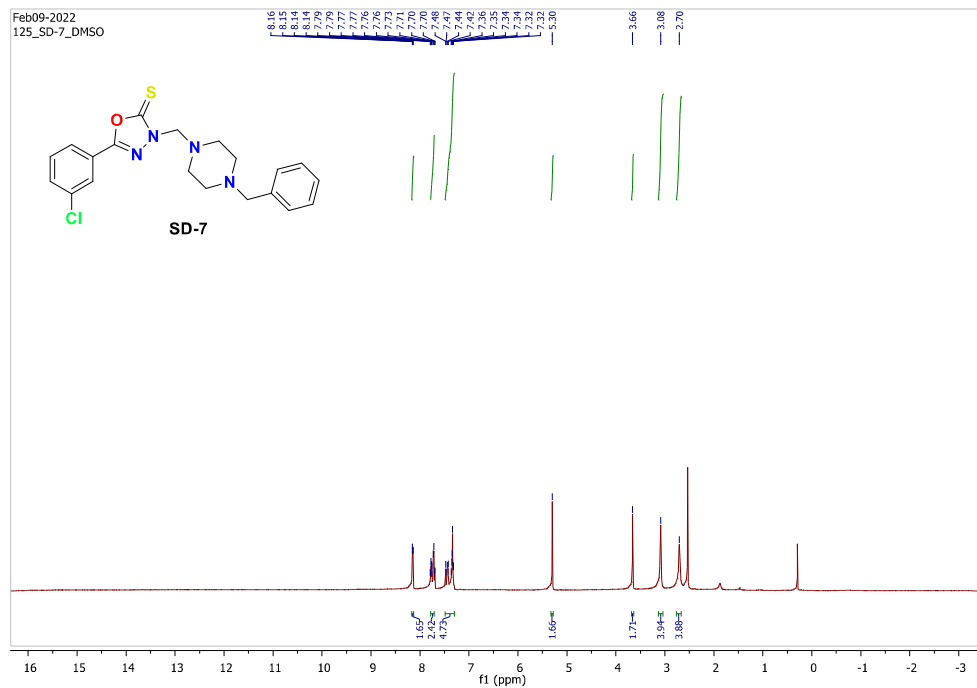
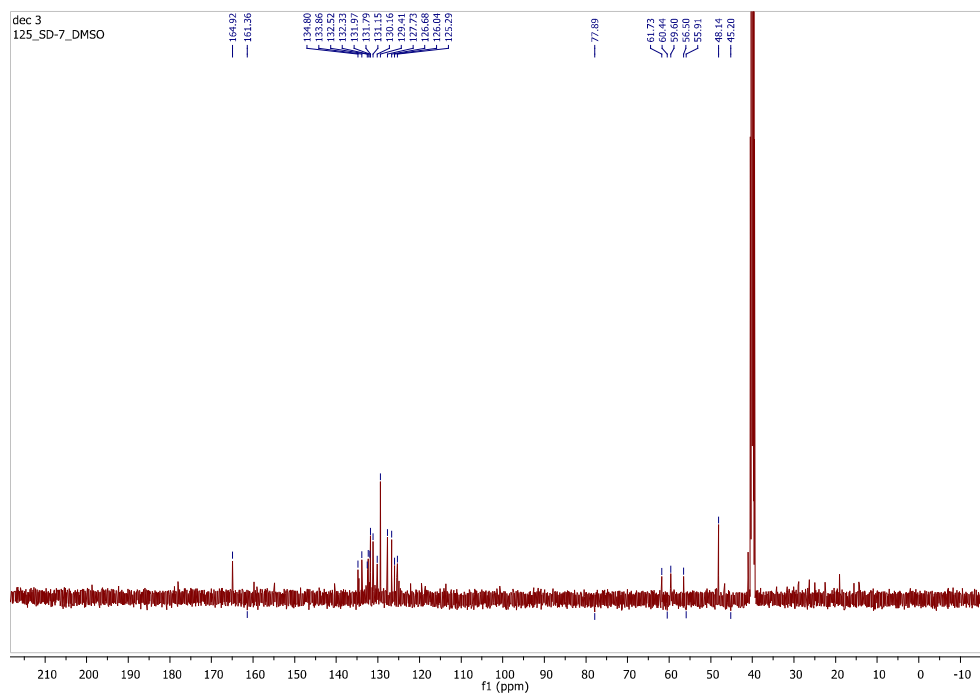
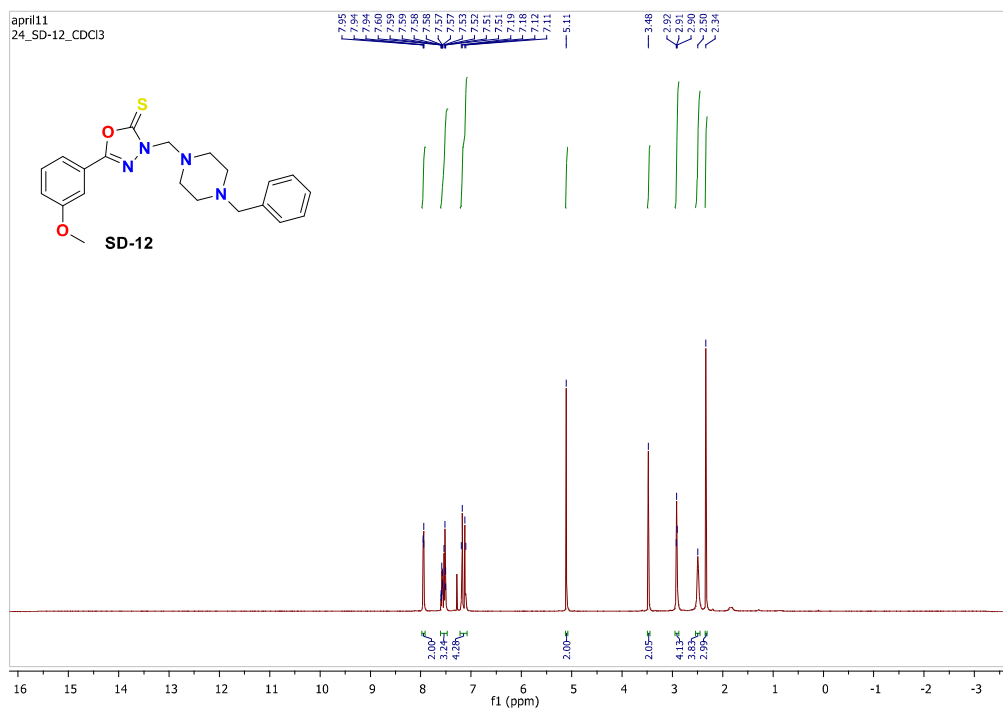
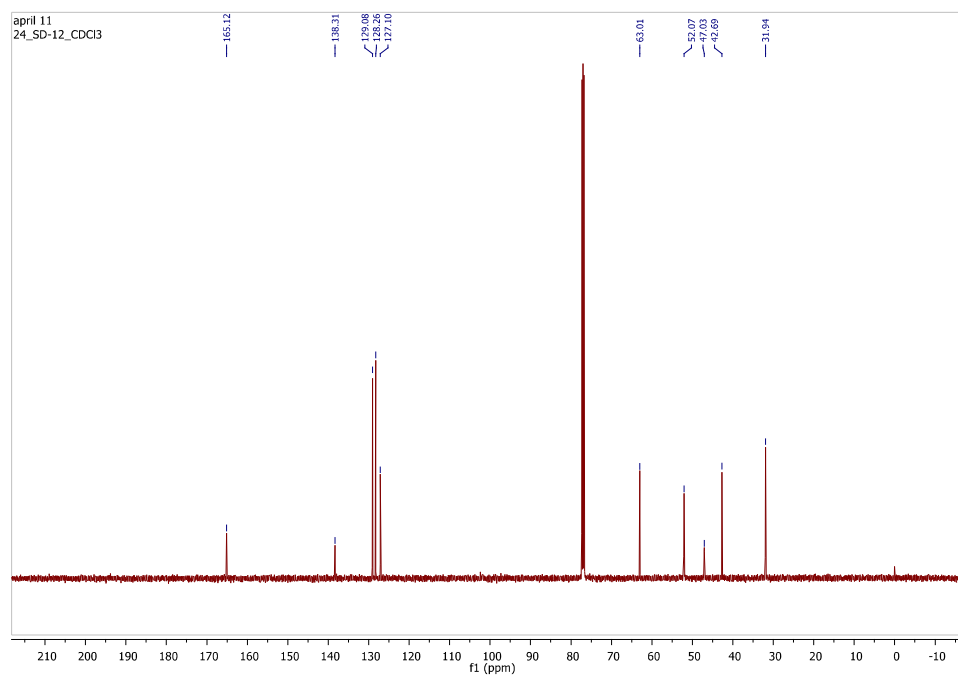


Figure 8.4 ^{13}C NMR spectrum of the compound **SD-2** in $\text{DMSO-}d_6$

3-(4-((4-benzylpiperazin-1-yl)methyl)-5-thioxo-4,5-dihydro-1,3,4-oxadiazol-2-yl)benzonitrile (SD-4)**Figure 8.5** ^1H NMR spectrum of the compound **SD-4** in $\text{DMSO-}d_6$ **Figure 8.6** ^{13}C NMR spectrum of the compound **SD-4** in $\text{DMSO-}d_6$

3-((4-benzylpiperazin-1-yl)methyl)-5-(2-nitrophenyl)-1,3,4-oxadiazole-2(3H)-thione (SD-5)**Figure 8.7** ^1H NMR spectrum of the compound **SD-5** in CDCl_3 **Figure 8.8** ^{13}C NMR spectrum of the compound **SD-5** in CDCl_3

3-((4-benzylpiperazin-1-yl)methyl)-5-(3-chlorophenyl)-1,3,4-oxadiazole-2(3H)-thione (SD-7)**Figure 8.11** ^1H NMR spectrum of the compound SD-7 in $\text{DMSO-}d_6$ **Figure 8.12** ^{13}C NMR spectrum of the compound SD-7 in $\text{DMSO-}d_6$

3-((4-benzylpiperazin-1-yl)methyl)-5-(3-methoxyphenyl)-1,3,4-oxadiazole-2(3H)-thione (SD-12)**Figure 8.13** ¹H NMR spectrum of the compound **SD-12** in CDCl₃**Figure 8.14** ¹³C NMR spectrum of the compound **SD-12** in CDCl₃

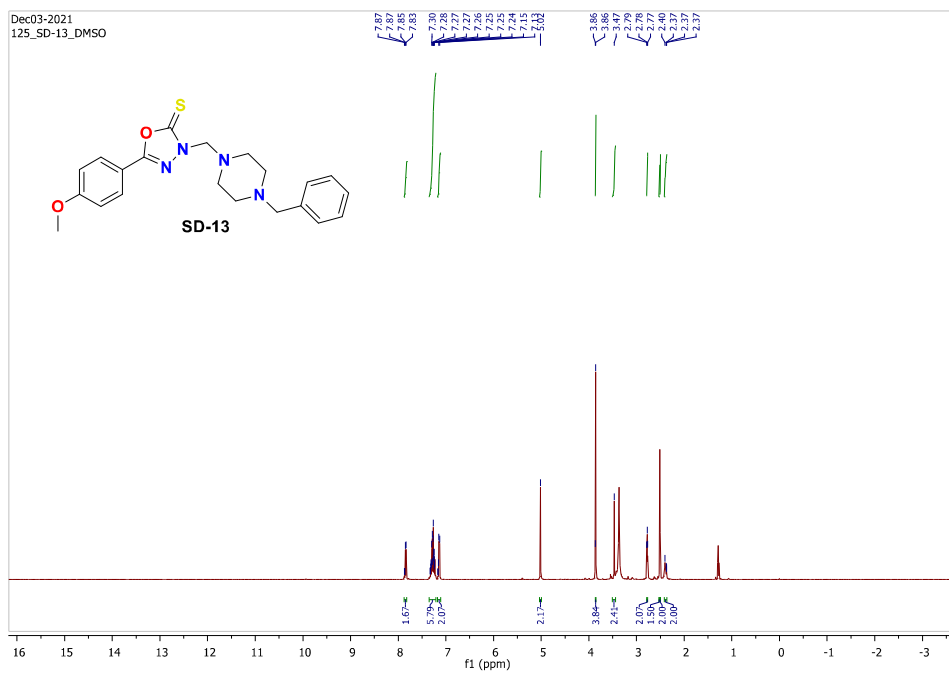
3-((4-benzylpiperazin-1-yl)methyl)-5-(4-methoxyphenyl)-1,3,4-oxadiazole-2(3H)-thione (SD-13)

Figure 8.15 ^1H NMR spectrum of the compound SD-13 in $\text{DMSO}-d_6$

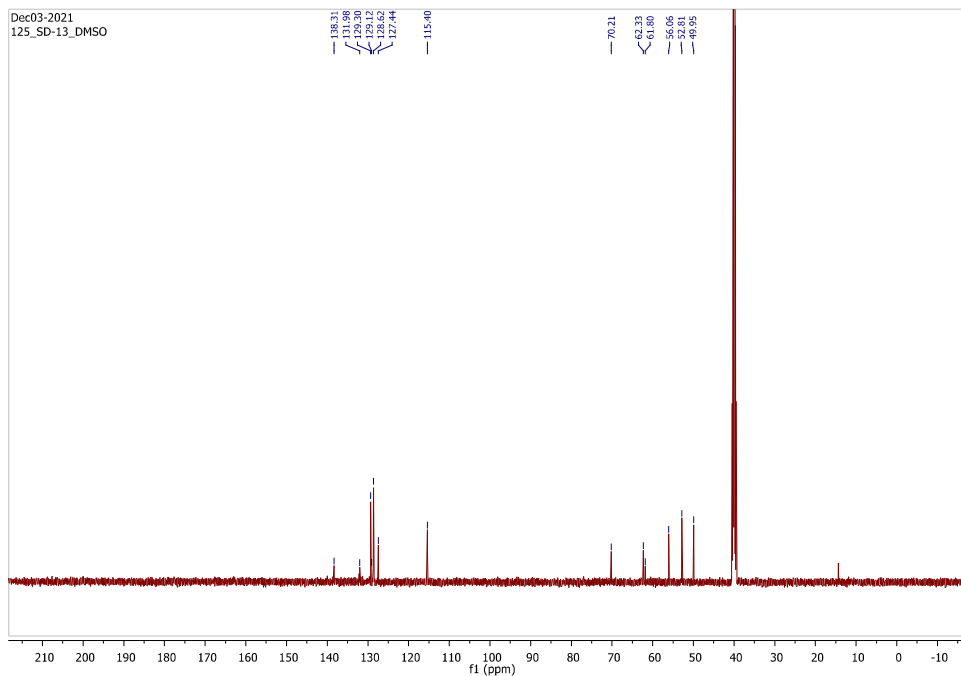
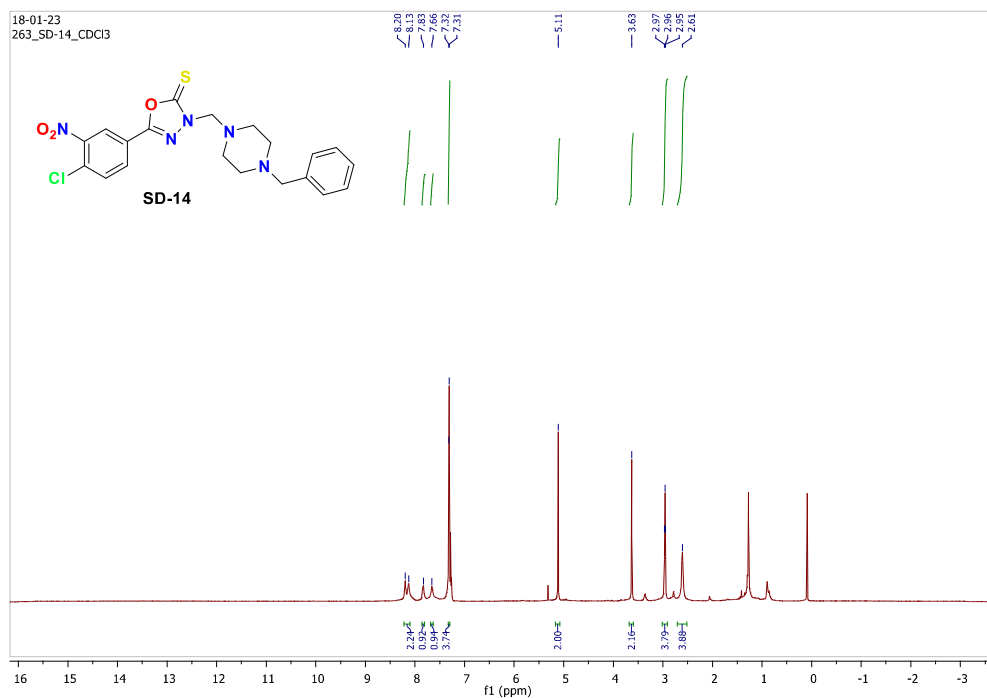
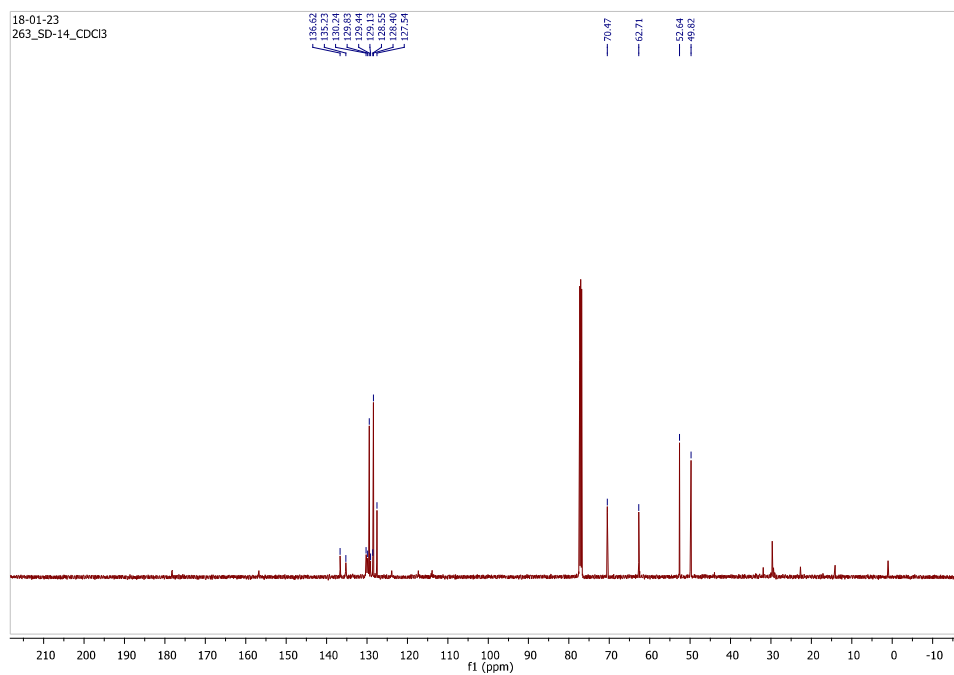


Figure 8.16 ^{13}C NMR spectrum of the compound SD-13 in $\text{DMSO}-d_6$

3-((4-benzylpiperazin-1-yl)methyl)-5-(4-chloro-3-nitrophenyl)-1,3,4-oxadiazole-2(3H)-thione (SD-14)**Figure 8.17** ^1H NMR spectrum of the compound **SD-14** in CDCl_3 **Figure 8.18** ^{13}C NMR spectrum of the compound **SD-14** in CDCl_3

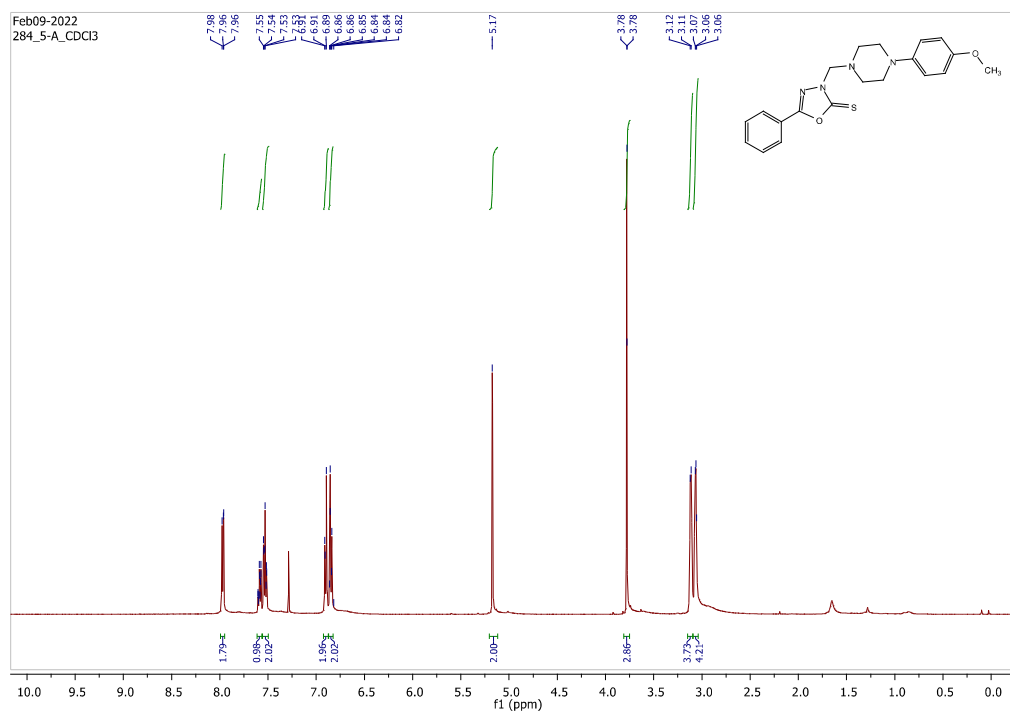


Figure 8.19 ^1H NMR spectrum of the compound 4a

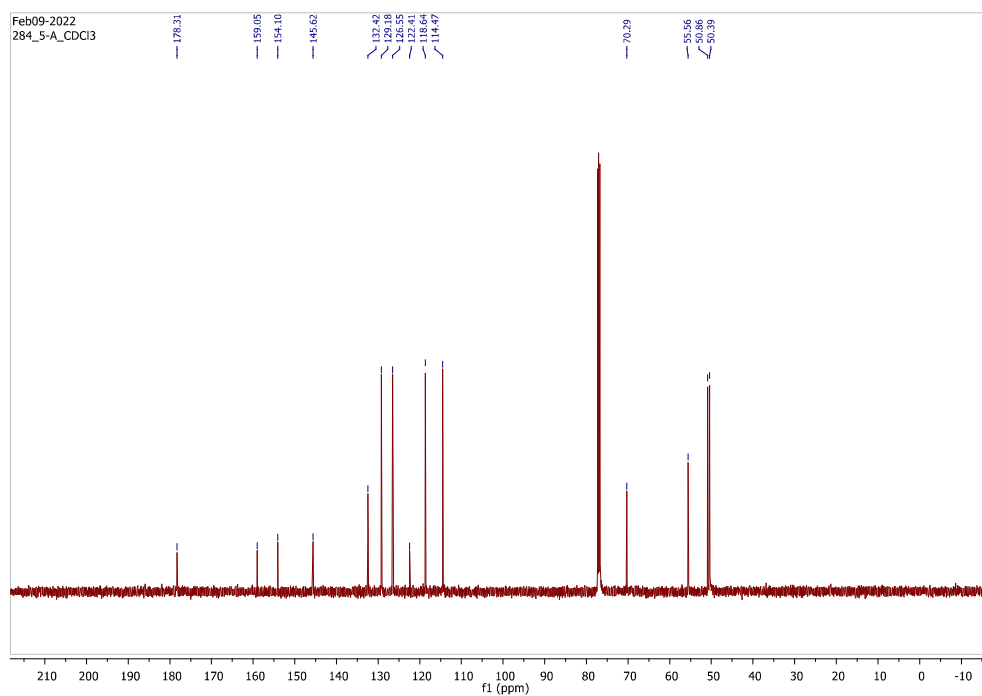


Figure 8.20 ^{13}C NMR spectrum of the compound 4a.

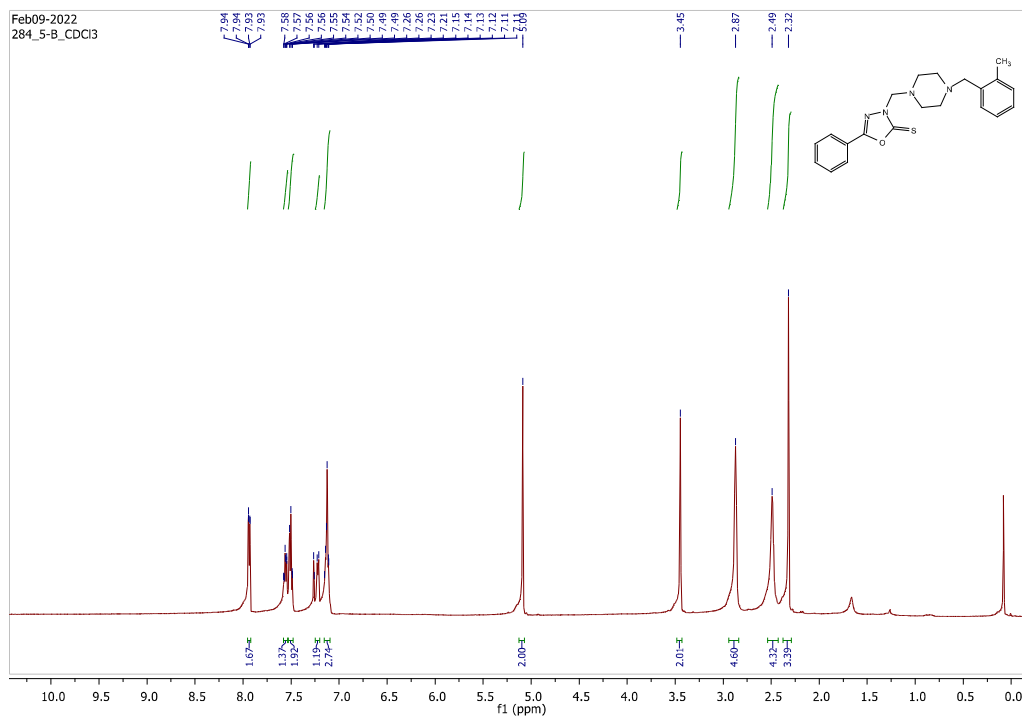


Figure 8.21 ^1H NMR spectrum of the compound 4b.

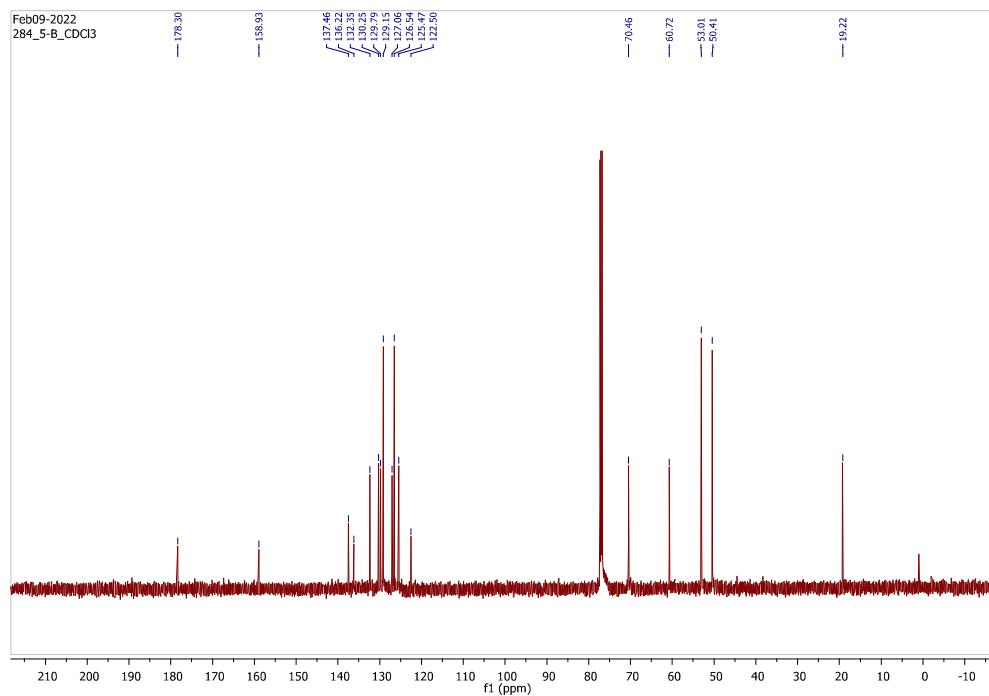


Figure 8.22 ^{13}C NMR spectrum of the compound 4b.

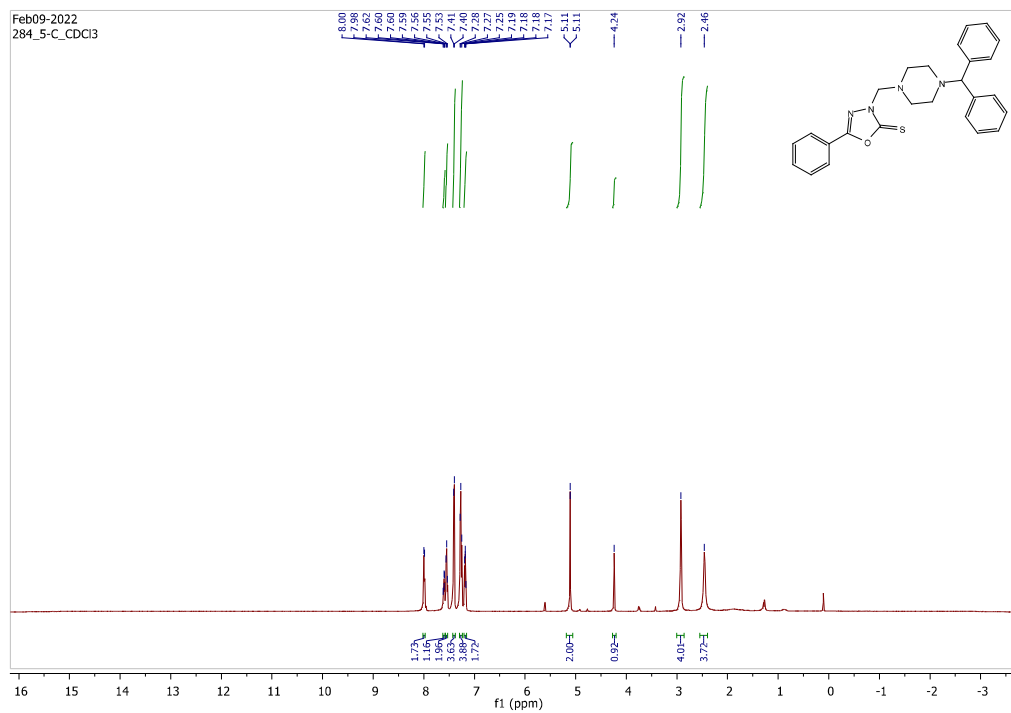


Figure 8.23 ^1H NMR spectrum of the compound 4c.

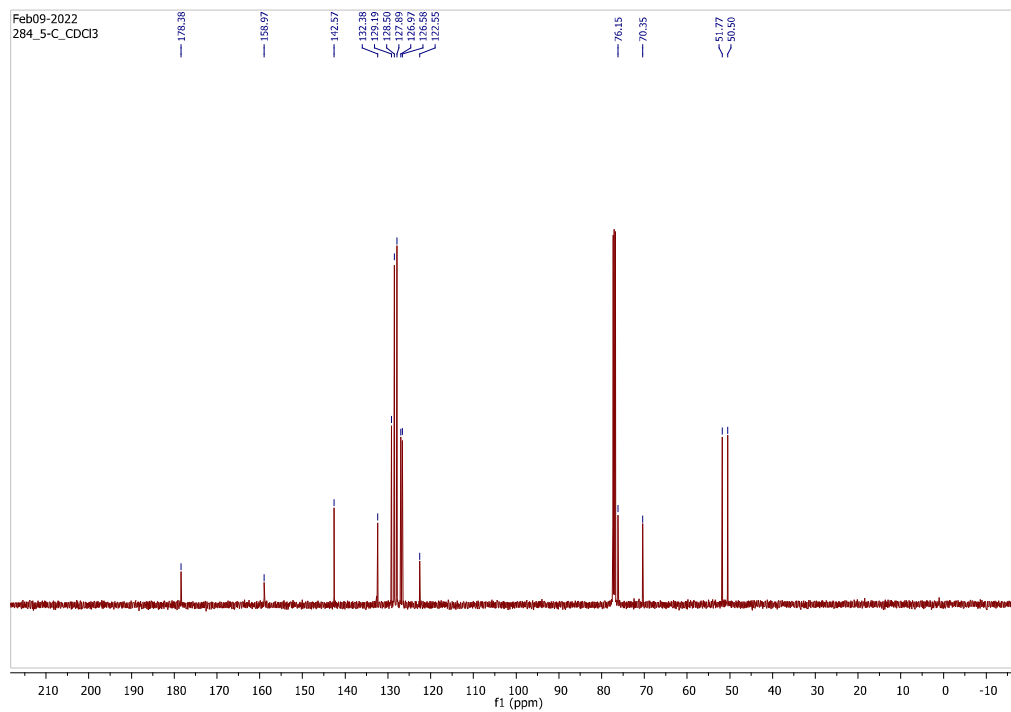


Figure 8.24 ^{13}C NMR spectrum of the compound 4c.

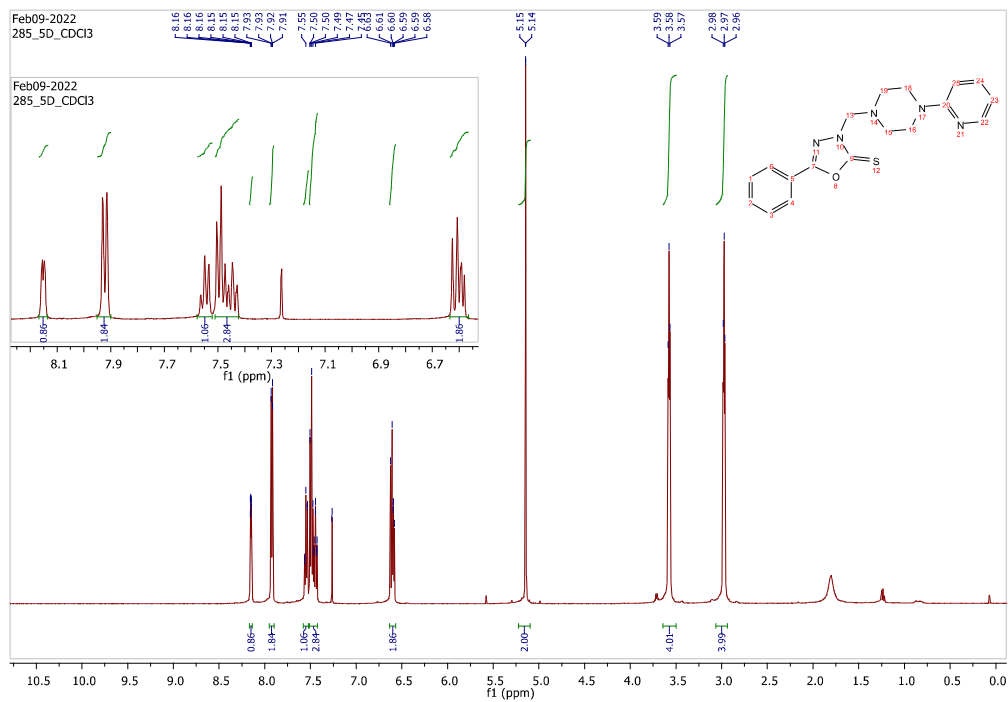


Figure 8.25 ^1H NMR spectrum of the compound 4d.

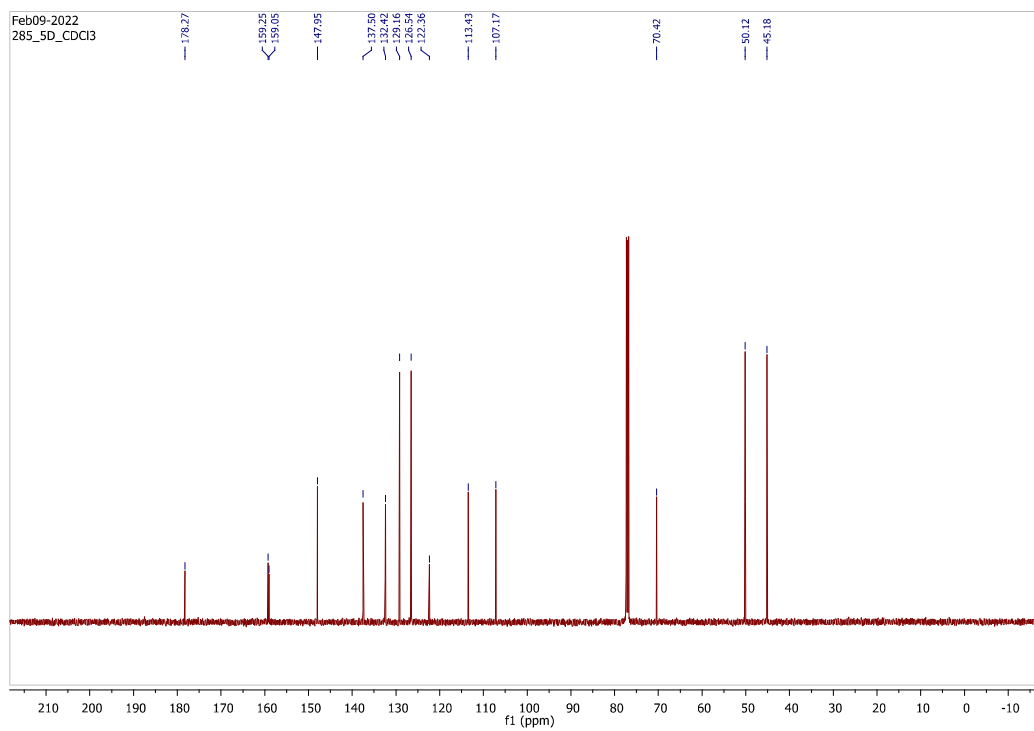


Figure 8.26 ^{13}C NMR spectrum of the compound 4d.

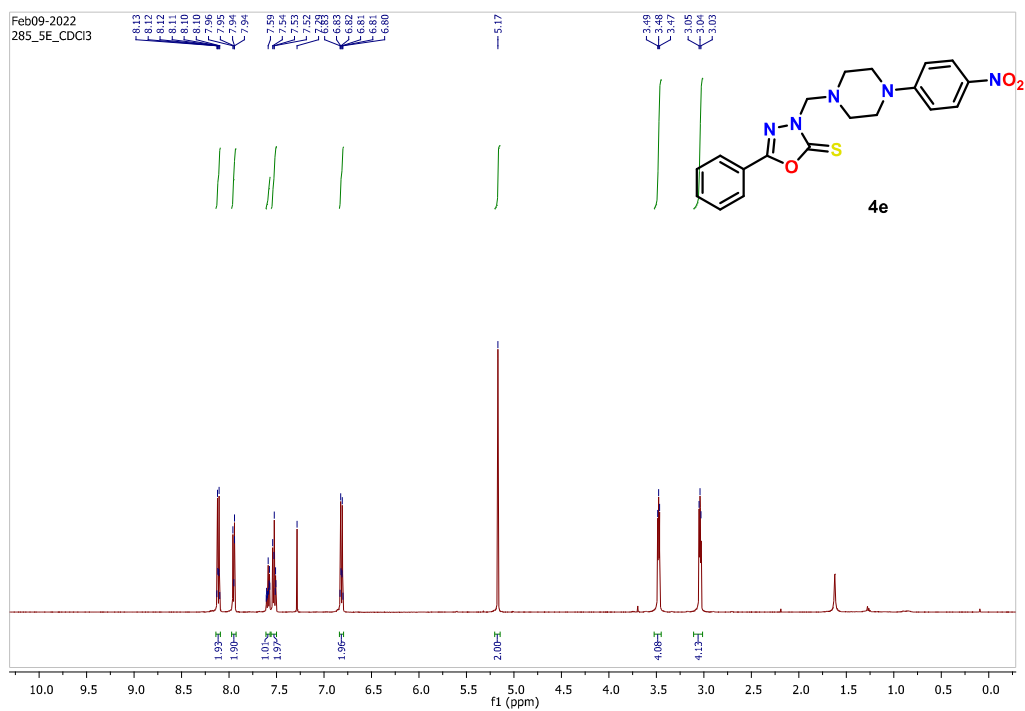


Figure 8.27 ^1H NMR spectrum of the compound 4e.

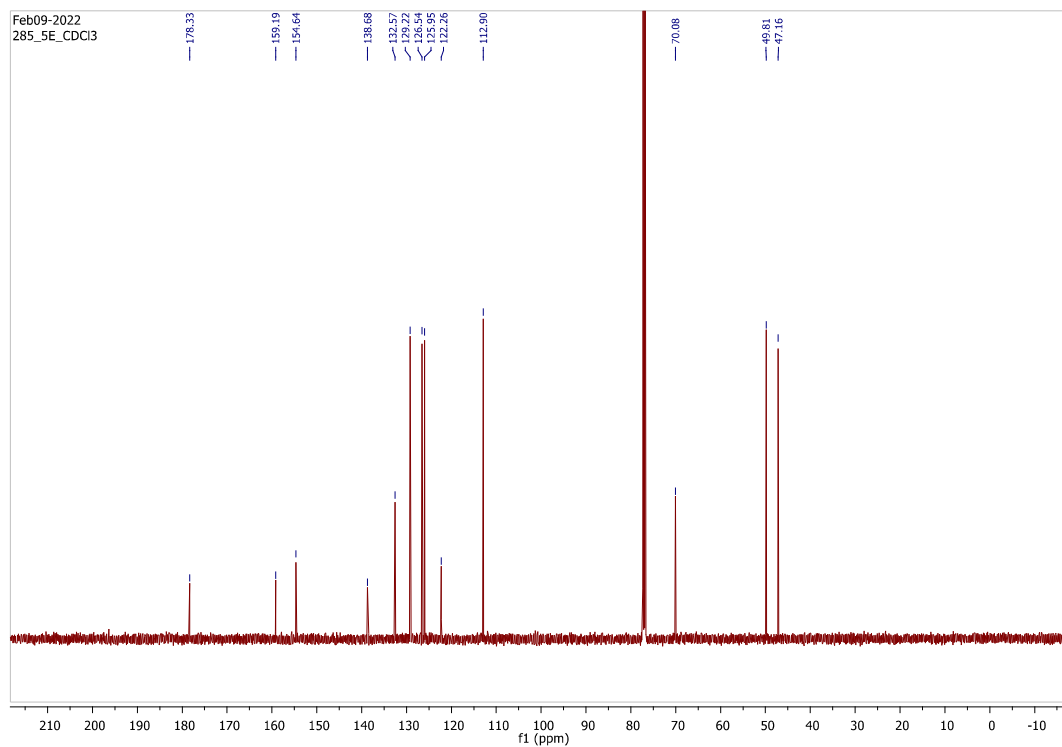


Figure 8.28 ^{13}C NMR spectrum of the compound 4e.

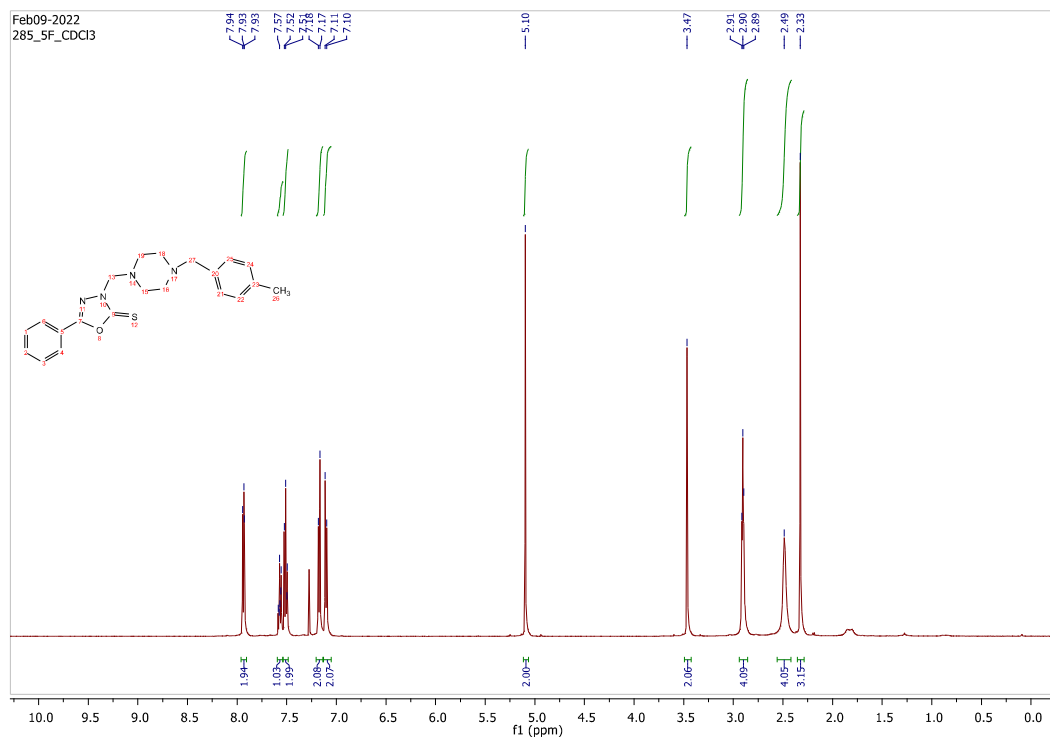


Figure 8.29 ^1H NMR spectrum of the compound 4f.

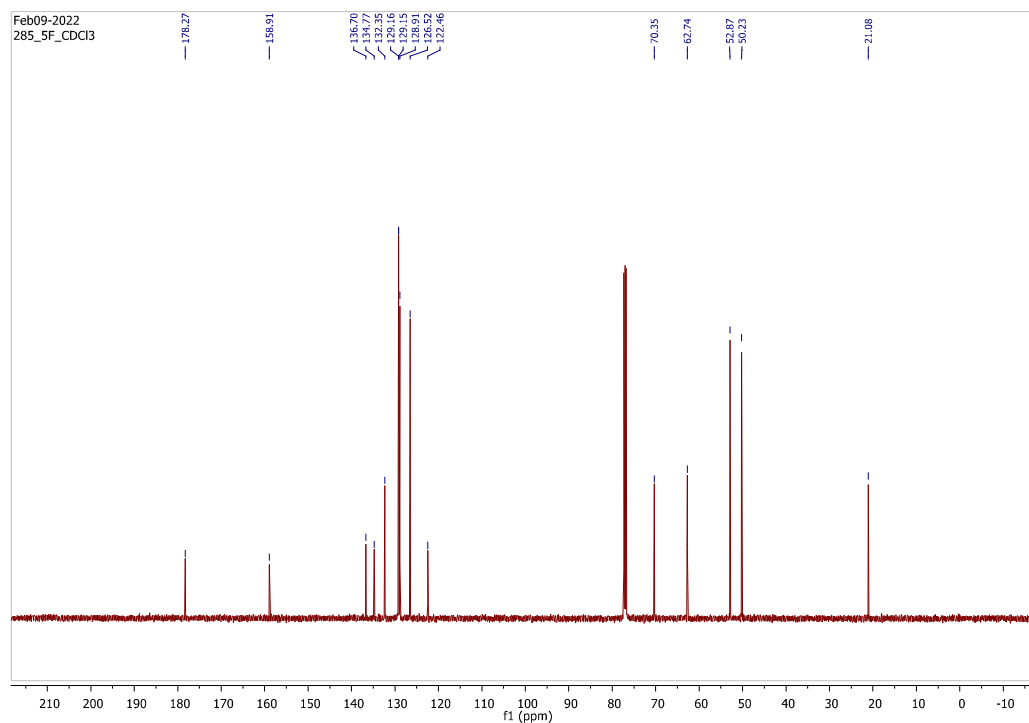


Figure 8.30 ^{13}C NMR spectrum of the compound 4f

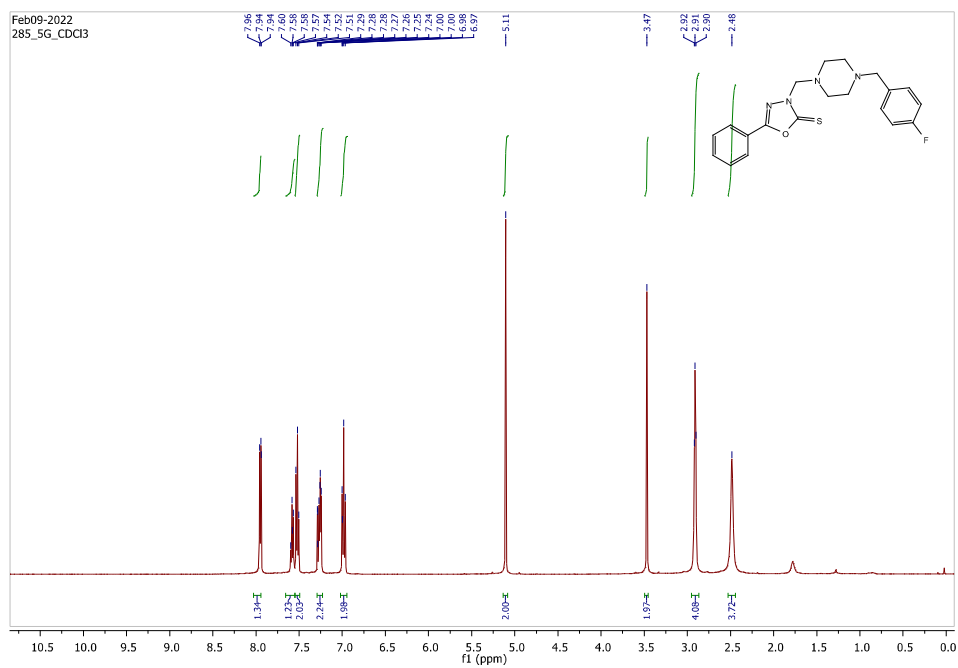


Figure 8.31 ^1H NMR spectrum of the compound 4g.

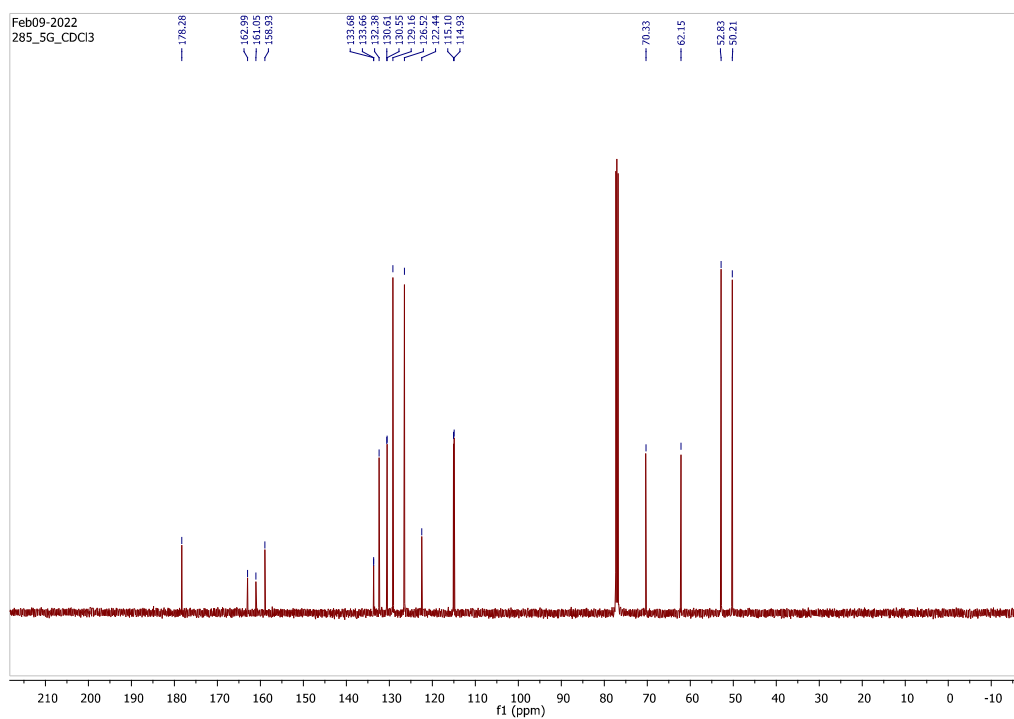


Figure 8.32 ^{13}C NMR spectrum of the compound 4g.

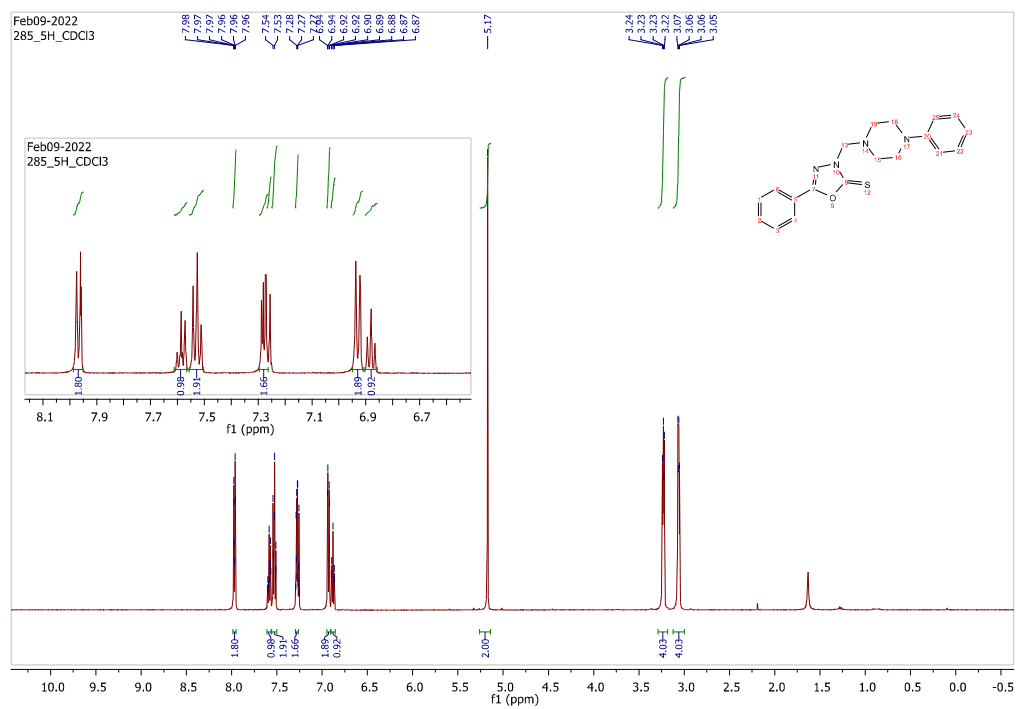


Figure 8.33 ^1H NMR spectrum of the compound **4h**.

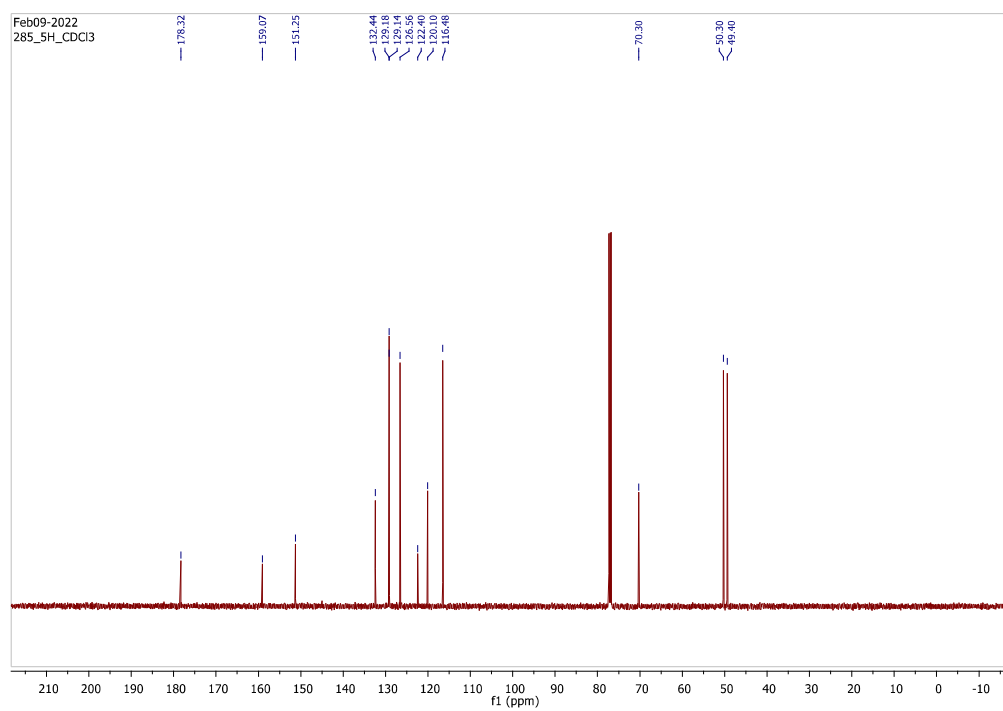


Figure 8.34 ^{13}C NMR spectrum of the compound **4h**.

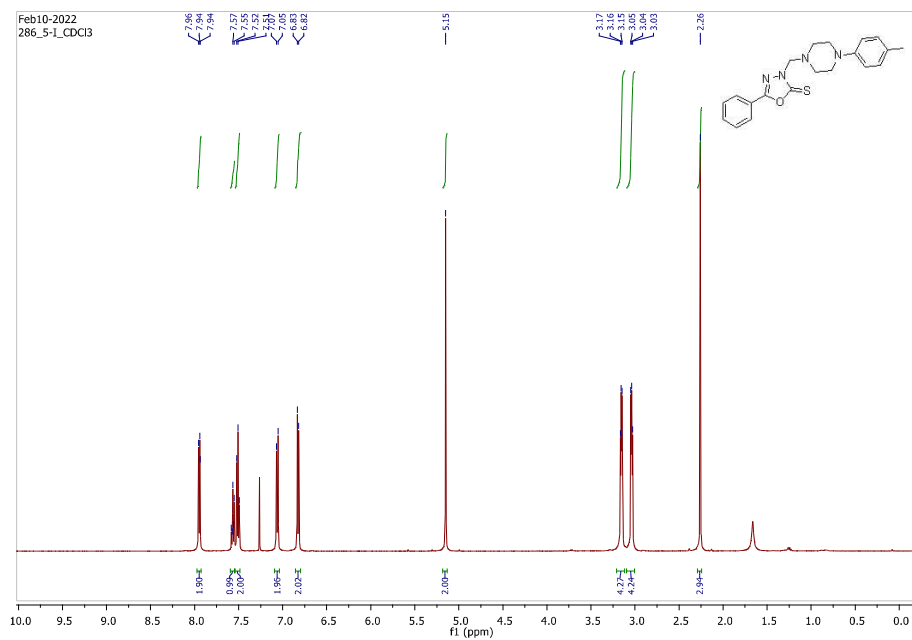


Figure 8.35 ^1H NMR spectrum of the compound **4i**

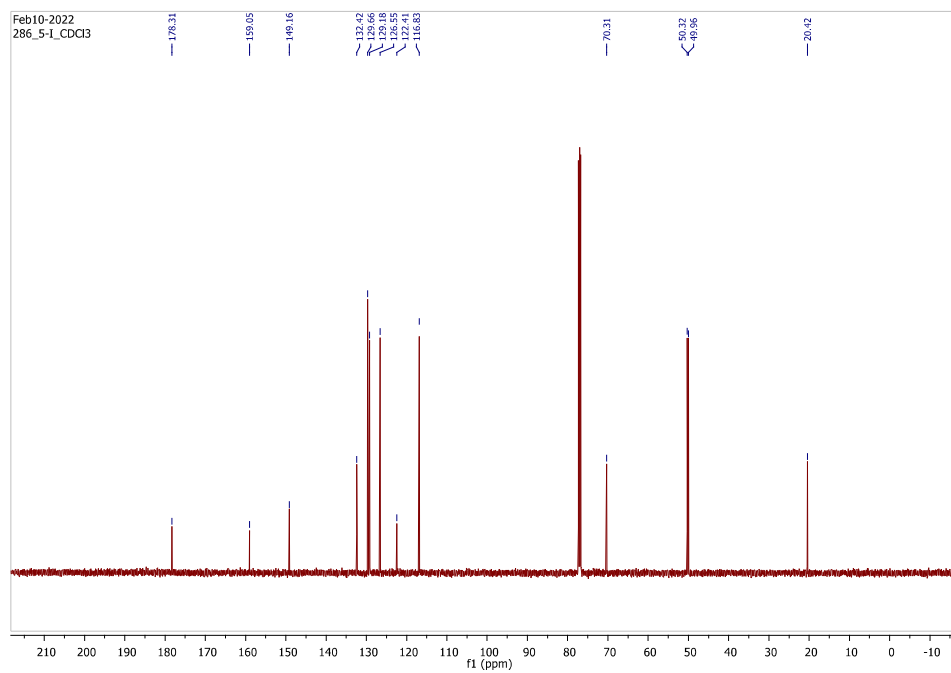


Figure 8.36 ^{13}C NMR spectrum of the compound **4i**.

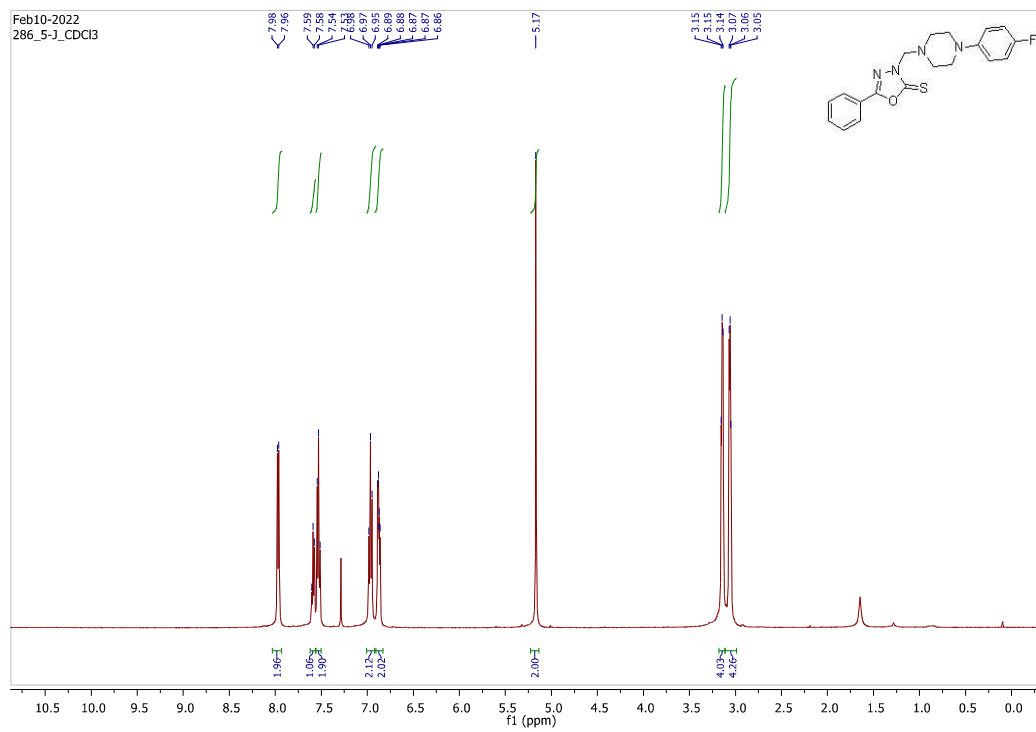


Figure 8.37 ^{13}C NMR spectrum of the compound 4j.

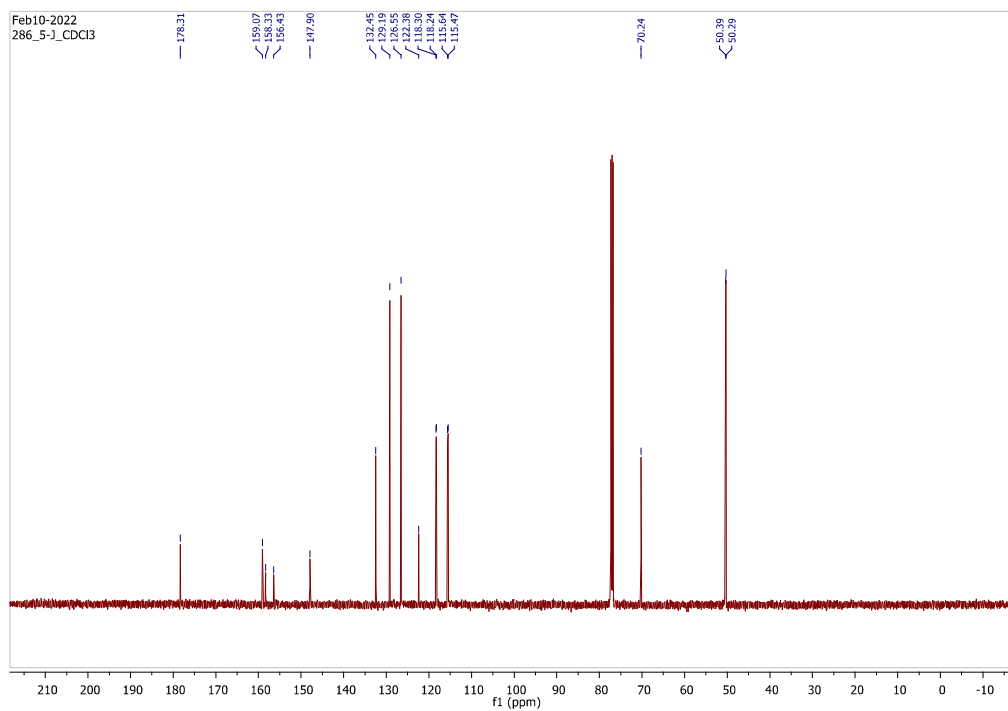


Figure 8.38 ^{13}C NMR spectrum of the compound 4j

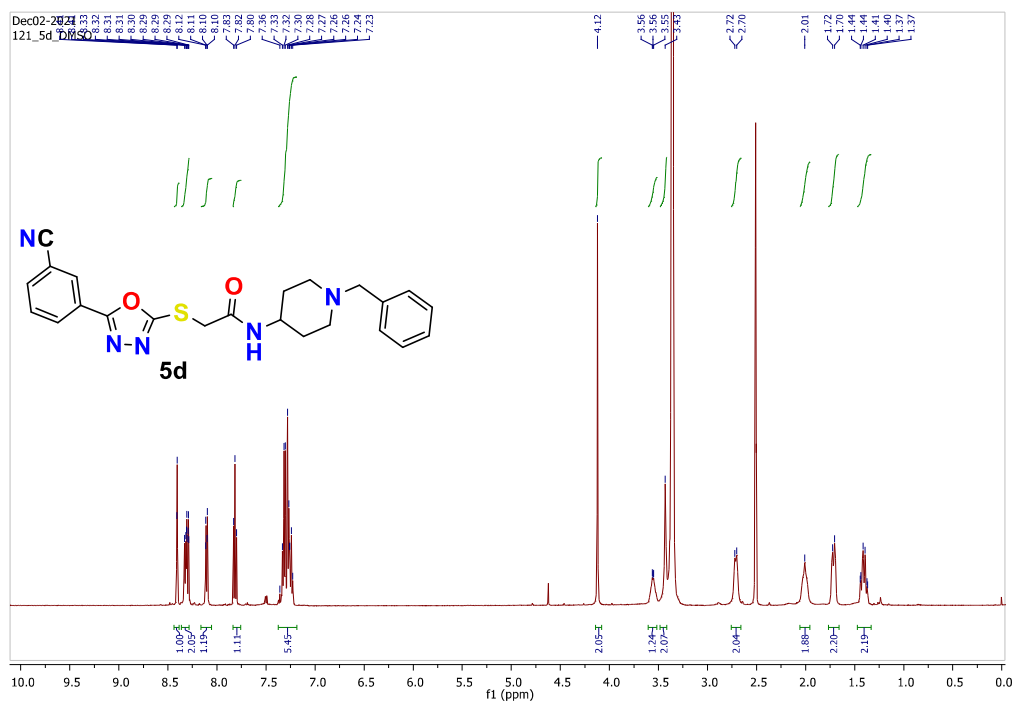


Figure 8.39 ^1H NMR spectrum of the compound **5d**.

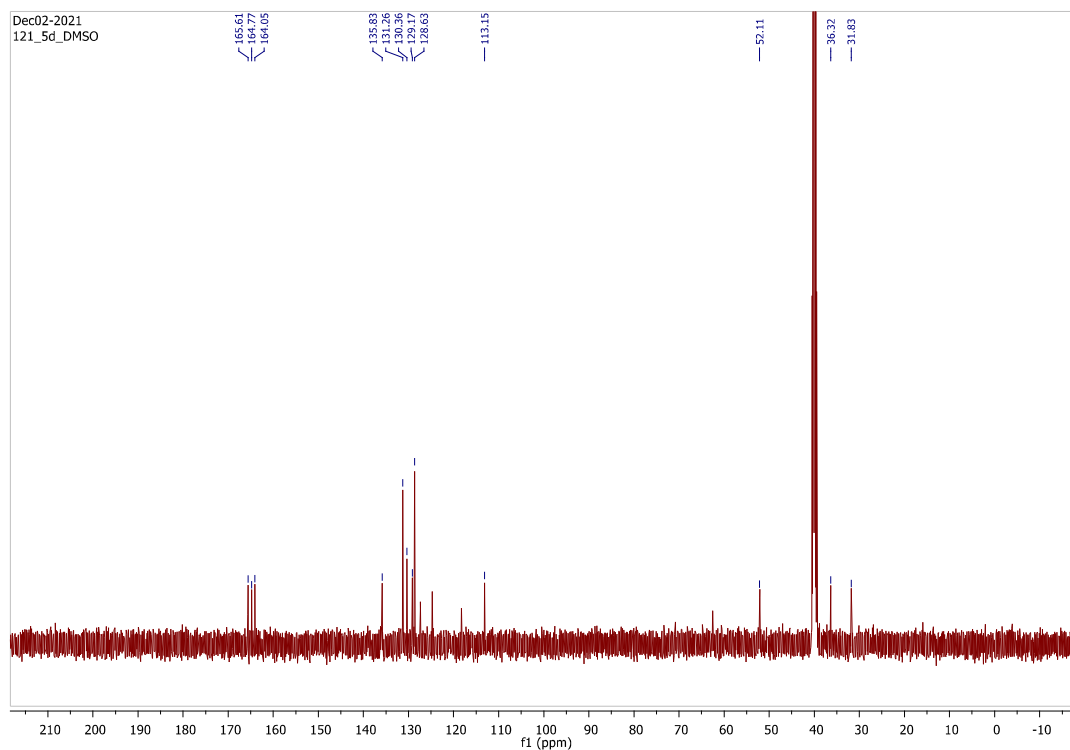


Figure 8.40 ^{13}C NMR spectrum of the compound **5d**

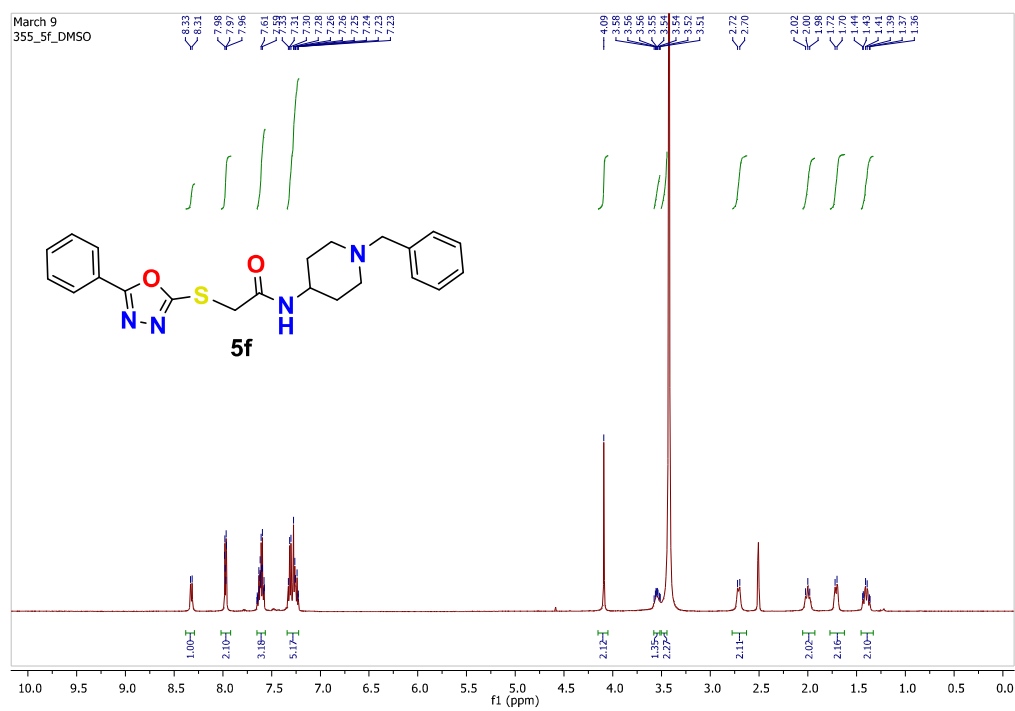


Figure 8.41 ^1H NMR spectrum of the compound **5f**.

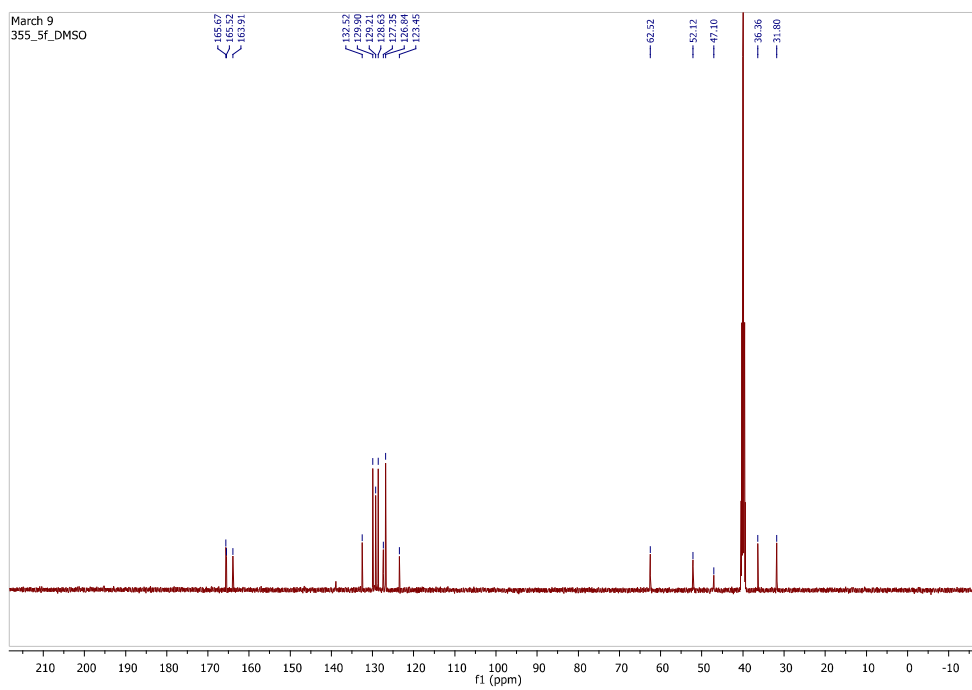


Figure 8.42 ^{13}C NMR spectrum of the compound **5f**.

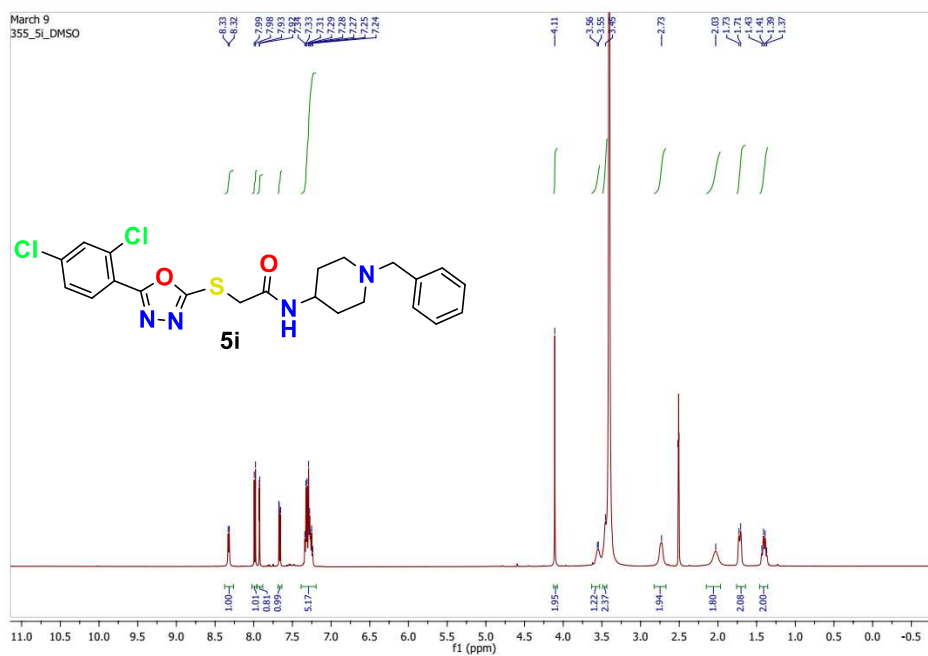


Figure 8.43 ^1H NMR spectrum of the compound **5i**.

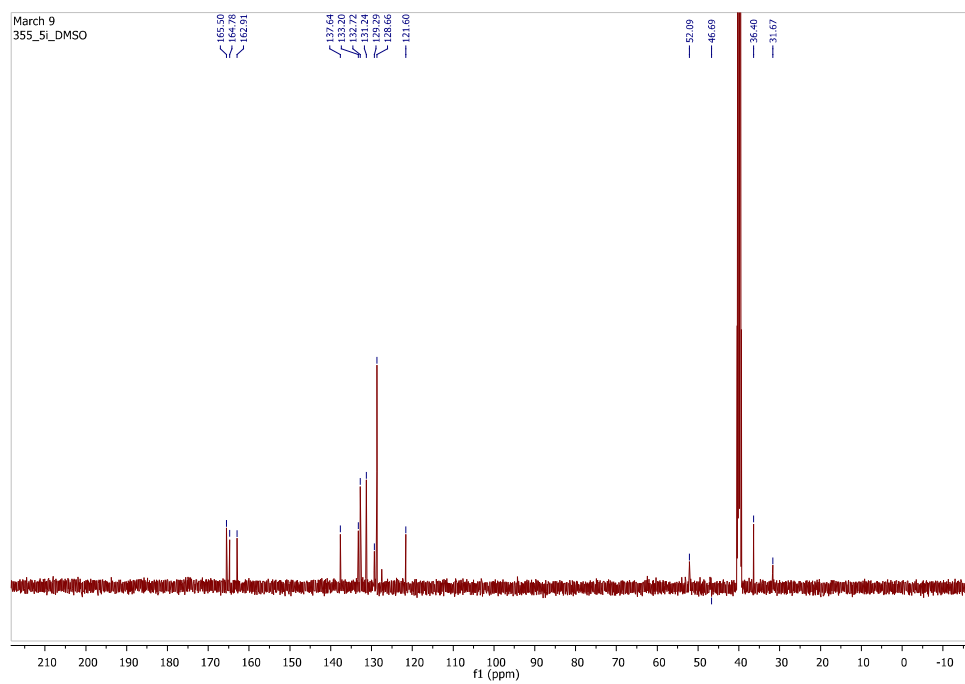


Figure 8.44 ^{13}C NMR spectrum of the compound **5i**.

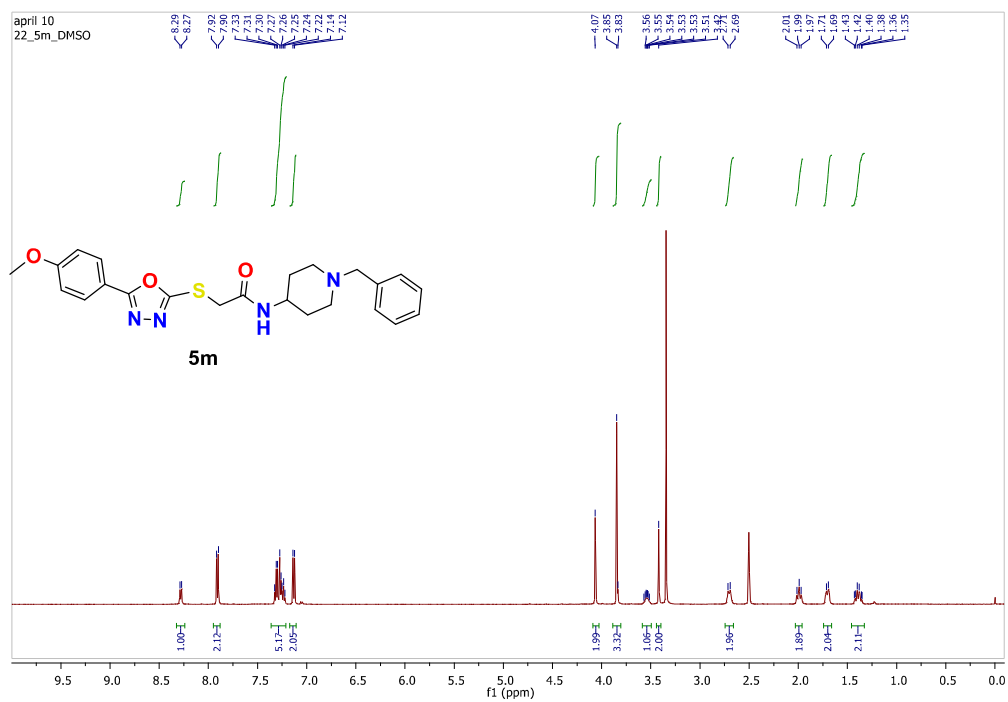


Figure 8.45 ^1H NMR spectrum of the compound **5m**.

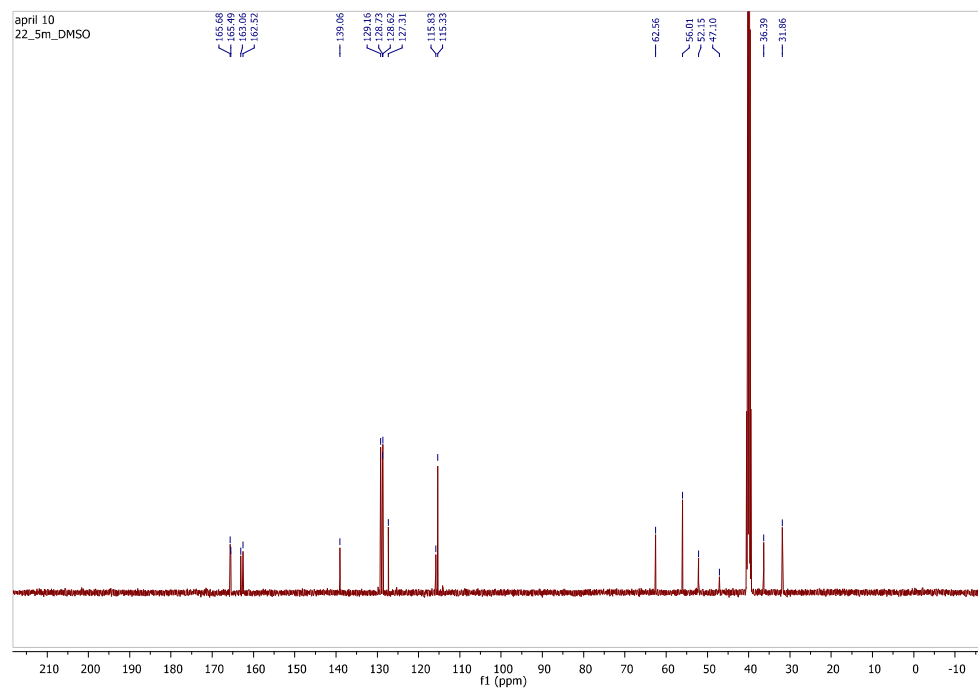


Figure 8.46 ^{13}C NMR spectrum of the compound **5m**

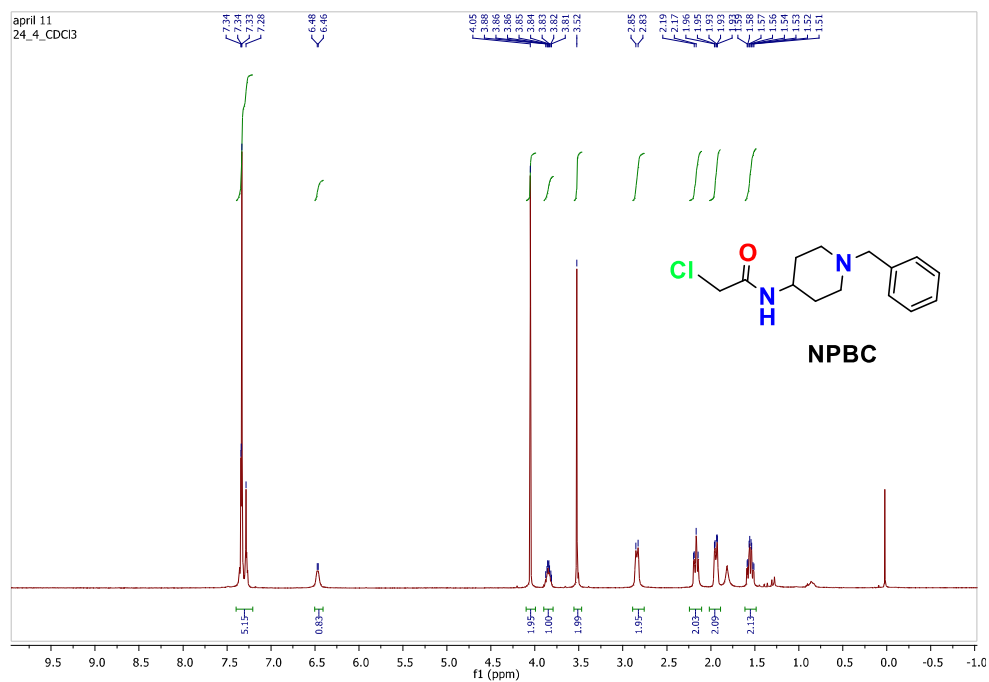


Figure 8.47 ^1H NMR spectrum of the compound NPBC

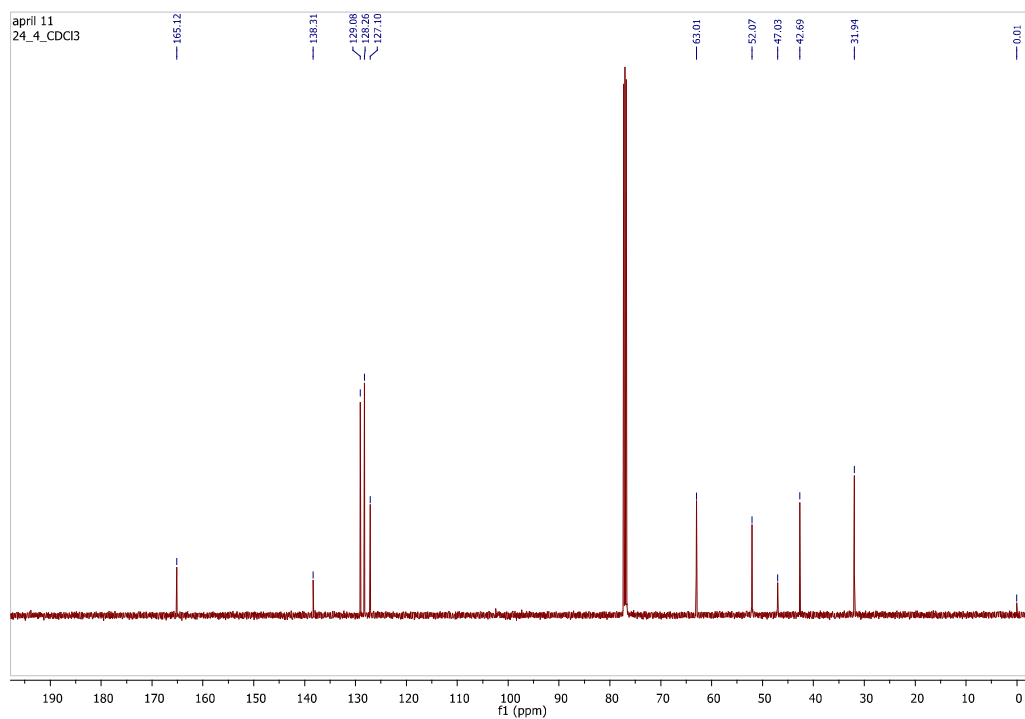


Figure 8.48 ^{13}C NMR spectrum of the compound NPBC

8.2 Mass Spectra of the representative compounds

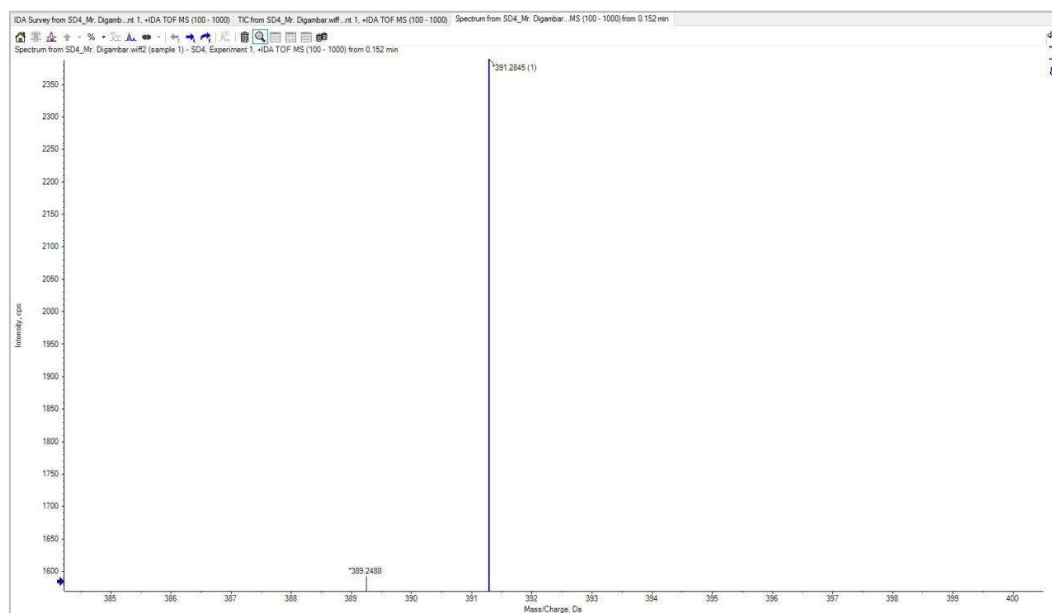


Figure 8.49 HRMS spectrum of the compound **SD-4**

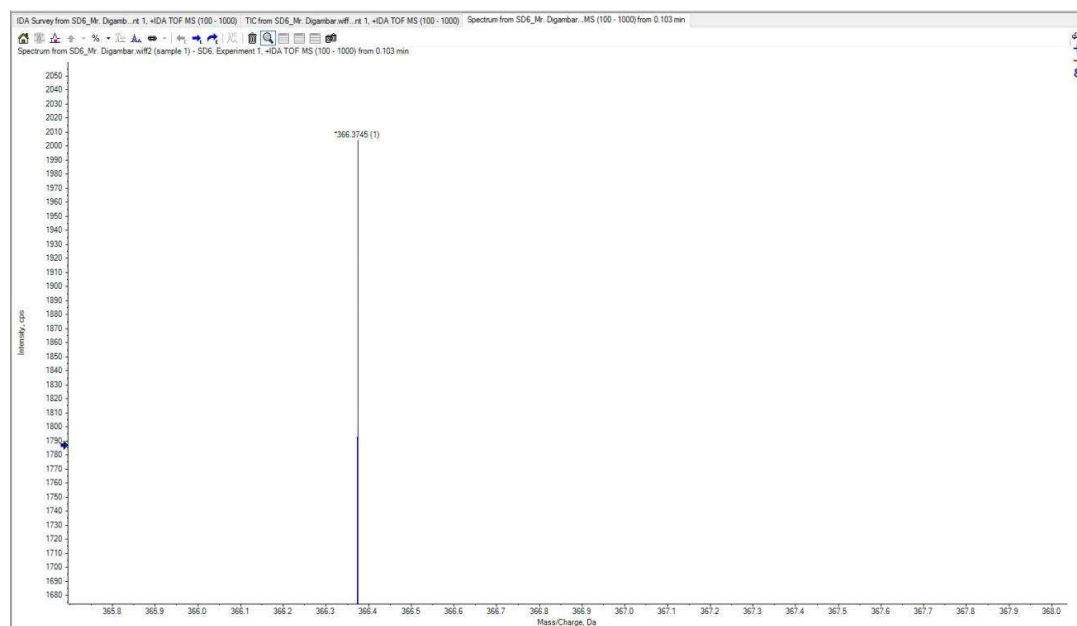


Figure 8.50 HRMS spectrum of the compound **SD-6**

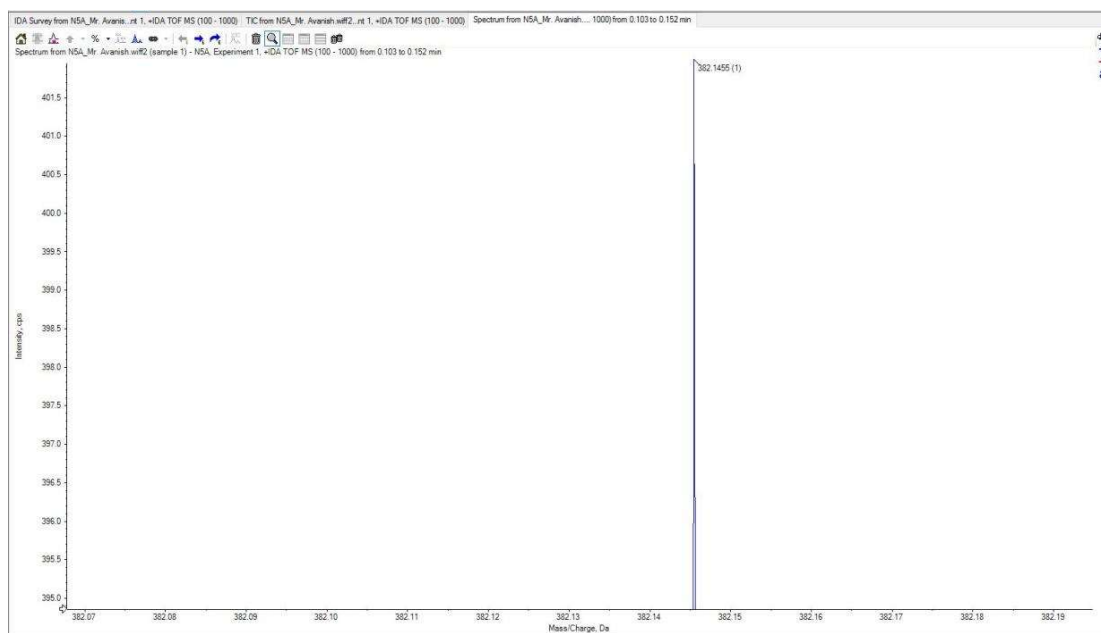


Figure 8.51 HRMS spectrum of the compound 4a

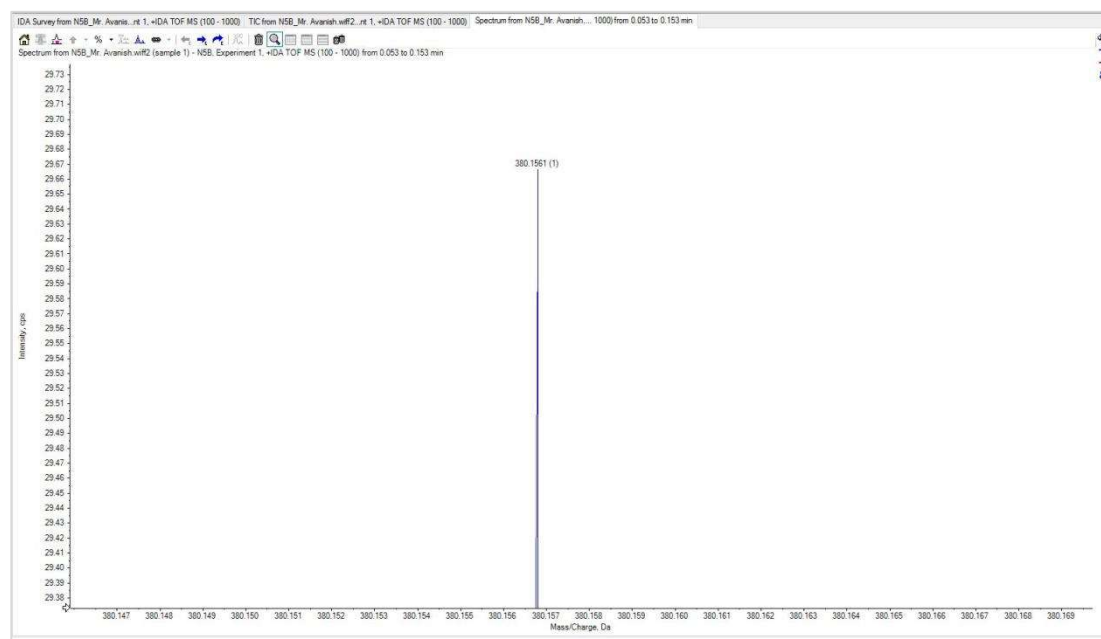


Figure 8.52 HRMS spectrum of the compound 4b

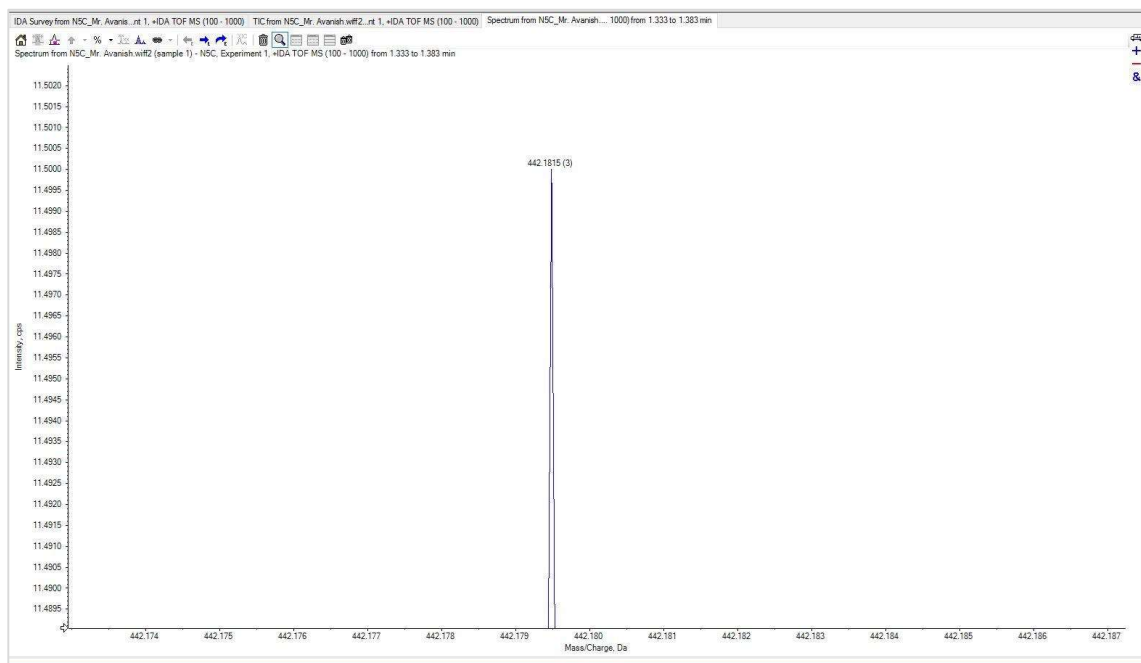


Figure 8.53 HRMS spectrum of the compound 4c

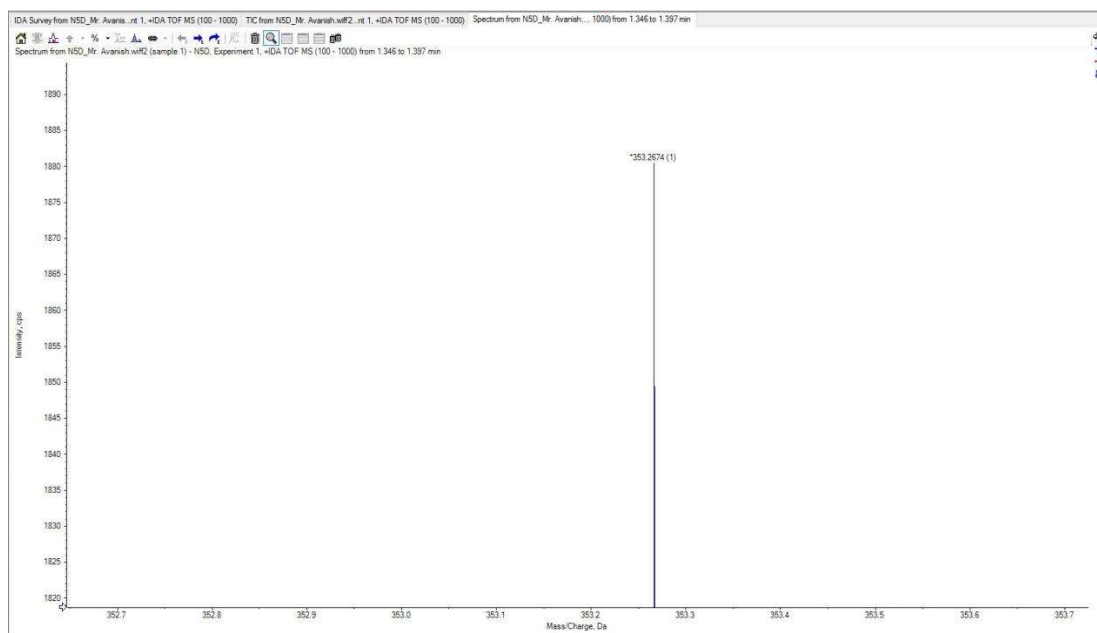


Figure 8.54 HRMS spectrum of the compound 4d



Figure 8.55 HRMS spectrum of the compound **4e**

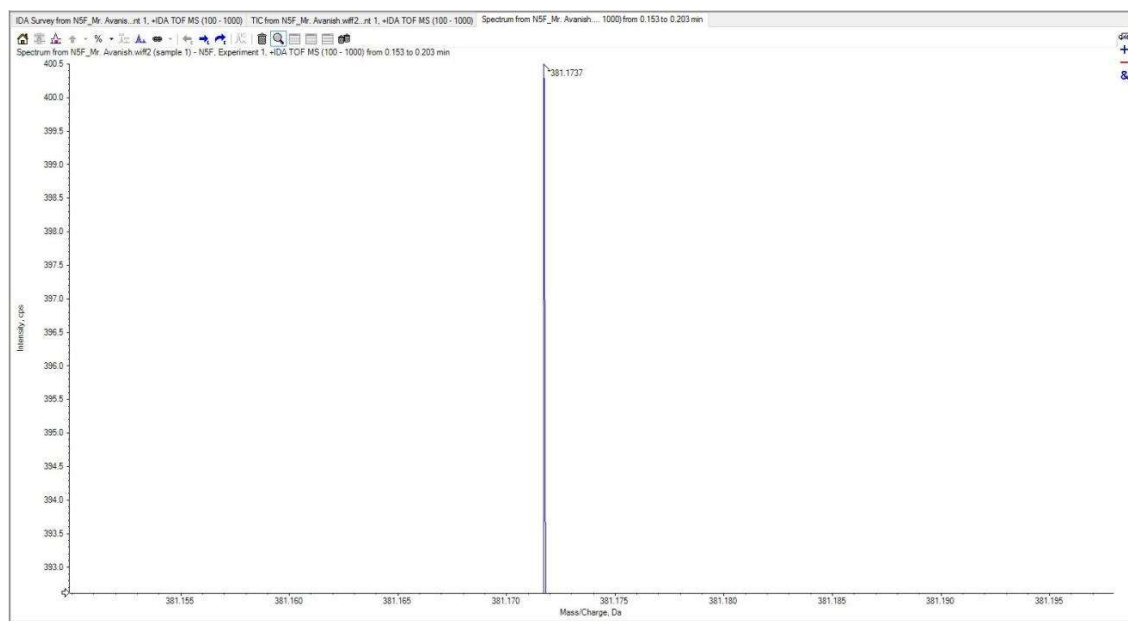


Figure 8.56 HRMS spectrum of the compound **4f**

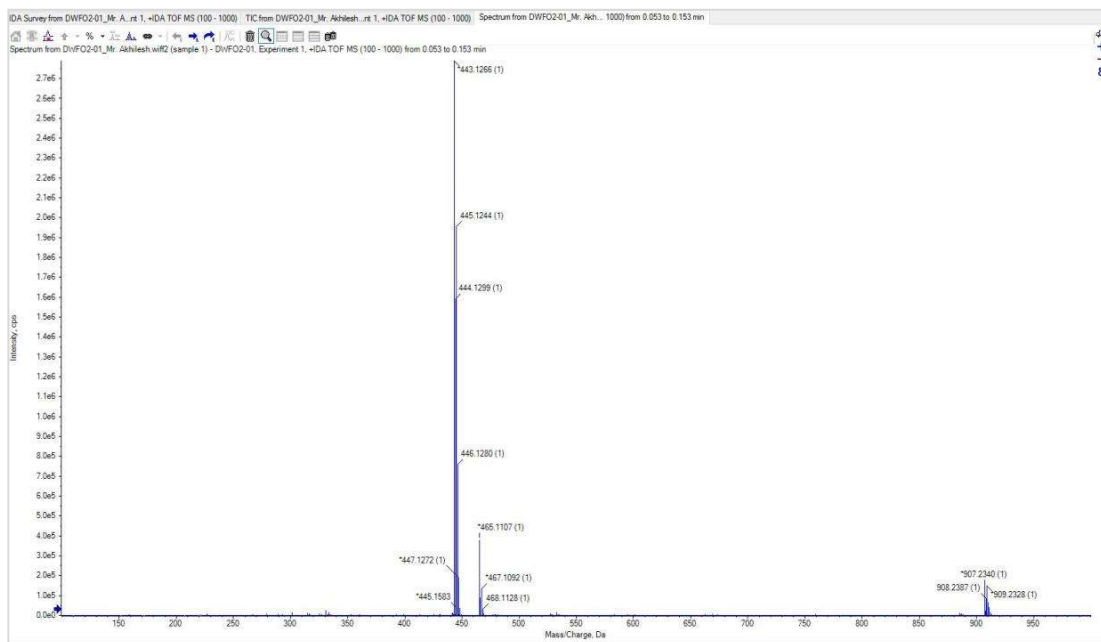


Figure 8.57 HRMS spectrum of the compound 5a

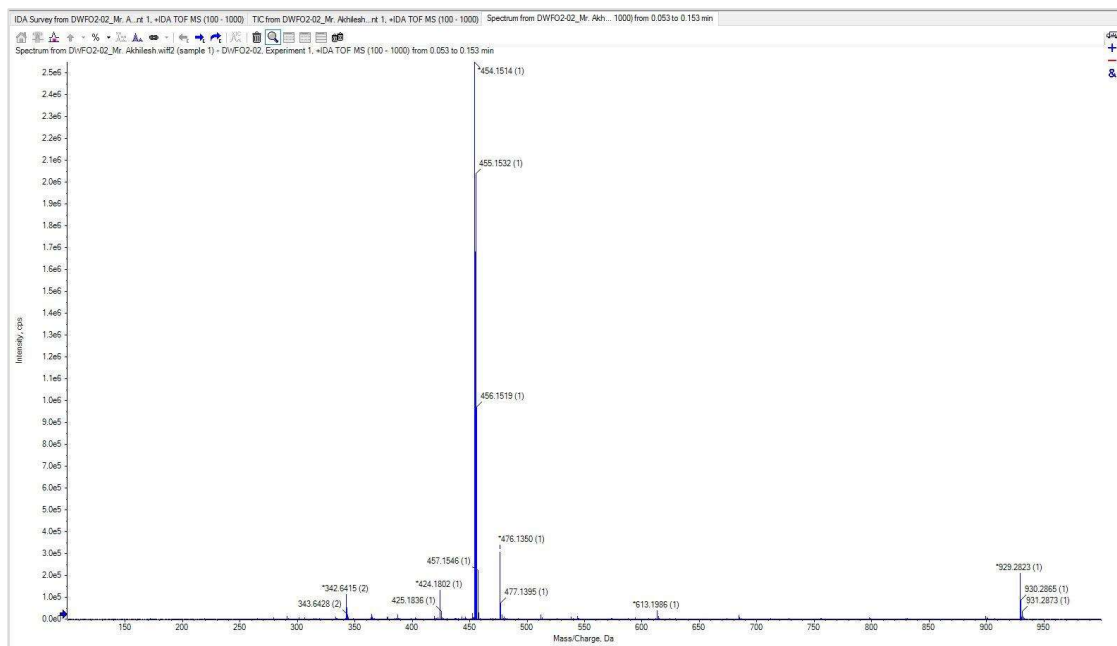


Figure 8.58 HRMS spectrum of the compound 5b

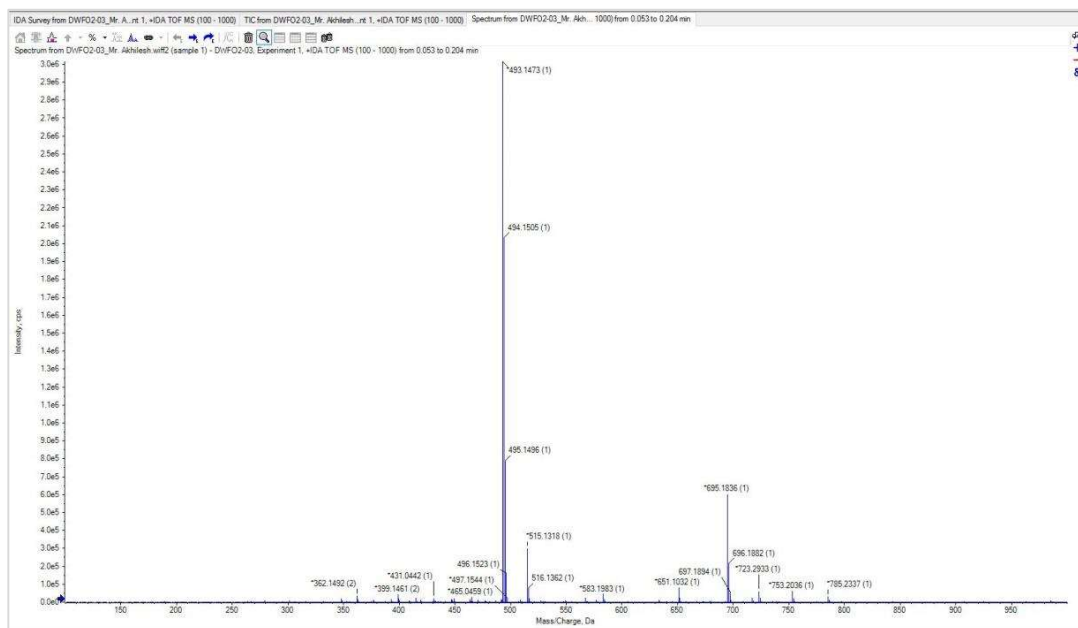


Figure 8.59 HRMS spectrum of the compound 5c

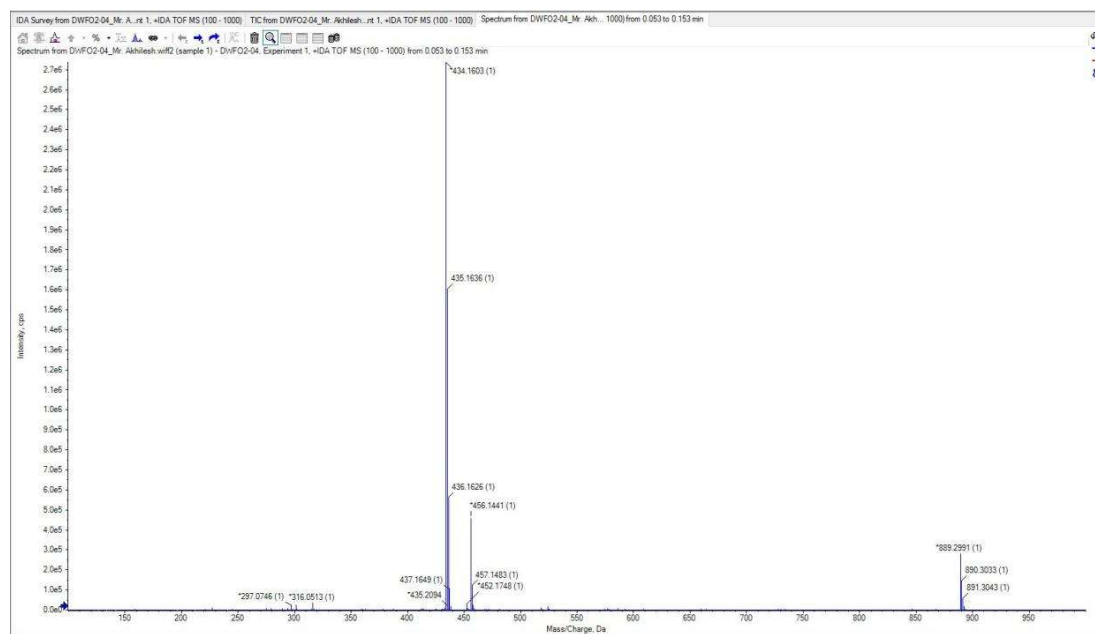


Figure 8.60 HRMS spectrum of the compound 5d

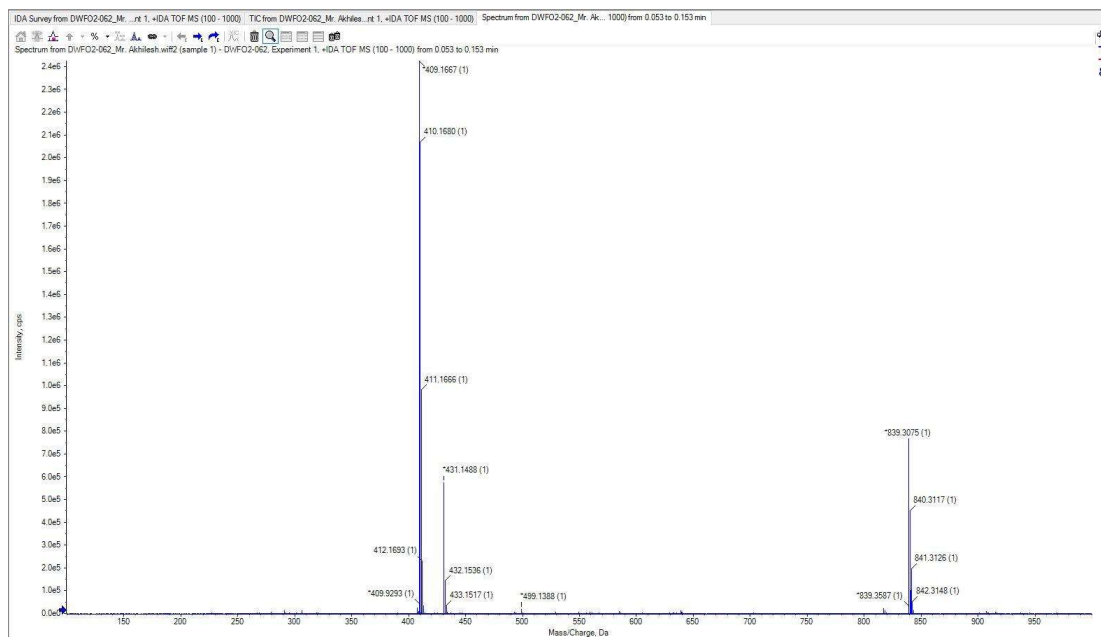


Figure 8.61 HRMS spectrum of the compound **5f**

8.3 HPLC purity Chromatograms of the representative compounds

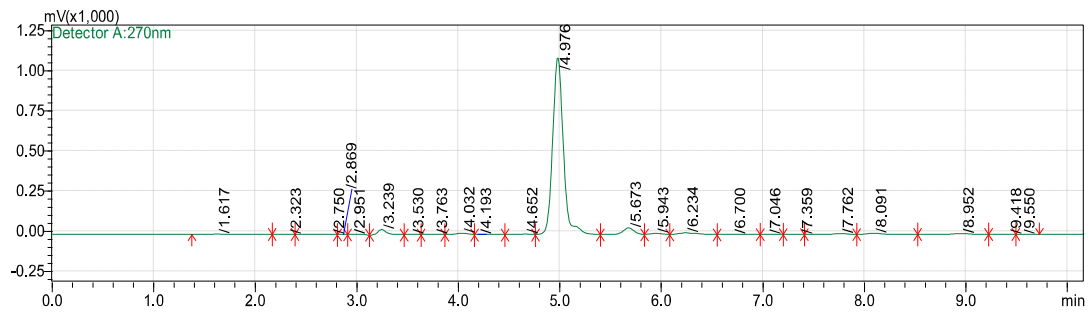


Figure 8.62 HPLC Chromatogram of compound SD-4

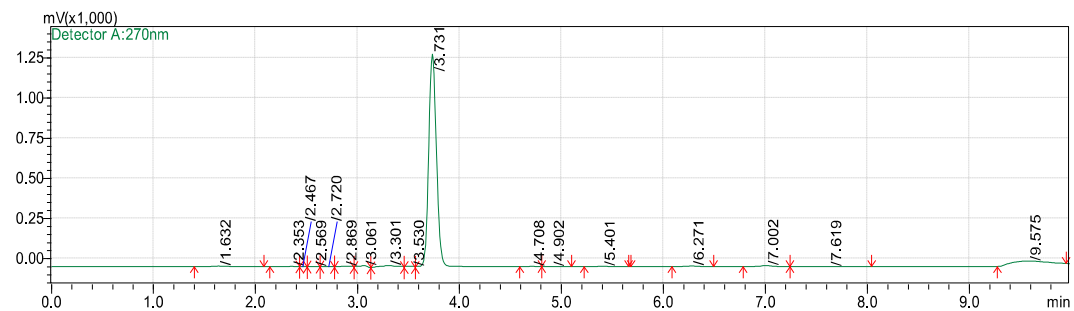


Figure 8.63 HPLC Chromatogram of compound SD-6

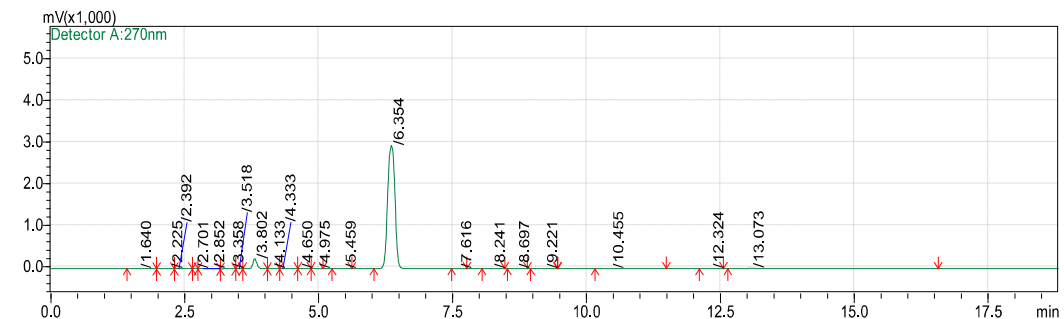


Figure 8.64 HPLC chromatogram of the compound 5a

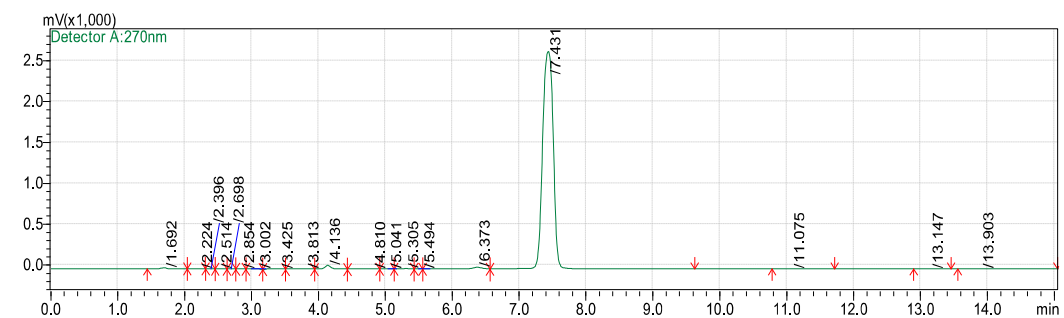


Figure 8.65 HPLC chromatogram of the compound 5c

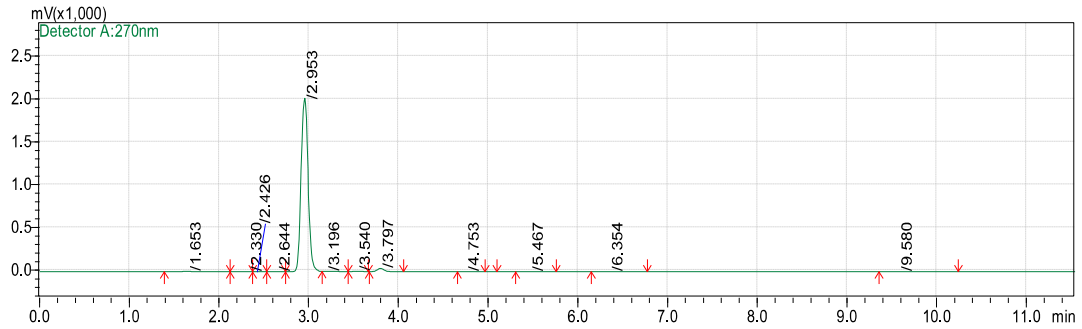


Figure 8.66 HPLC chromatogram of the compound 5d

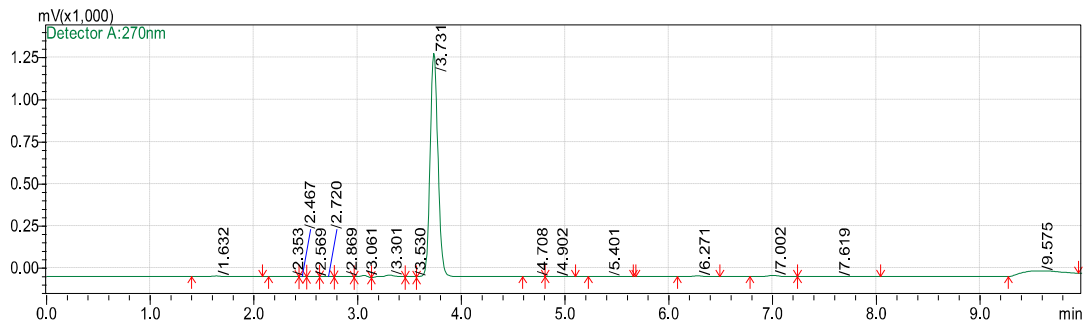


Figure 8.67 HPLC chromatogram of the compound 5f

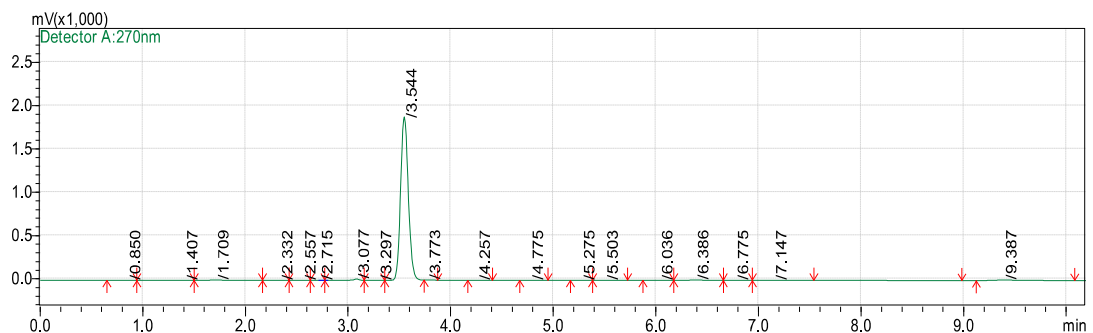


Figure 8.68 HPLC chromatogram of the compound 5h

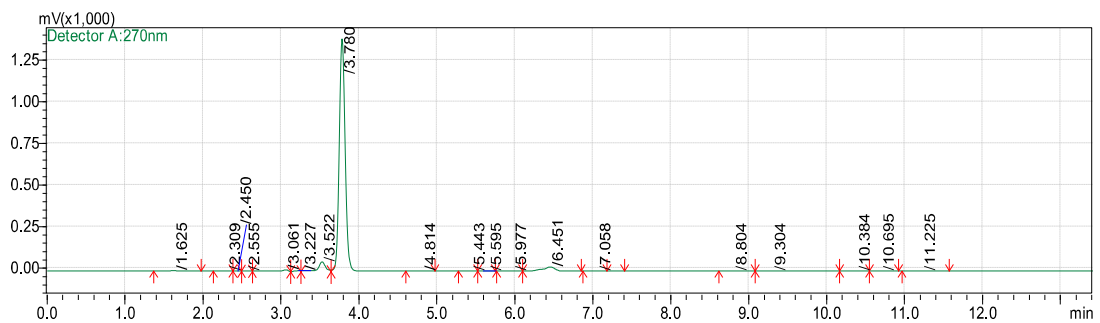


Figure 8.69 HPLC chromatogram of the compound 5i

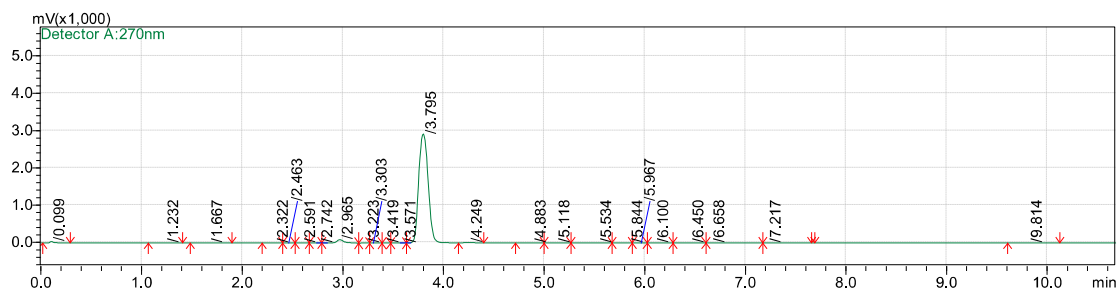


Figure 8.70 HPLC chromatogram of the compound 5l

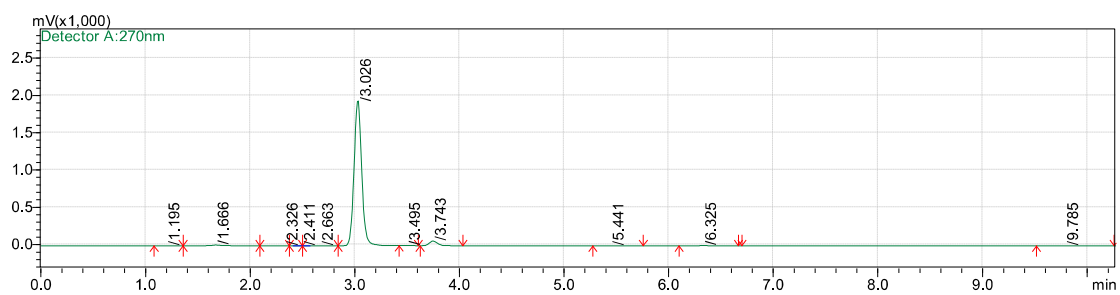


Figure 8.71 HPLC chromatogram of the compound 5m

List of Publications

RESEARCH PUBLICATION FROM Ph.D. DISSERTATION

- **Digambar Kumar Waiker**, Akash Verma Akhilesh, Gajendra T.A., Namrata Singh, Anima Roy, hagera Dilnashin, Vinod Tiwari, Surendra Kumar Trigun, Surya P Singh, Sairam Krishnamurthy, Prem Lama, Vincent Jo Davisson, Sushant Kumar Shrivastava, Design, Synthesis, and Biological Evaluation of Piperazine and N-Benzylpiperidine Hybrids of 5-phenyl-1,3,4-oxadiazol-2-thiol as Potential Multitargeted Ligands for Alzheimer's Disease Therapy, *ACS Chem. Neurosci.* 2023, 14, 11, 2217–2242. (I.F. 5.78)
- **Digambar Kumar Waiker**, Akash Verma, Poorvi Saraf, Gajendra T A, Sairam Krishnamurthy, Rameshwar Nath Chaurasia, Sushant Kumar Shrivastava, Development and Evaluation of Some Molecular Hybrids of N-(1-Benzylpiperidin-4-yl)-2-((5-phenyl-1, 3, 4-oxadiazol-2-yl) thio) as Multifunctional Agents to Combat Alzheimer's Disease, *ACS Omega* 2023, 8, 10, 9394–9414 (I.F. 4.1)

OTHER PUBLICATIONS

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development of novel p-aminobenzoic acid derivatives as potential cholinesterase inhibitors for the treatment of Alzheimer's disease, *Bioorganic Chemistry*, 82, (2019) 211-223. (I.F. 5.27)

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- Presented a Poster on the topic " Design synthesis and biological evaluation of some 1,3,4-oxadiazol-2-thiol derivatives as potential MTDLs for Alzheimer's disease management." In an International conference on "Recent Advances in Translational Research & Molecular Medicine" held at Shivajirao Kadam Institute of Pharmaceutical Education & Research Indore (M. P.) on 24-25 Feb 2023.
- Presented a Poster on the topic " Targeting the Nuclear Compartment Kinase activities in DNA Repair" in 6 th annual symposium of Drug Discovery, Purdue University, West Lafayette, Indiana, USA on 14 October 2019.
- Presented a Poster on the topic " Targeting the Nuclear Compartment Kinase activities in DNA Repair" in Purdue University, Department Medicinal Chemistry and Molecular Pharmacology, Retreat, USA on 10 October 2019.