

Chapter 7

(References)

7. REFERENCES

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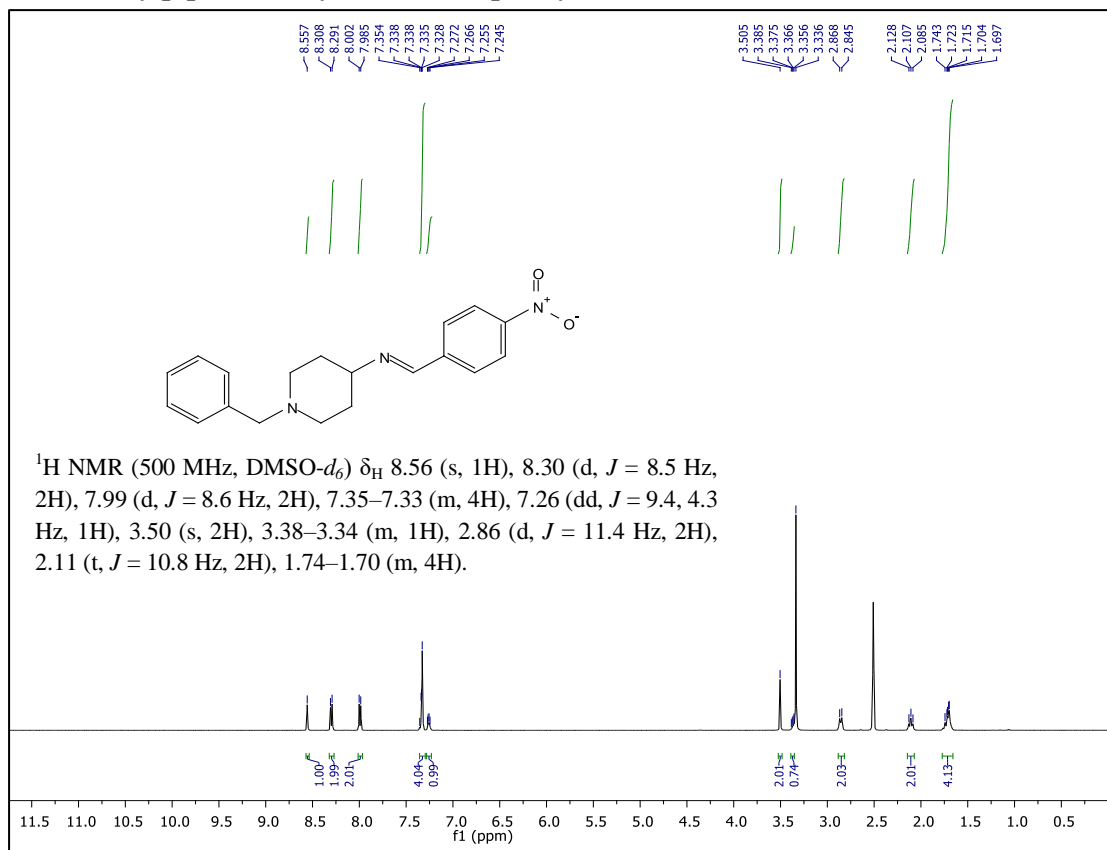
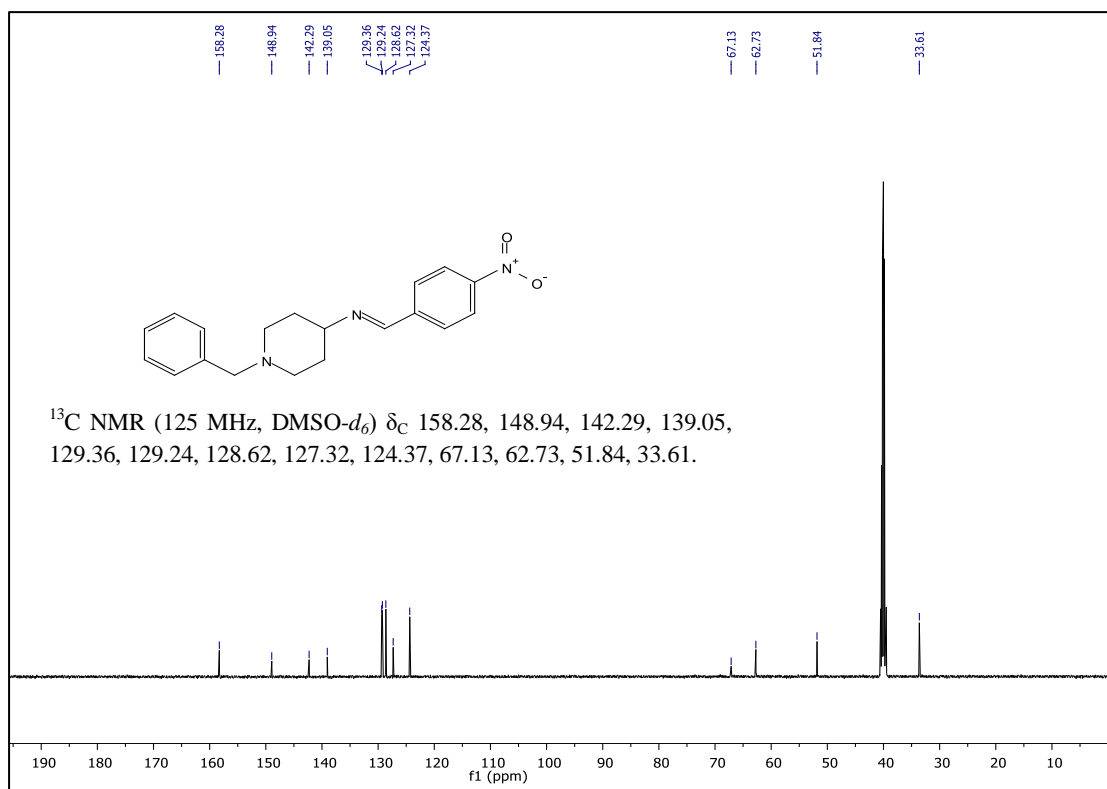
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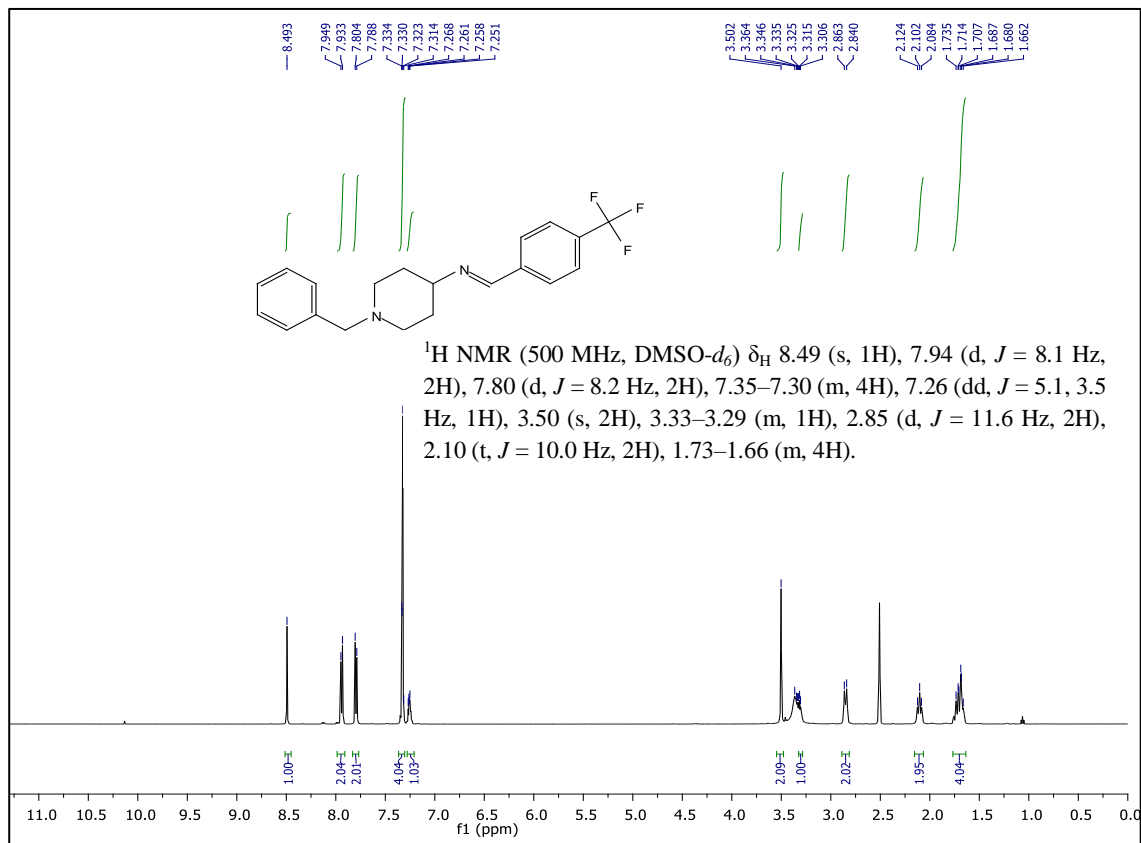
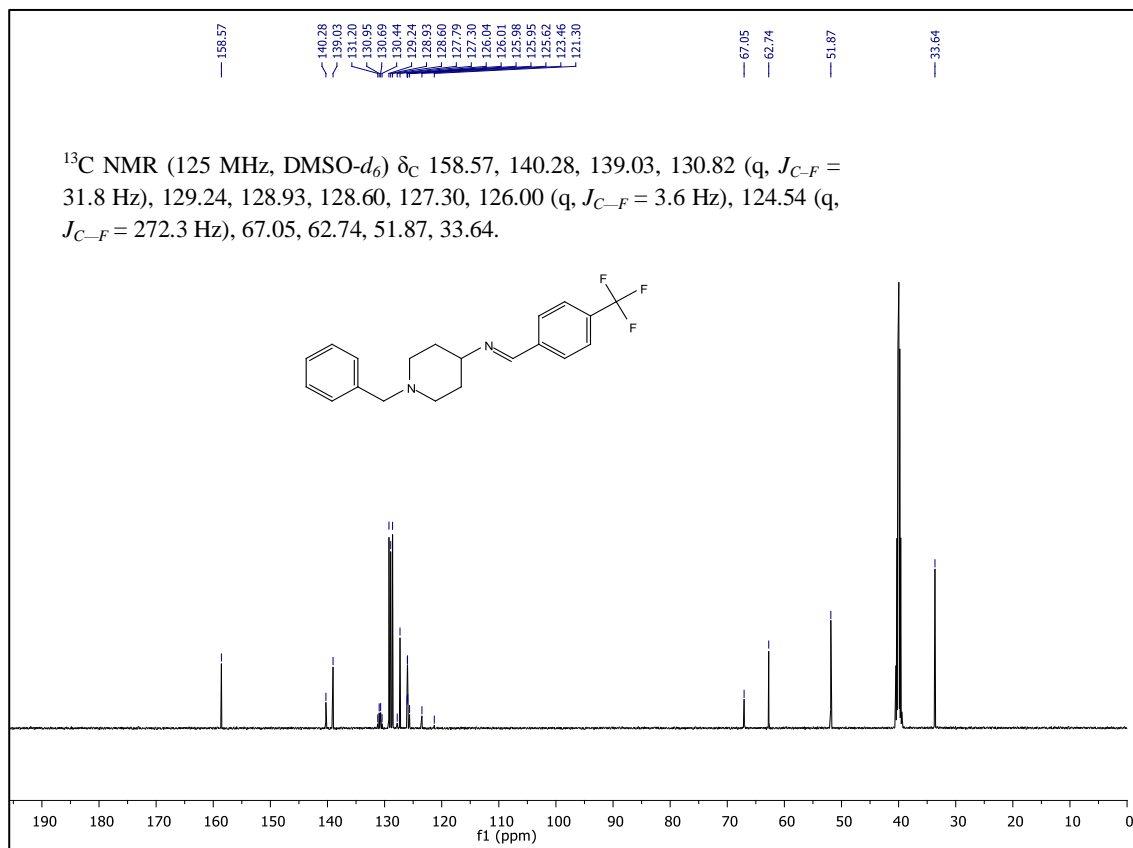
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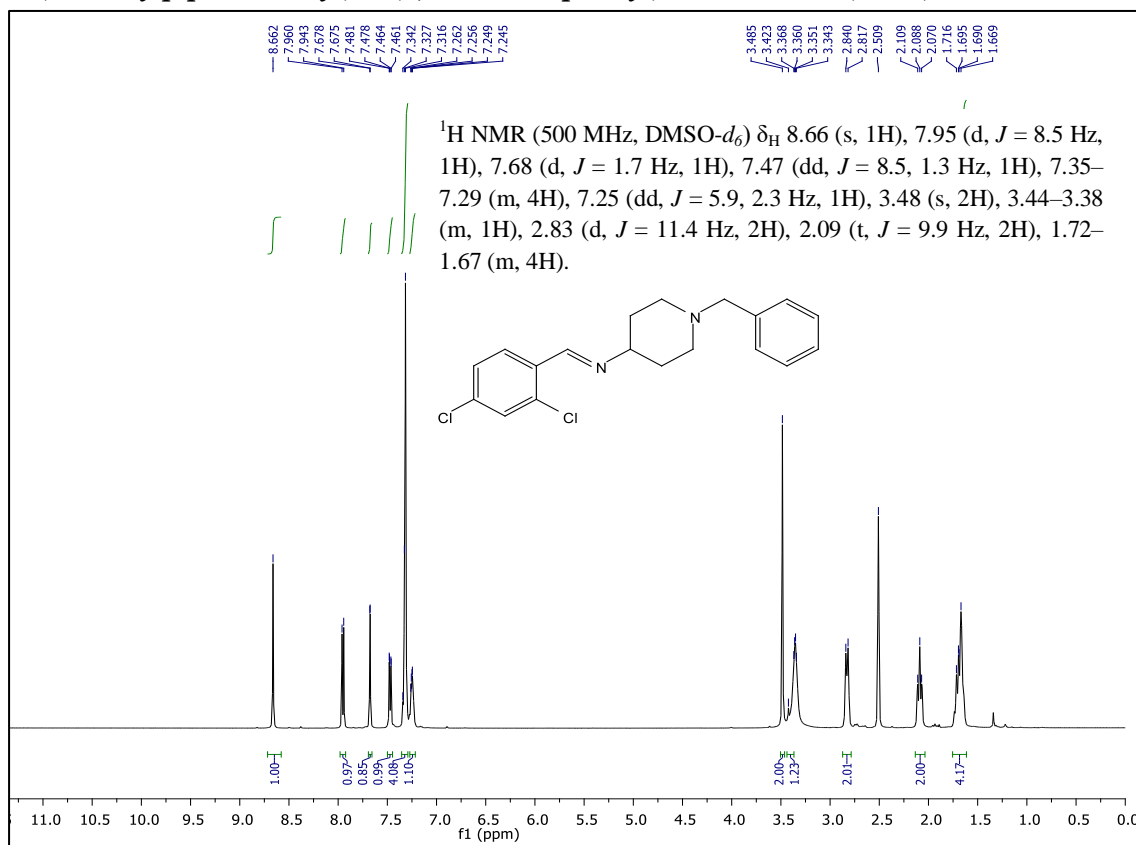
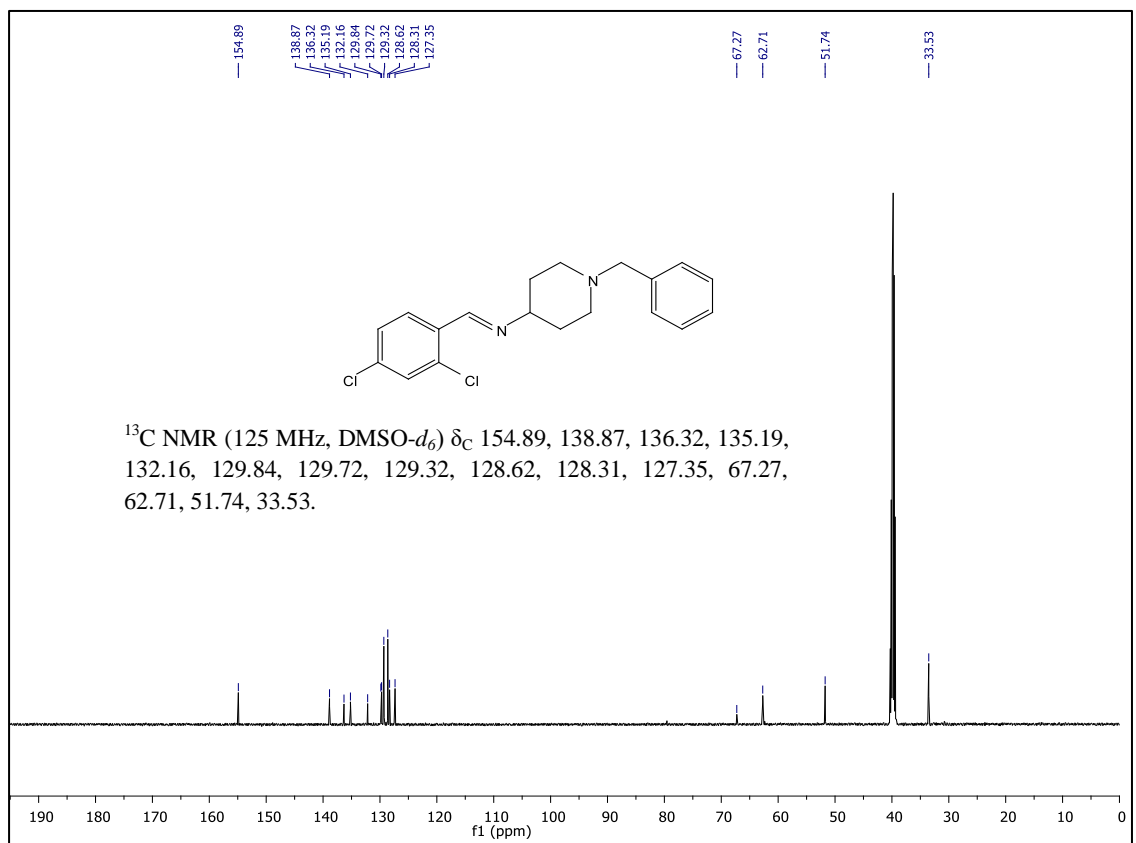
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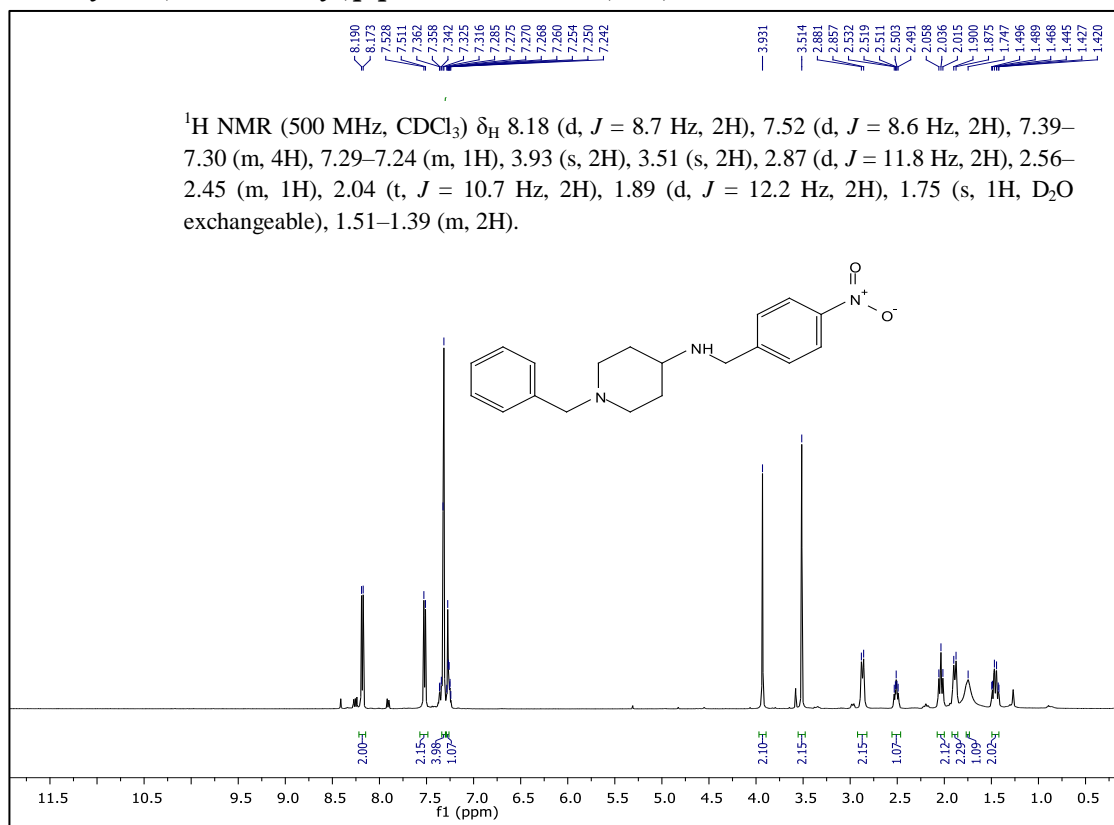
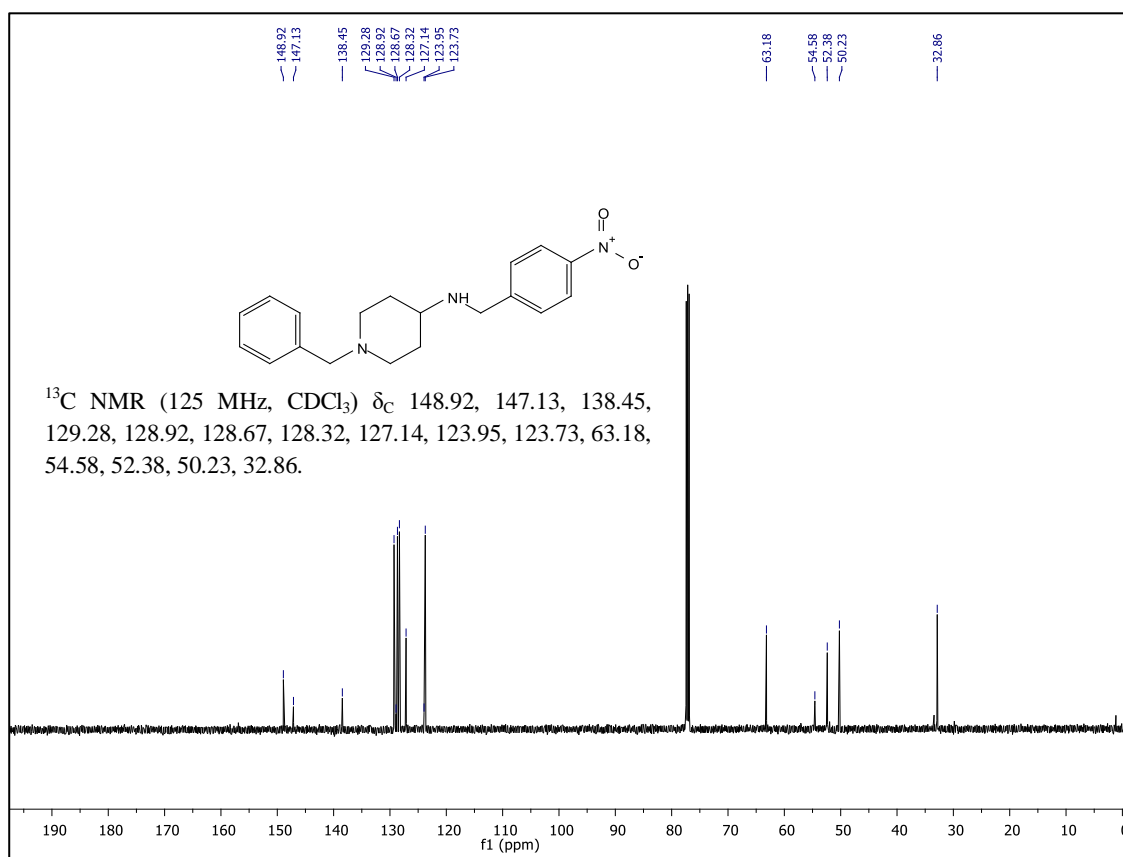
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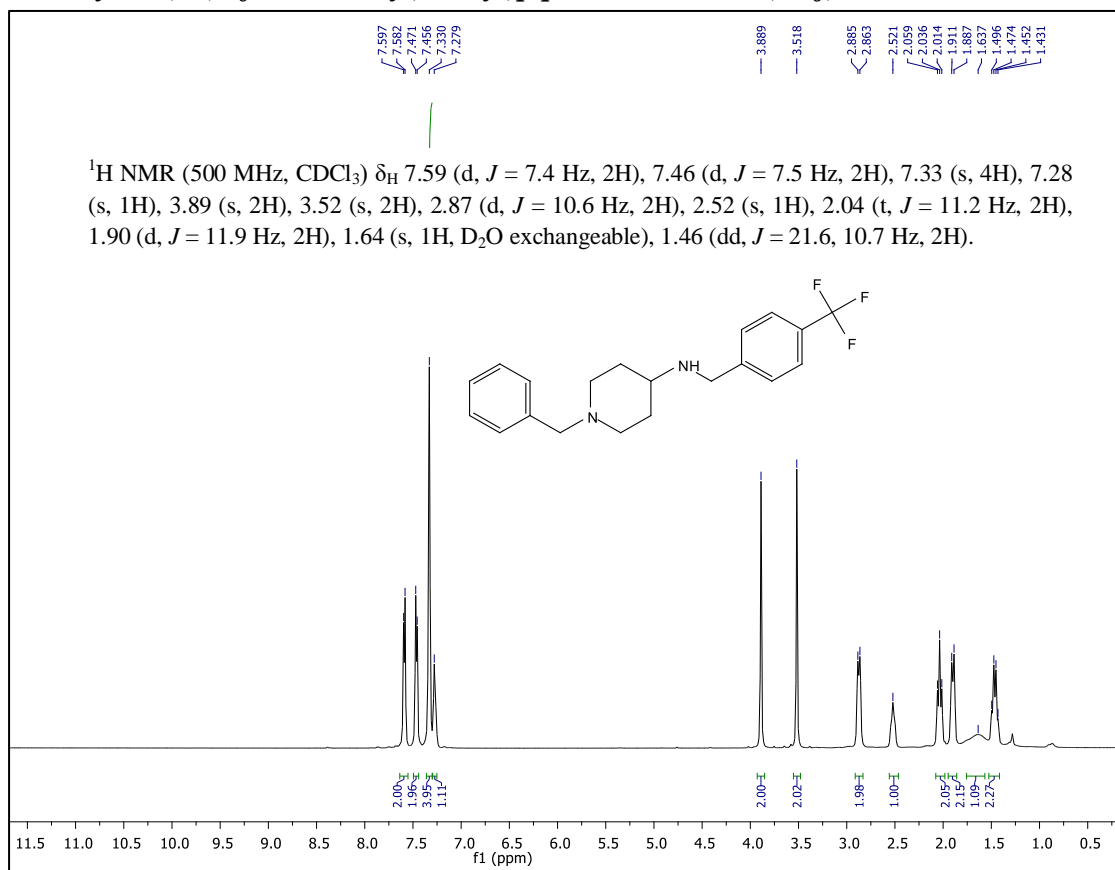
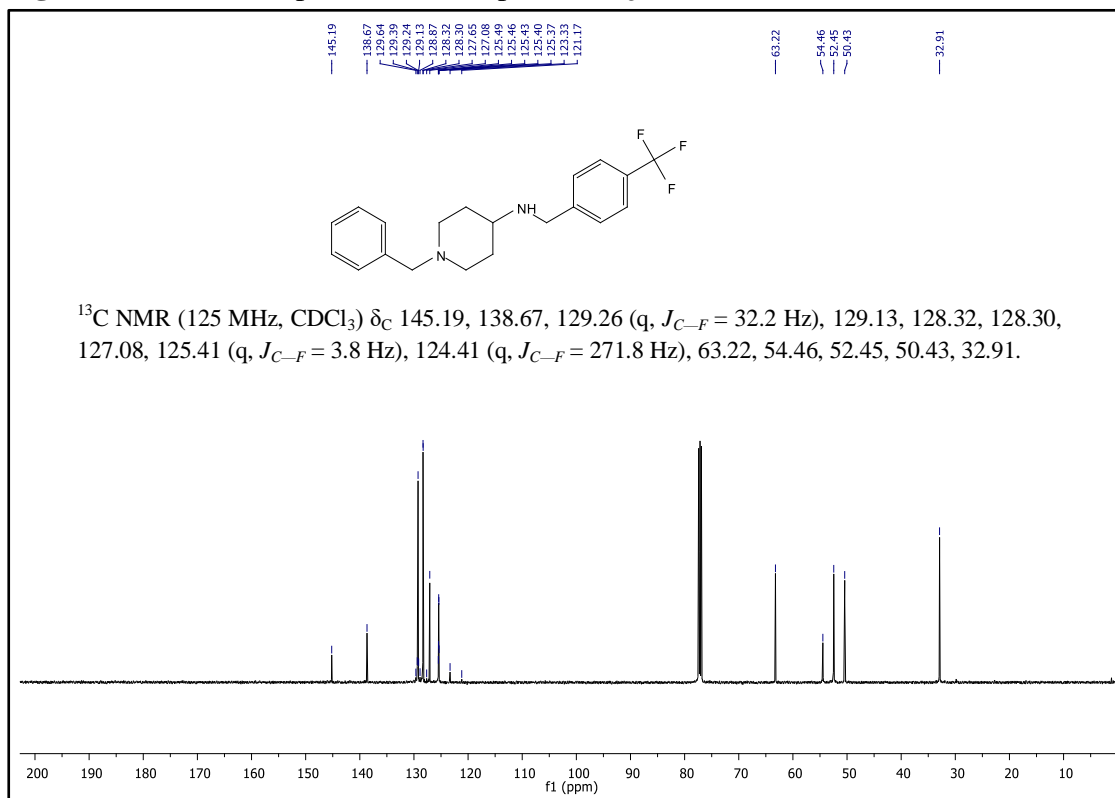
Chapter 8
(Appendix)

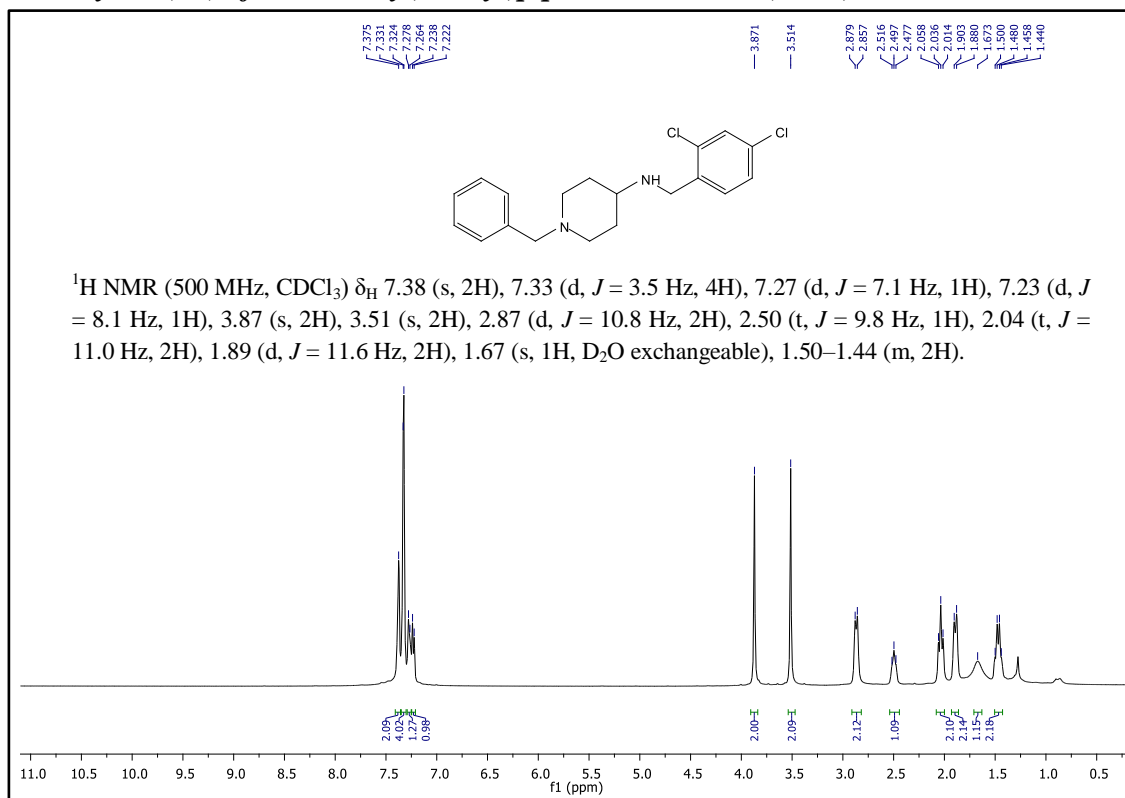
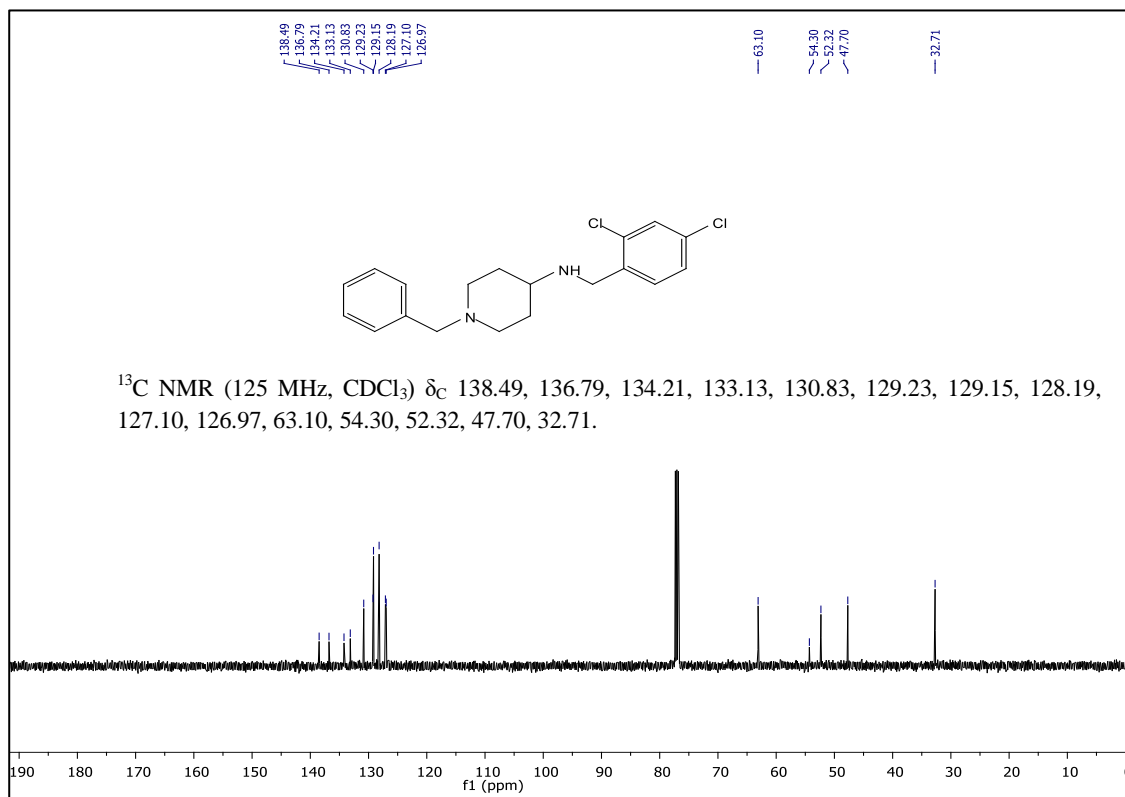
8.1. ^1H and ^{13}C NMR spectra of representative synthesized compounds*N*-(1-Benzylpiperidin-4-yl)-1-(4-nitrophenyl)methanimine (*S*_{13i})Figure 8.1. ^1H NMR spectrum of compound *S*_{13i}Figure 8.2. ^{13}C NMR spectrum of compound *S*_{13i}

N-(1-Benzylpiperidin-4-yl)-1-(4-(trifluoromethyl)phenyl)methanimine (*S*_{13j})Figure 8.3. ¹H NMR spectrum of compound *S*_{13j}Figure 8.4. ¹³C NMR spectrum of compound *S*_{13j}

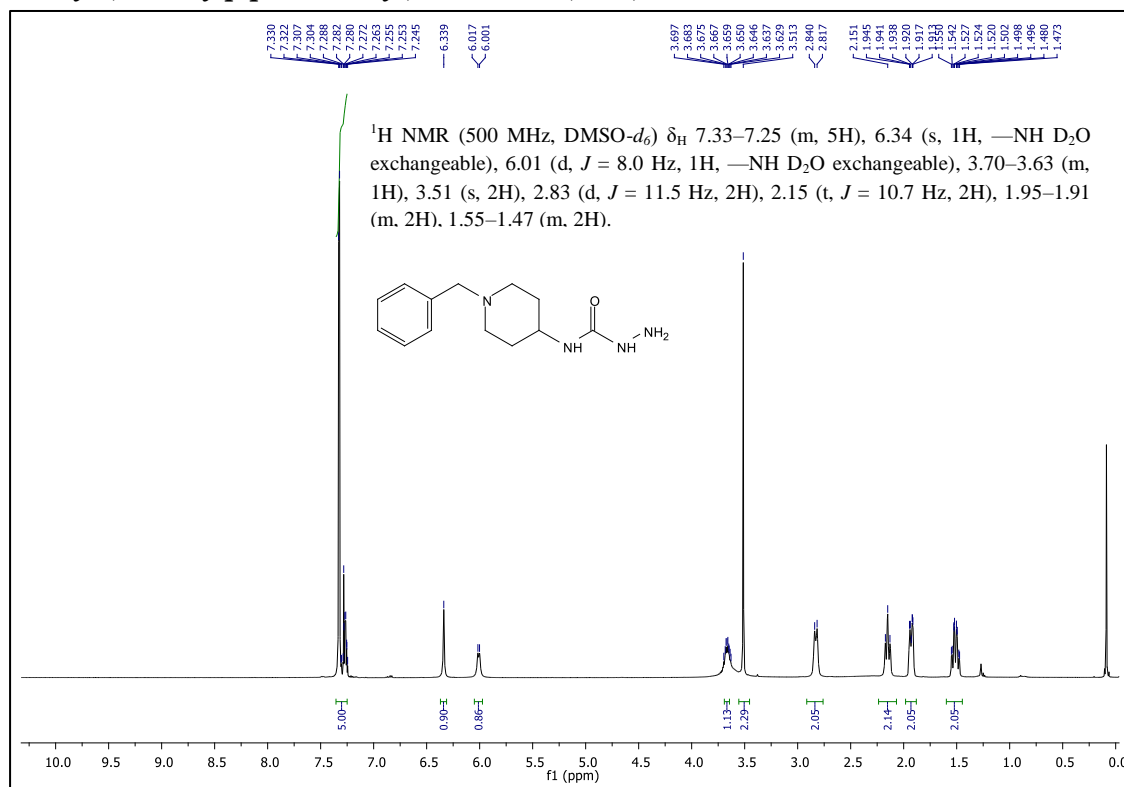
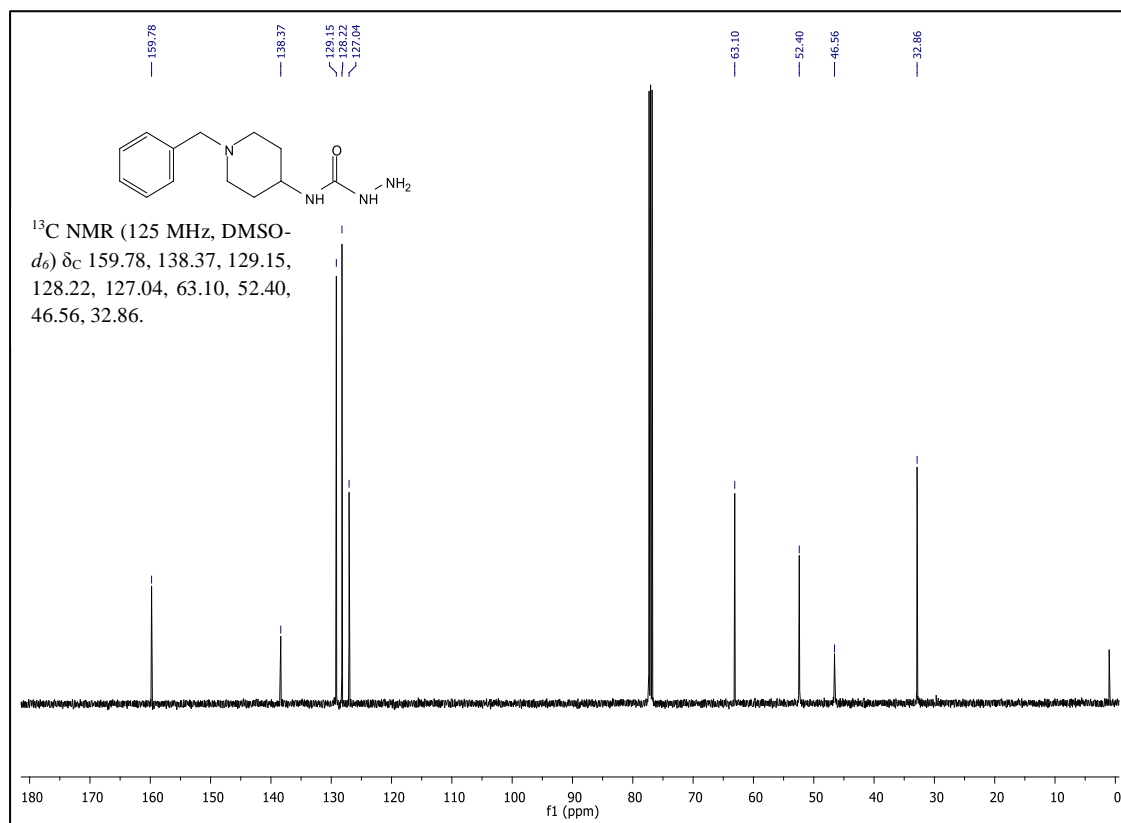
N-(1-Benzylpiperidin-4-yl)-1-(2,4-dichlorophenyl)methanimine (*S*₁3*m*)Figure 8.5. ¹H NMR spectrum of compound *S*₁3*m*Figure 8.6. ¹³C NMR spectrum of compound *S*₁3*m*

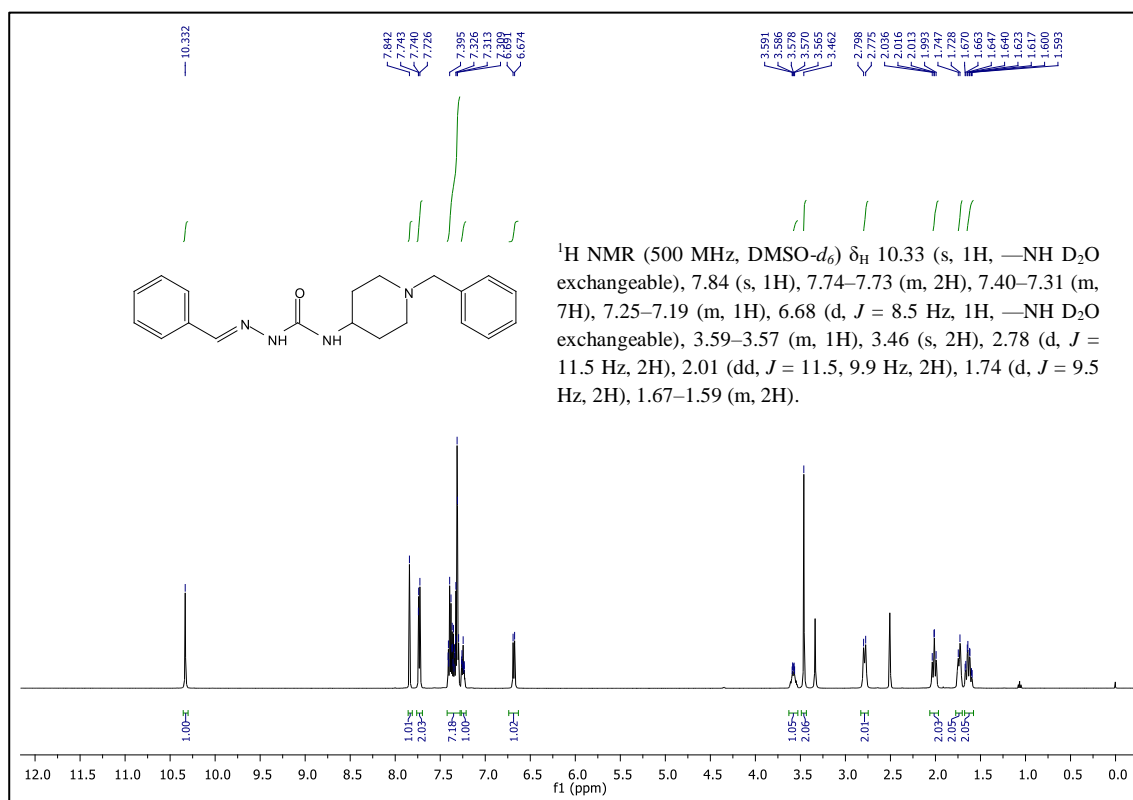
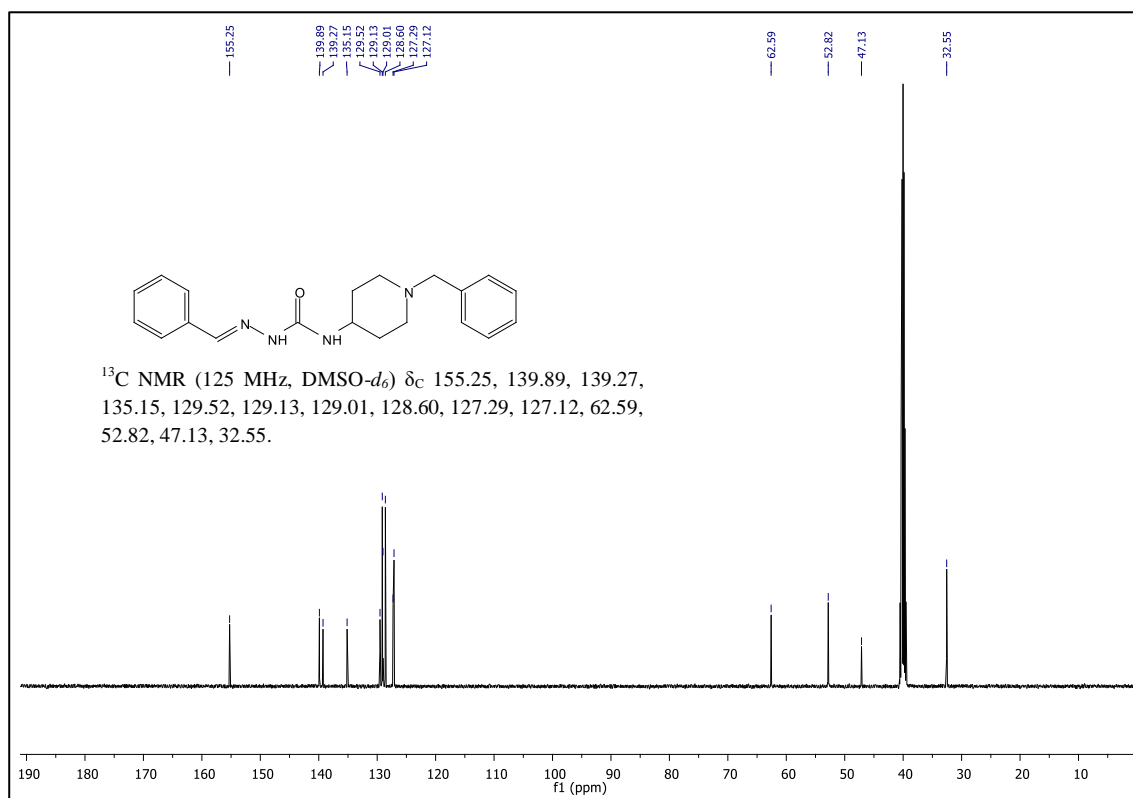
1-Benzyl-N-(4-nitrobenzyl)piperidin-4-amine (S₁4i)Figure 8.7. ¹H NMR spectrum of compound S₁4iFigure 8.8. ¹³C NMR spectrum of compound S₁4i

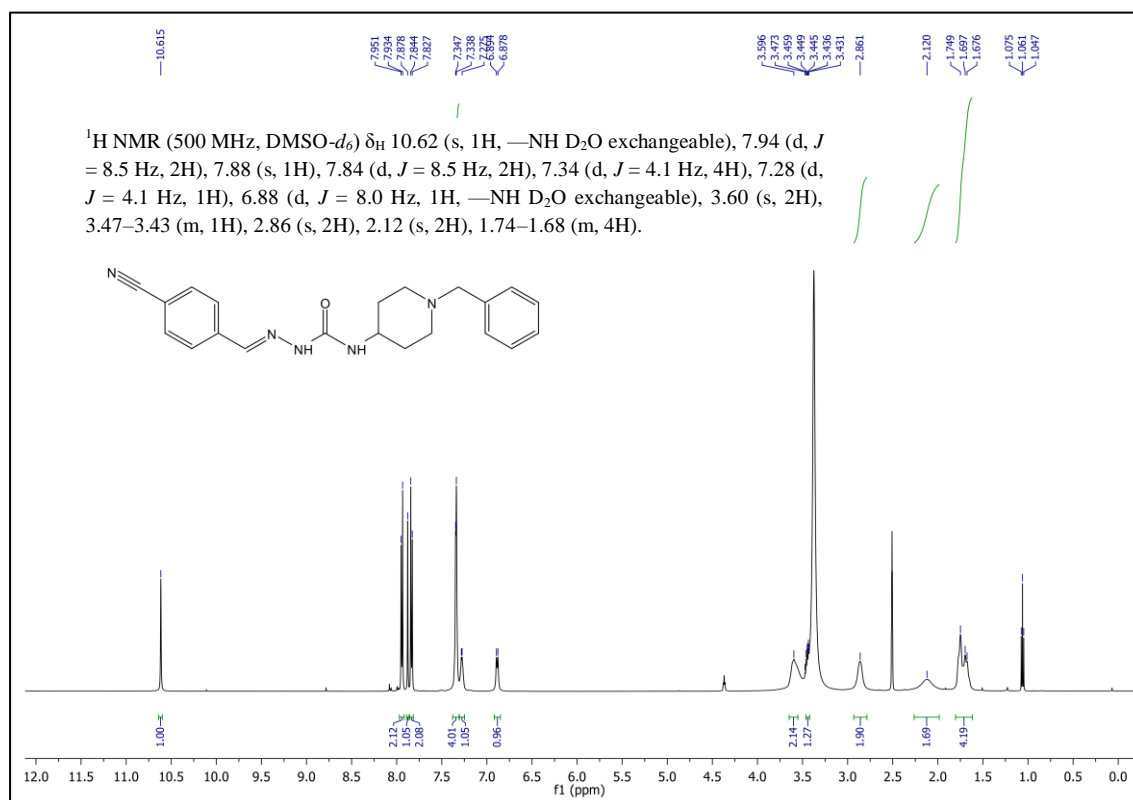
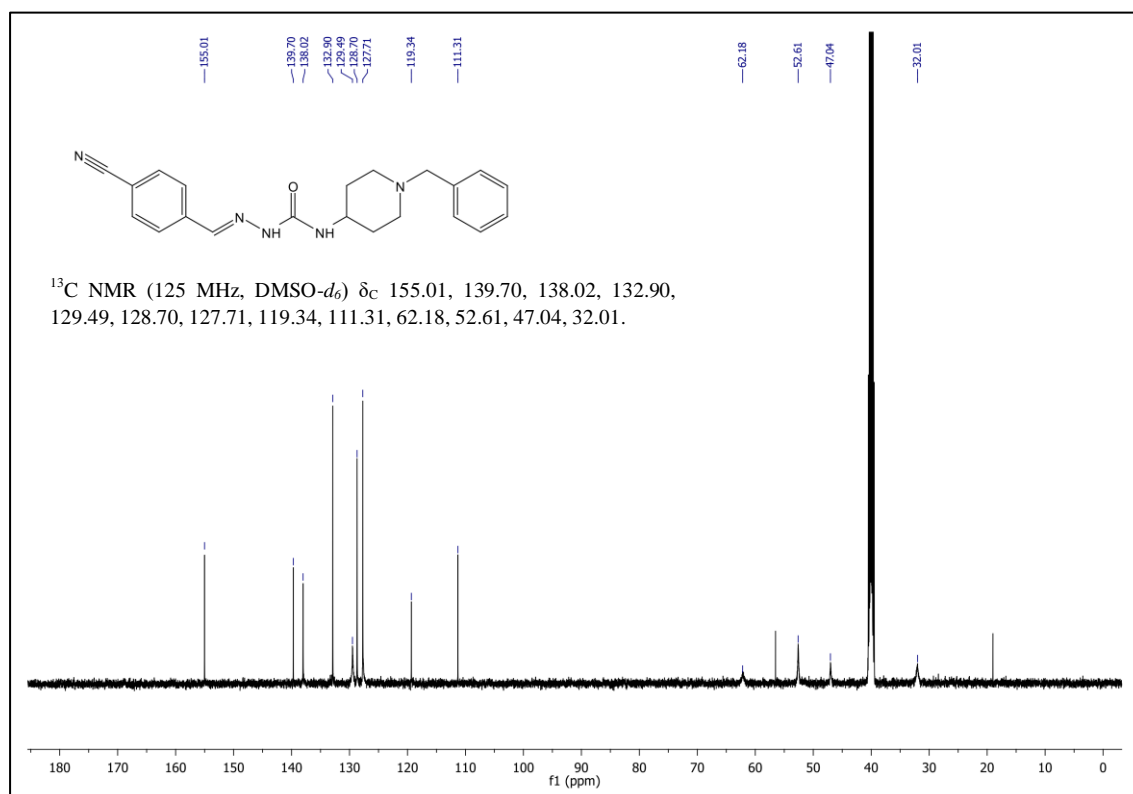
1-Benzyl-N-(4-(trifluoromethyl)benzyl)piperidin-4-amine (S_{14j})Figure 8.9. ¹H NMR spectrum of compound S_{14j}Figure 8.10. ¹³C NMR spectrum of compound S_{14j}

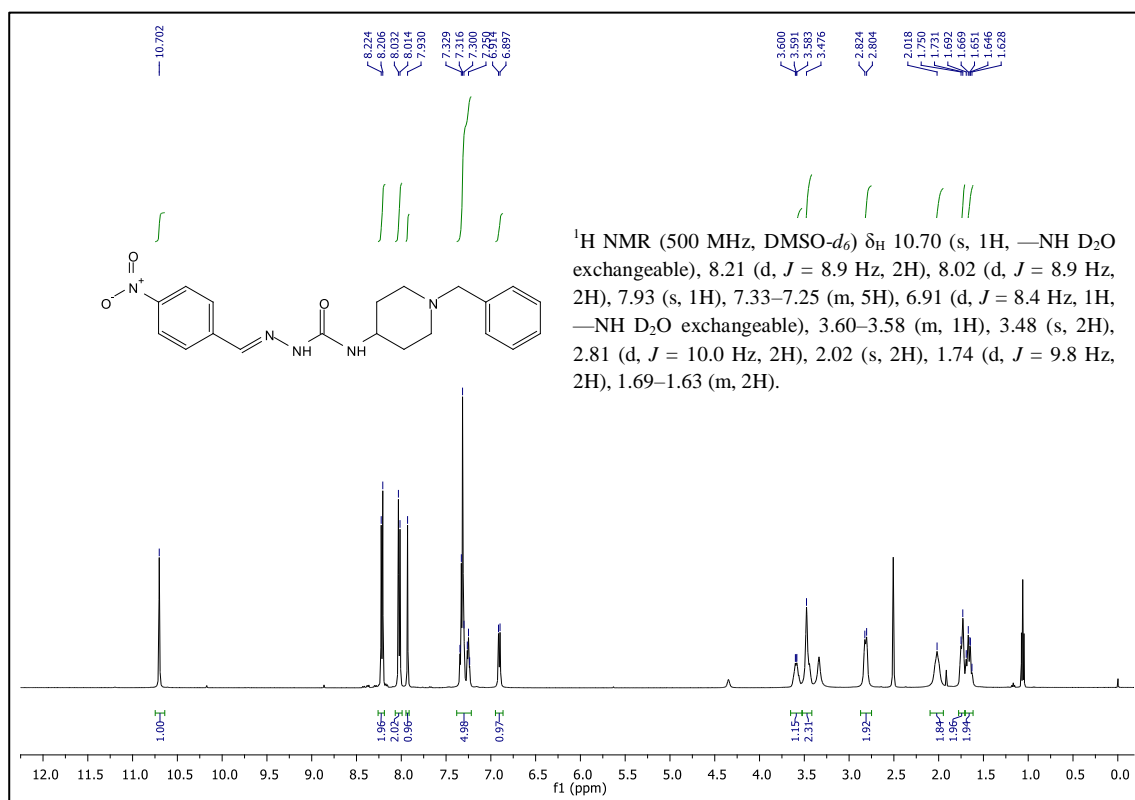
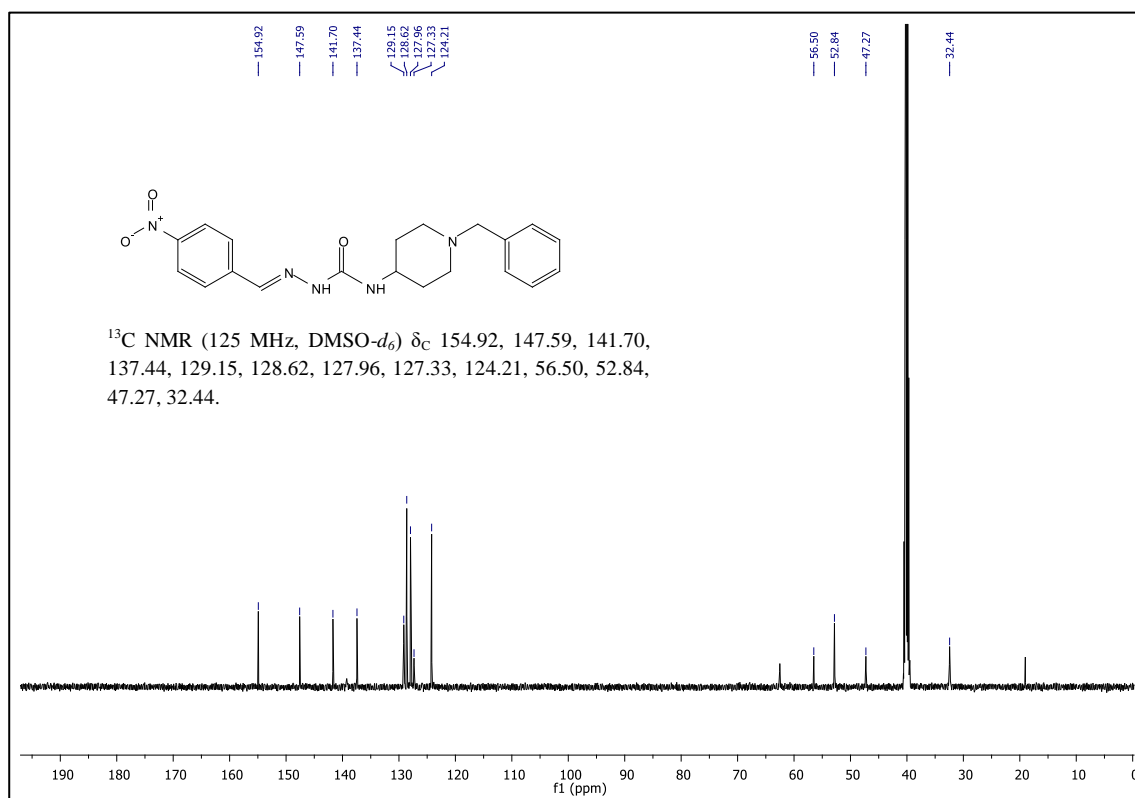
1-Benzyl-N-(4-(trifluoromethyl)benzyl)piperidin-4-amine (S₁₄m)Figure 8.11. ¹H NMR spectrum of compound S₁₄mFigure 8.12. ¹³C NMR spectrum of compound S₁₄m

Phenyl (1-benzylpiperidin-4-yl)carbamate (SII8)

Figure 8.13. ¹H NMR spectrum of compound SII8Figure 8.14. ¹³C NMR spectrum of compound SII8

2-Benzylidene-N-(1-benzylpiperidin-4-yl)hydrazine-1-carboxamide (S_{II}9a)Figure 8.15. ¹H NMR spectrum of compound S_{II}9aFigure 8.16. ¹³C NMR spectrum of compound S_{II}9a

N-(1-Benzylpiperidin-4-yl)-2-(4-cyanobenzylidene)hydrazine-1-carboxamide (*S*_{II}9b)Figure 8.17. ¹H NMR spectrum of compound *S*_{II}9bFigure 8.18. ¹³C NMR spectrum of compound *S*_{II}9b

N-(1-Benzylpiperidin-4-yl)-2-(4-nitrobenzylidene)hydrazine-1-carboxamide (*S_{II}9c*)Figure 8.19. ¹H NMR spectrum of compound *S_{II}9c*Figure 8.20. ¹³C NMR spectrum of compound *S_{II}9c*

N-(1-Benzylpiperidin-4-yl)-2-(2,4-difluorobenzylidene)hydrazine-1-carboxamide (*S_{II}9d*)

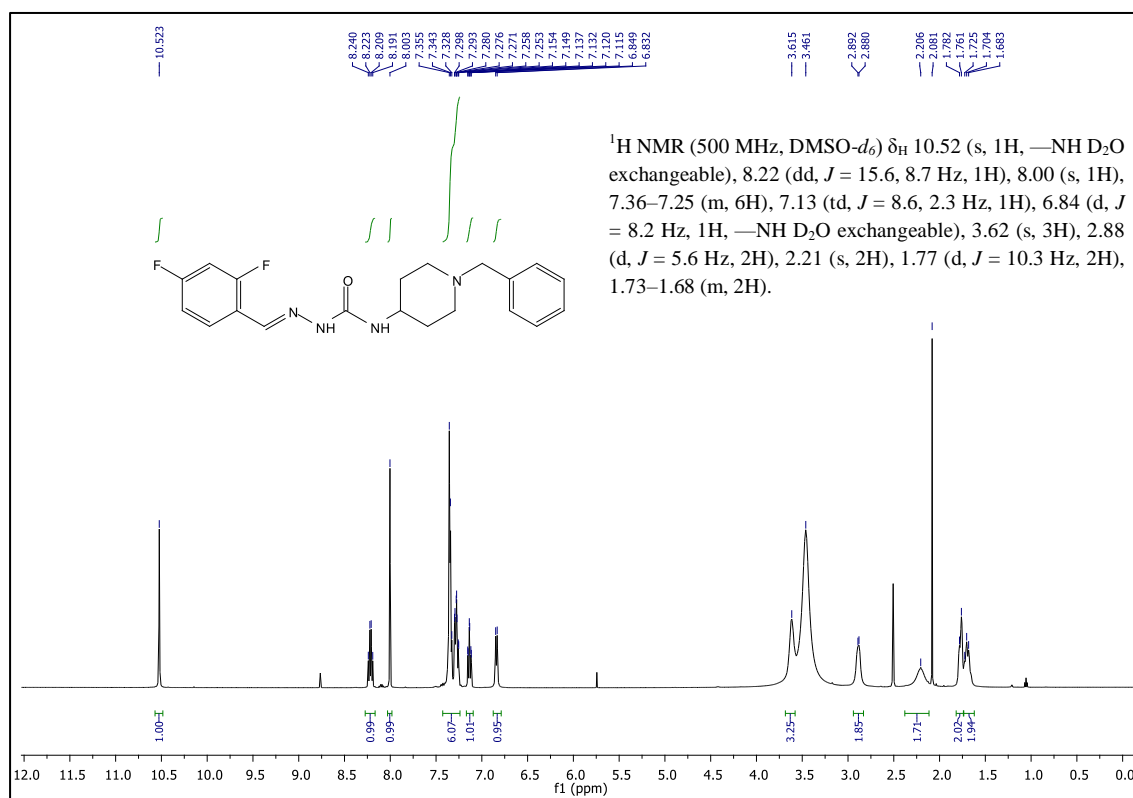


Figure 8.21. ¹H NMR spectrum of compound *S_{II}9d*

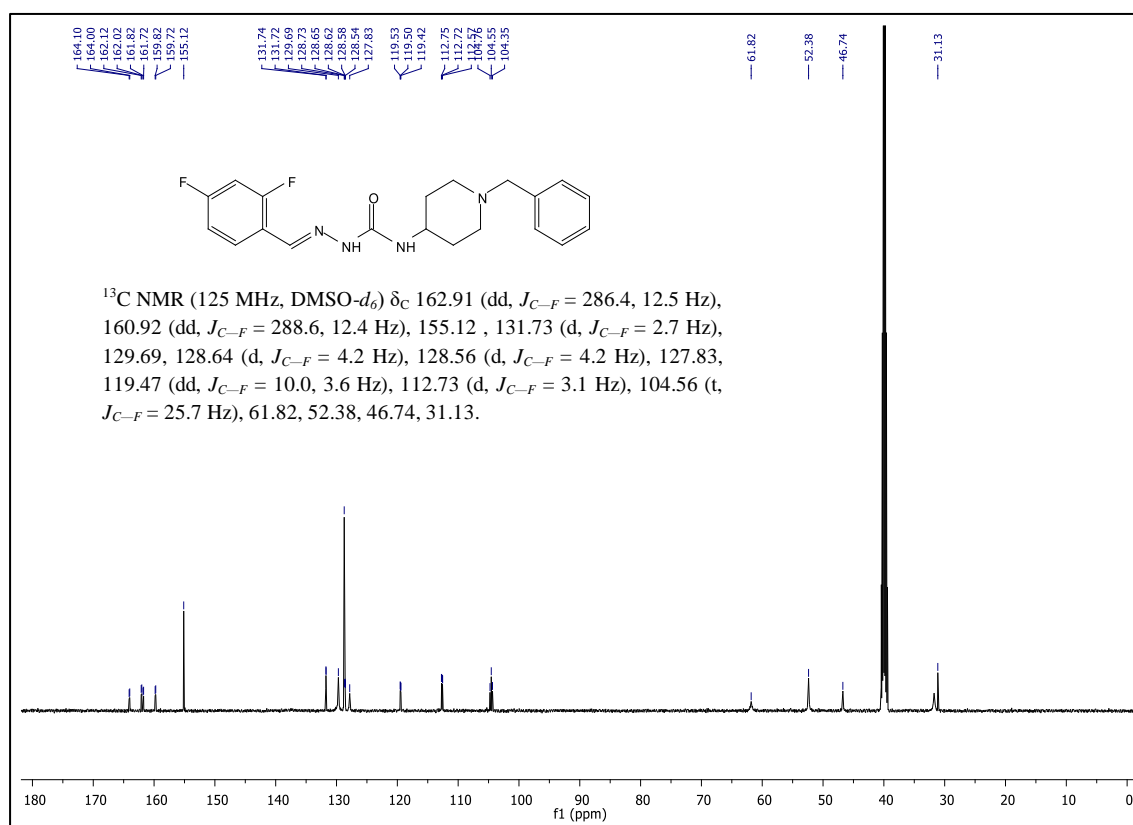
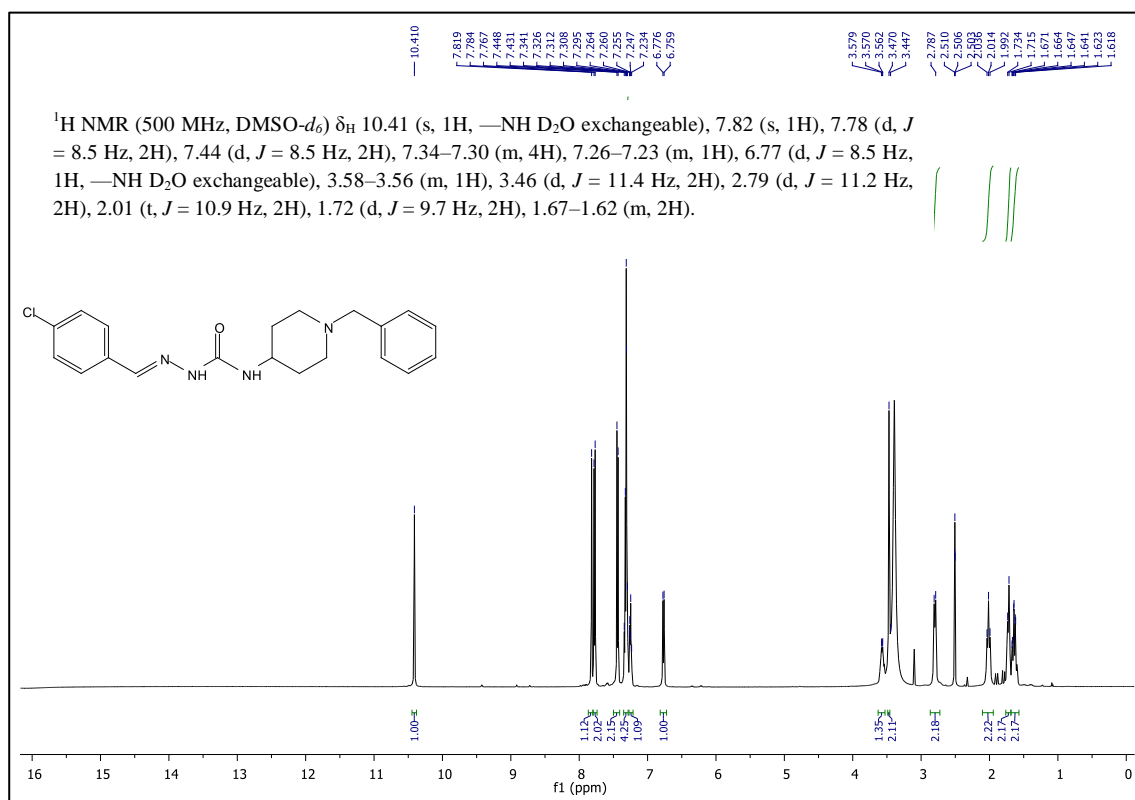
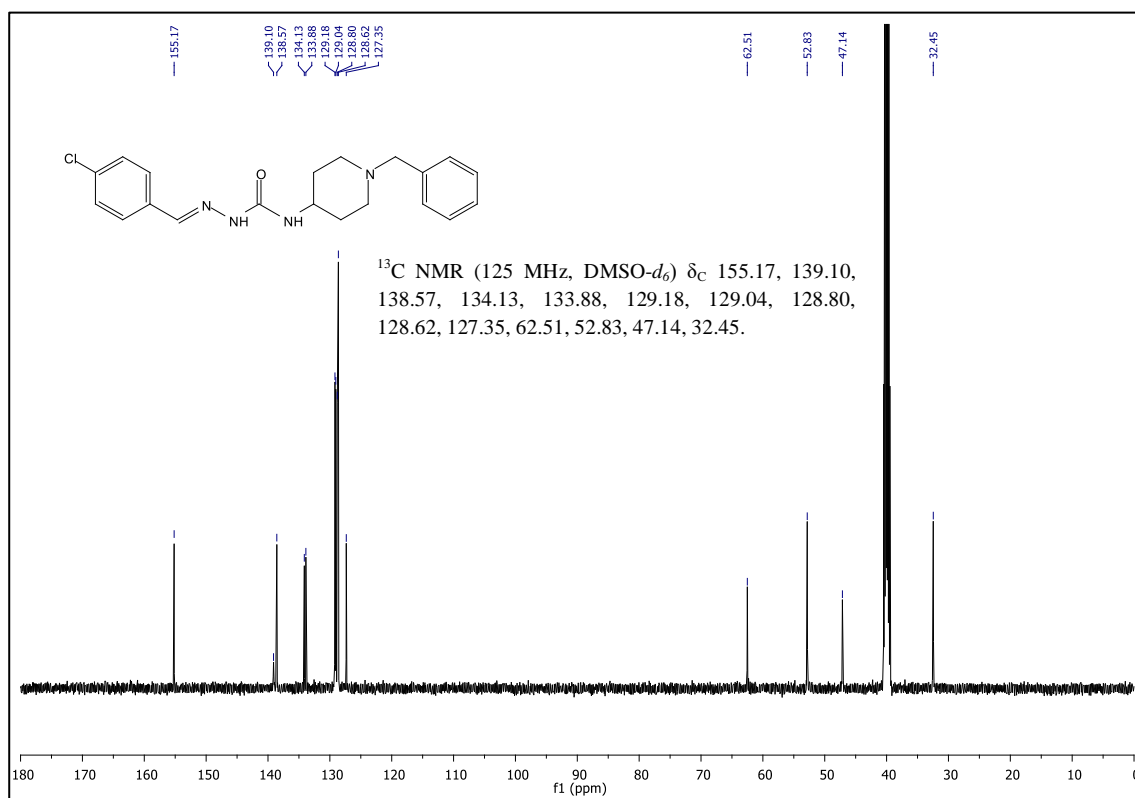


Figure 8.22. ¹³C NMR spectrum of compound *S_{II}9d*

N-(1-Benzylpiperidin-4-yl)-2-(4-chlorobenzylidene)hydrazine-1-carboxamide (*S*_{II}9e)Figure 8.23. ¹H NMR spectrum of compound *S*_{II}9eFigure 8.24. ¹³C NMR spectrum of compound *S*_{II}9e

N-(1-Benzylpiperidin-4-yl)-2-(2,4-dichlorobenzylidene)hydrazine-1-carboxamide (S_{II}9f)

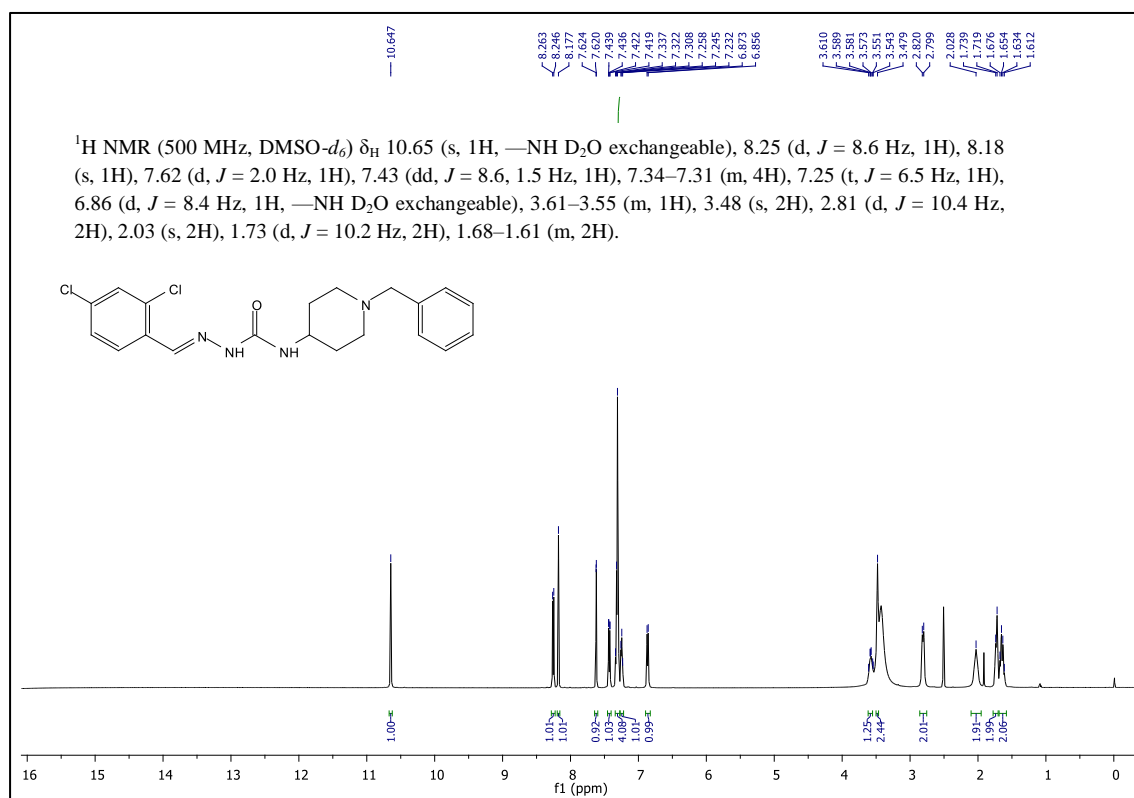


Figure 8.25. ¹H NMR spectrum of compound S_{II}9f

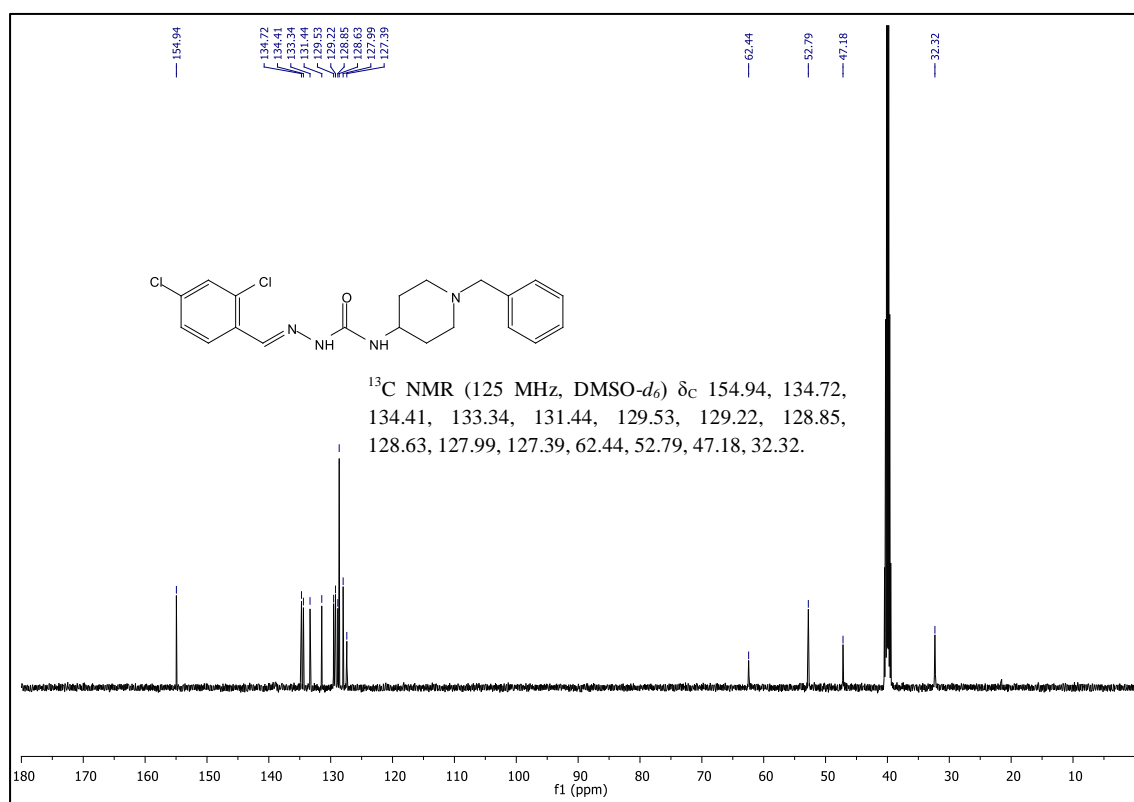


Figure 8.26. ¹³C NMR spectrum of compound S_{II}9f

N-(1-Benzylpiperidin-4-yl)-2-(4-(trifluoromethyl)benzylidene)hydrazine-1-carboxamide (*S*_{II}9g)

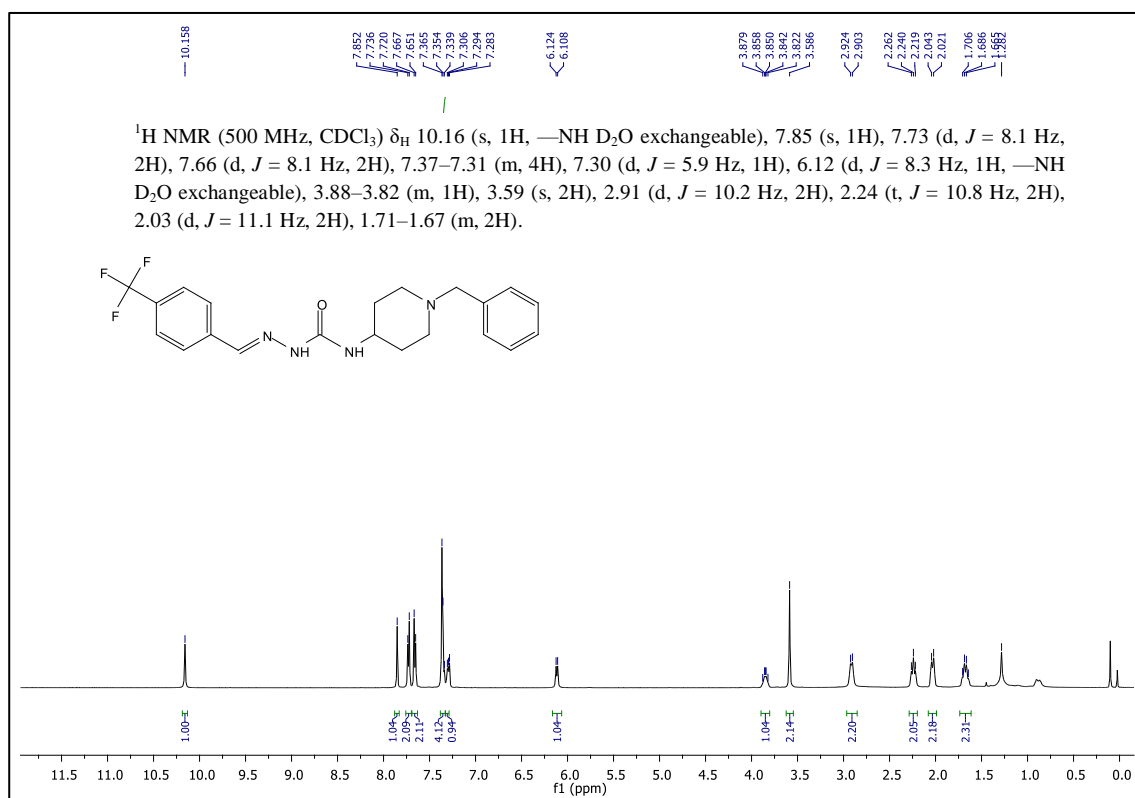


Figure 8.27. ¹H NMR spectrum of compound *S*_{II}9g

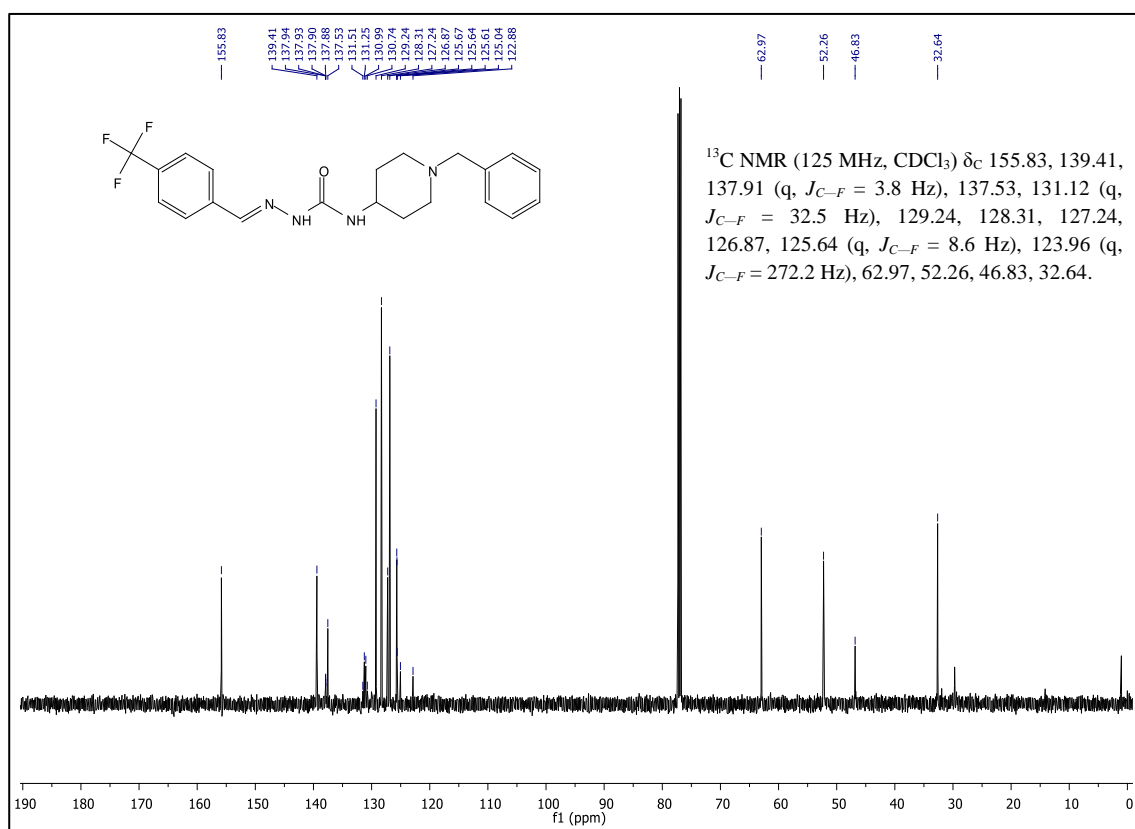
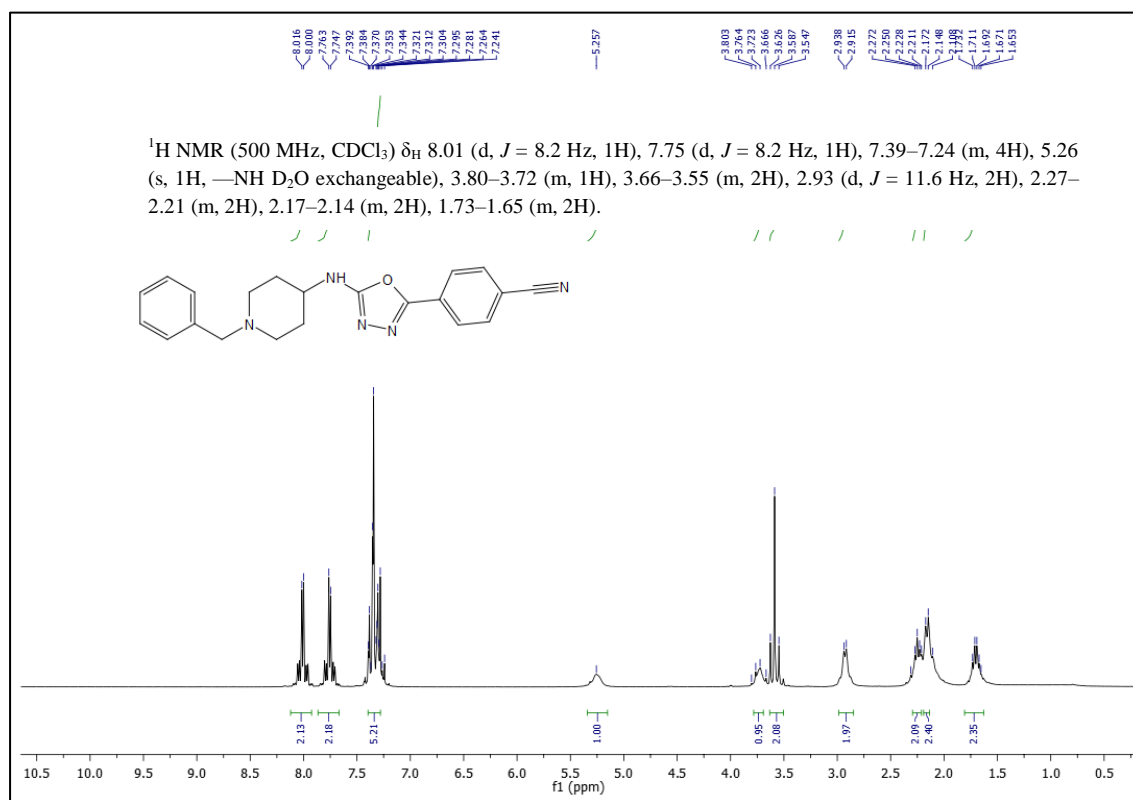
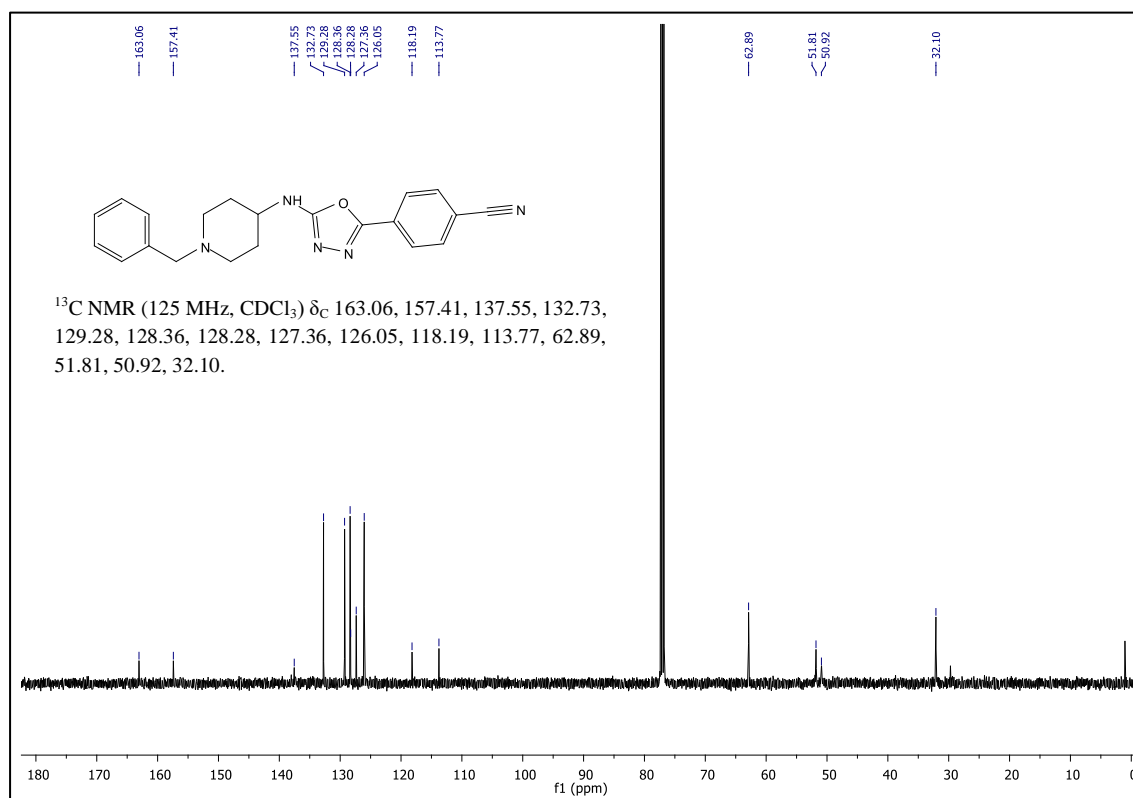


Figure 8.28. ¹³C NMR spectrum of compound *S*_{II}9g

4-(5-((1-Benzylpiperidin-4-yl)amino)-1,3,4-oxadiazol-2-yl)benzonitrile (*S_{III}10b*)Figure 8.29. ¹H NMR spectrum of compound *S_{III}10b*Figure 8.30. ¹³C NMR spectrum of compound *S_{III}10b*

N-(1-Benzylpiperidin-4-yl)-5-(4-(trifluoromethyl)phenyl)-1,3,4-oxadiazol-2-amine
(**S_{III}10g**)

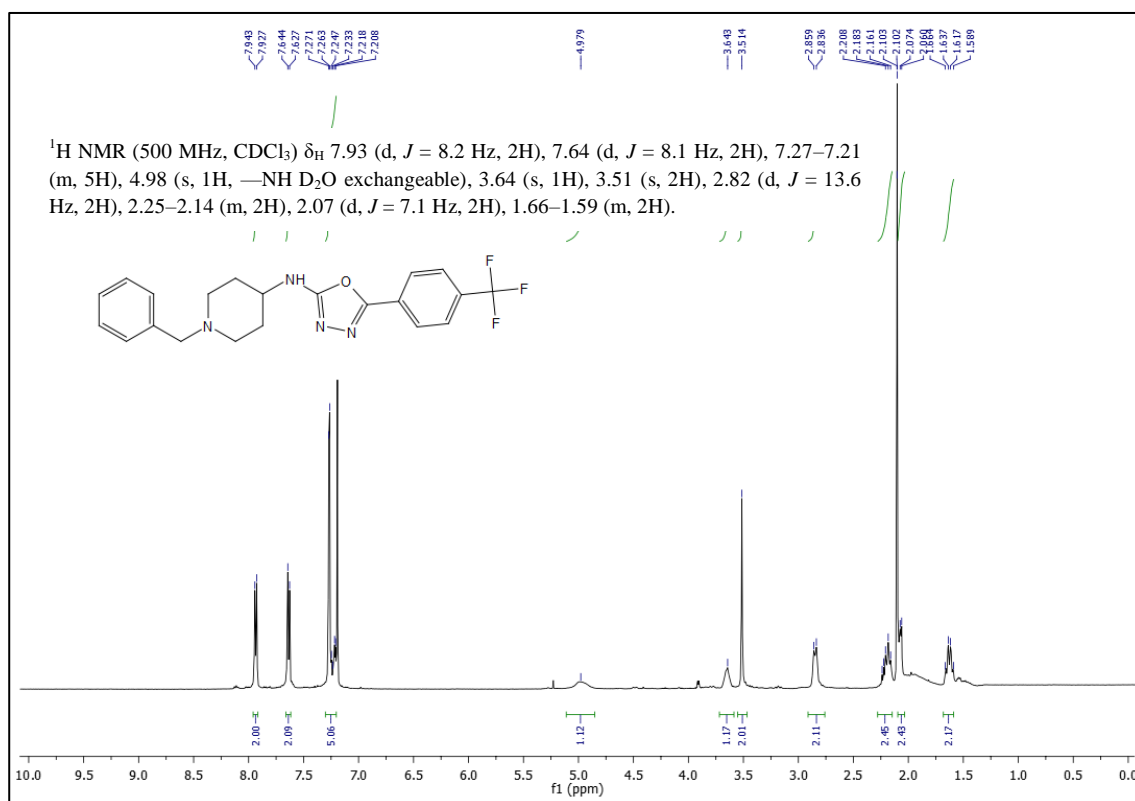


Figure 8.31. ¹H NMR spectrum of compound **S_{III}10g**

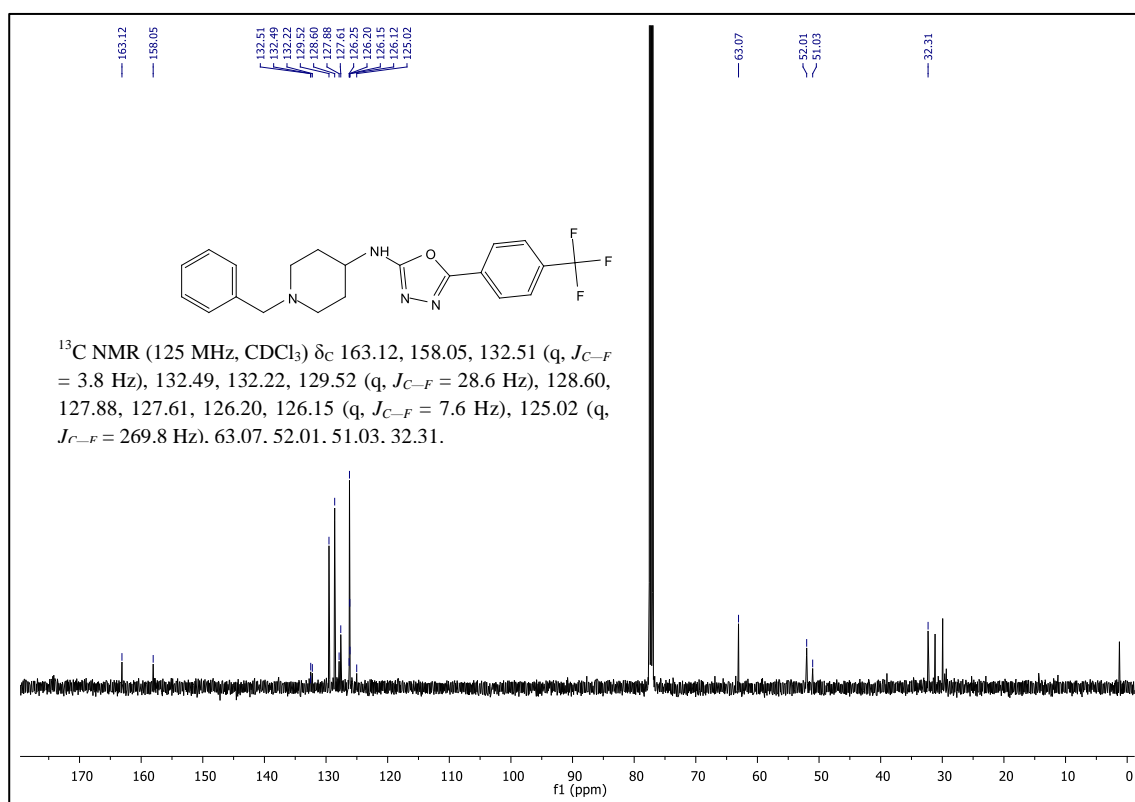
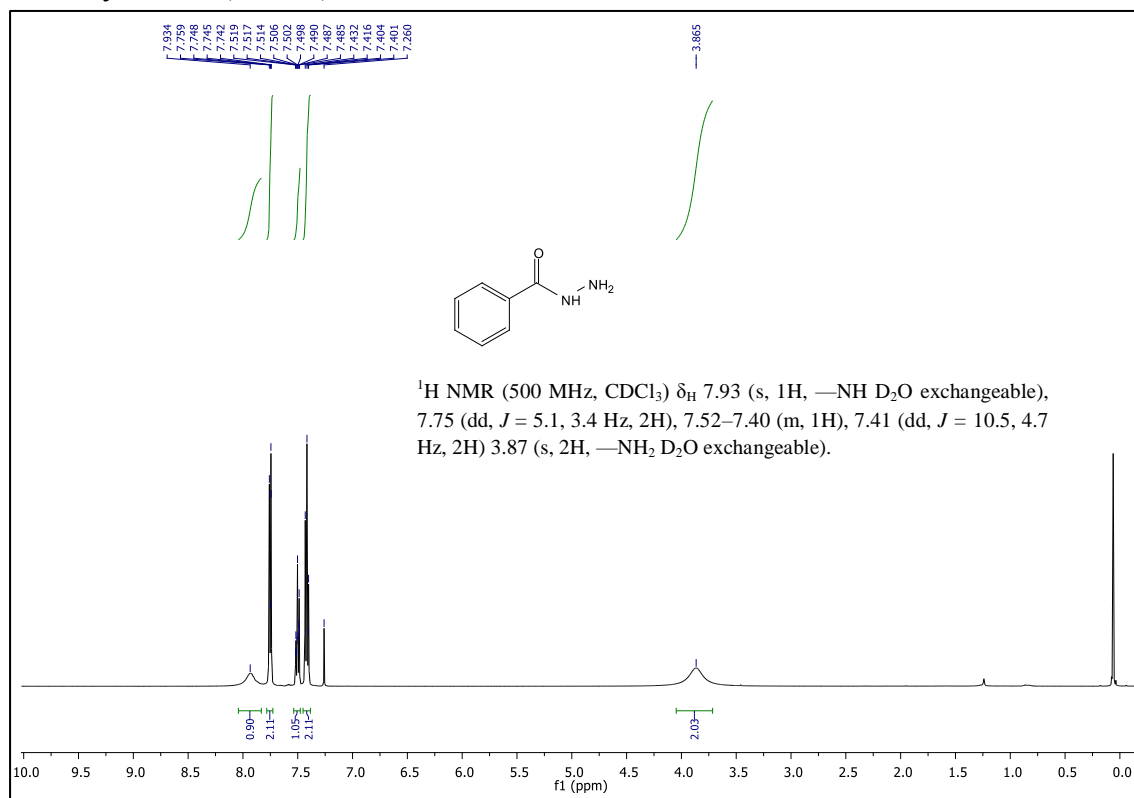
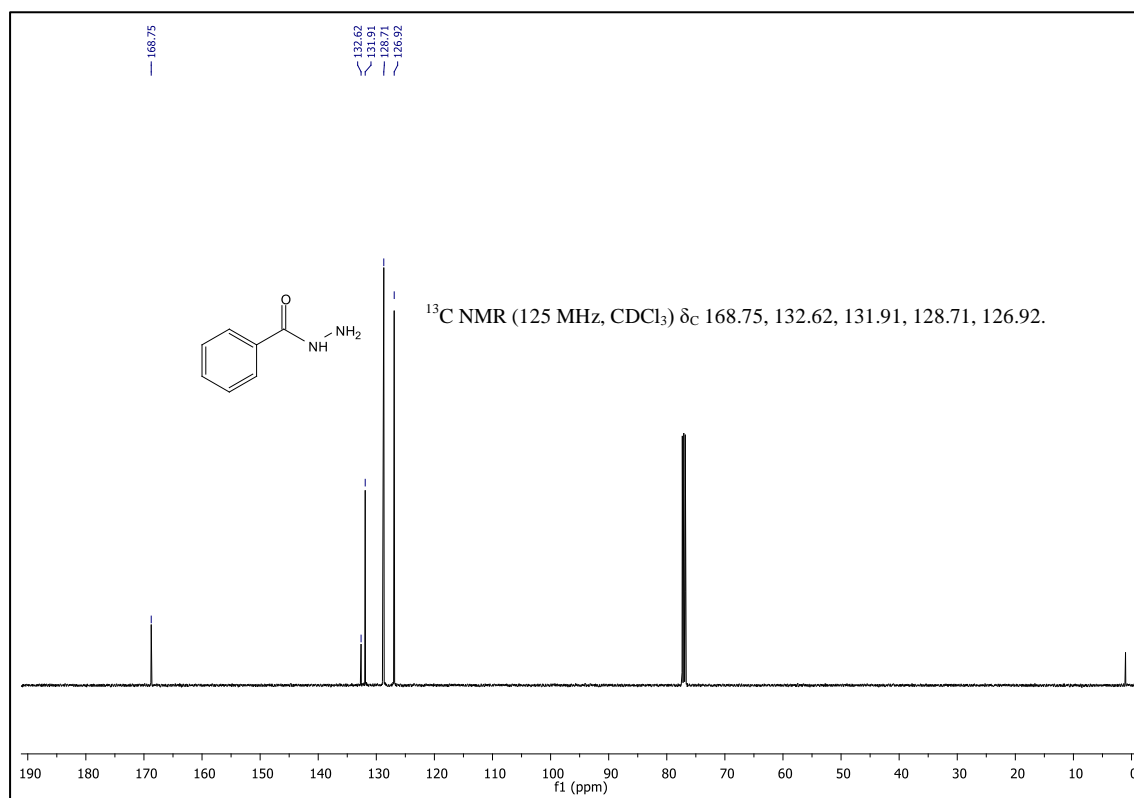
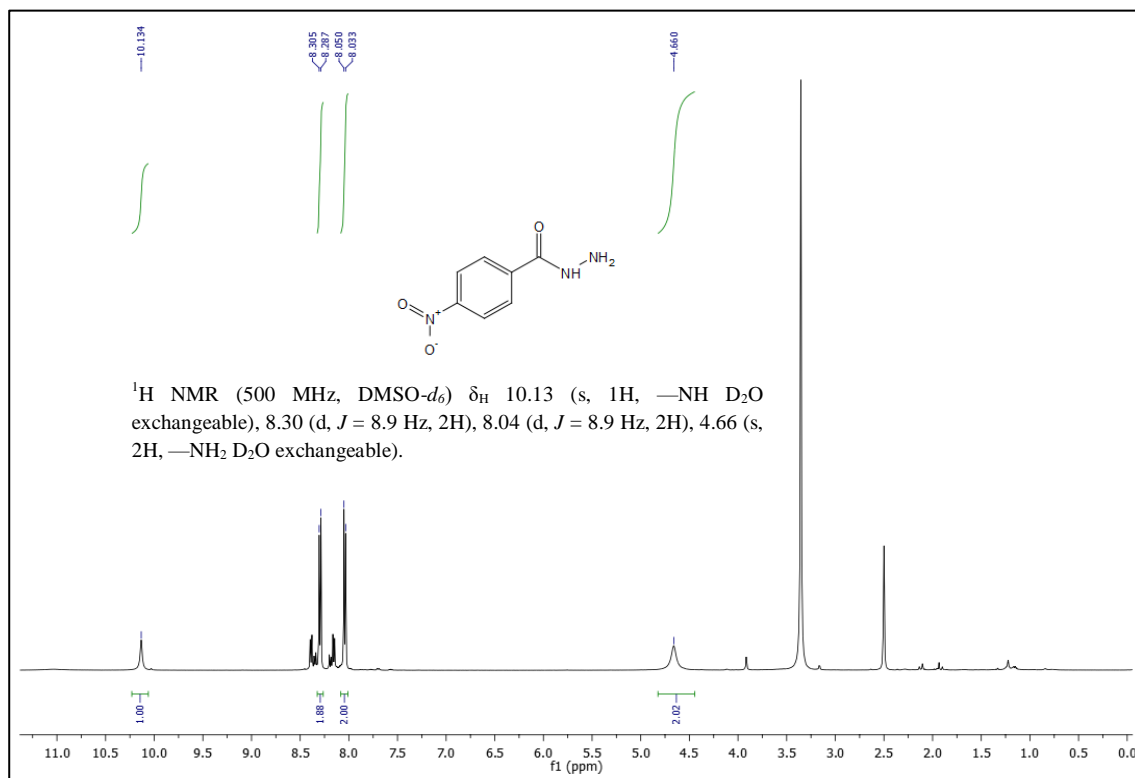
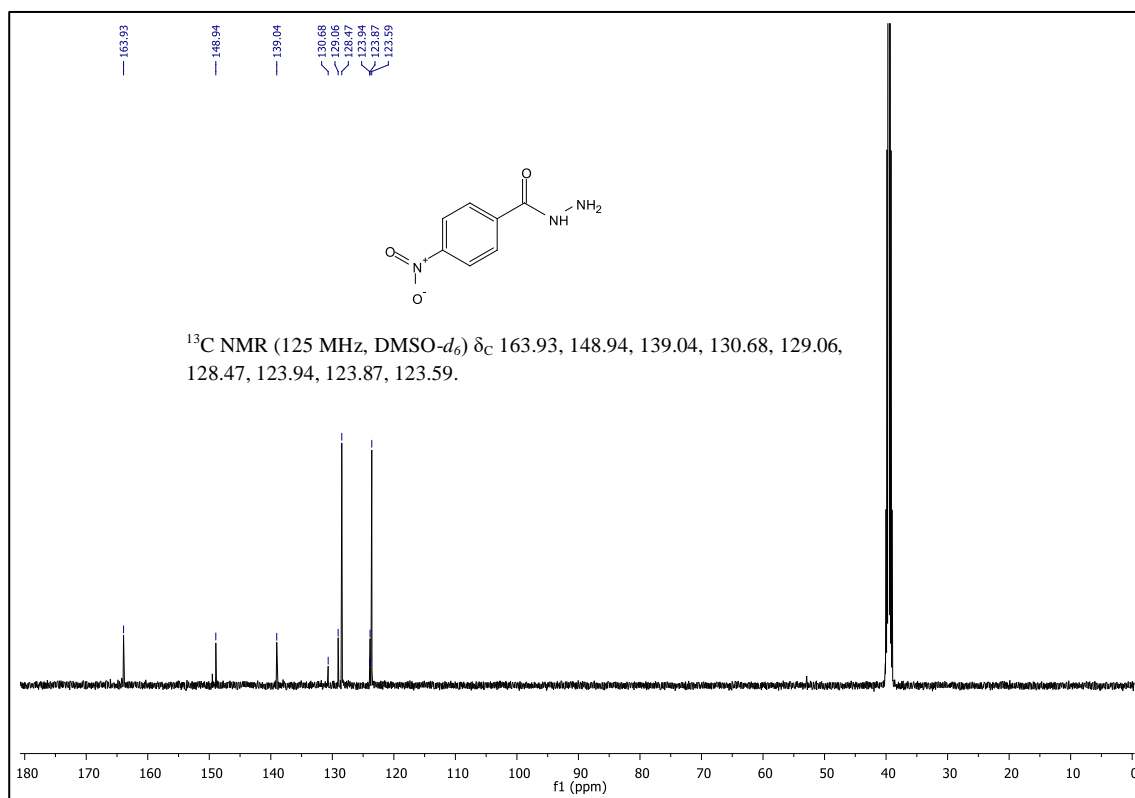
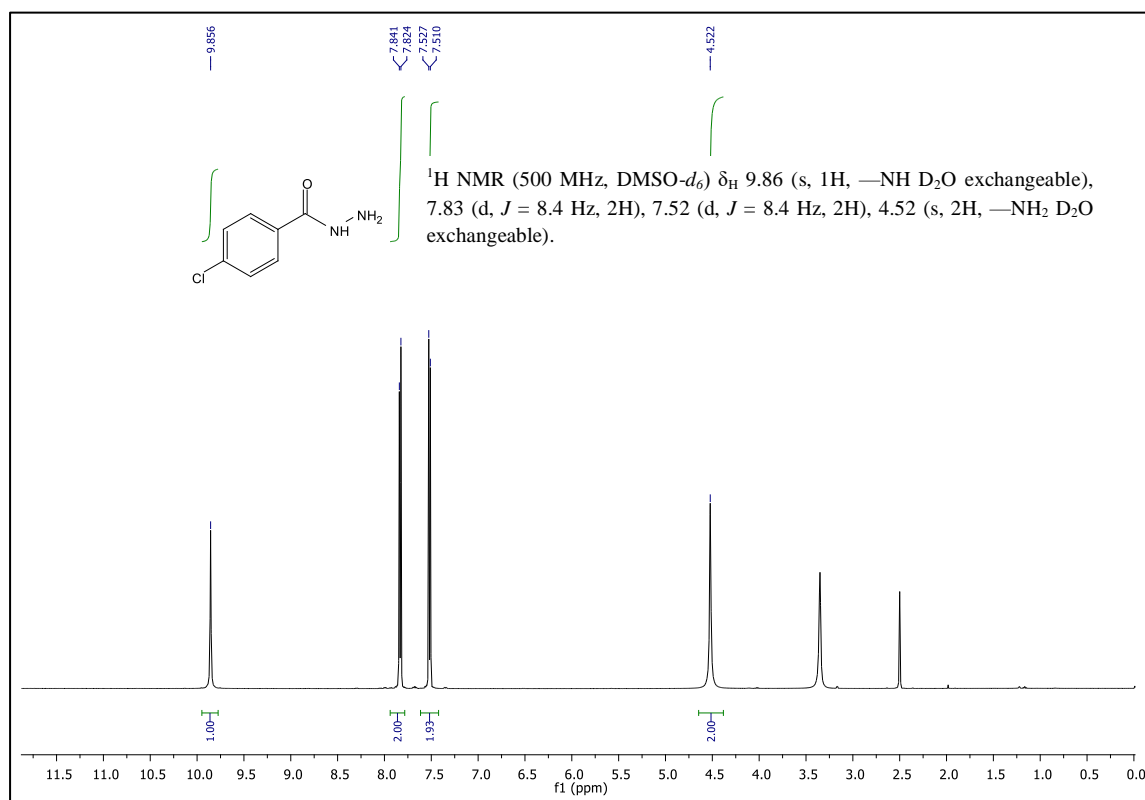
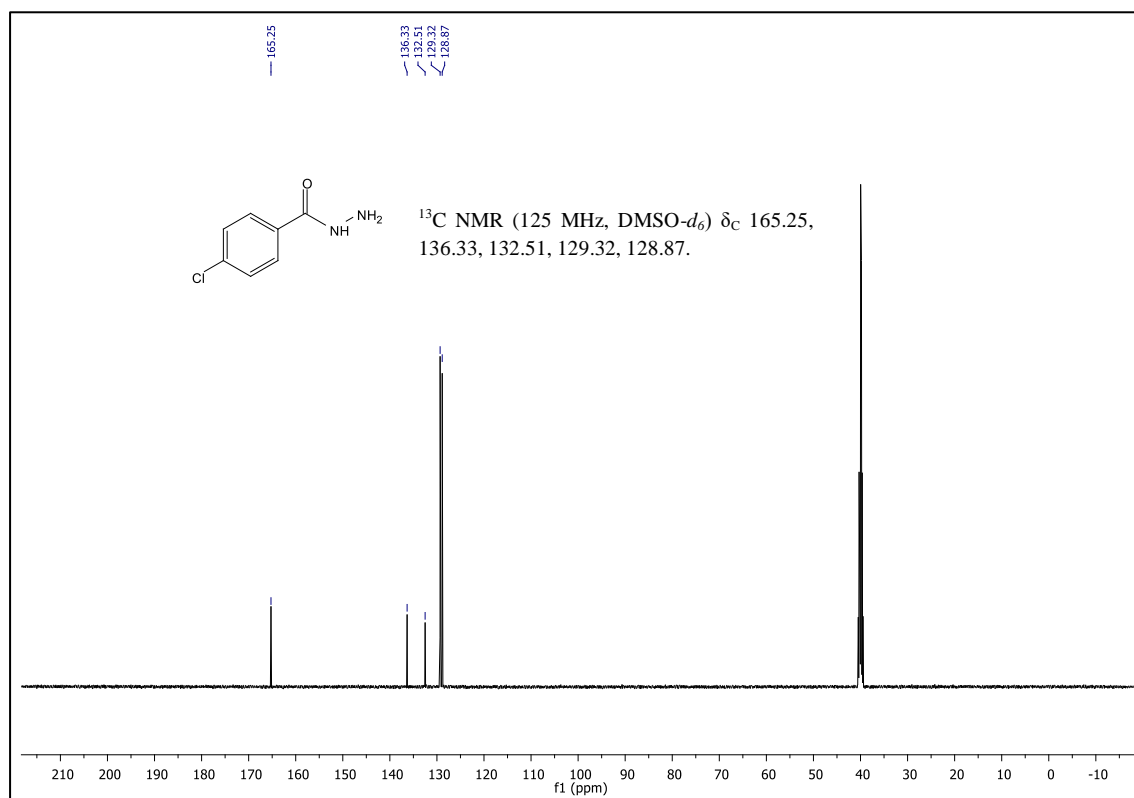
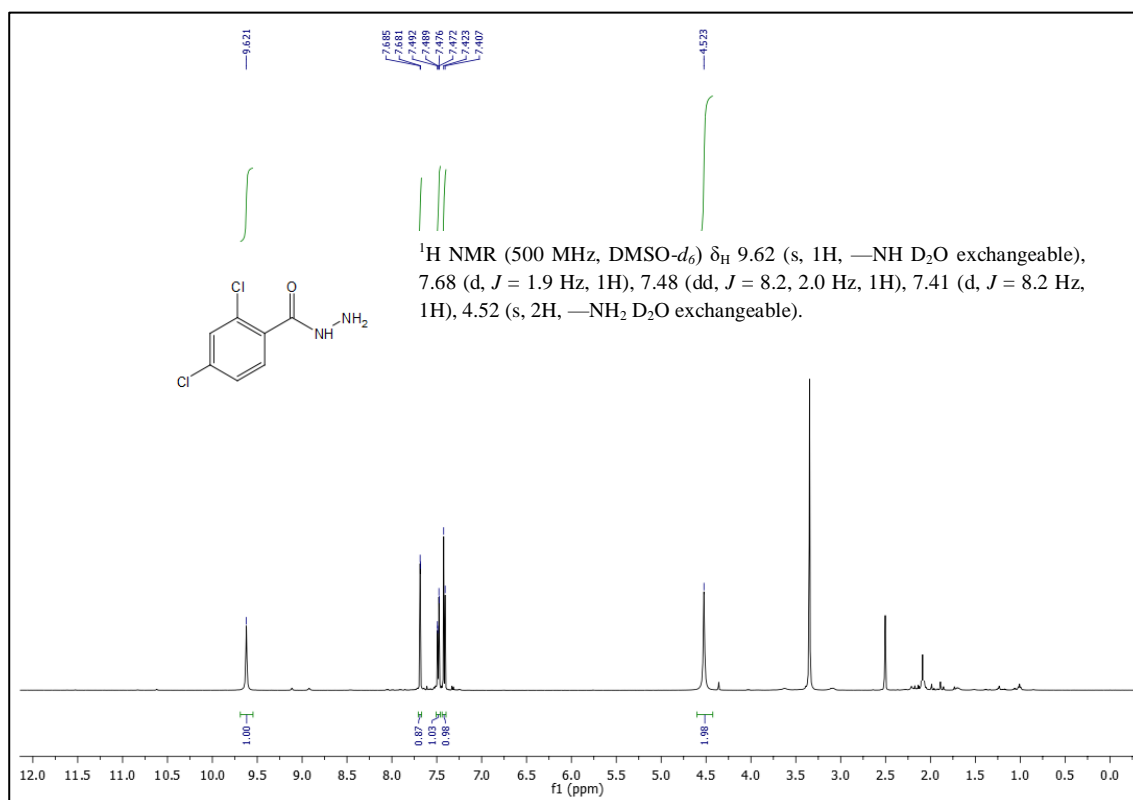
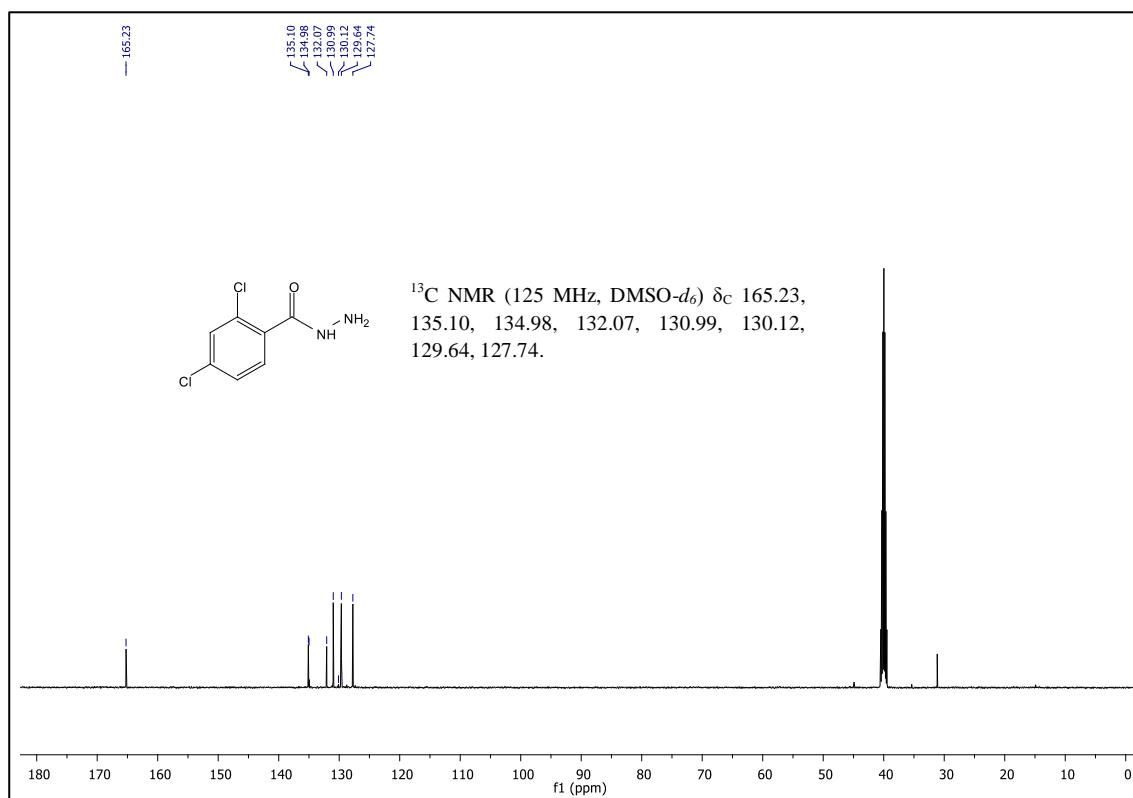


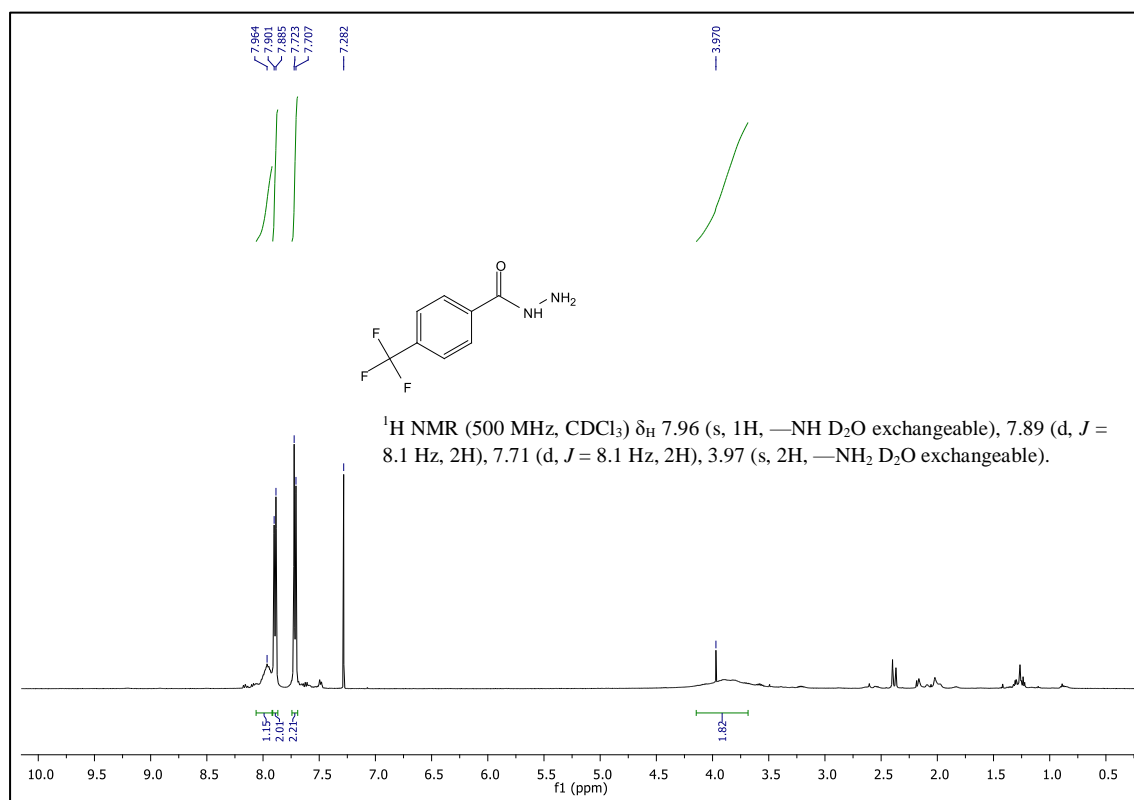
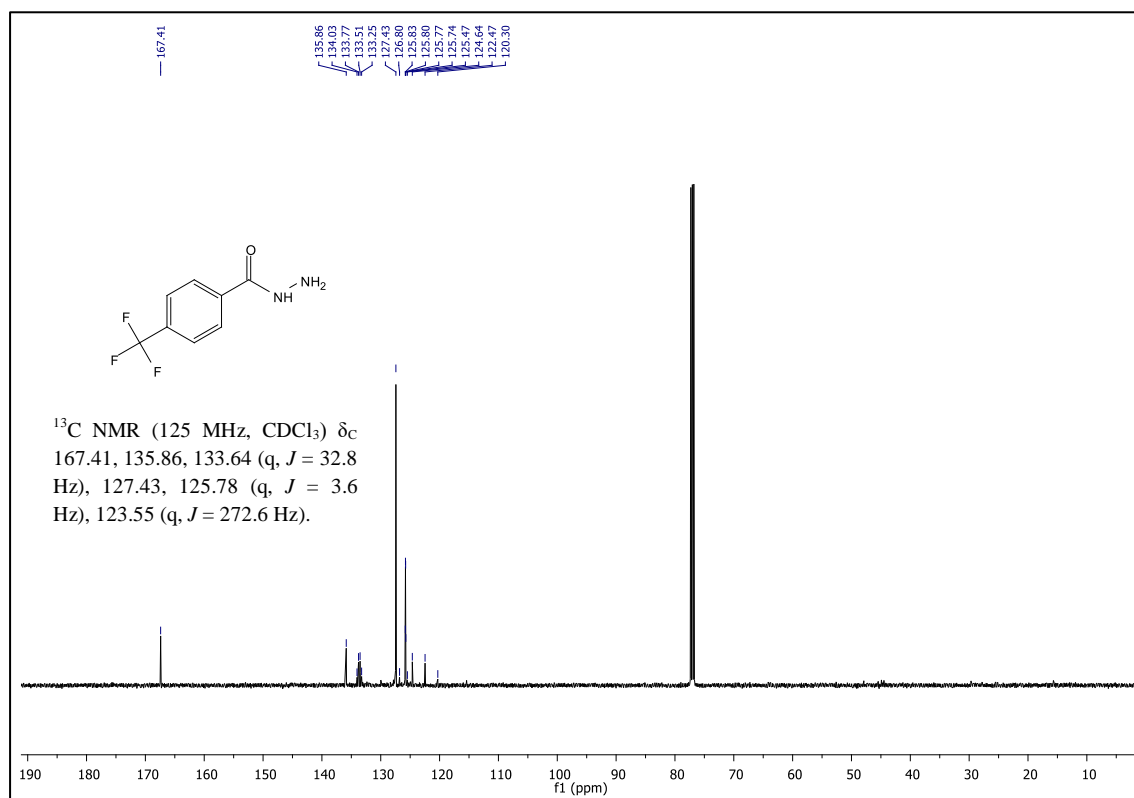
Figure 8.32. ¹³C NMR spectrum of compound **S_{III}10g**

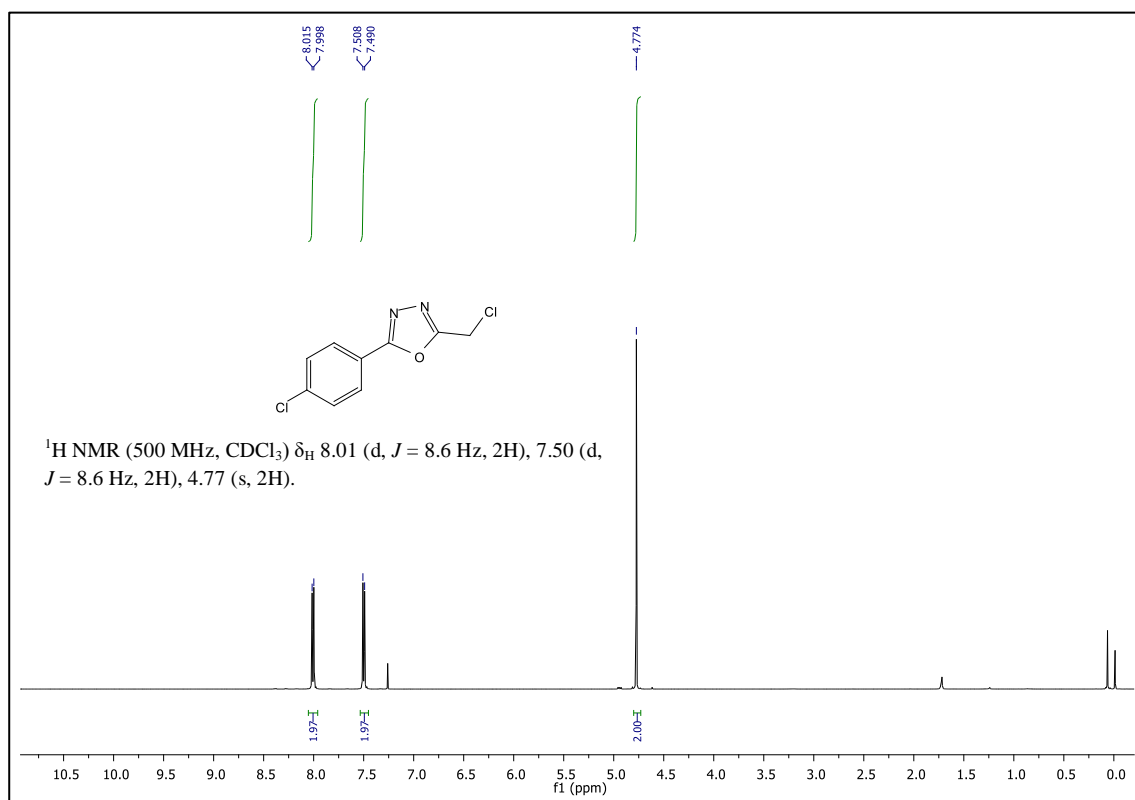
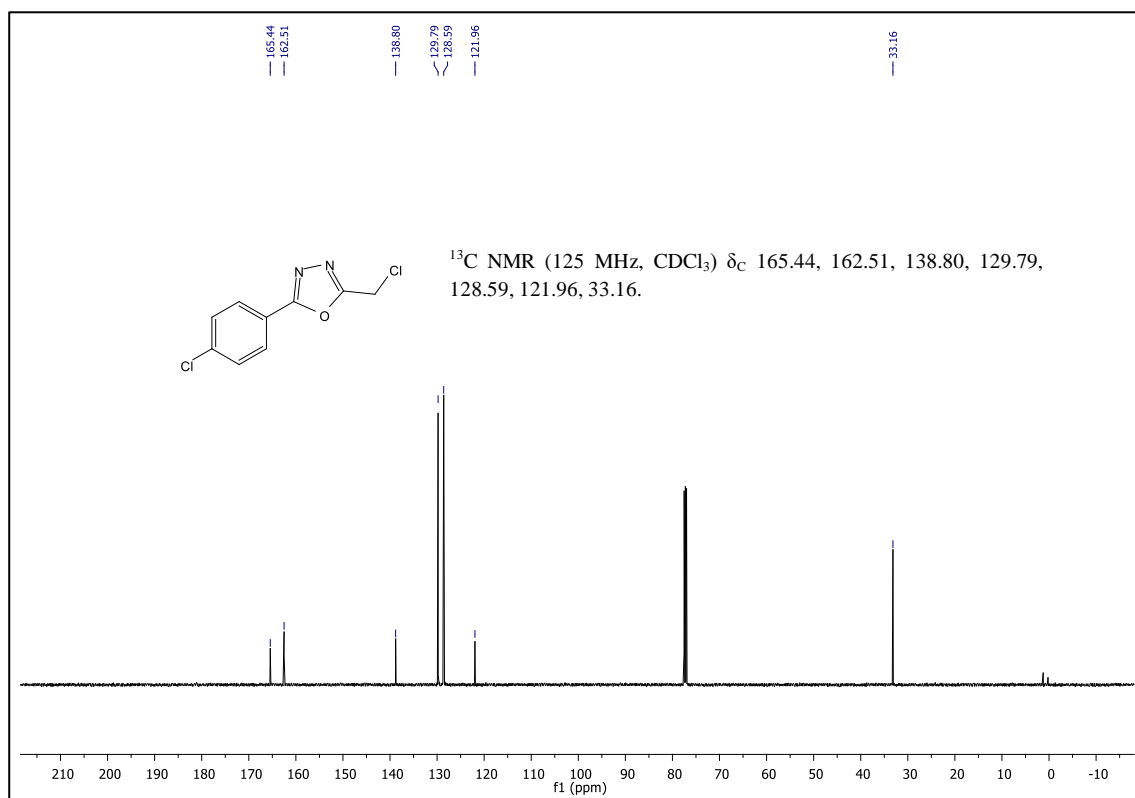
Benzohydrazide (S_{IV}12a)**Figure 8.33.** ¹H NMR spectrum of compound S_{IV}12a**Figure 8.34.** ¹³C NMR spectrum of compound S_{IV}12a

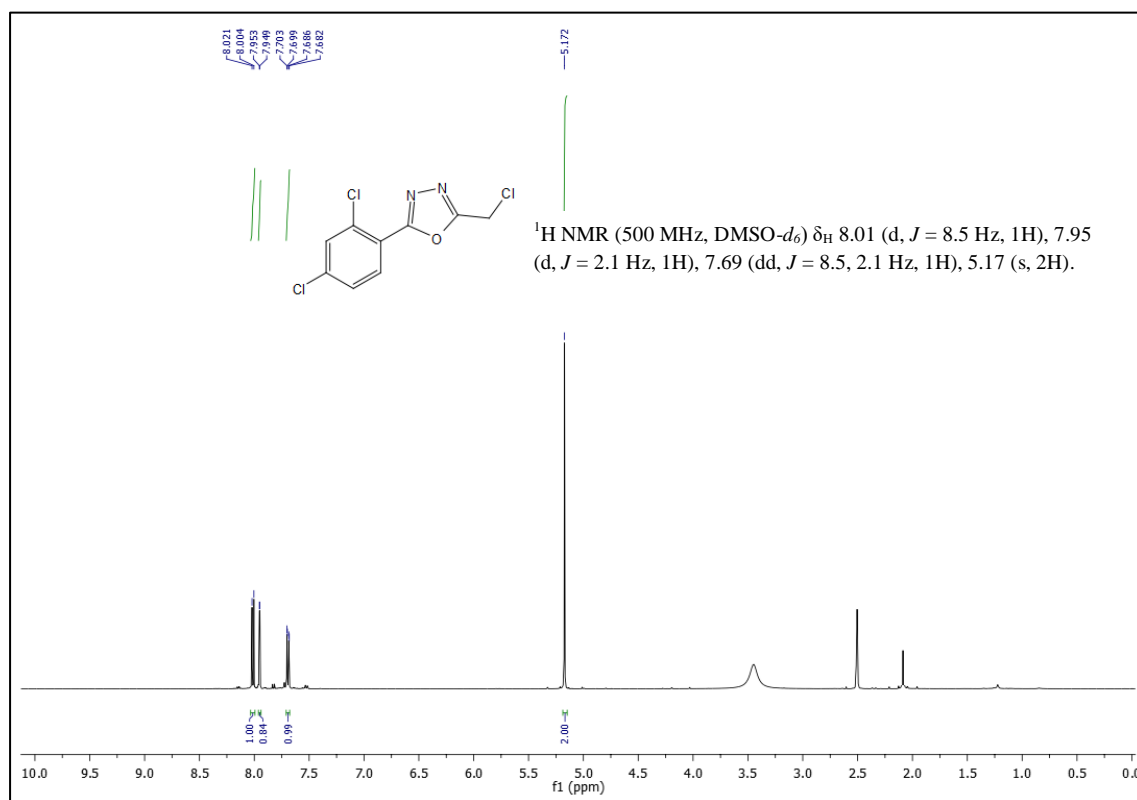
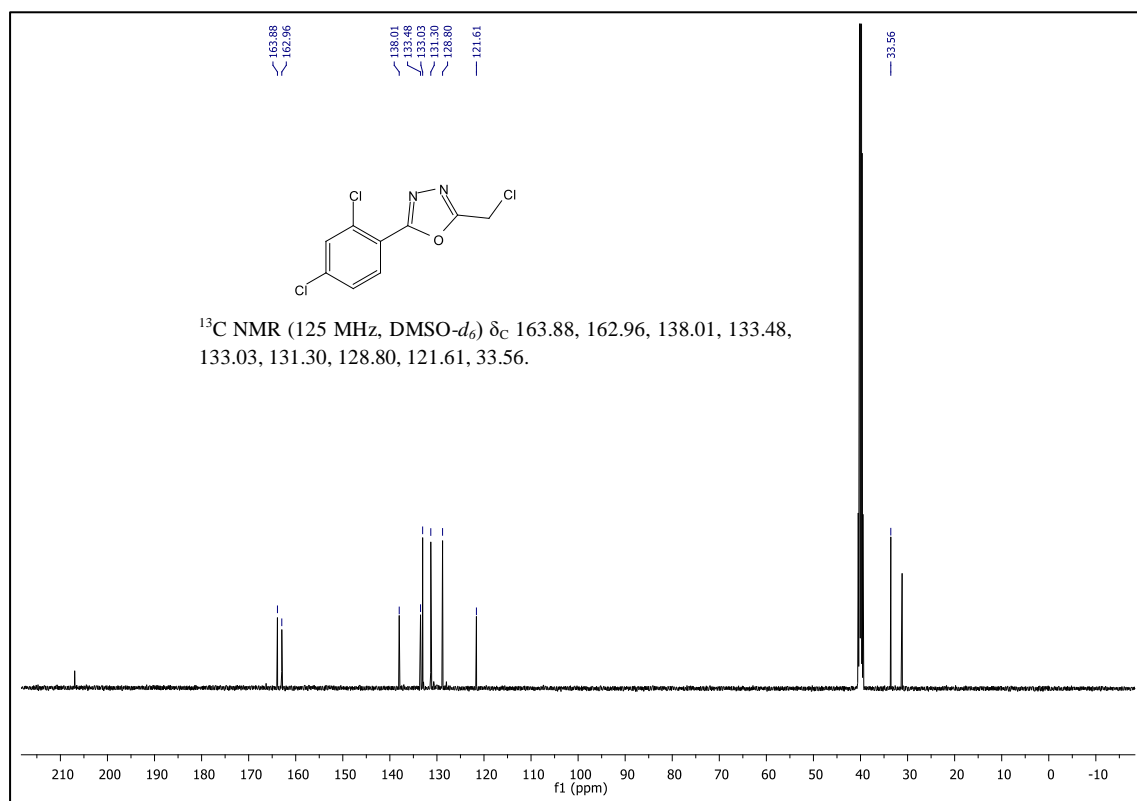
4-Nitrobenzohydrazide (*S_{IV}12c*)Figure 8.35. ¹H NMR spectrum of compound *S_{IV}12c*Figure 8.36. ¹³C NMR spectrum of compound *S_{IV}12c*

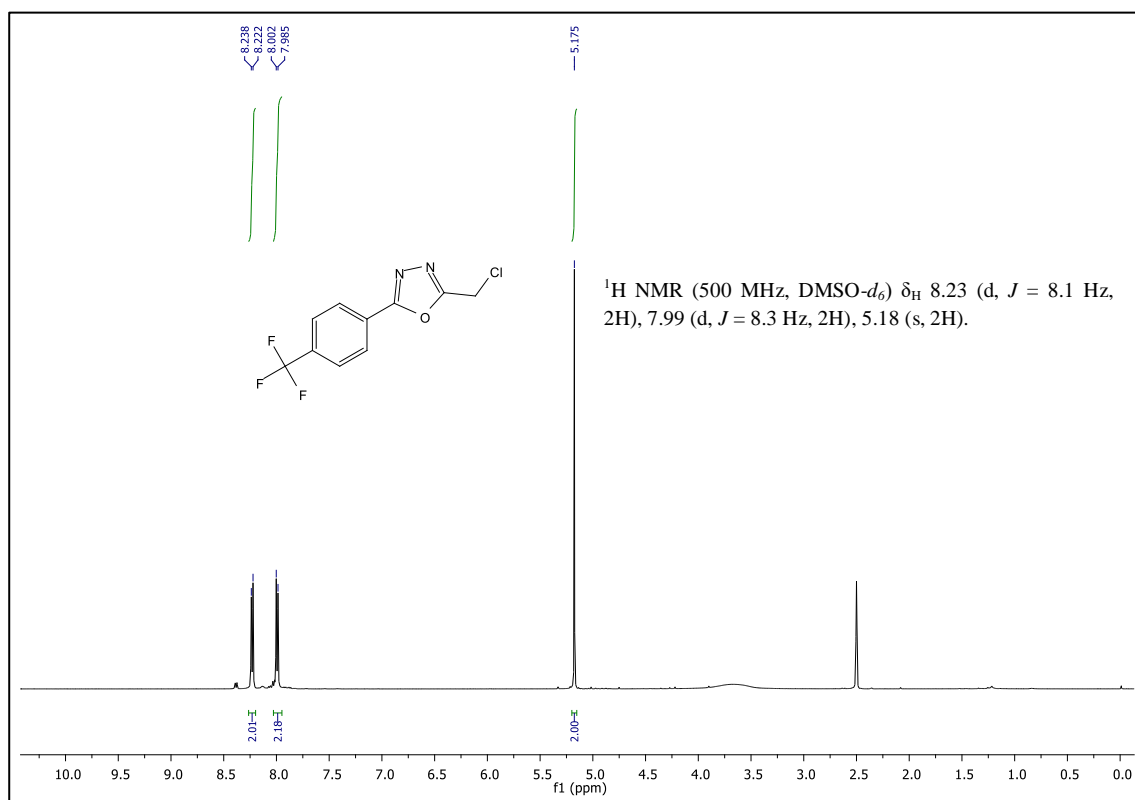
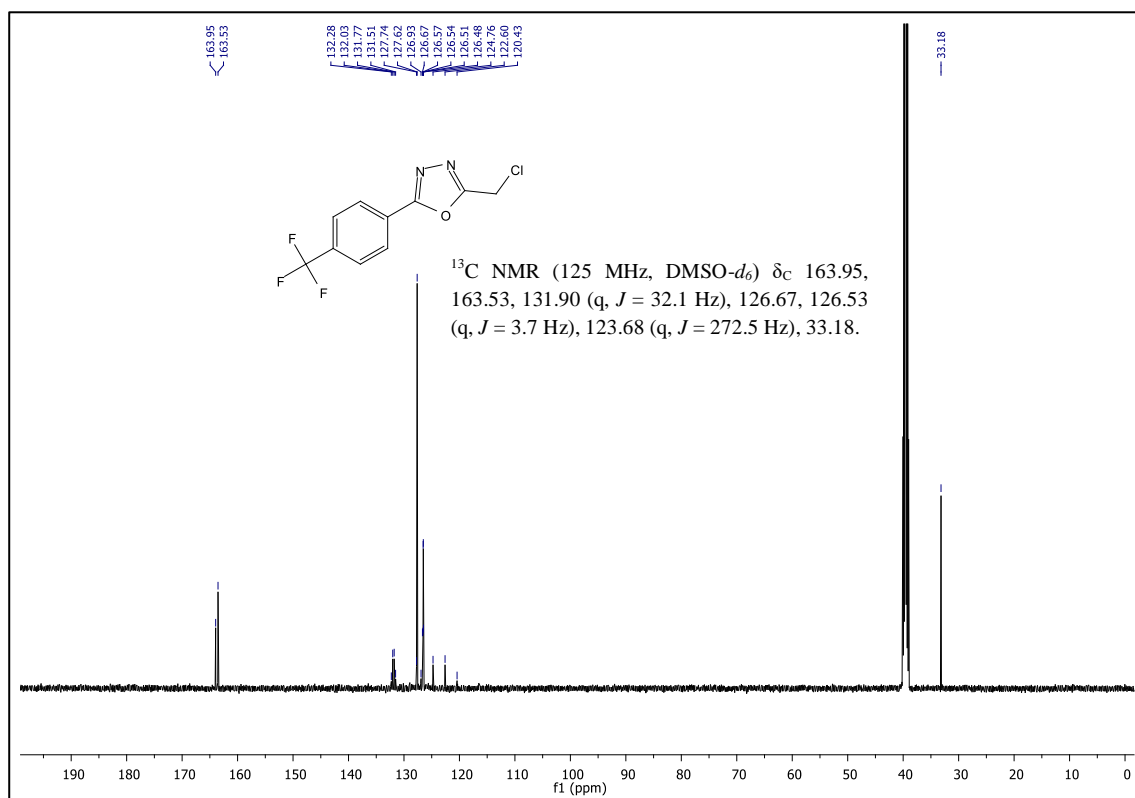
4-Chlorobenzohydrazide (*S_{IV}12e*)Figure 8.37. ¹H NMR spectrum of compound *S_{IV}12e*Figure 8.38. ¹³C NMR spectrum of compound *S_{IV}12e*

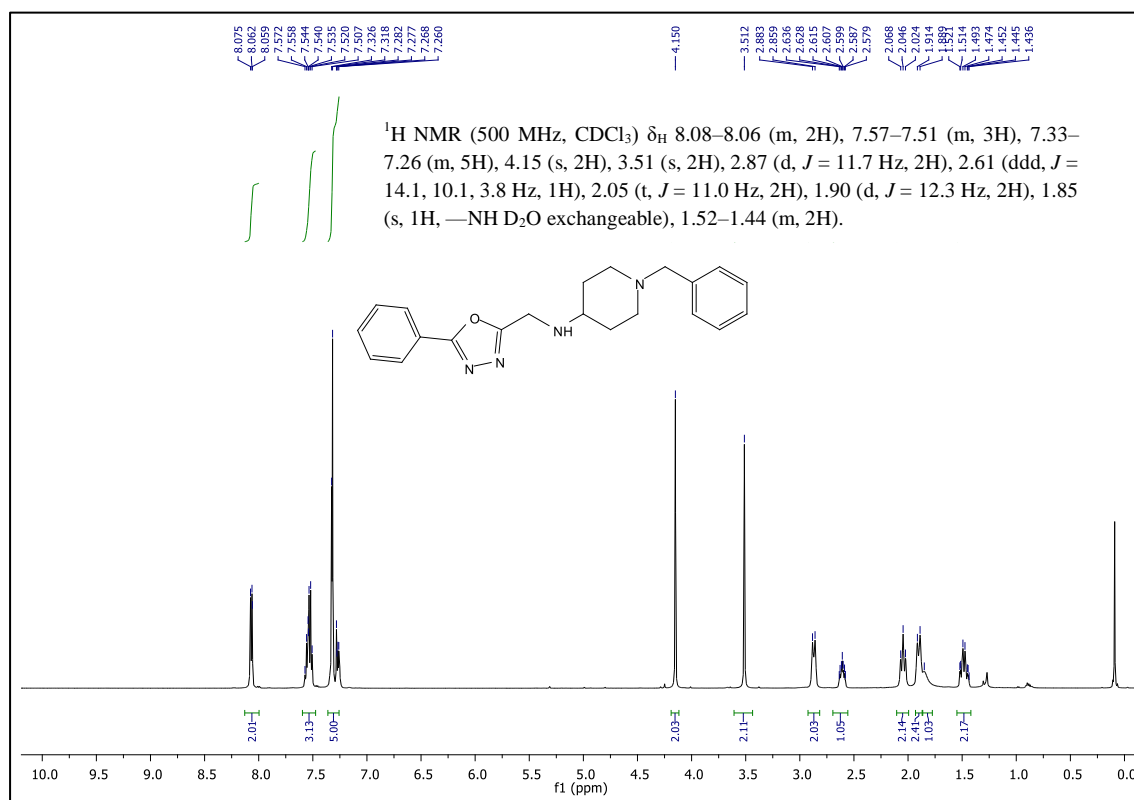
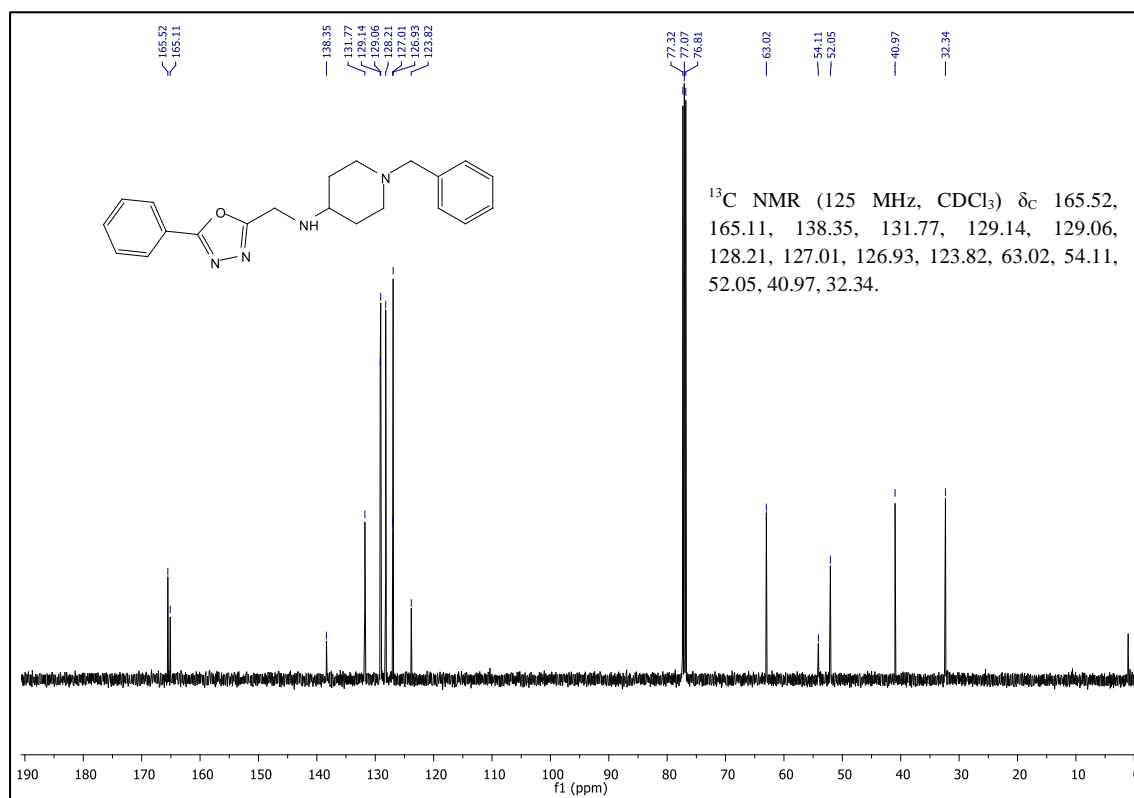
2,4-Dichlorobenzohydrazide (*S_{IV}12f*)Figure 8.39. ¹H NMR spectrum of compound *S_{IV}12f*Figure 8.40. ¹³C NMR spectrum of compound *S_{IV}12f*

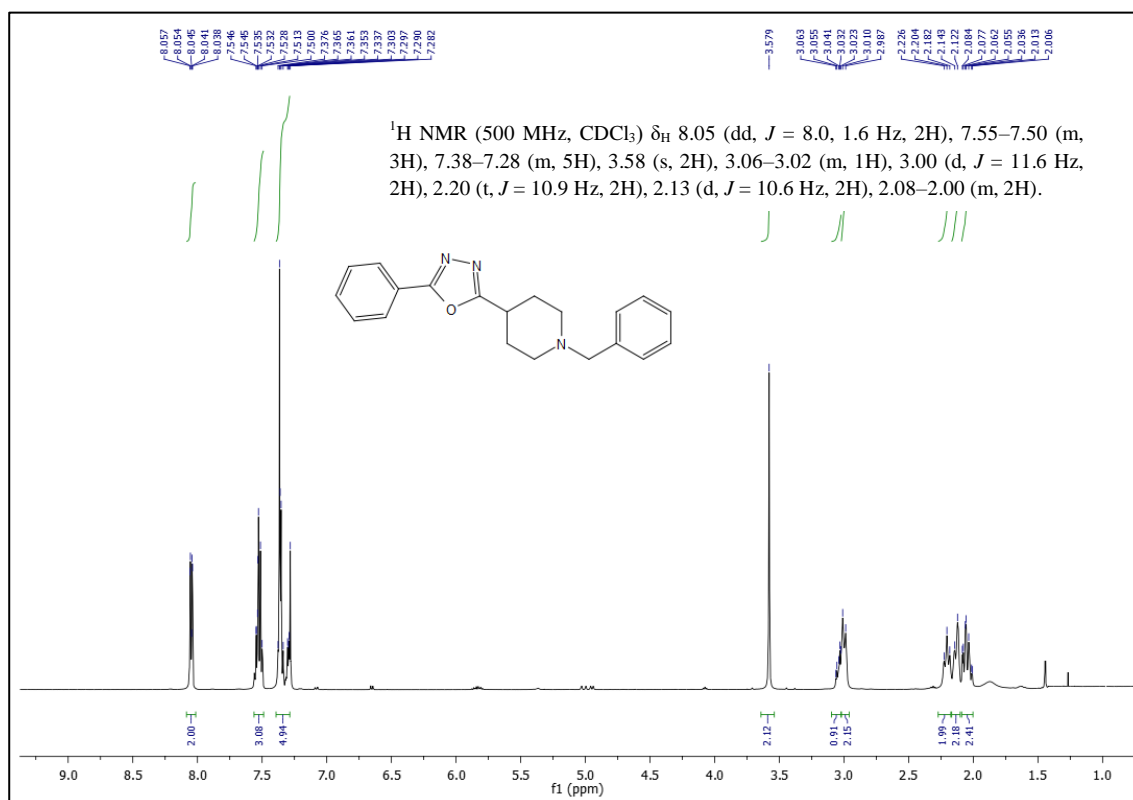
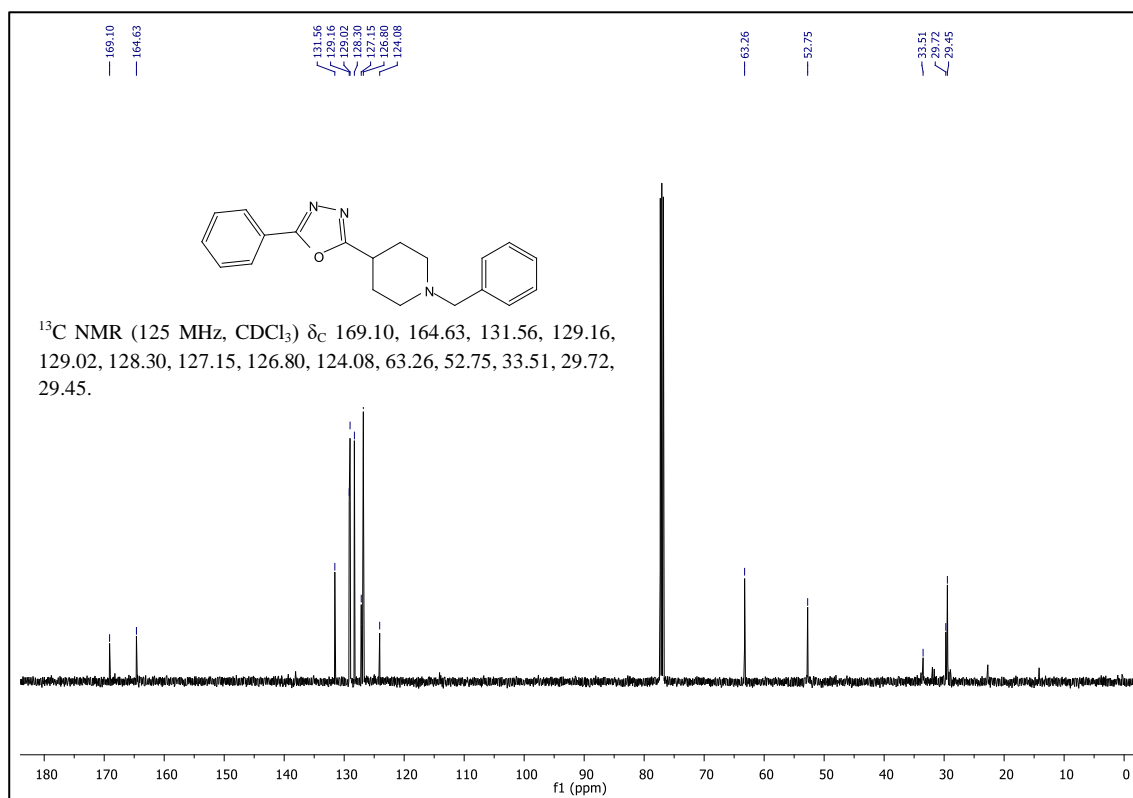
4-(Trifluoromethyl)benzohydrazide (*S_{IV}12g*)Figure 8.41. ¹H NMR spectrum of compound *S_{IV}12g*Figure 8.42. ¹³C NMR spectrum of compound *S_{IV}12g*

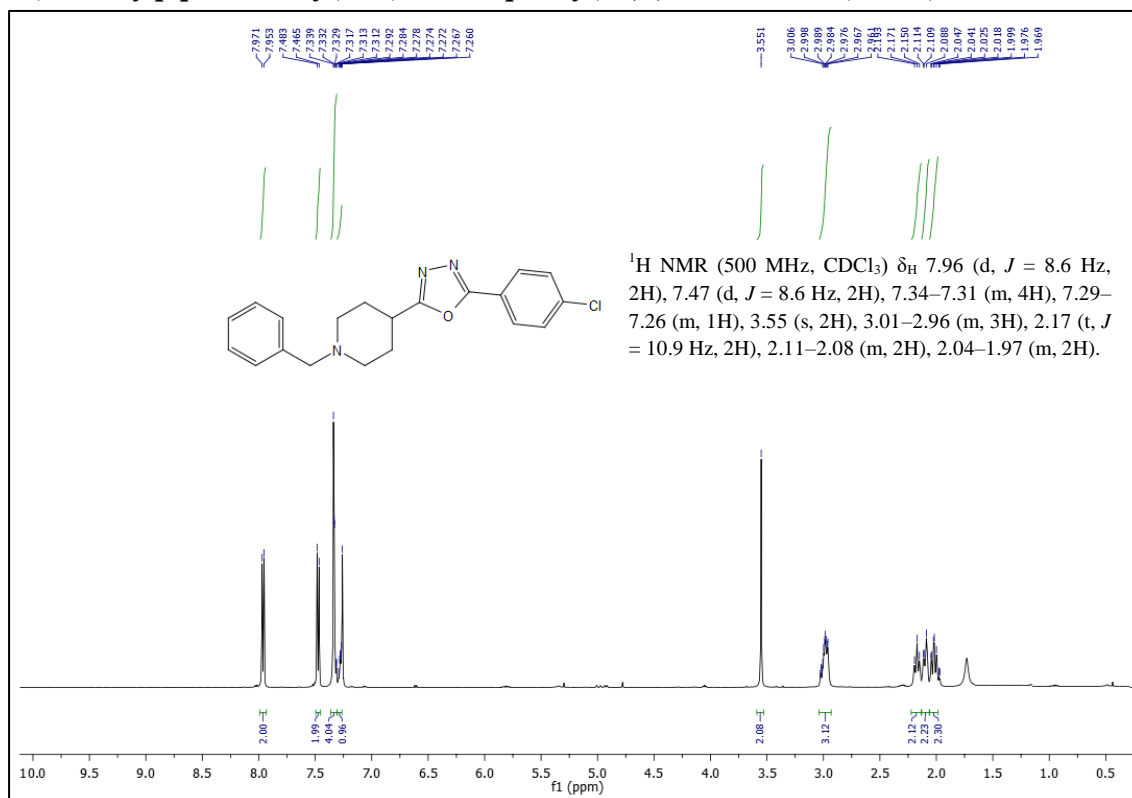
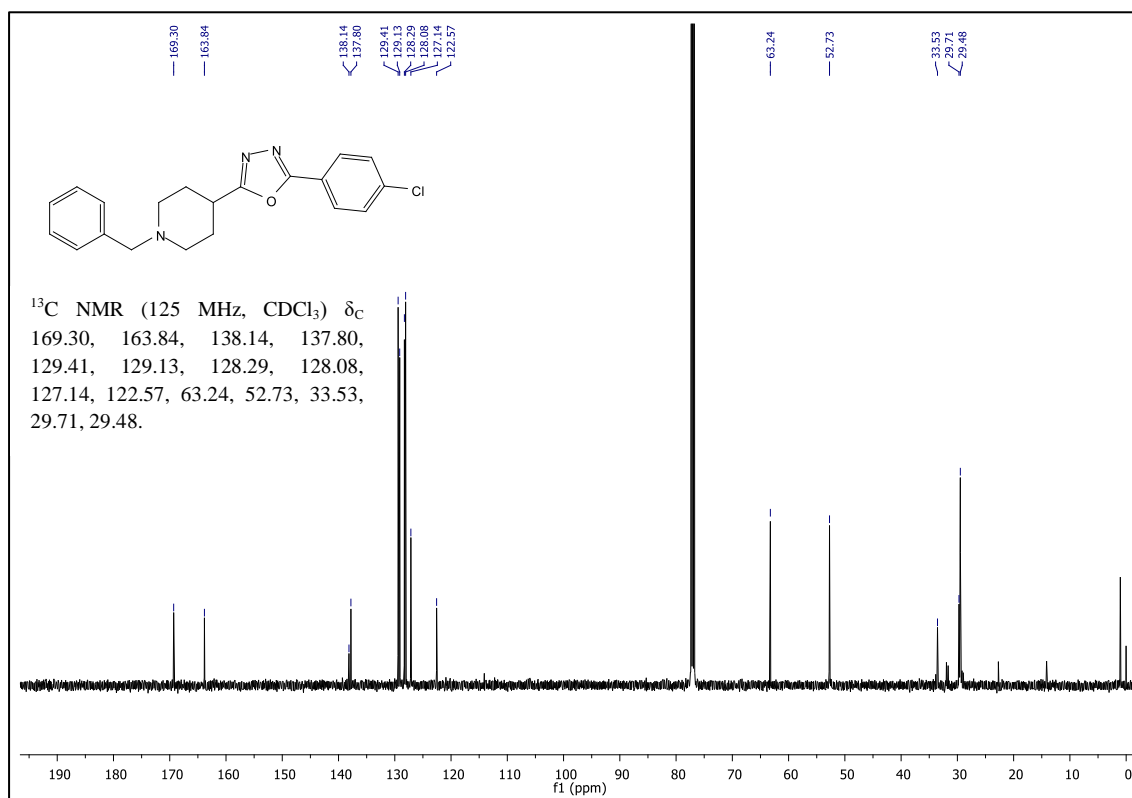
2-(Chloromethyl)-5-(4-chlorophenyl)-1,3,4-oxadiazole (*S_{IV}13e*)Figure 8.43. ¹H NMR spectrum of compound *S_{IV}13e*Figure 8.44. ¹³C NMR spectrum of compound *S_{IV}13e*

2-(Chloromethyl)-5-(2,4-dichlorophenyl)-1,3,4-oxadiazole (S_{IV}13f)**Figure 8.45.** ¹H NMR spectrum of compound S_{IV}13f**Figure 8.46.** ¹³C NMR spectrum of compound S_{IV}13f

2-(Chloromethyl)-5-(4-(trifluoromethyl)phenyl)-1,3,4-oxadiazole (*S_{IV}13g*)Figure 8.47. ¹H NMR spectrum of compound *S_{IV}13g*Figure 8.48. ¹³C NMR spectrum of compound *S_{IV}13g*

1-Benzyl-N-((5-phenyl-1,3,4-oxadiazol-2-yl)methyl)piperidin-4-amine (S_{IV}14a)Figure 8.49. ¹H NMR spectrum of compound S_{IV}14aFigure 8.50. ¹³C NMR spectrum of compound S_{IV}14a

2-(1-Benzylpiperidin-4-yl)-5-phenyl-1,3,4-oxadiazole (S_V17a)Figure 8.51. ¹H NMR spectrum of compound S_V17aFigure 8.52. ¹³C NMR spectrum of compound S_V17a

2-(1-Benzylpiperidin-4-yl)-5-(4-chlorophenyl)-1,3,4-oxadiazole (*S_v17e*)Figure 8.53. ¹H NMR spectrum of compound *S_v17e*Figure 8.54. ¹³C NMR spectrum of compound *S_v17e*

8.2. Mass spectra of representative synthesized compounds

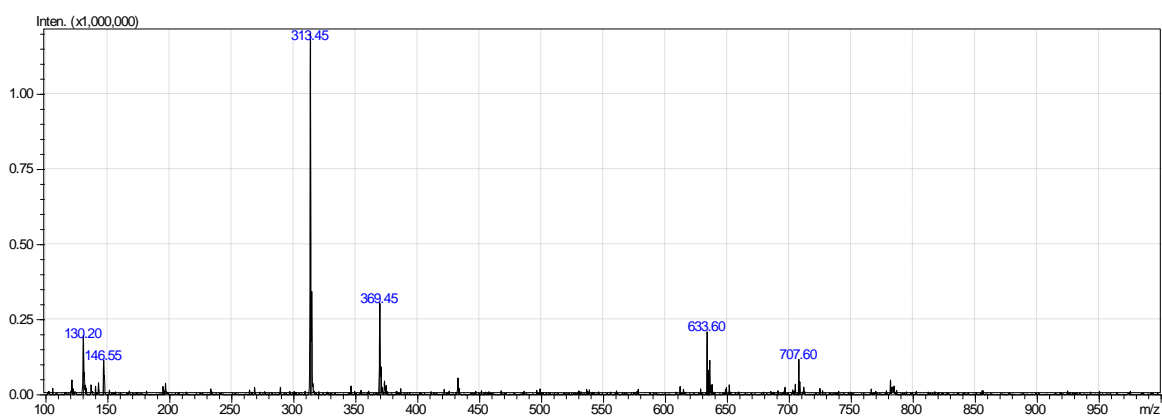


Figure 8.55. Mass Spectrum of compound S_{13j}.

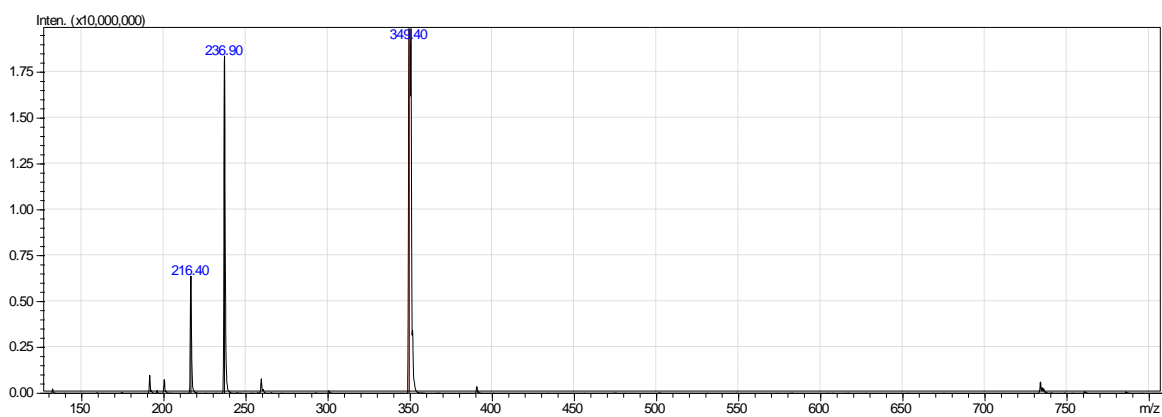


Figure 8.56. Mass Spectrum of compound S_{14j}.

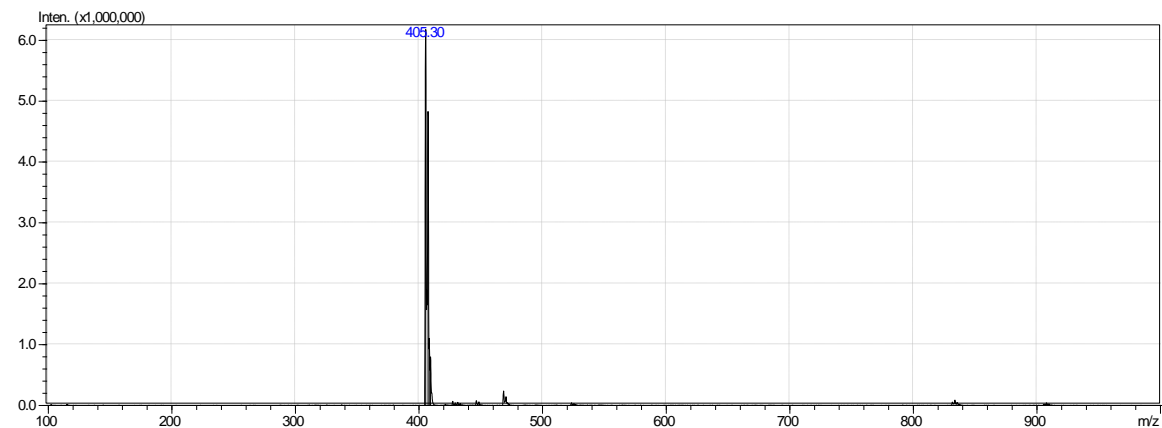


Figure 8.57. Mass spectrum of compound S_{119f}

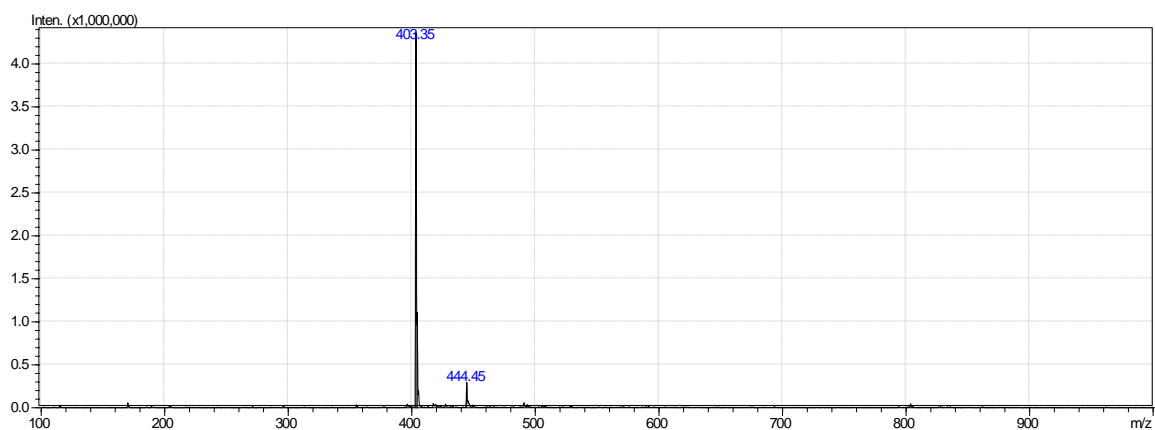


Figure 8.58. Mass spectrum of compound S_{III}10g.

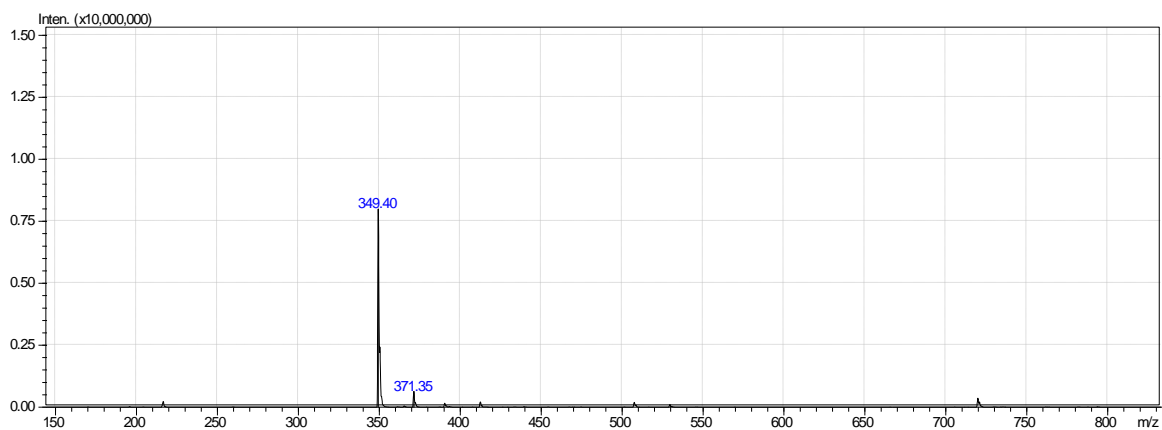


Figure 8.59. Mass spectrum of compound S_{IV}14a.

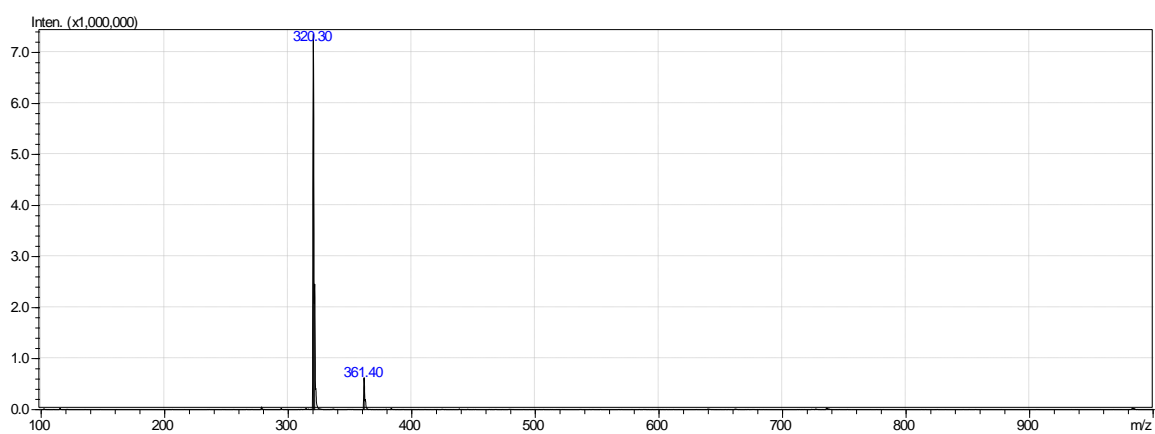
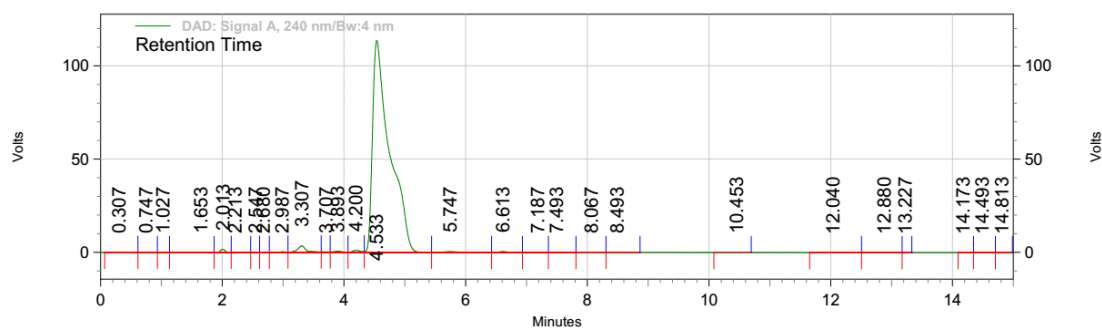


Figure 8.60. Mass spectrum of compound S_V17a.

8.3 HPLC chromatograms of representative synthesized compounds

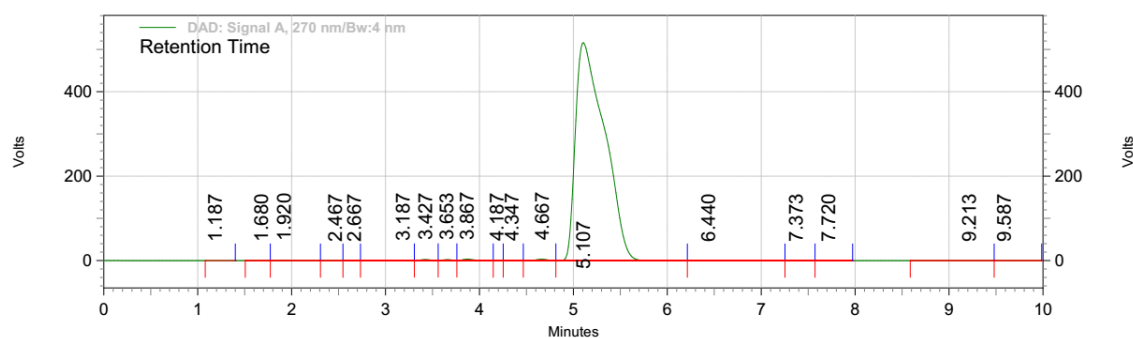


**DAD: Signal F,
270 nm/Bw:4 nm
Results**

Retention Time	Area	Area %	Height	Height %
0.307	794	0.01	41	0.01
1.653	880	0.01	106	0.02
2.013	11860	0.09	2176	0.31
2.227	3246	0.02	194	0.03
2.547	4366	0.03	406	0.06
3.000	16577	0.12	1968	0.28
3.307	128121	0.97	14451	2.09
3.707	9954	0.08	1254	0.18
3.907	41601	0.31	4532	0.65
4.200	29541	0.22	3370	0.49
4.533	12942979	97.57	658628	95.18
5.760	47290	0.36	2191	0.32
6.613	20076	0.15	2129	0.31
7.213	1463	0.01	61	0.01
7.520	654	0.00	49	0.01
8.480	742	0.01	74	0.01
8.640	646	0.00	62	0.01
10.427	415	0.00	46	0.01
12.027	1766	0.01	87	0.01
12.347	205	0.00	28	0.00
12.893	710	0.01	51	0.01
13.093	203	0.00	18	0.00
14.467	330	0.00	31	0.00
14.813	305	0.00	31	0.00

Totals	13264724	100.00	691984	100.00
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Figure 8.61. HPLC chromatogram and report of compound **S_{13i}**.

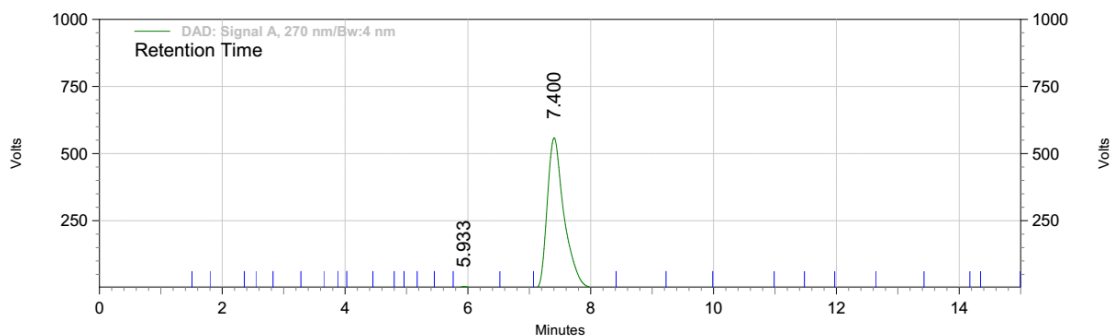


**DAD: Signal A,
270 nm/Bw:4 nm
Results**

Retention Time	Area	Area %	Height	Height %
1.187	418	0.00	36	0.00
1.680	1149	0.00	132	0.01
1.920	9792	0.04	1385	0.12
2.467	1851	0.01	330	0.03
2.667	1431	0.01	159	0.01
3.187	26096	0.11	2183	0.20
3.427	42494	0.18	5305	0.48
3.653	35135	0.15	4949	0.44
3.867	66488	0.28	7117	0.64
4.187	3729	0.02	596	0.05
4.347	8188	0.03	778	0.07
4.667	60537	0.26	6873	0.62
5.107	23224818	98.79	1082934	97.22
6.440	17807	0.08	587	0.05
7.373	1275	0.01	85	0.01
7.720	1457	0.01	120	0.01
9.213	4730	0.02	133	0.01
9.587	2230	0.01	142	0.01

Totals	23509625	100.00	1113844	100.00
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Figure 8.62. HPLC chromatogram and report of compound **S_I3j**.

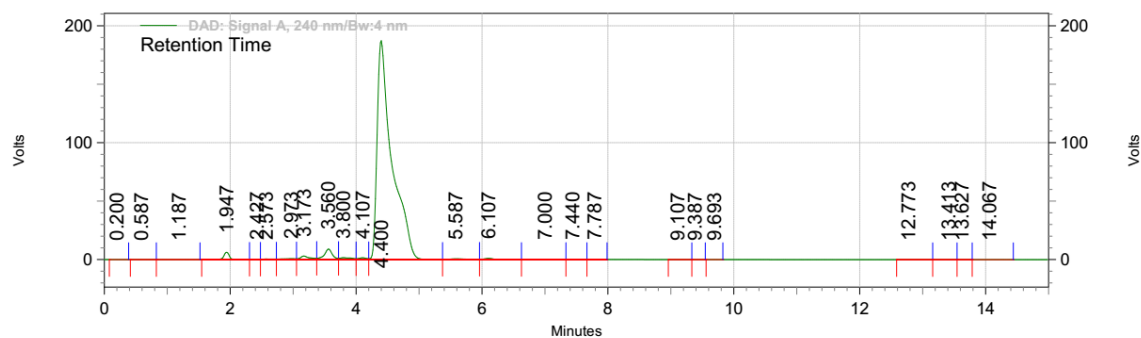


**DAD: Signal A,
270 nm/Bw:4 nm
Results**

Retention Time	Area	Area %	Height	Height %
1.427	4979	0.02	301	0.02
1.693	6846	0.03	525	0.04
1.947	24434	0.11	1636	0.13
2.467	7846	0.03	1146	0.09
2.720	9507	0.04	694	0.06
3.200	20435	0.09	1146	0.09
3.493	33858	0.15	2617	0.21
3.760	41176	0.18	5666	0.47
3.960	13455	0.06	1672	0.14
4.280	46925	0.21	2773	0.23
4.587	37097	0.16	3798	0.31
4.867	5351	0.02	581	0.05
5.080	7677	0.03	683	0.06
5.347	10162	0.04	665	0.05
5.613	17828	0.08	1354	0.11
5.933	154125	0.68	10404	0.85
6.867	26051	0.11	1516	0.12
7.400	22090493	97.20	1172862	96.31
8.760	100058	0.44	4952	0.41
9.840	21760	0.10	577	0.05
10.267	41402	0.18	1966	0.16
11.067	2373	0.01	110	0.01
11.667	731	0.00	43	0.00
12.453	171	0.00	21	0.00
13.107	701	0.00	42	0.00
13.827	1532	0.01	73	0.01
14.200	94	0.00	12	0.00
14.773	158	0.00	17	0.00

Totals	22727225	100.00	1217852	100.00
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Figure 8.63. HPLC chromatogram and report of compound **S₁3m**.

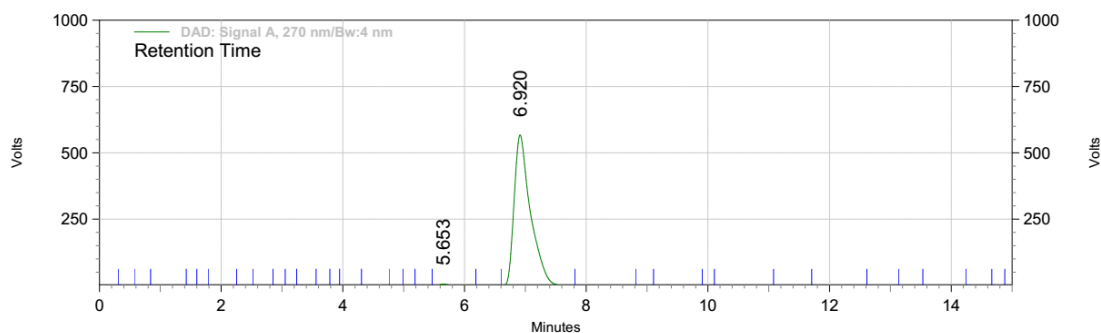


**DAD: Signal F,
270 nm/Bw:4 nm
Results**

Retention Time	Area	Area %	Height	Height %
0.227	514	0.00	49	0.00
0.587	490	0.00	39	0.00
1.227	1016	0.00	42	0.00
1.933	17706	0.09	2306	0.18
2.200	8684	0.04	617	0.05
2.427	5797	0.03	630	0.05
2.960	55378	0.27	3558	0.28
3.173	133677	0.66	16426	1.31
3.907	127170	0.62	7877	0.63
4.107	41175	0.20	4666	0.37
4.400	19836892	97.29	1209505	96.31
5.587	70544	0.35	3793	0.30
6.107	51302	0.25	4727	0.38
7.000	32843	0.16	1187	0.09
7.760	1131	0.01	92	0.01
8.493	1884	0.01	56	0.00
9.693	149	0.00	25	0.00
9.880	136	0.00	15	0.00
10.853	141	0.00	17	0.00
11.533	224	0.00	20	0.00
12.227	346	0.00	25	0.00
12.773	838	0.00	55	0.00
13.373	341	0.00	27	0.00
14.053	850	0.00	37	0.00
14.587	210	0.00	22	0.00
14.853	90	0.00	14	0.00

Totals	20389528	100.00	1255827	100.00
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Figure 8.64. HPLC chromatogram and report of compound **S_{14i}**.



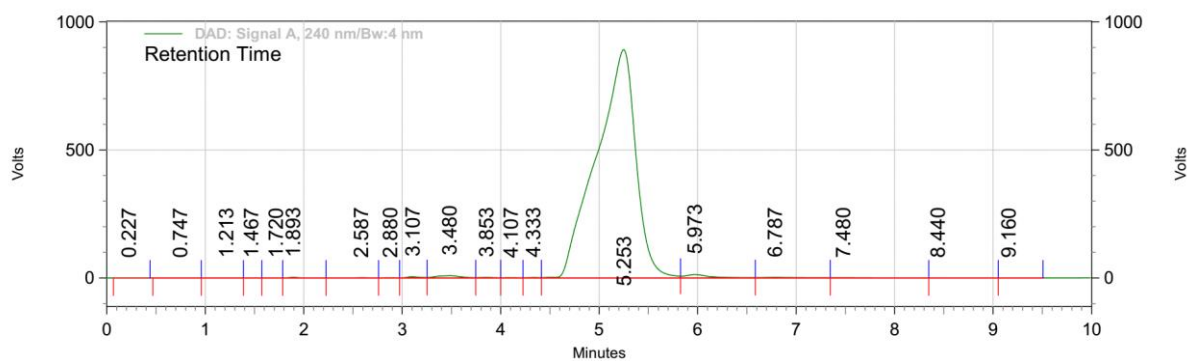
**DAD: Signal A,
270 nm/Bw:4 nm**

Results

Retention Time	Area	Area %	Height	Height %
0.187	292	0.00	36	0.00
0.480	232	0.00	23	0.00
0.667	209	0.00	23	0.00
1.187	10228	0.05	428	0.03
1.507	4438	0.02	560	0.05
1.680	3468	0.02	354	0.03
1.933	16977	0.08	1492	0.12
2.440	4931	0.02	480	0.04
2.720	9156	0.04	613	0.05
3.000	6362	0.03	626	0.05
3.160	9150	0.04	1033	0.08
3.427	29076	0.13	2555	0.21
3.667	39955	0.18	5571	0.45
3.880	13912	0.06	1649	0.13
4.147	40113	0.18	2796	0.23
4.427	37398	0.17	3829	0.31
4.880	6151	0.03	513	0.04
5.093	5639	0.02	514	0.04
5.347	13609	0.06	1190	0.10
5.653	148301	0.66	9968	0.81
6.427	19888	0.09	1436	0.12
6.920	22056743	97.51	1188024	96.51
8.120	102175	0.45	4878	0.40
8.987	3446	0.02	237	0.02
9.360	31167	0.14	1771	0.14
9.947	270	0.00	31	0.00
10.867	1413	0.01	83	0.01
11.240	2327	0.01	110	0.01
12.213	836	0.00	42	0.00
12.800	372	0.00	29	0.00
13.360	241	0.00	22	0.00
14.013	801	0.00	54	0.00
14.427	615	0.00	42	0.00
14.773	56	0.00	9	0.00

Totals	22619947	100.00	1231021	100.00
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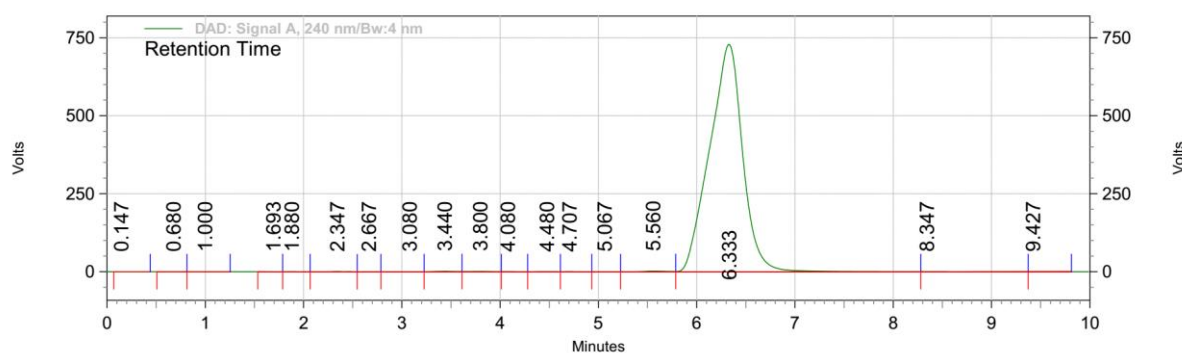
Figure 8.65. HPLC chromatogram and report of compound **S₁₄m**.



**Spectrum Max
Plot Results**

Retention Time	Area	Area %	Height	Height %
0.307	41932	0.02	4561	0.07
1.907	324275	0.15	37068	0.53
3.467	2004956	0.93	72445	1.04
5.253	212410935	98.84	6827289	98.27
8.840	111941	0.05	5842	0.08
Totals	214894039	100.00	6947205	100.00

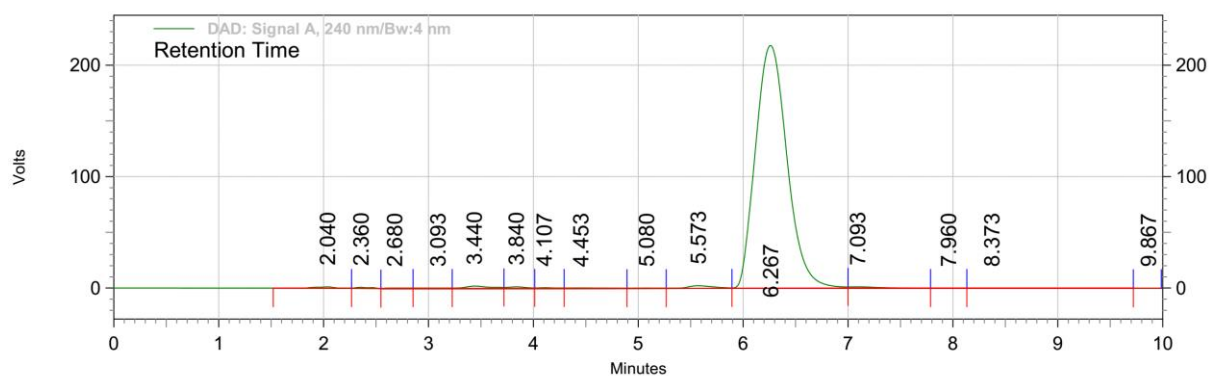
Figure 8.66. HPLC chromatogram and report of compound **S_{III}10g**.



**Spectrum Max
Plot Results**

Retention Time	Area	Area %	Height	Height %
0.307	48000	0.07	2981	0.10
2.480	462838	0.67	37729	1.29
3.413	746427	1.09	21783	0.74
6.333	67316001	98.10	2866396	97.79
8.987	48935	0.07	2204	0.08
Totals	68622201	100.00	2931093	100.00

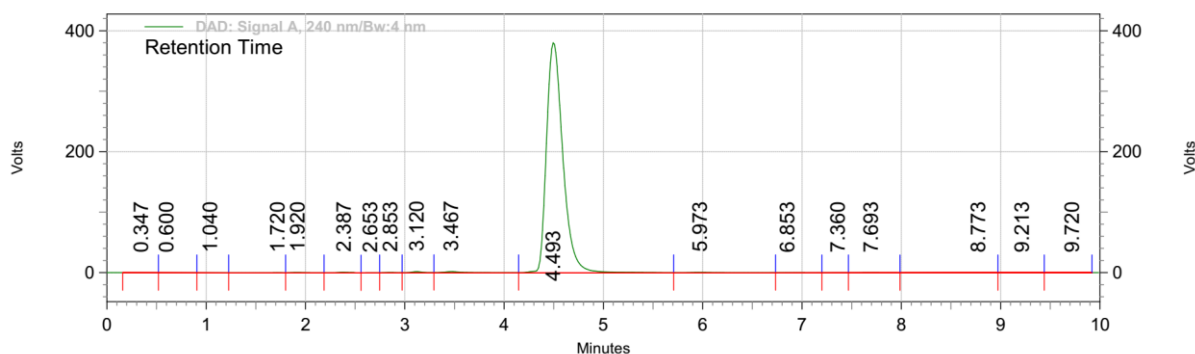
Figure 8.67. HPLC chromatogram and report of compound **S_{III}10h**.



Spectrum Max Plot Results

Retention Time	Area	Area %	Height	Height %
3.427	671586	3.38	22594	2.52
6.267	18882778	95.17	869560	96.97
8.093	286610	1.44	4576	0.51
Totals	19840974	100.00	896730	100.00

Figure 8.68. HPLC chromatogram and report of compound S_{IV}14f.



Spectrum Max Plot Results

Retention Time	Area	Area %	Height	Height %
2.480	631476	1.10	41403	0.85
3.467	553429	0.97	25258	0.52
4.493	55983775	97.76	4818815	98.48
7.787	63537	0.11	4793	0.10
8.853	32829	0.06	2936	0.06
Totals	57265046	100.00	4893205	100.00

Figure 8.69. HPLC chromatogram and report of compound S_{IV}14g.

List of Publications

RESEARCH PUBLICATIONS FROM Ph.D. DISSERTATION

- (1) **Sharma, P.**, Tripathi, A., Tripathi, P.N., Singh, S.S., Singh, S.P., Shrivastava, S.K. Novel Molecular Hybrids of *N*-Benzylpiperidine and 1,3,4-Oxadiazole as Multitargeted Therapeutics to Treat Alzheimer's Disease. *ACS Chemical Neuroscience* 10, 4361-4384 (2019). [**Impact Factor: 3.861**].
- (2) **Sharma, P.**, Tripathi, A., Tripathi, P.N., Prajapati, S.K., Seth A., Tripathi, M.K., Srivastava, P., Tiwari, V., Krishnamurthy, S., Shrivastava, S.K. Design and development of multitarget-directed *N*-Benzylpiperidine analogs as potential candidates for the treatment of Alzheimer's disease. *European Journal of Medicinal Chemistry* 167, 510-524 (2019). [**Impact Factor: 4.833**].

REVIEW ARTICLES PUBLISHED

- (1) **Sharma, P.**, Srivastava, P., Seth, A., Tripathi, P.N., Banerjee, A.G., Shrivastava, S.K. Comprehensive review of mechanisms of pathogenesis involved in Alzheimer's disease and potential therapeutic strategies. *Progress in Neurobiology* 174, 53-89 (2019). [**Impact Factor: 10.658**].

OTHER PUBLICATIONS

- (1) Tripathi, A., Choubey, P.K., **Sharma, P.**, Seth, A., Saraf, P., Shrivastava, S.K. Design, Synthesis, and Biological Evaluation of Ferulic Acid Based 1,3,4-Oxadiazole Hybrids as Multifunctional Therapeutics for the Treatment of Alzheimer's Disease. *Bioorganic Chemistry* In Press (2019) 103506 <https://doi.org/10.1016/j.bioorg.2019.103506>. [**Impact Factor: 3.926**].
- (2) Tripathi, A., Choubey, P.K., **Sharma, P.**, Seth, A., Tripathi, P.N., Tripathi, M.K., Prajapati, S.K., Krishnamurthy, S., Shrivastava, S.K. Design and development of molecular hybrids of 2-pyridylpiperazine and 5-phenyl-1,3,4-oxadiazoles as potential multifunctional agents to treat Alzheimer's disease. *European Journal of Medicinal Chemistry* 183, 111707 (2019). [**Impact Factor: 4.833**].
- (3) Srivastava, P., Tripathi, P.N., **Sharma, P.**, Shrivastava, S.K. Design, synthesis, and evaluation of novel *N*-(4-phenoxybenzyl)aniline derivatives targeting acetylcholinesterase, β -amyloid aggregation and oxidative stress to treat Alzheimer's disease. *Bioorganic & Medicinal Chemistry* 27(16), 3650-3662 (2019). [**Impact Factor: 2.802**].
- (4) Mishra, P., **Sharma, P.**, Tripathi, P.N., Gupta, S.K., Srivastava, P., Seth, A., Seth, A., Tripathi, A., Krishnamurthy, S., Shrivastava, S.K. Design and Development of 1,3,4-Oxadiazole Derivatives as Potential Inhibitors of Acetylcholinesterase to Ameliorate Scopolamine-Induced Cognitive Dysfunctions. *Bioorganic Chemistry* 89, 103025 (2019). [**Impact Factor: 3.926**].

- (5) Tripathi, P.N., Srivastava, P., **Sharma, P.**, Seth, A., Shrivastava, S.K. Design and development of novel N-(pyrimidin-2-yl)-1, 3, 4-oxadiazole hybrids to treat cognitive dysfunctions. *Bioorganic & Medicinal Chemistry* 27(7), 1327-1340 (2019). [**Impact Factor: 2.802**].
- (6) Tripathi, P.N., Srivastava, P., **Sharma, P.**, Tripathi, M.K., Tripathi, A., Seth, A., Rai, S.N., Singh, S.P., Shrivastava, S.K. Biphenyl-3-oxo-1,2,4-triazine linked piperazine derivatives as potential cholinesterase inhibitors with anti-oxidant property to improve the learning and memory. *Bioorganic Chemistry* 85, 82-96 (2019). [**Impact Factor: 3.926**].
- (7) Srivastava, P., Tripathi, P.N., **Sharma, P.**, Rai, S.N., Singh, S.P., Srivastava, R.K., Shankar, S., Shrivastava, S.K. Design and development of some phenyl benzoxazole derivatives as a potent acetylcholinesterase inhibitor with antioxidant property to enhance learning and memory. *European Journal of Medicinal Chemistry* 163, 116-135 (2019). [**Impact Factor: 4.833**].
- (8) Srivastava, P., Tripathi, P.N., **Sharma, P.**, Shrivastava, S.K. Quantitative Structure Activity Relationship based Design, Synthesis, and Evaluation of Novel Diarylether derivatives as a potent Acetylcholinesterase inhibitor and Antioxidant to treat Cognitive dysfunctions. *Current Trends in Biotechnology and Pharmacy* 13(2), 124-145.
- (9) Shrivastava, S.K., Sinha, S.K., Srivastava, P., Tripathi, P.N., **Sharma, P.**, Tripathi, M.K., Tripathi, A., Choubey, P.K., Waiker, D., Aggarwal, L.M., Dixit, M., Kheruka, S.C., Gambhir, S., Shankar, S. & Srivastava, R.K. Design and development of novel p-aminobenzoic acid derivatives as potential cholinesterase inhibitors for the treatment of Alzheimer's disease. *Bioorganic Chemistry* 82, 211-223 (2018). [**Impact Factor: 3.926**].
- (10) Shrivastava, S.K., Tripathi, P., Srivastava, P., **Sharma, P.**, Tripathi, A., Seth, A., Tripathi, M.K. Synthesis, evaluation and docking studies of some 4-thiazolone derivatives as effective lipoxygenase inhibitors. *Chemical Papers* 72, 2769-2783 (2018). [**Impact Factor: 1.246**].
- (11) Seth, A., **Sharma, P.**, Tripathi, A., Choubey, P., Srivastava, P., Tripathi, P. & Shrivastava, S. Design, synthesis, evaluation and computational studies of nipecotic acid-acetonaphthone hybrids as potential antiepileptic agents. *Medicinal Chemistry* 14, 409-426 (2018). [**Impact Factor: 2.530**].
- (12) Seth, A., **Sharma, P.**, Tripathi, A., Choubey, P.K., Srivastava, P., Tripathi, P.N. & Shrivastava, S.K. Design, synthesis, evaluation and molecular modeling studies of some novel N-substituted piperidine-3-carboxylic acid derivatives as potential anticonvulsants. *Medicinal Chemistry Research* 27, 1206-1225 (2018). [**Impact Factor: 1.720**].

- (13) Banerjee, A.G., Das, N., Shengule, S.A., **Sharma, P.**, Srivastava, R.S. & Shrivastava, S.K. Design, synthesis, evaluation and molecular modelling studies of some novel 5, 6-diphenyl-1, 2, 4-triazin-3 (2H)-ones bearing five-member heterocyclic moieties as potential COX-2 inhibitors: A hybrid pharmacophore approach. *Bioorganic Chemistry* 69, 102-120 (2016). [**Impact Factor: 3.926**].
- (14) Banerjee, A.G., Kothapalli, L.P., **Sharma, P.**, Thomas, A.B., Nanda, R.K., Shrivastava, S.K. & Khatanglekar, V.V. A facile microwave assisted one pot synthesis of novel xanthene derivatives as potential anti-inflammatory and analgesic agents. *Arabian Journal of Chemistry* 9, S480-S489 (2016). [**Impact Factor: 3.298**].

PATENTS PUBLISHED/FILED FROM Ph.D. DISSERTATION

- (1) **Sharma, P.**, Tripathi, A., Tripathi P.N., Avhad, A., Shrivastava, S.K. Synthesis of *N*-benzylpiperidine and 5-(2,4-dichlorophenyl)-1,3,4-oxadiazole hybrid with multifunctional activities against Alzheimer's Disease. **Indian Patent** 201911034164 dated 24.08.2019- Filed.
- (2) **Sharma, P.**, Tripathi, A., Tripathi P.N., Salunke, P., Shrivastava, S.K. *N*-(1-benzylpiperidin-4-yl)-5-(4-(trifluoromethyl) phenyl)-1,3,4-oxadiazol-2-amine as multitargeted ligand to treat Alzheimer's disease. **Indian Patent** 201911034930 dated 29.08.2019- Filed.

OTHER PATENTS PUBLISHED/FILED

- (1) Shrivastava, S.K., **Sharma, P.**, Tripathi, P.N., Srivastava, P., Srivastava, R.K., Shankar, S. Methods for treating cancer and metabolic syndrome. **United States Patent**- 2932719-025-US1 dated 04.05.2018- PCT Filed.
- (2) Tripathi, A., **Sharma, P.**, Choubey, P.K., Shrivastava, S.K. A novel compound for treating Alzheimer's disease and a method of preparation thereof. **Indian Patent** 201911034300 dated 26.08.2019- Filed.
- (3) Tripathi, A., **Sharma, P.**, Choubey, P.K., Shrivastava, S.K. Synthesis of 2-(4-bromophenyl)-5-(4-(pyridin-2-yl)Piperazin-1-yl)-1,3,4-oxadiazole for treating Alzheimer's disease and method of preparation thereof. **Indian Patent** 201911034931 dated 29.08.2019- Filed.

BOOK CHAPTERS

- (1) **Sharma, P.**, Tripathi, M. & Shrivastava, S.K. Chapter 18- Cholinesterase as a target for drug development in Alzheimer's disease. In 'Targeting Enzymes for Pharmaceutical Development: Methods and Protocols' *Humana Press, Springer, USA*, pp. 257-286 (2020).

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- (2) Kumar, M., **Sharma, P.**, Maheshwari, R., Tekade, M., Shrivastava, S.K. & Tekade, R.K. Chapter 15 - Beyond the Blood–Brain Barrier: Facing New Challenges and Prospects of Nanotechnology-Mediated Targeted Delivery to the Brain. In ‘Nanotechnology-Based Targeted Drug Delivery Systems for Brain Tumors’ *Academic Press (Elsevier)*, pp. 397-437 (2018).

CONFERENCE: POSTERS PRESENTED

- (1) Presented a poster at **Basel Life 2019 at Congress Center, Basel, Switzerland** on topic entitled “Computational exploration to design and synthesise *N*-benzylpiperidines as multifunctional therapeutics to treat Alzheimer’s disease” held during 9-12 September 2019. **International Travel Grant Sanctioned by CSIR-HRDG, New Delhi and IIT (BHU), Varanasi**
- (2) Presented a poster at **20th Tetrahedron Symposium, Bangkok, Thailand** on topic entitled “Design and development of *N*-benzylpiperidines as multitargeted ligands for the treatment of Alzheimer’s disease” held on 18-21 June 2019. **Grant Sanctioned by SERB, New Delhi through International Travel Support (ITS) Scheme.**

WORKSHOPS ATTENDED

- (1) Attended one day workshop “Structuring your manuscript to impress SCI journal editors and responding to reviewer comments” on 24th October 2018 organized by Wiley Publication at IIT (BHU), Varanasi.
- (2) Attended one day workshop “LaTeX Software” on 6th October 2018 organized by IEEE Student Branch Chapter at IIT (BHU), Varanasi.
- (3) Attended three days workshop “Emerging trends in drug design and molecular modeling” from 19-21 July 2017 organized by Design Innovation Center, Banaras Hindu University, Varanasi and Schrödinger, India.