

Supporting Information

Suzuki-Miyaura Cross-Coupling of Potassium Trifluoro(*N*-Methylheteroaryl)borates with Aryl and Heteroaryl Halides

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[#]Department of Chemistry, Texas A&M University at Qatar, PO Box 23874, Doha, Qatar.

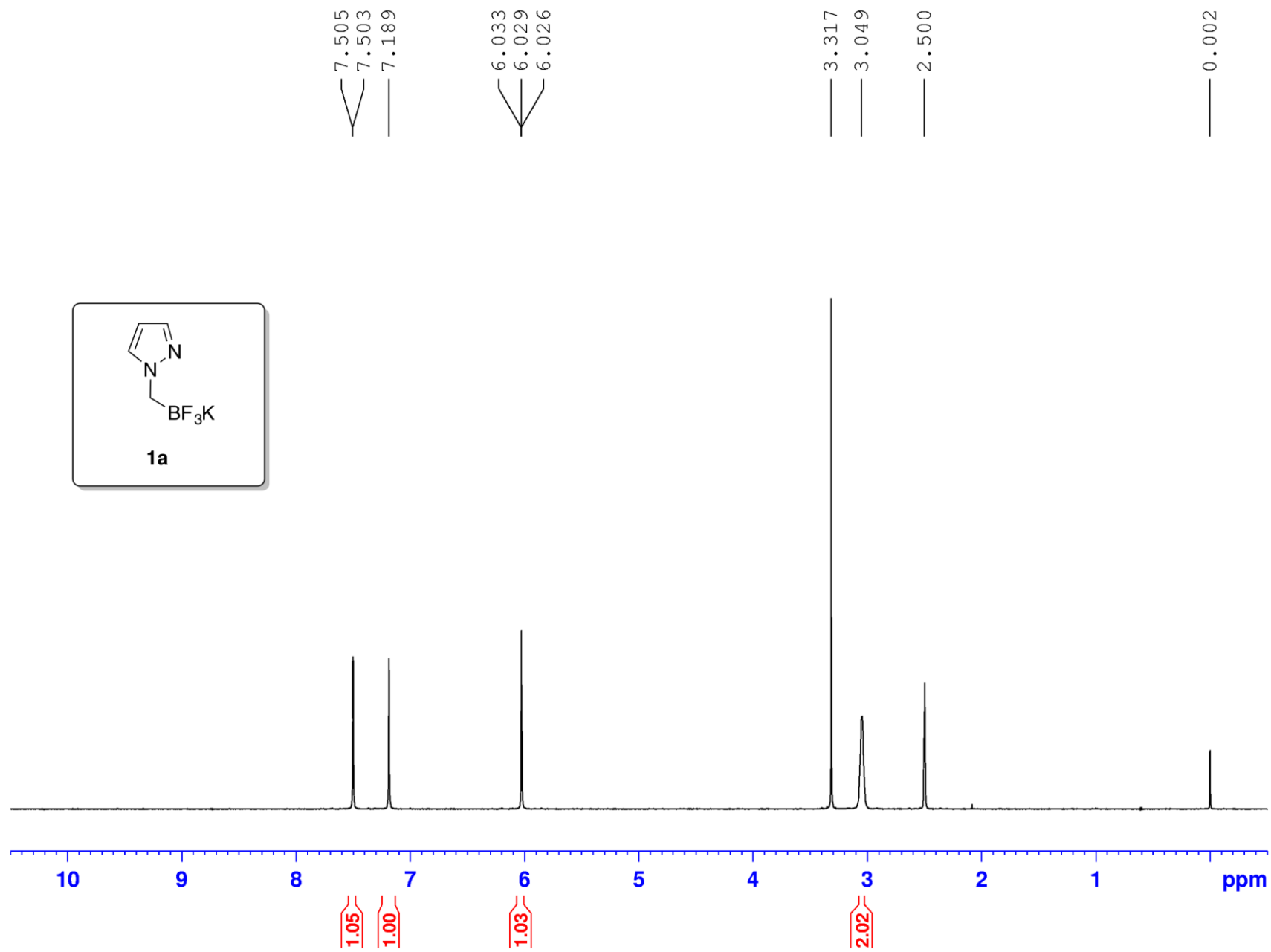
gmolandr@sas.upenn.edu

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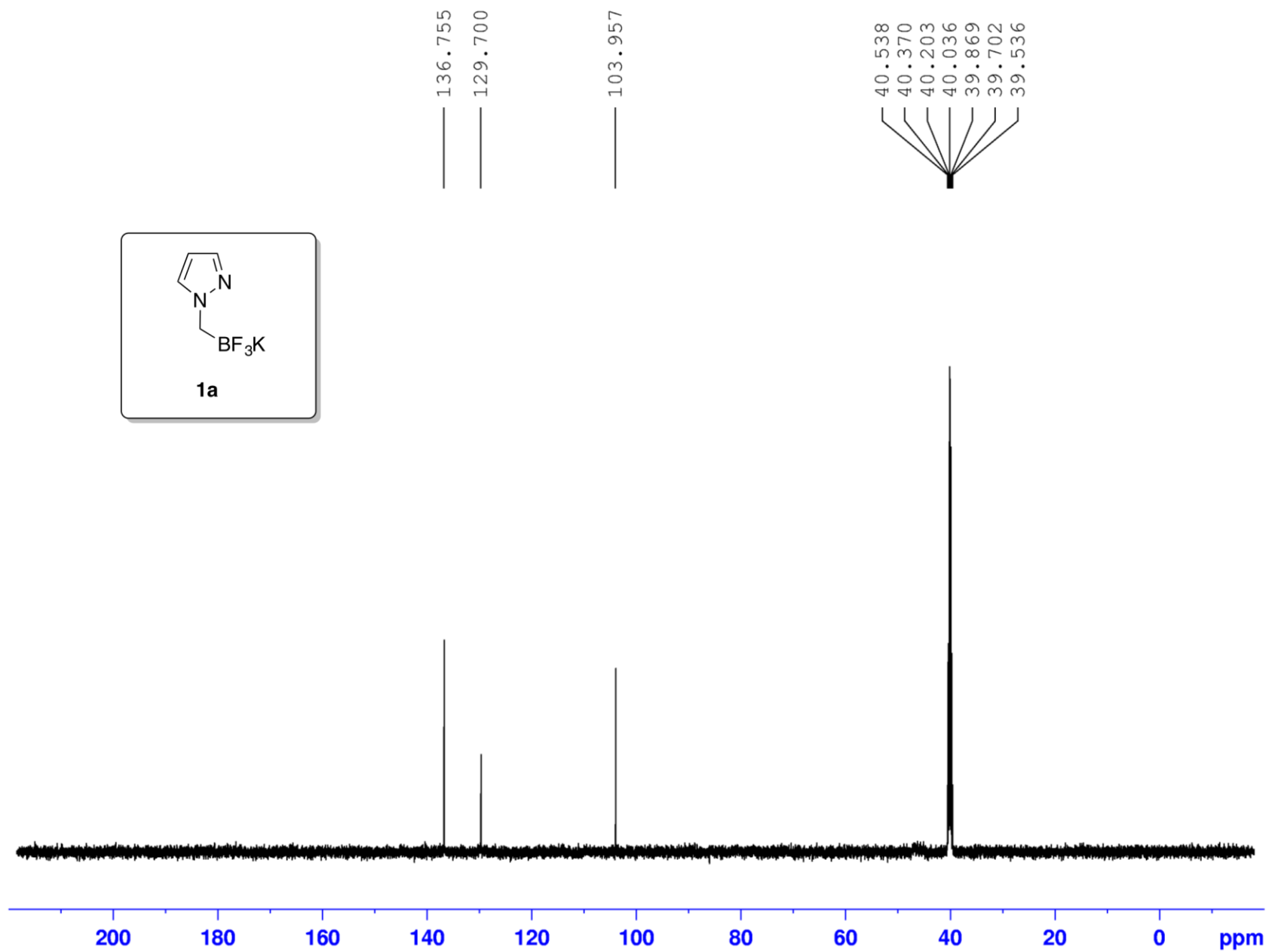
Copies of spectra of products

S2

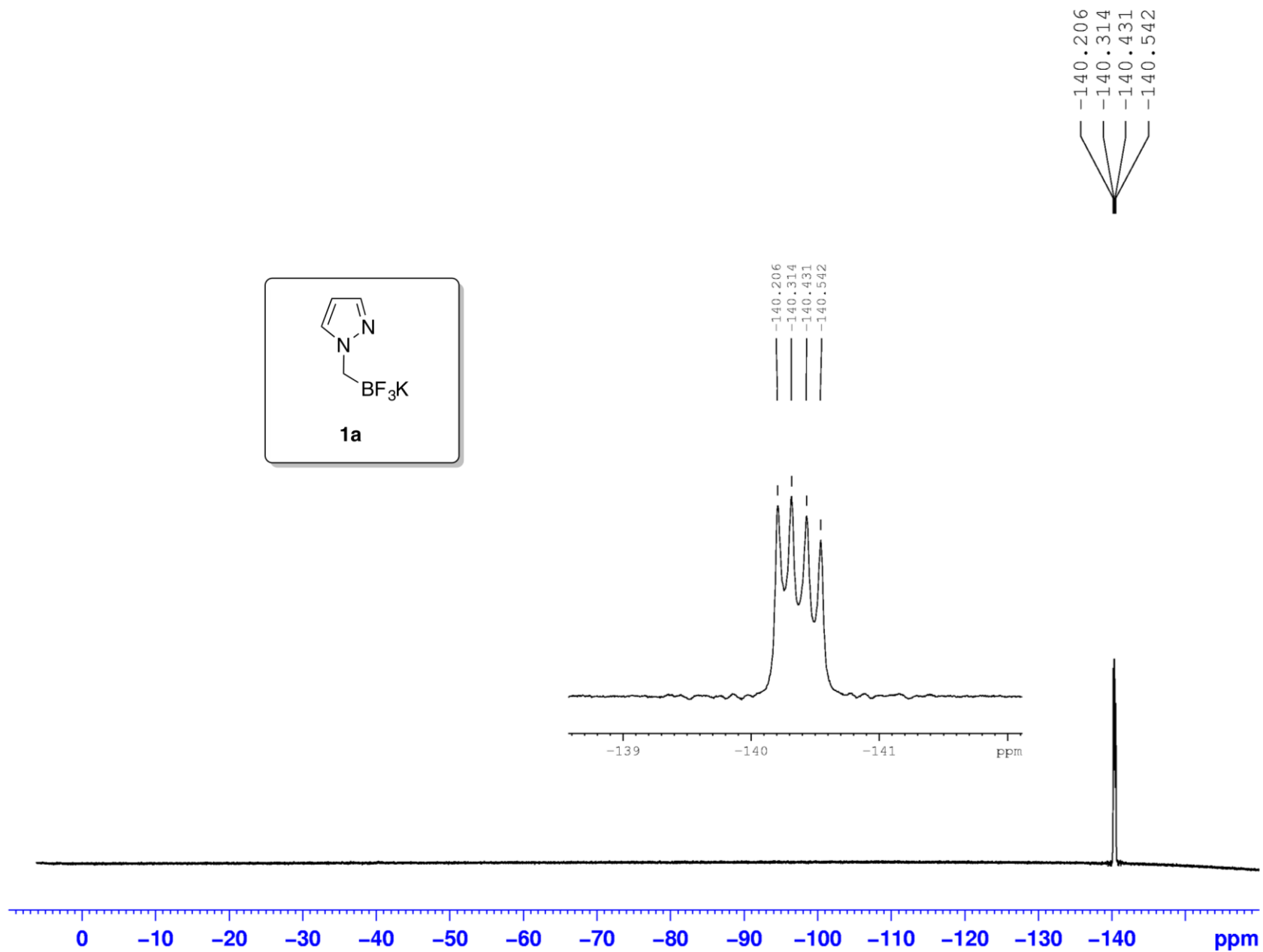
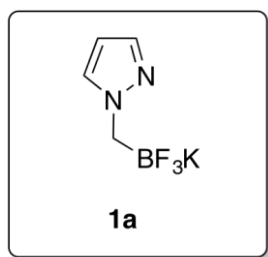
^1H NMR (DMSO, 500 MHz) spectrum of trifluoro(*N*-methylpyrazolo)borate (**1a**)



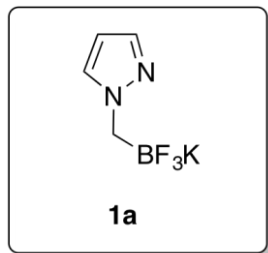
^{13}C NMR (DMSO, 125.8 MHz) spectrum of trifluoro(*N*-methylpyrazolo)borate (**1a**)



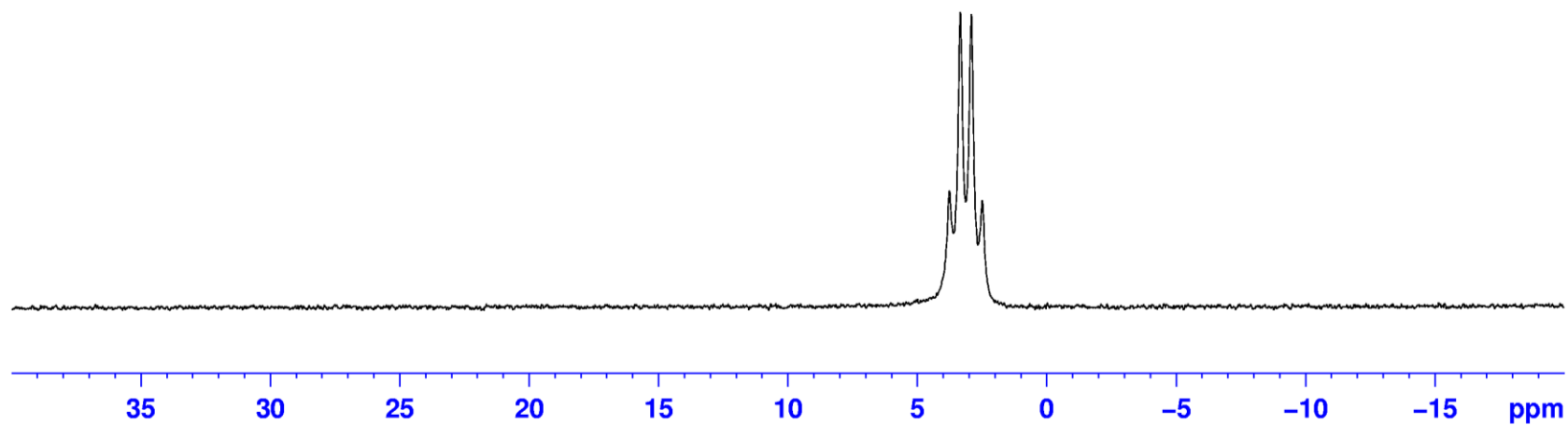
^{19}F NMR (DMSO, 470.8 MHz) spectrum of trifluoro(*N*-methylpyrazolo)borate (**1a**)



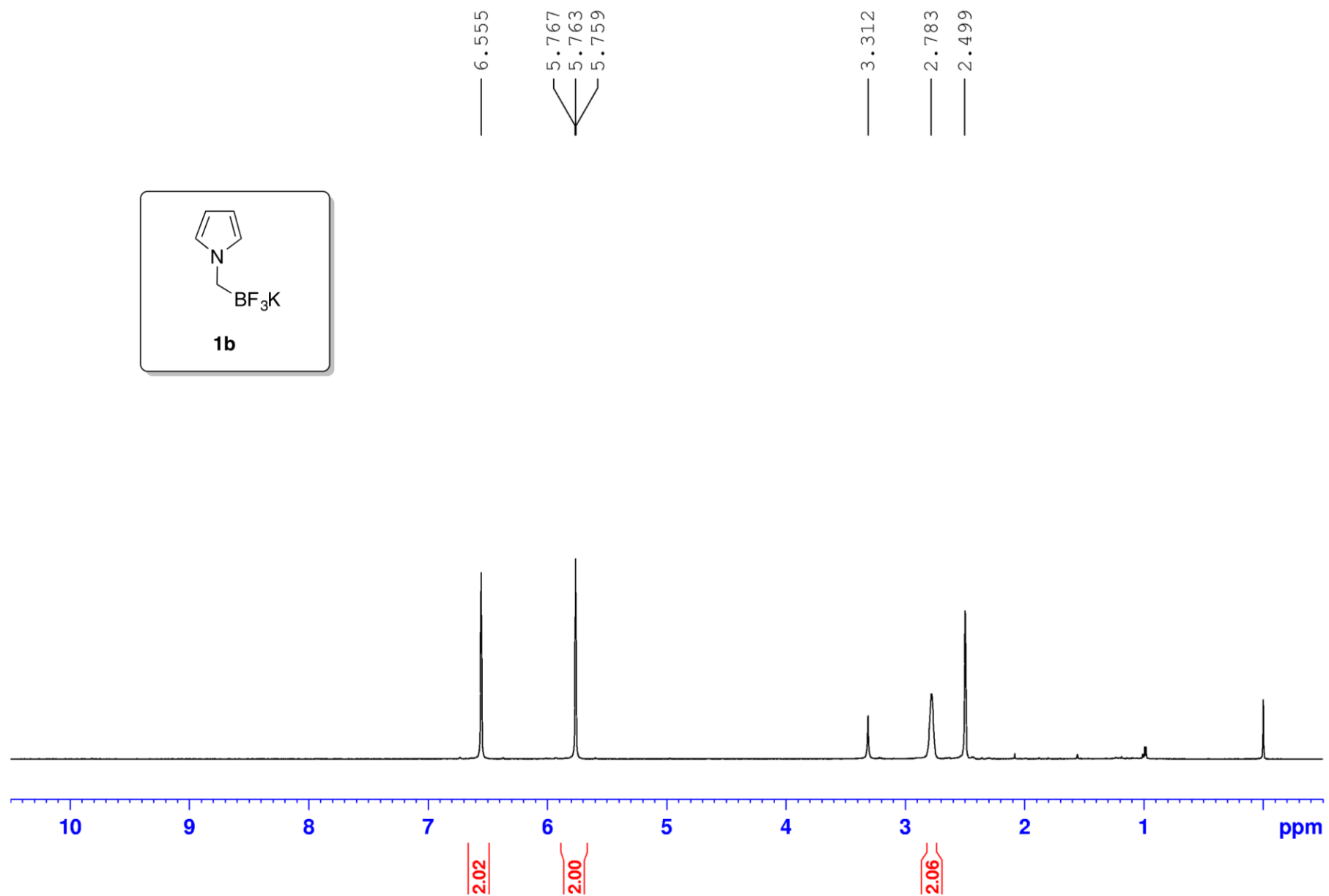
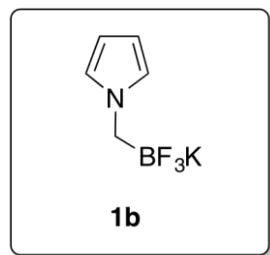
^{11}B NMR (DMSO, 400 MHz) spectrum of trifluoro(*N*-methylpyrazolo)borate (**1a**)



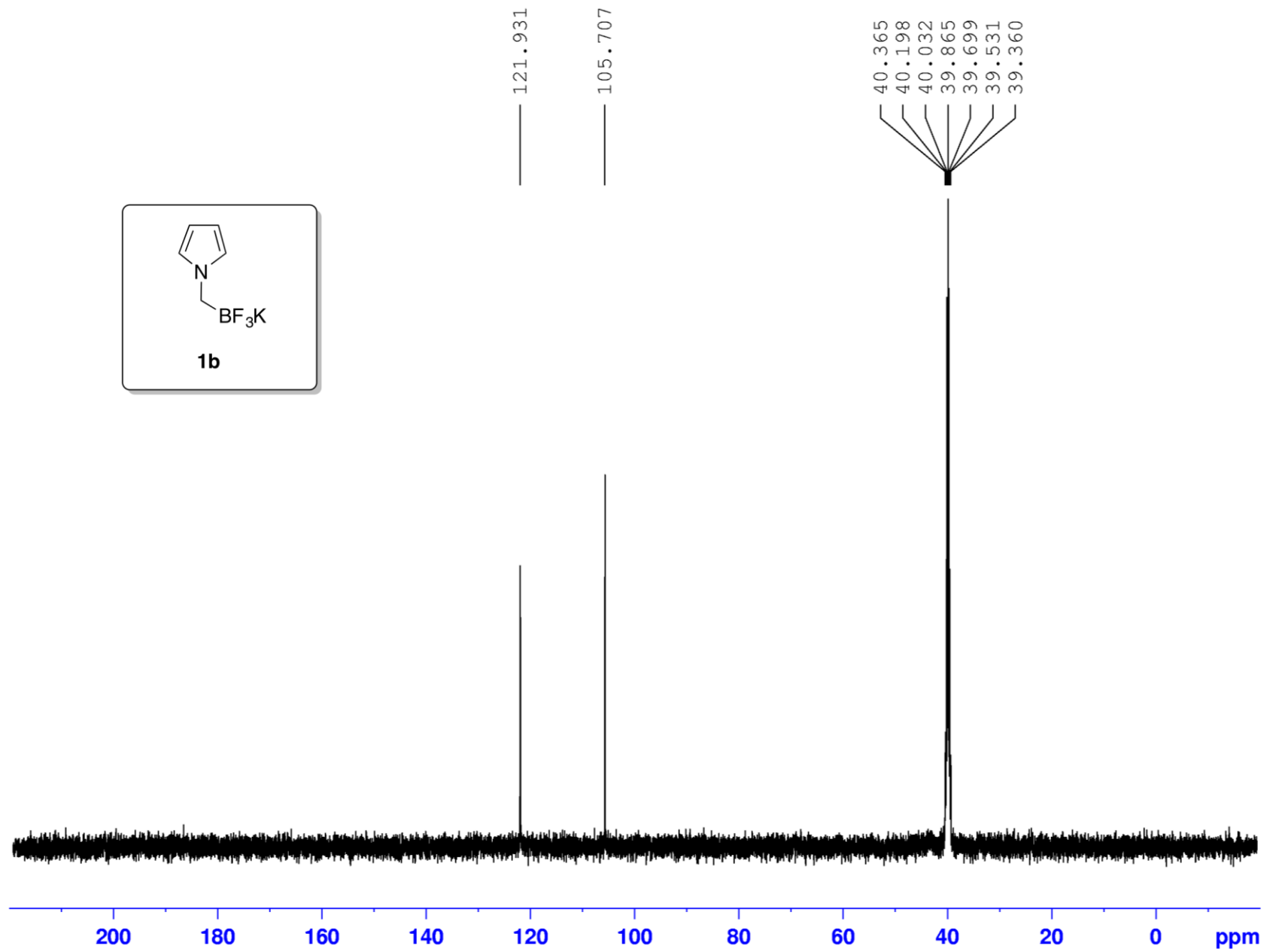
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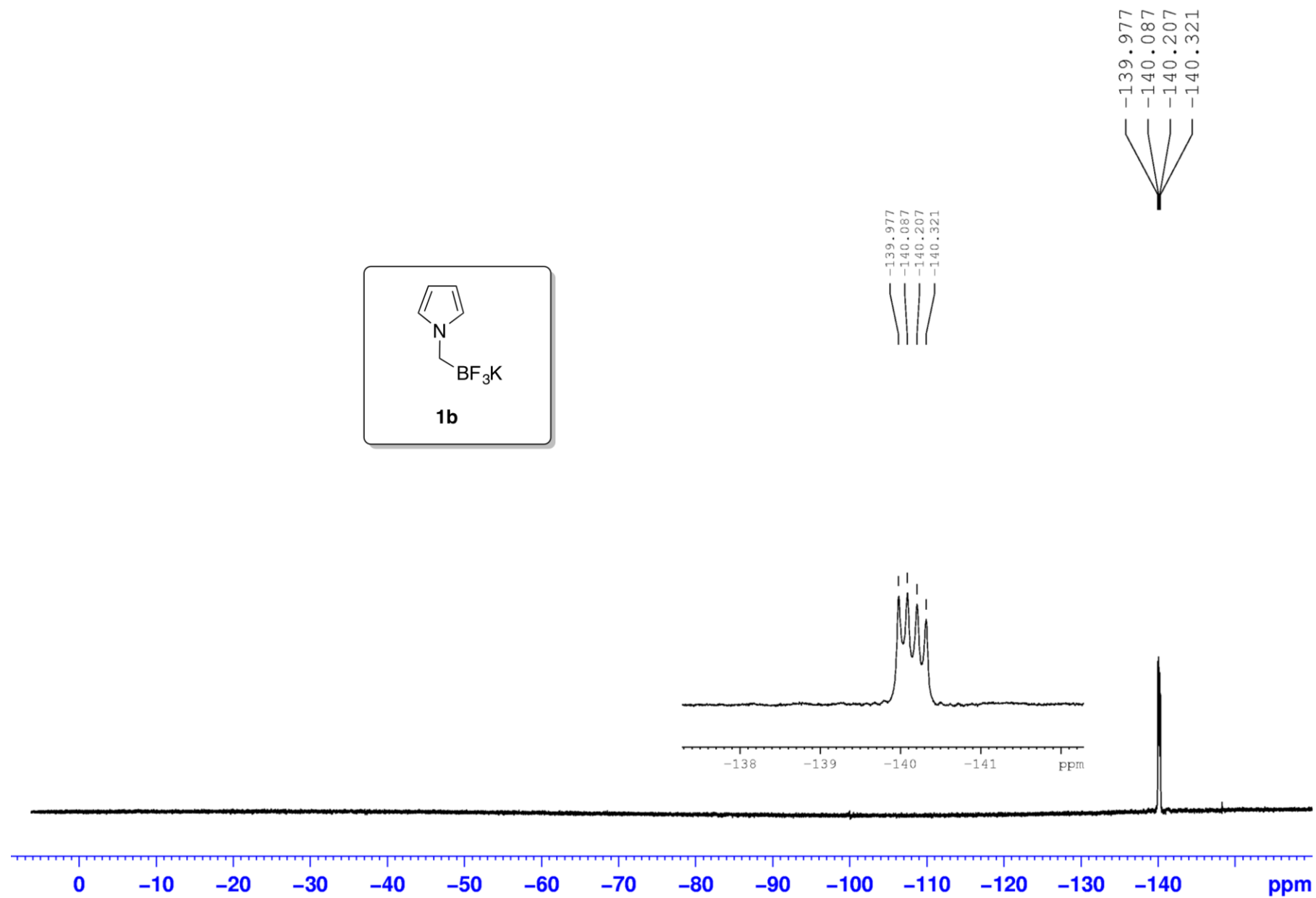
^1H NMR (DMSO, 500 MHz) spectrum of trifluoro(*N*-methylpyrrolo)borate (**1b**)



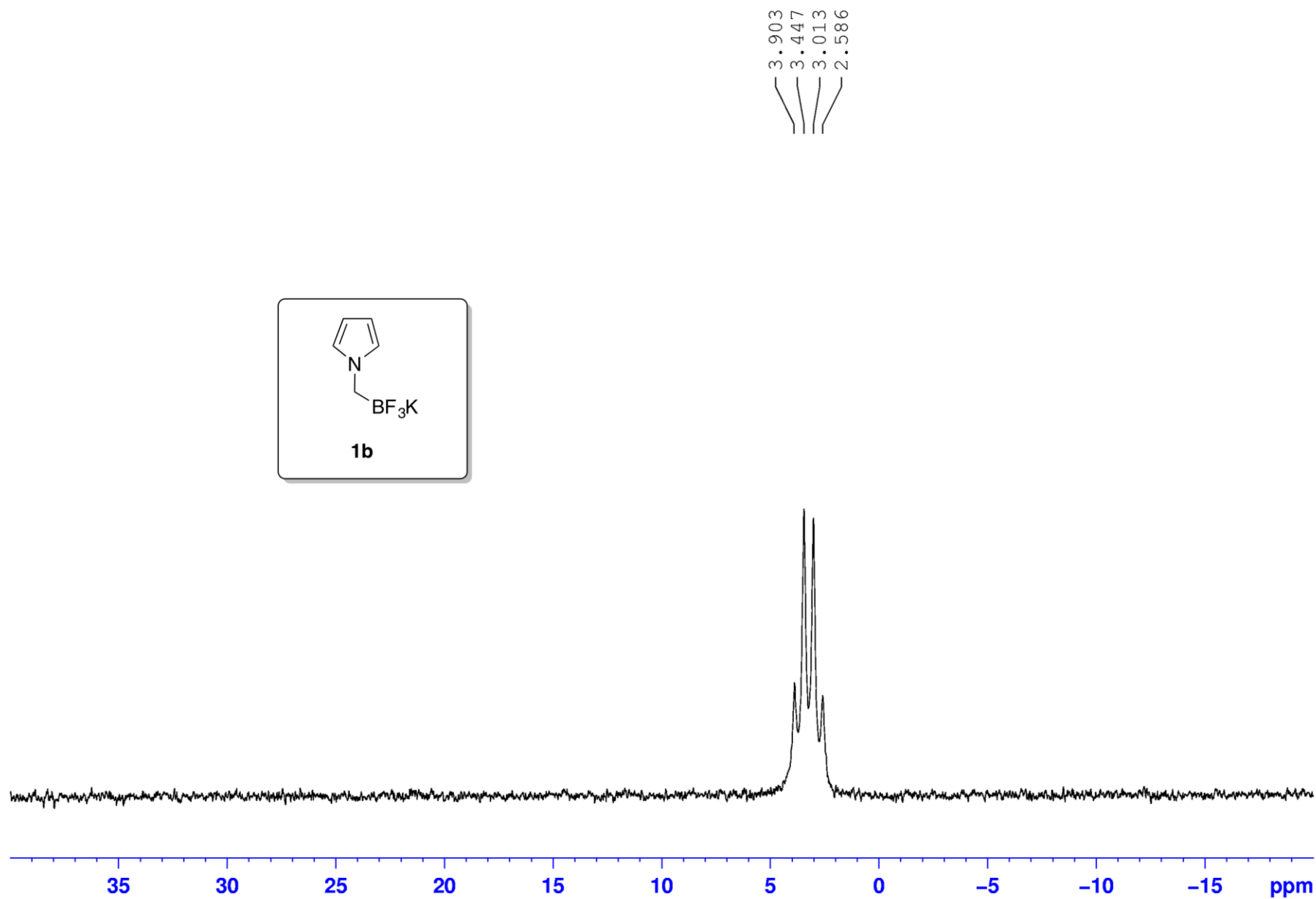
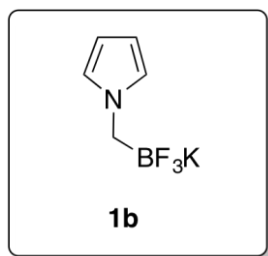
^{13}C NMR (DMSO, 125.8 MHz) spectrum of trifluoro(*N*-methylpyrrolo)borate (**1b**)



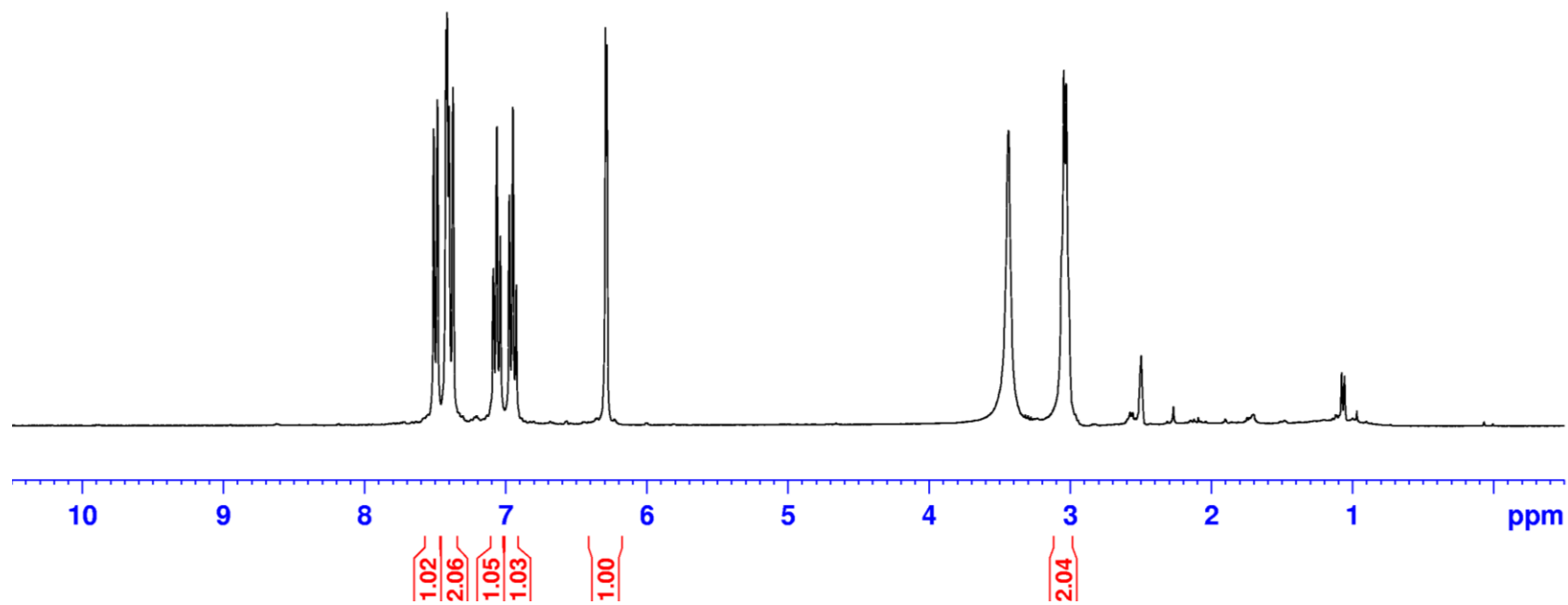
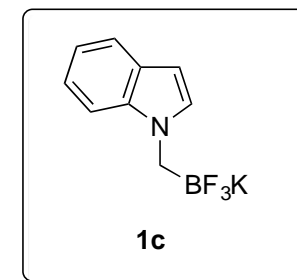
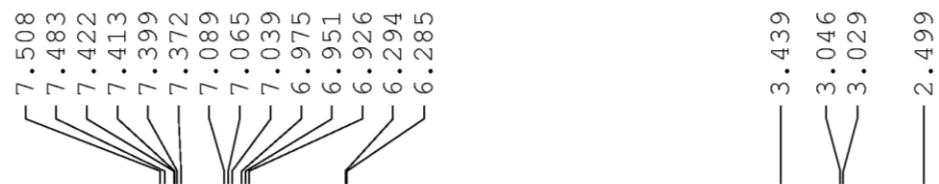
^{19}F NMR (DMSO, 470.8 MHz) spectrum of trifluoro(*N*-methylpyrrolo)borate (**1b**)



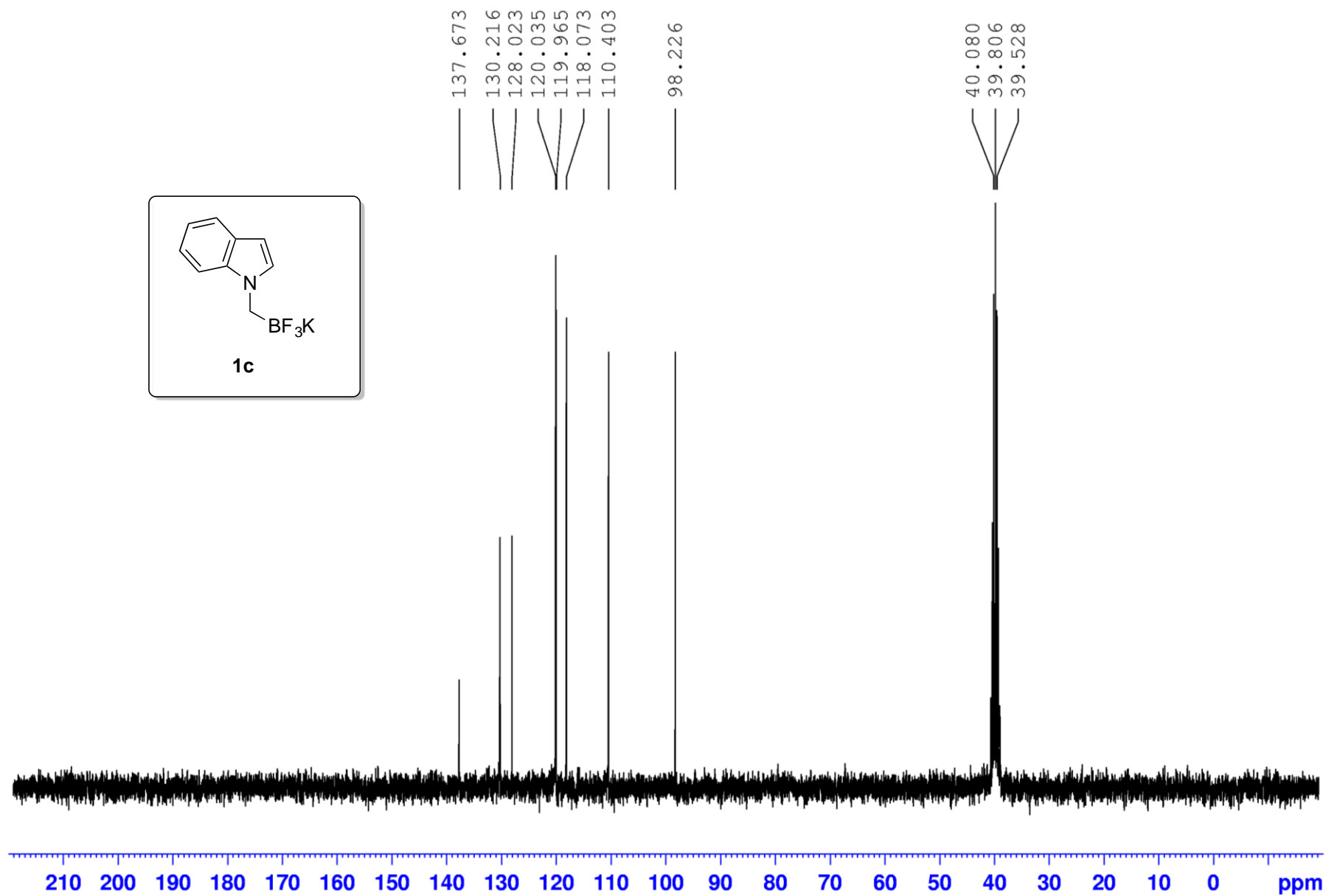
^{11}B NMR (DMSO, 400 MHz) spectrum of trifluoro(*N*-methylpyrrolo)borate (**1b**)



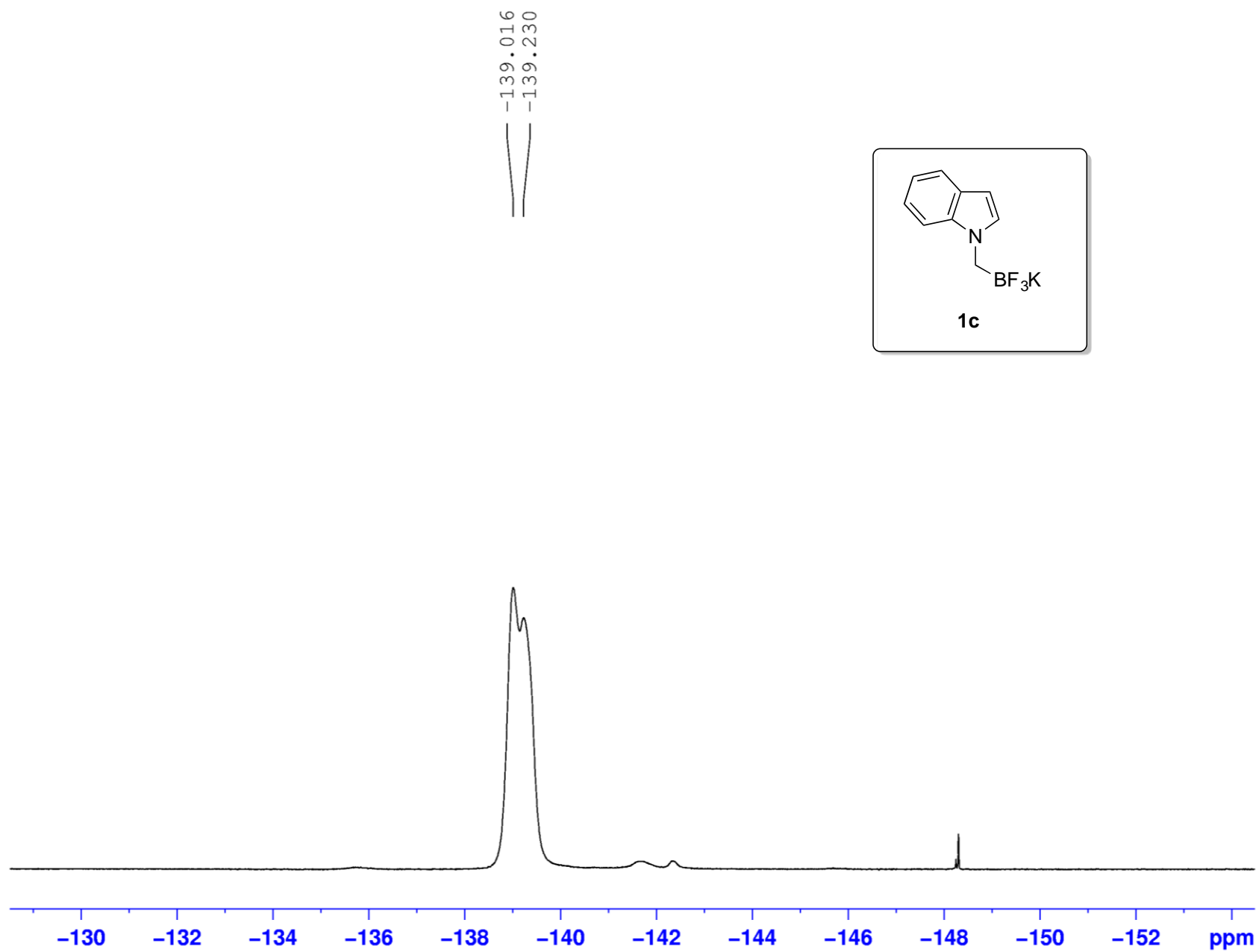
^1H NMR (DMSO, 300 MHz) spectrum of trifluoro(*N*-methylindolo)borate (**1c**)



^{13}C NMR (DMSO, 75.4 MHz) spectrum of trifluoro(*N*-methylindolo)borate (**1c**)

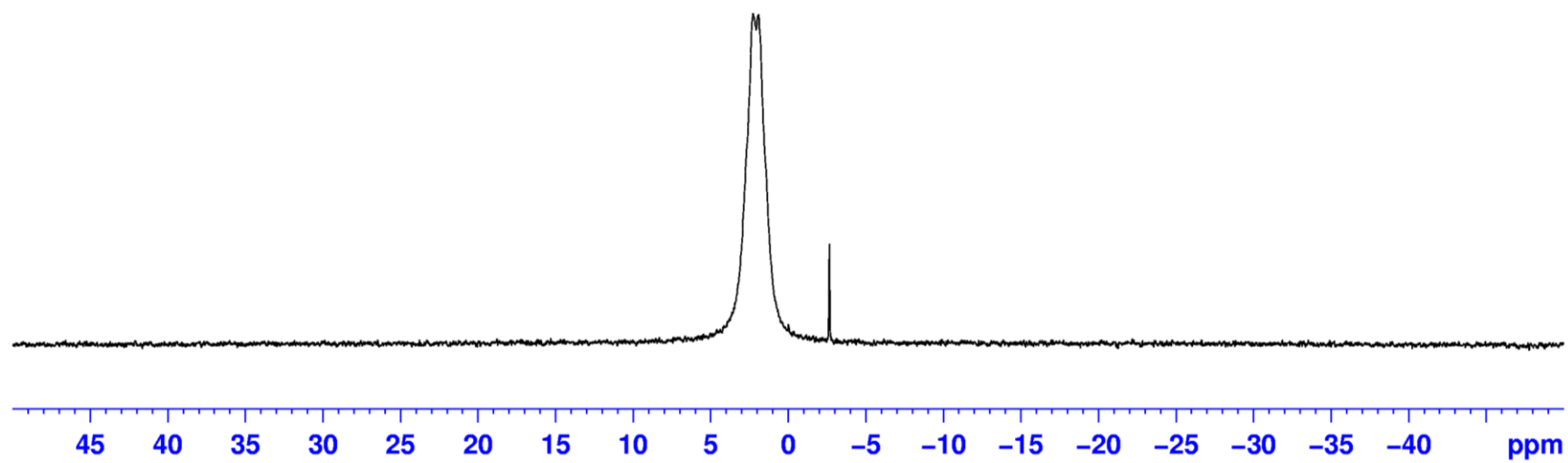
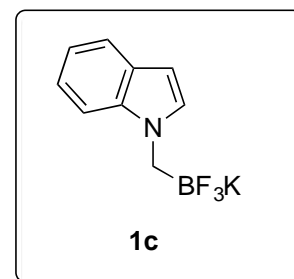


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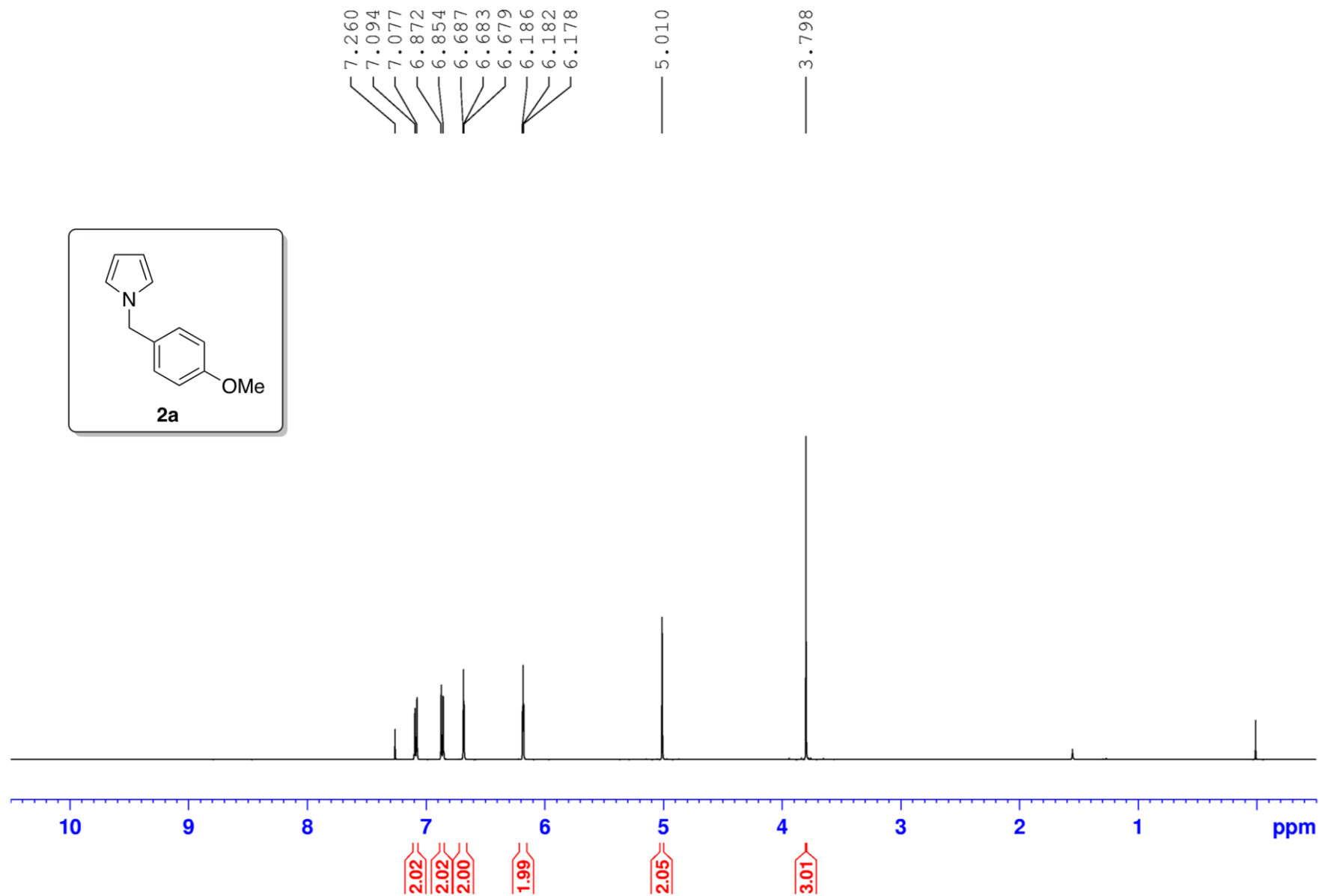


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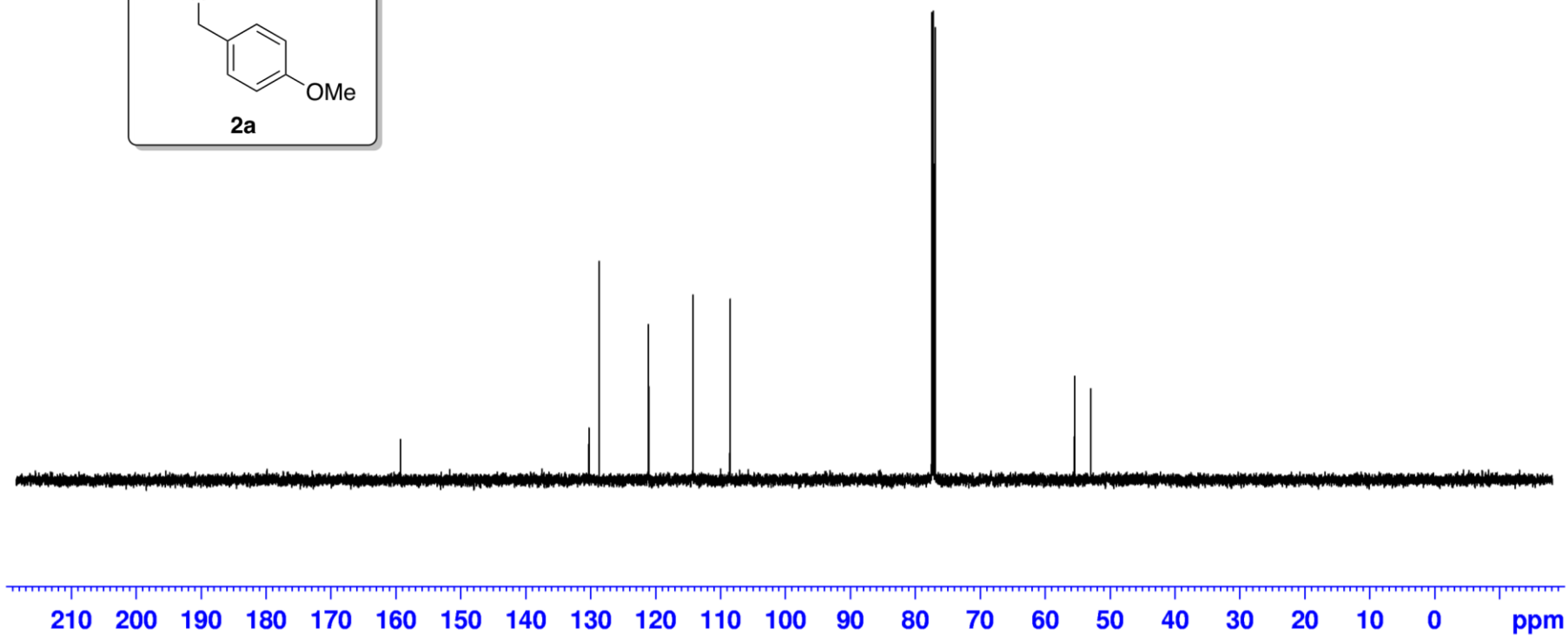
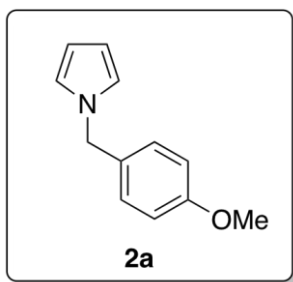
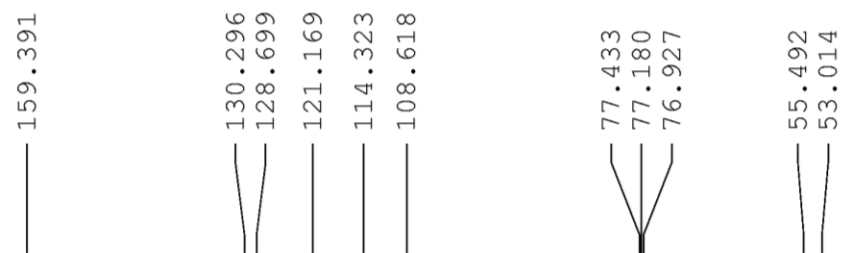
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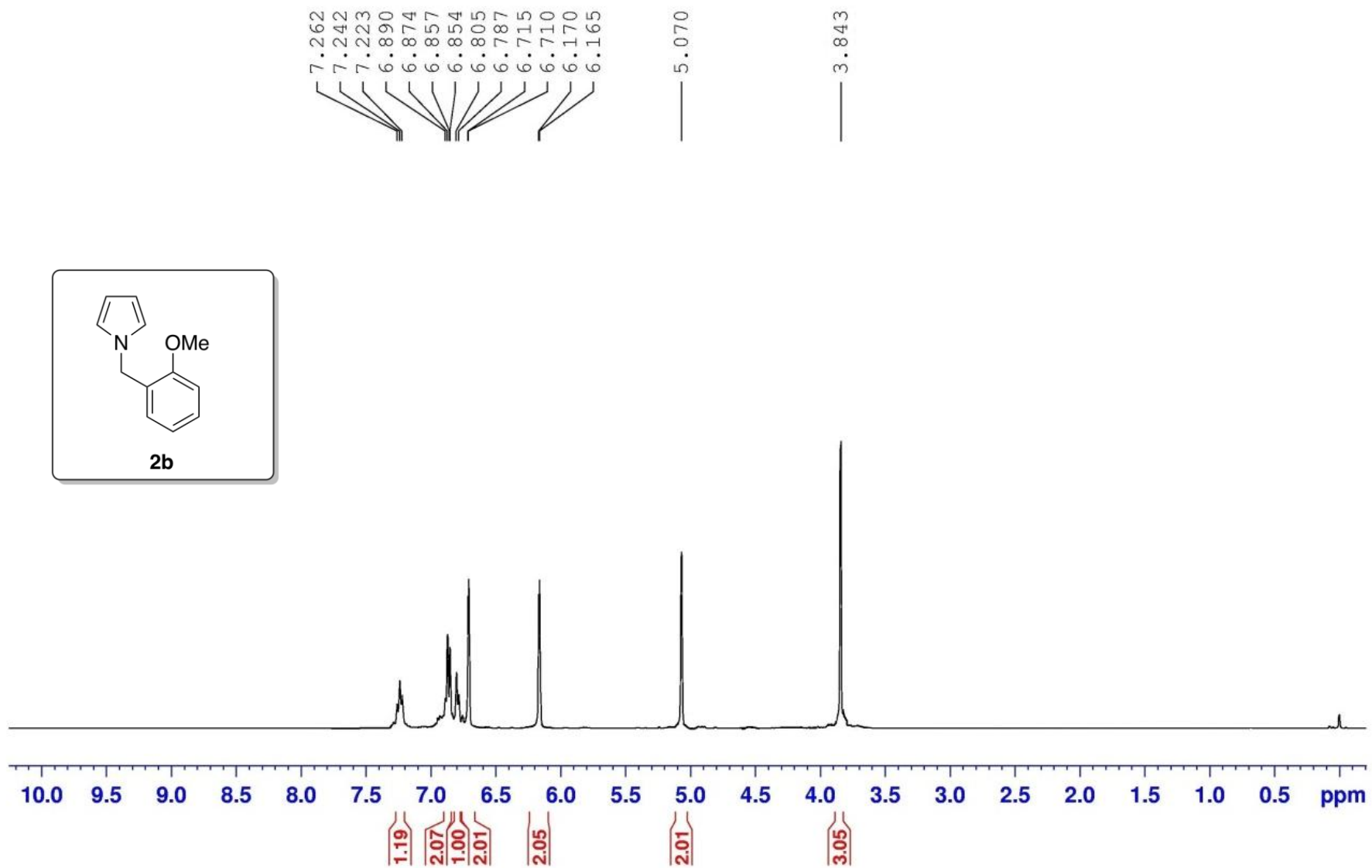
^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(4-methoxybenzyl)-1*H*-pyrrole (**2a**)



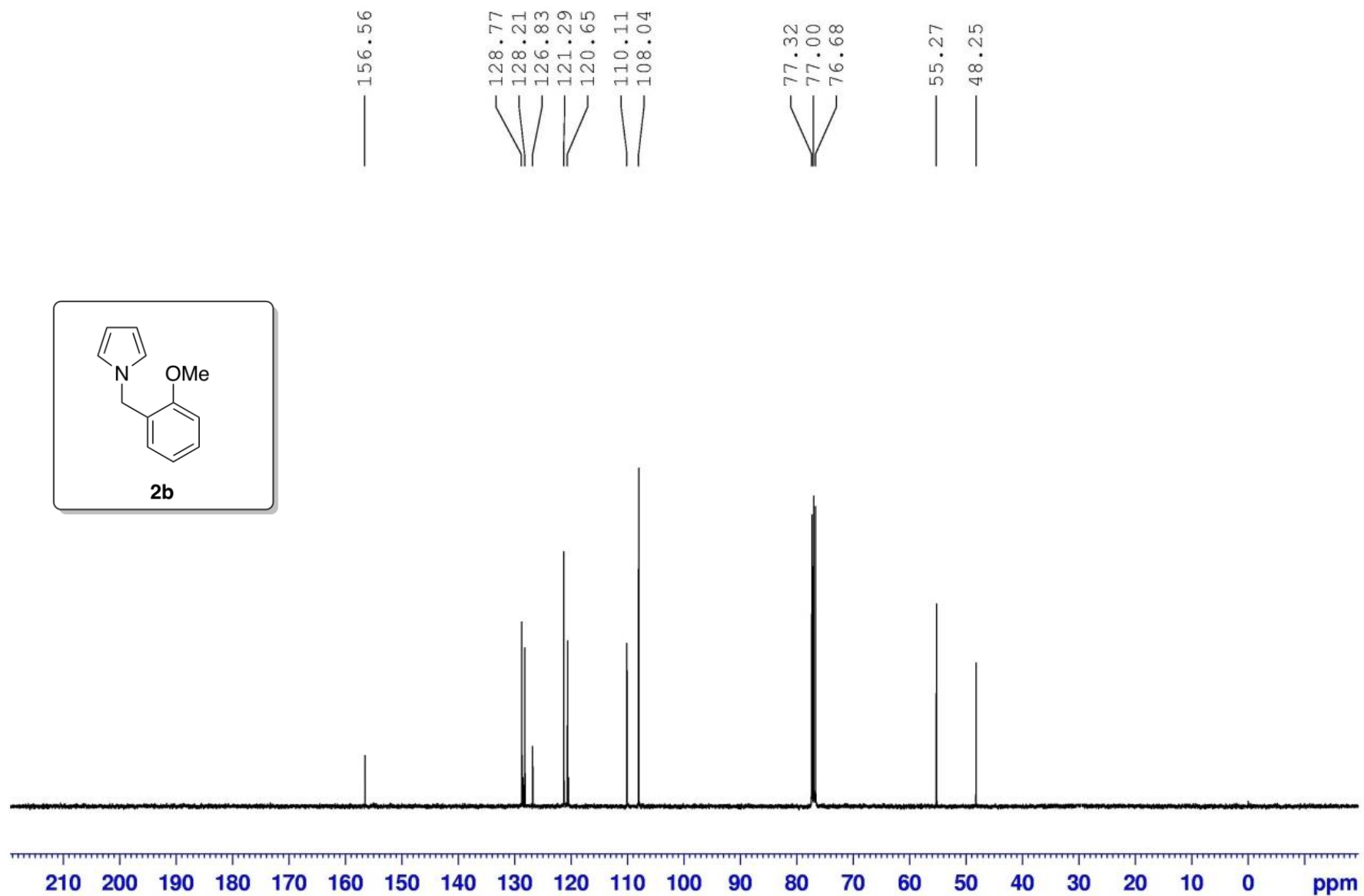
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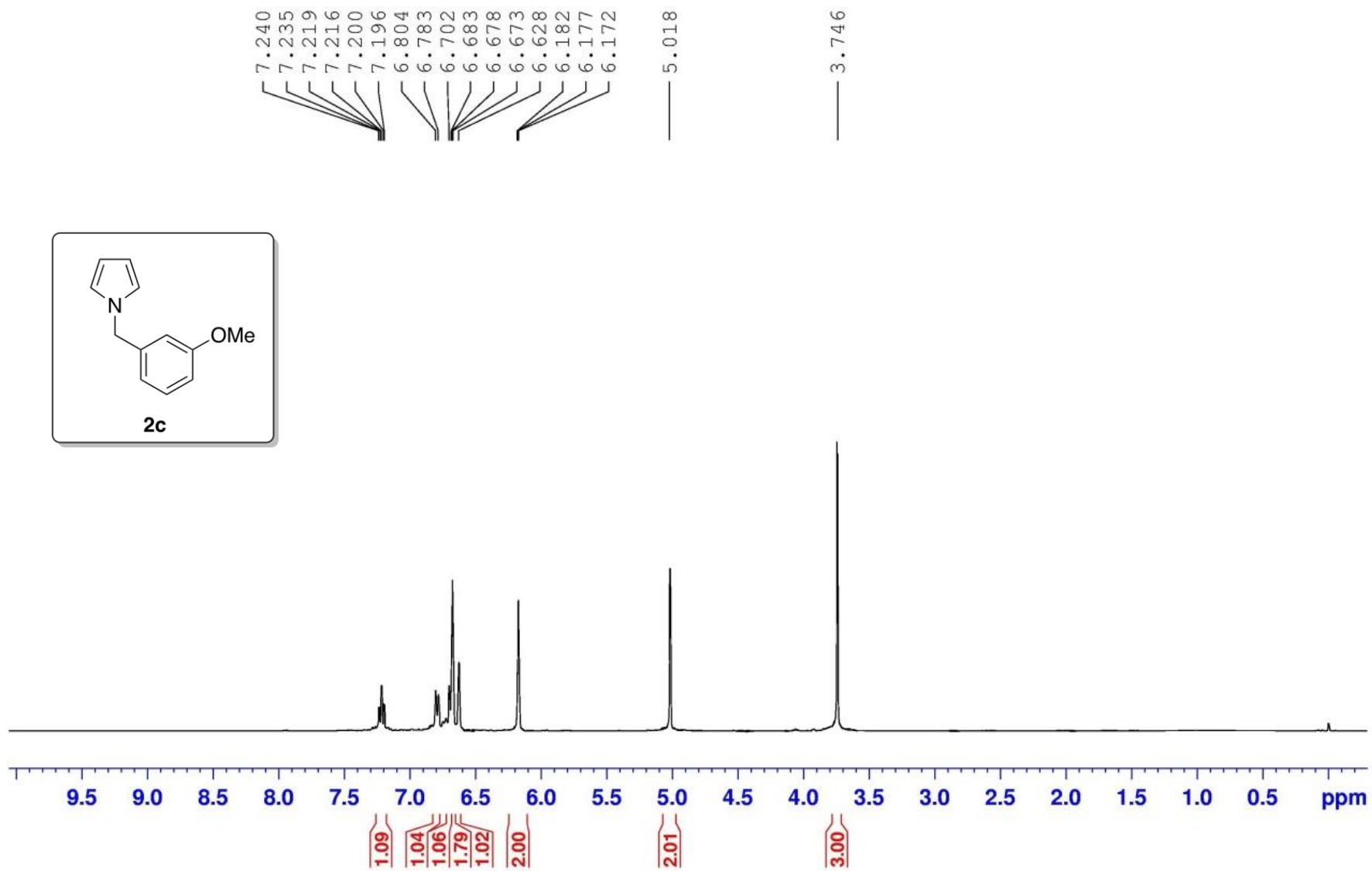
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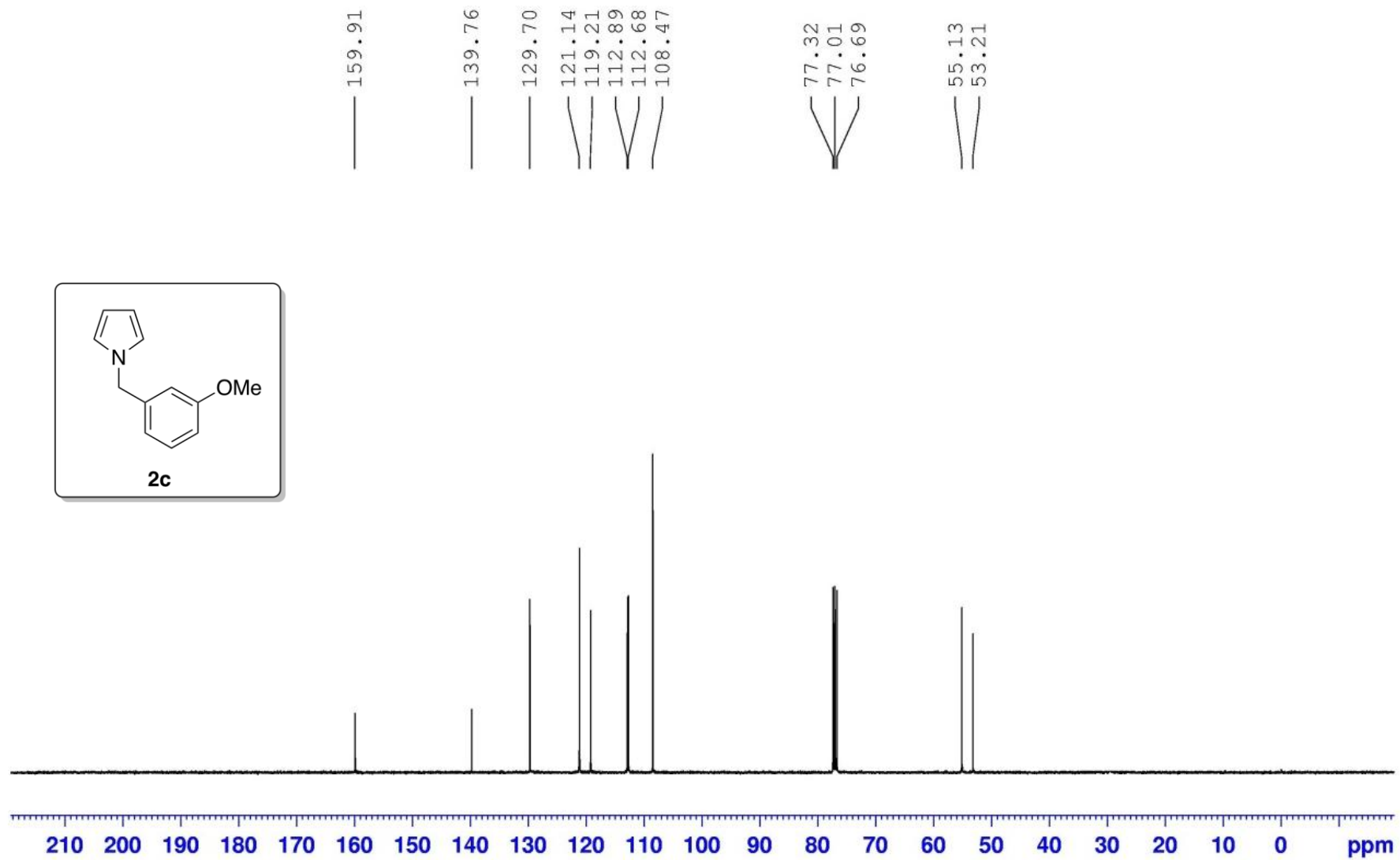
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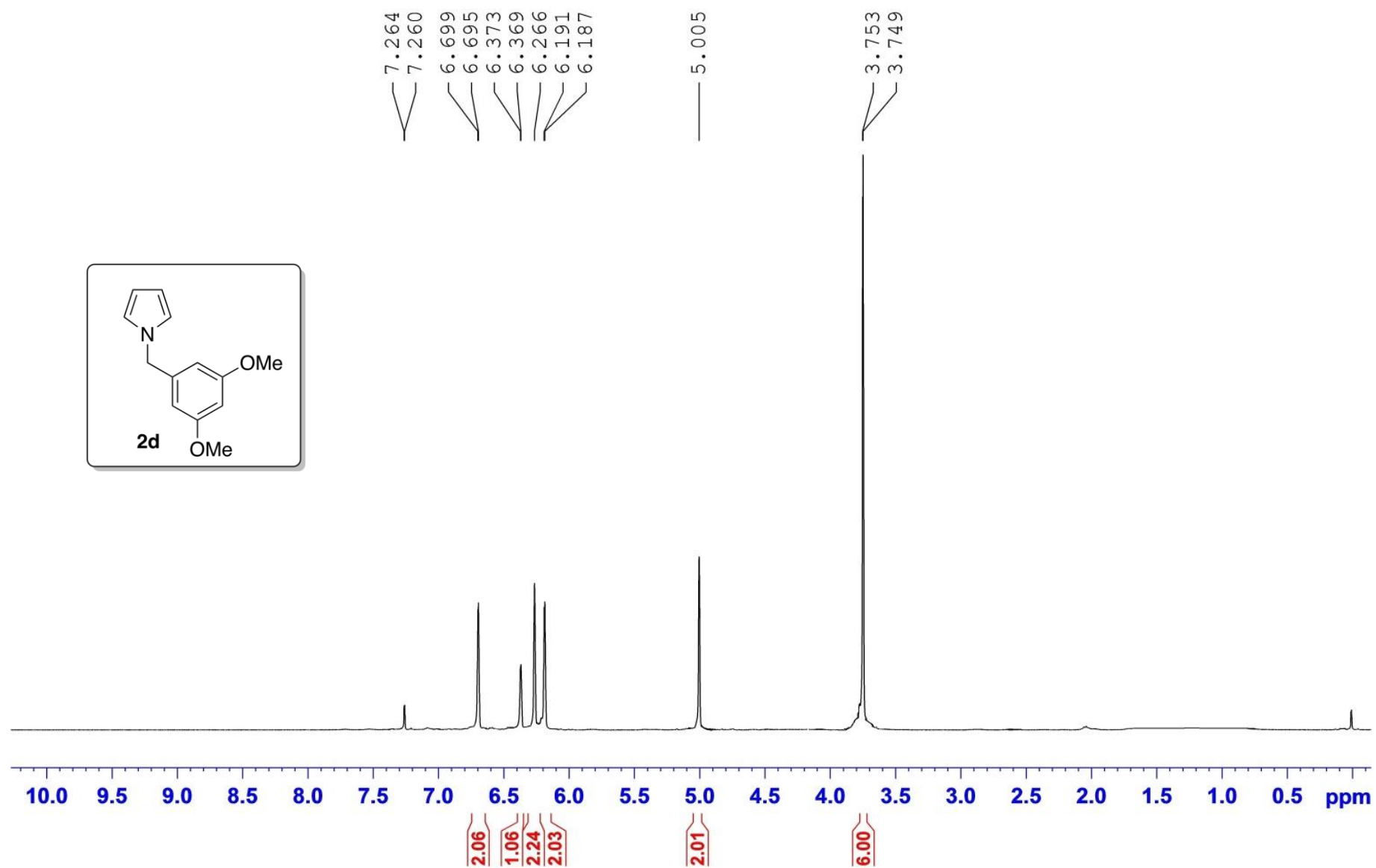
^1H NMR (CDCl_3 , 400 MHz) spectrum of methyl 1-(3-methoxybenzyl)-1*H*-pyrrole (**2c**)



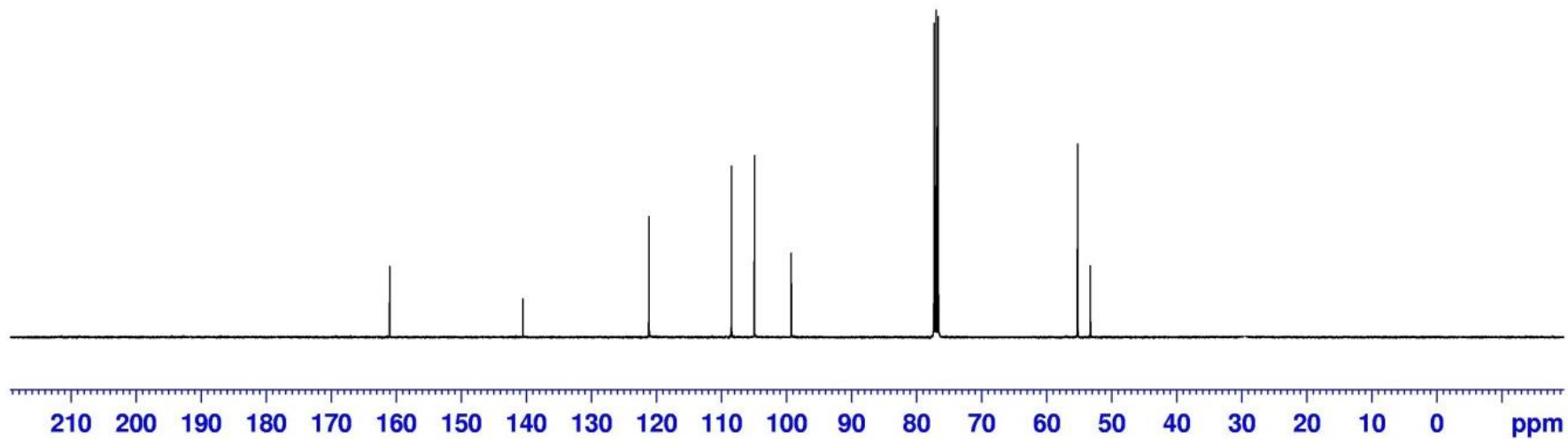
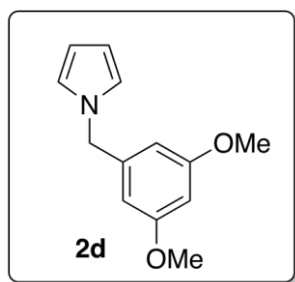
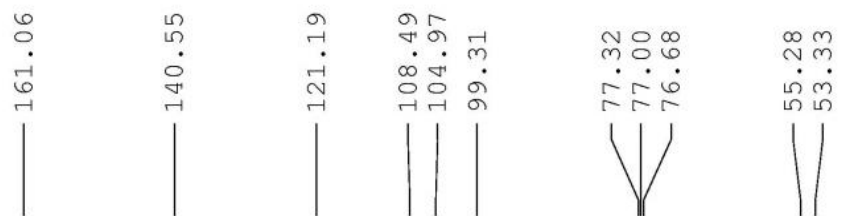
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of methyl 1-(3-methoxybenzyl)-1*H*-pyrrole (**2c**)



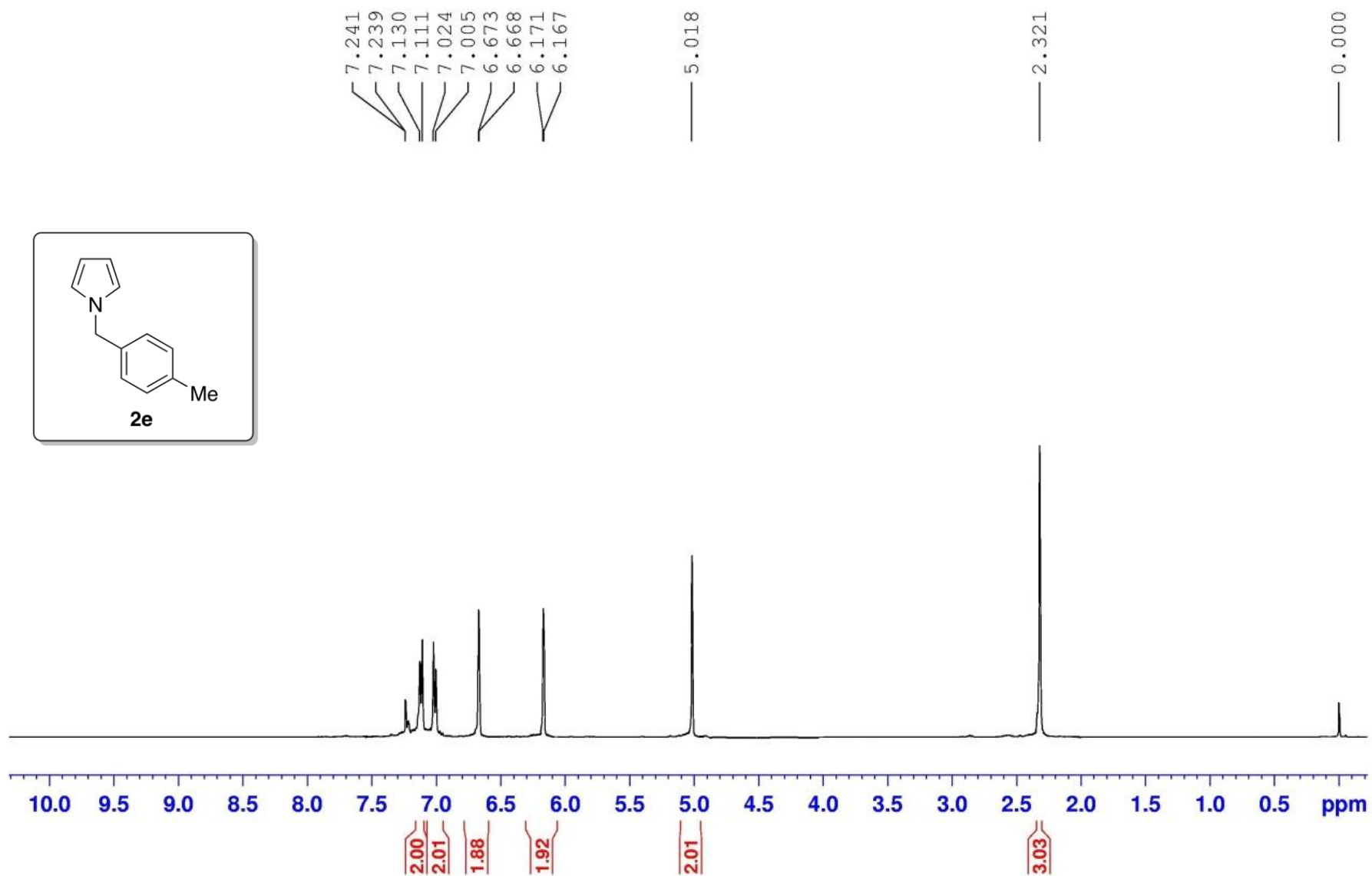
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(3,5-dimethoxybenzyl)-1*H*-pyrrole (**2d**)



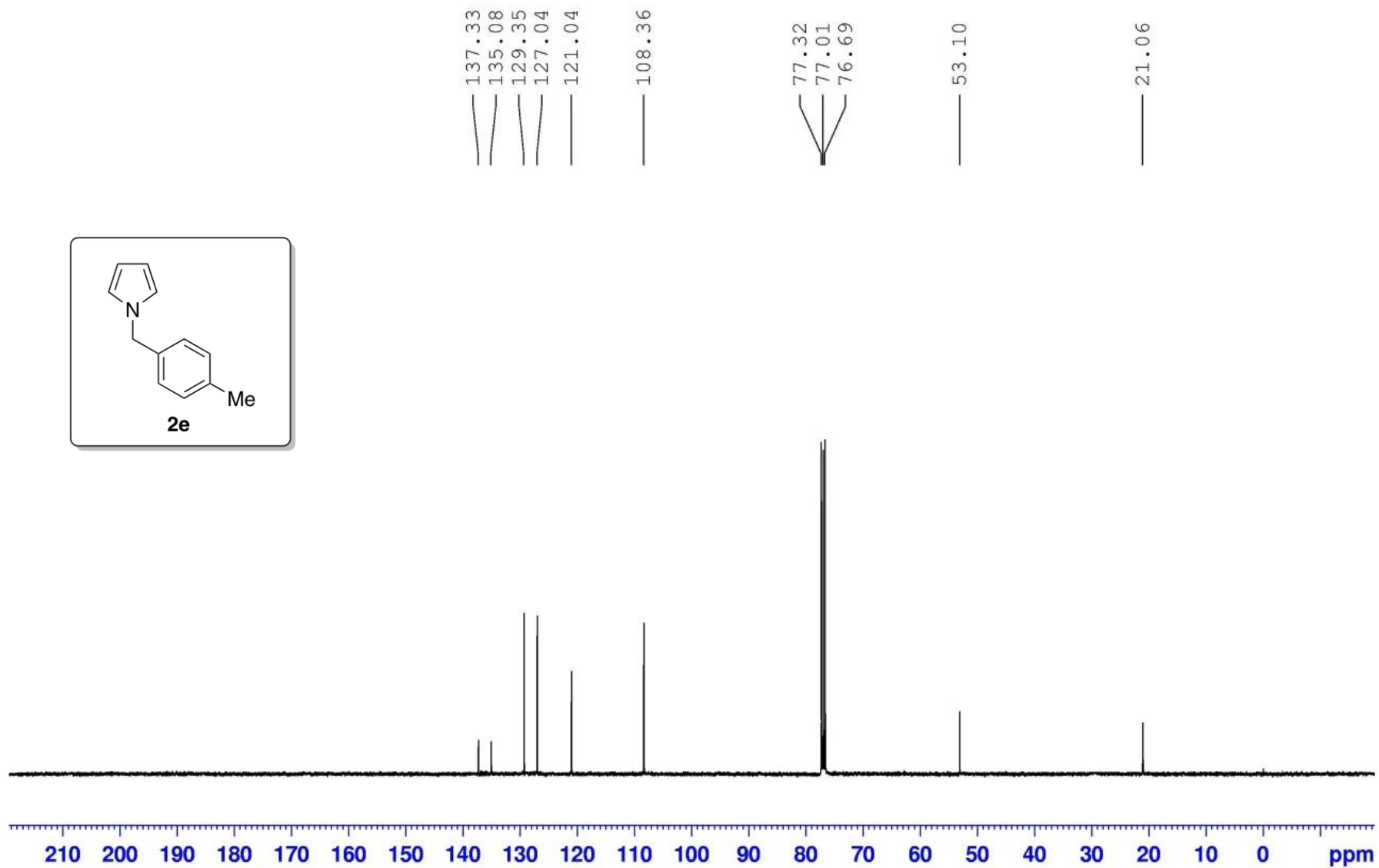
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 1-(3,5-dimethoxybenzyl)-1H-pyrrole (**2d**)



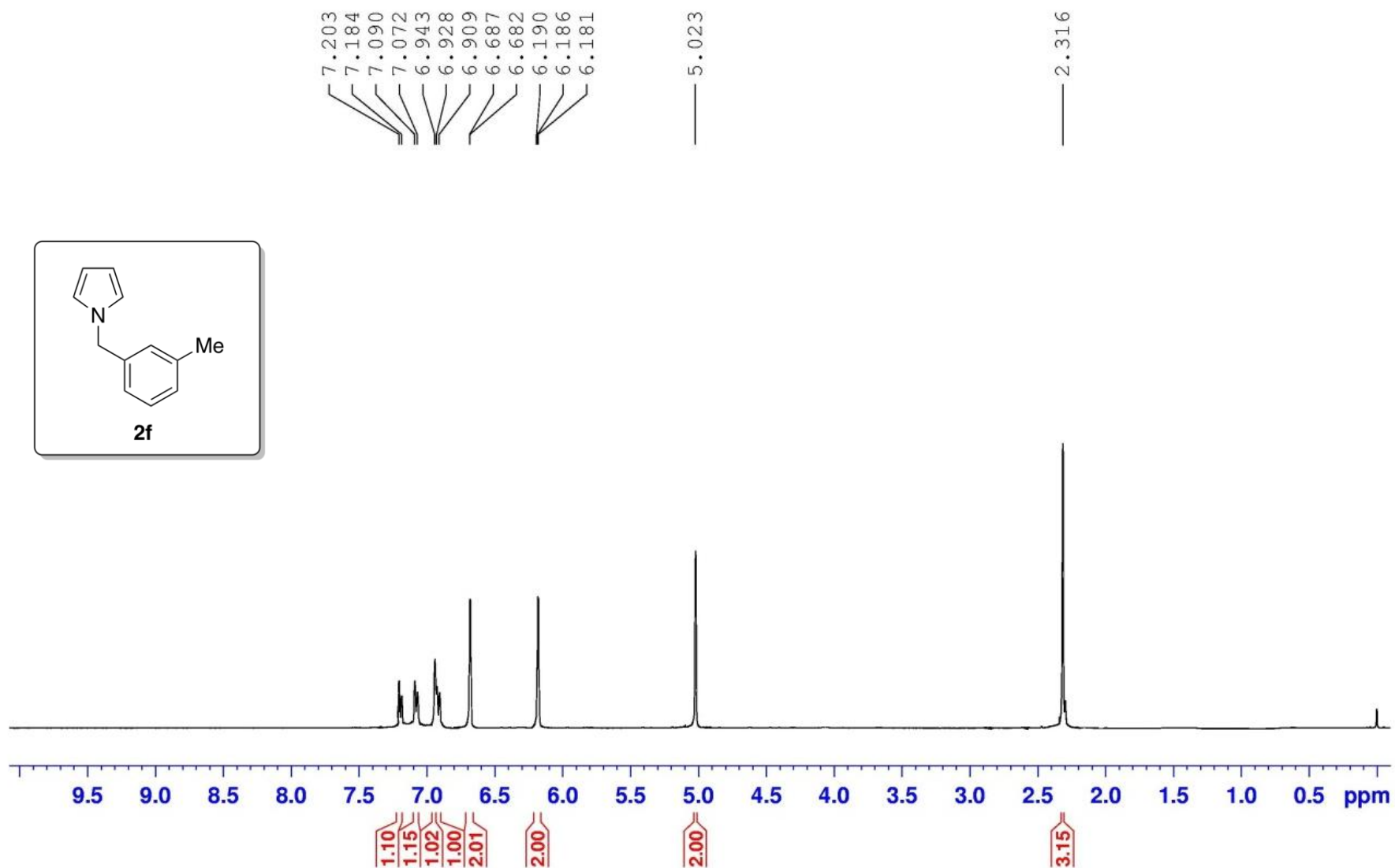
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(4-methylbenzyl)-1*H*-pyrrole (**2e**)



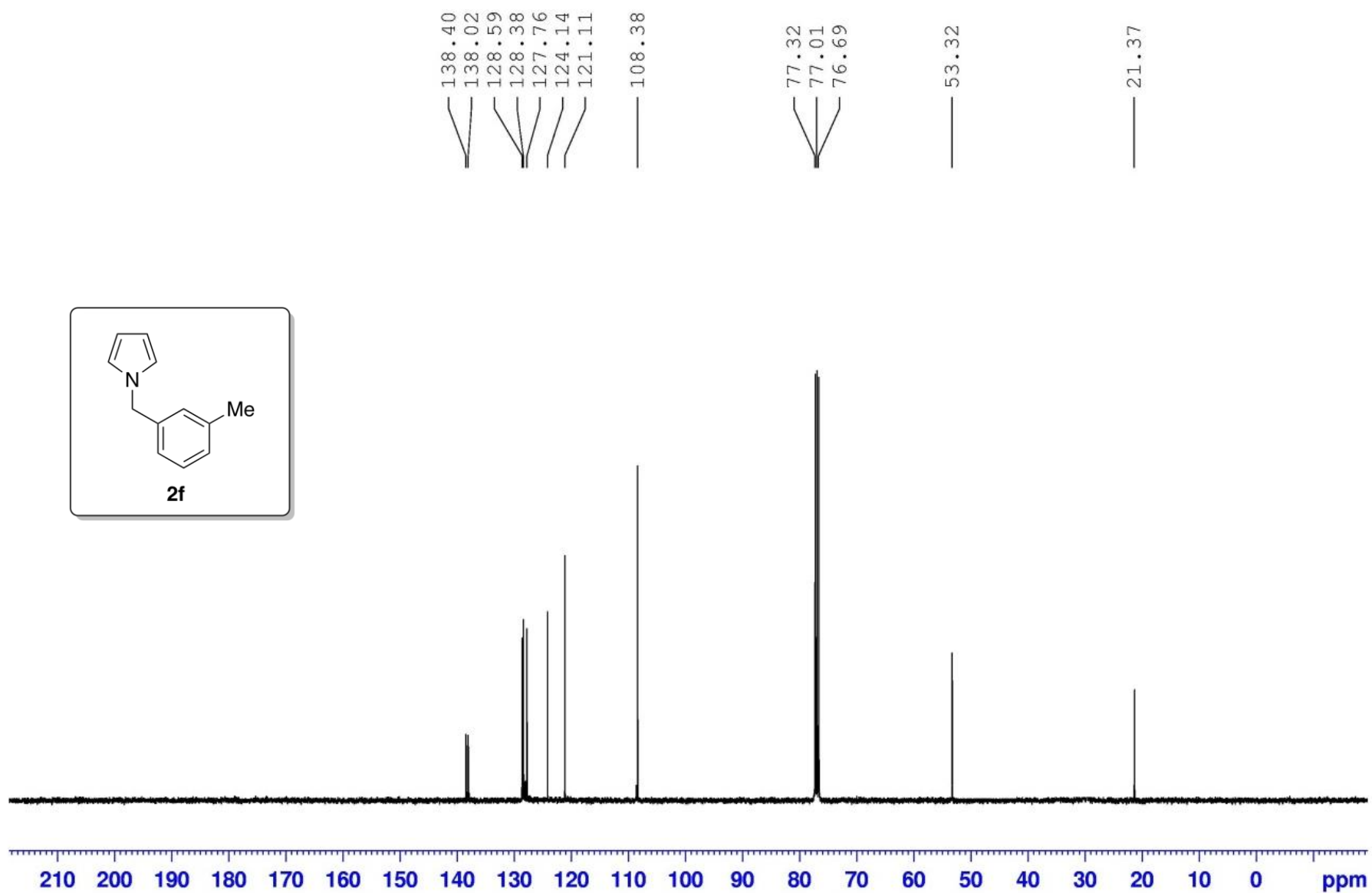
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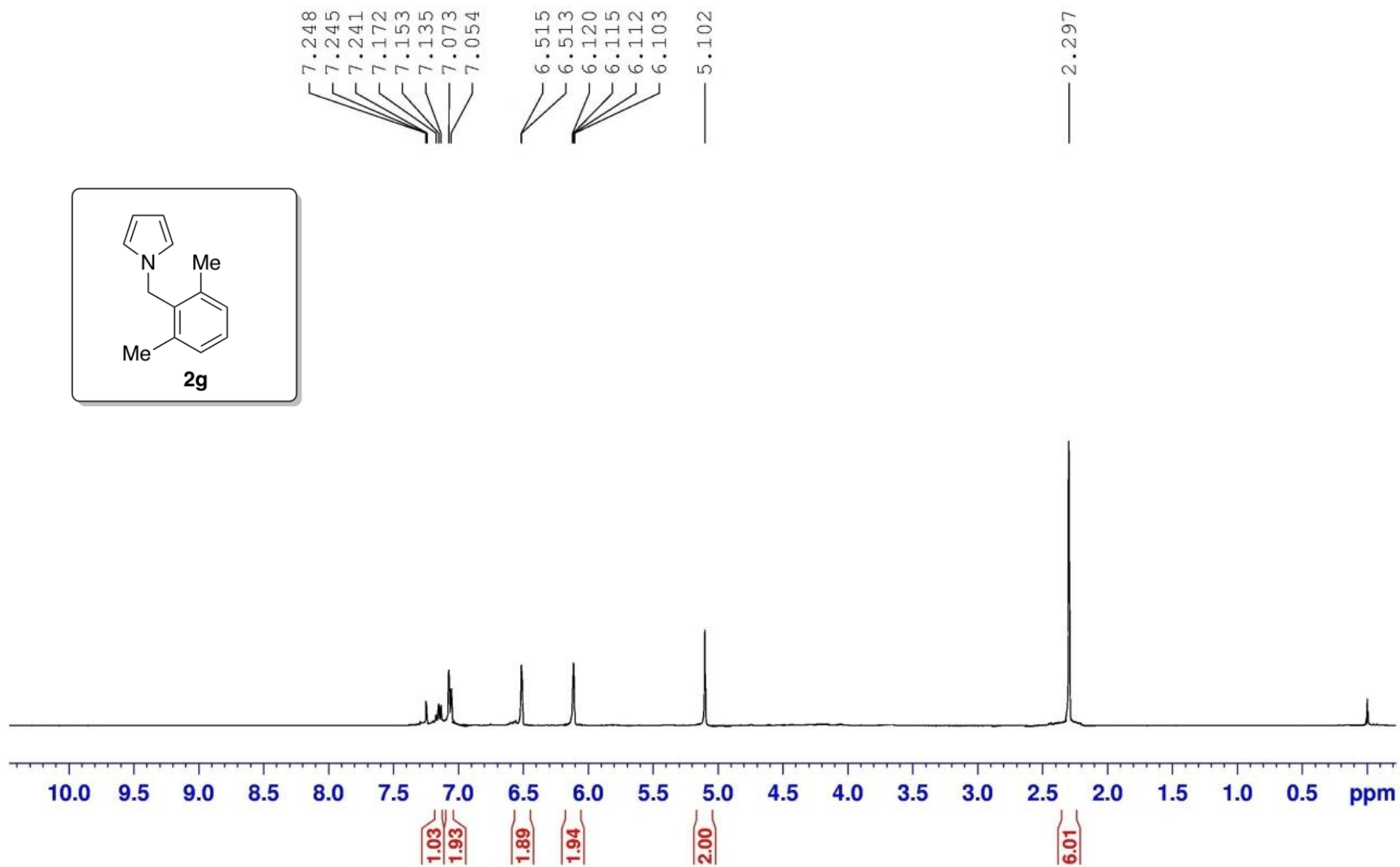
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(3-methylbenzyl)-1*H*-pyrrole (**2f**)



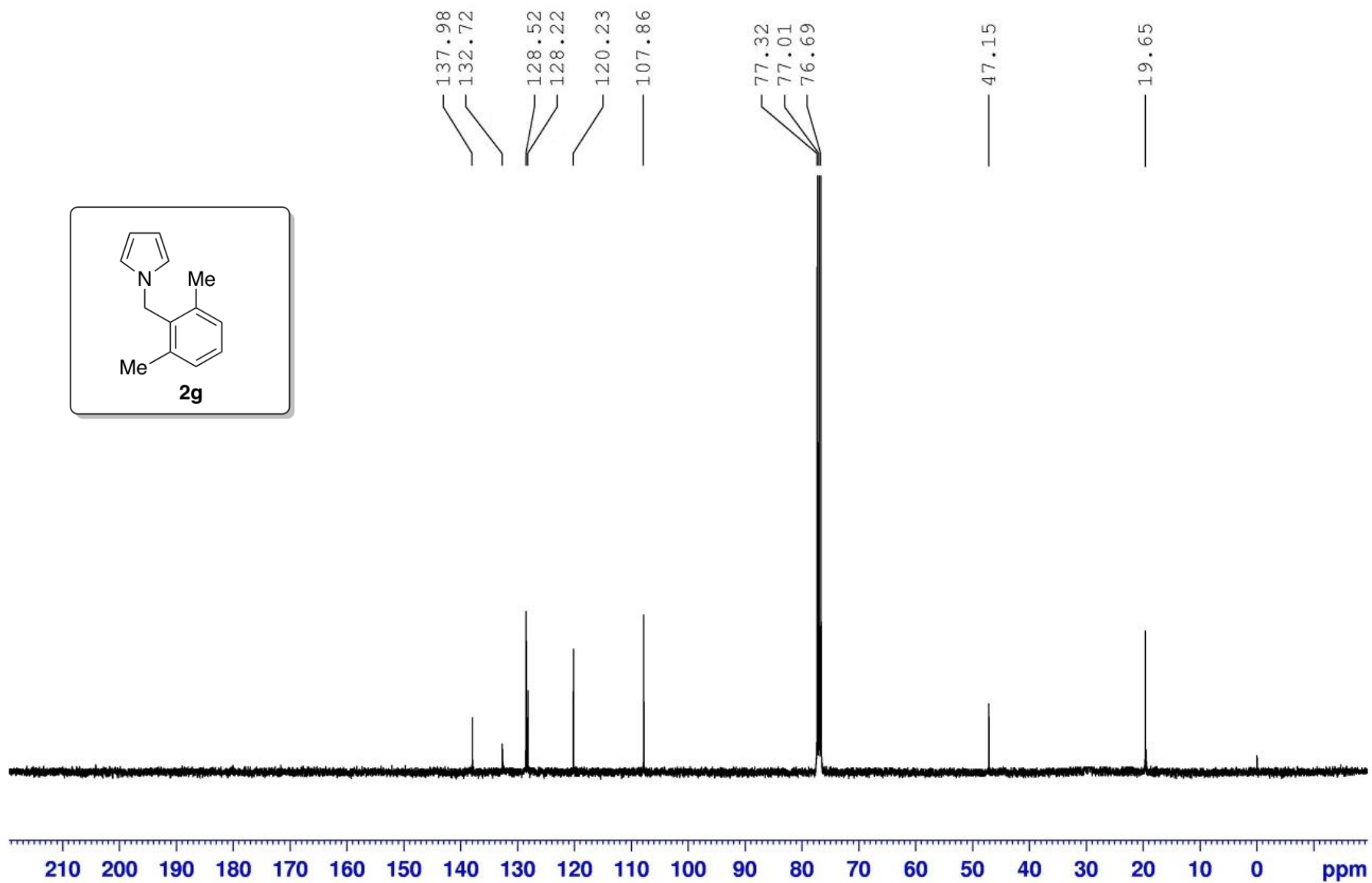
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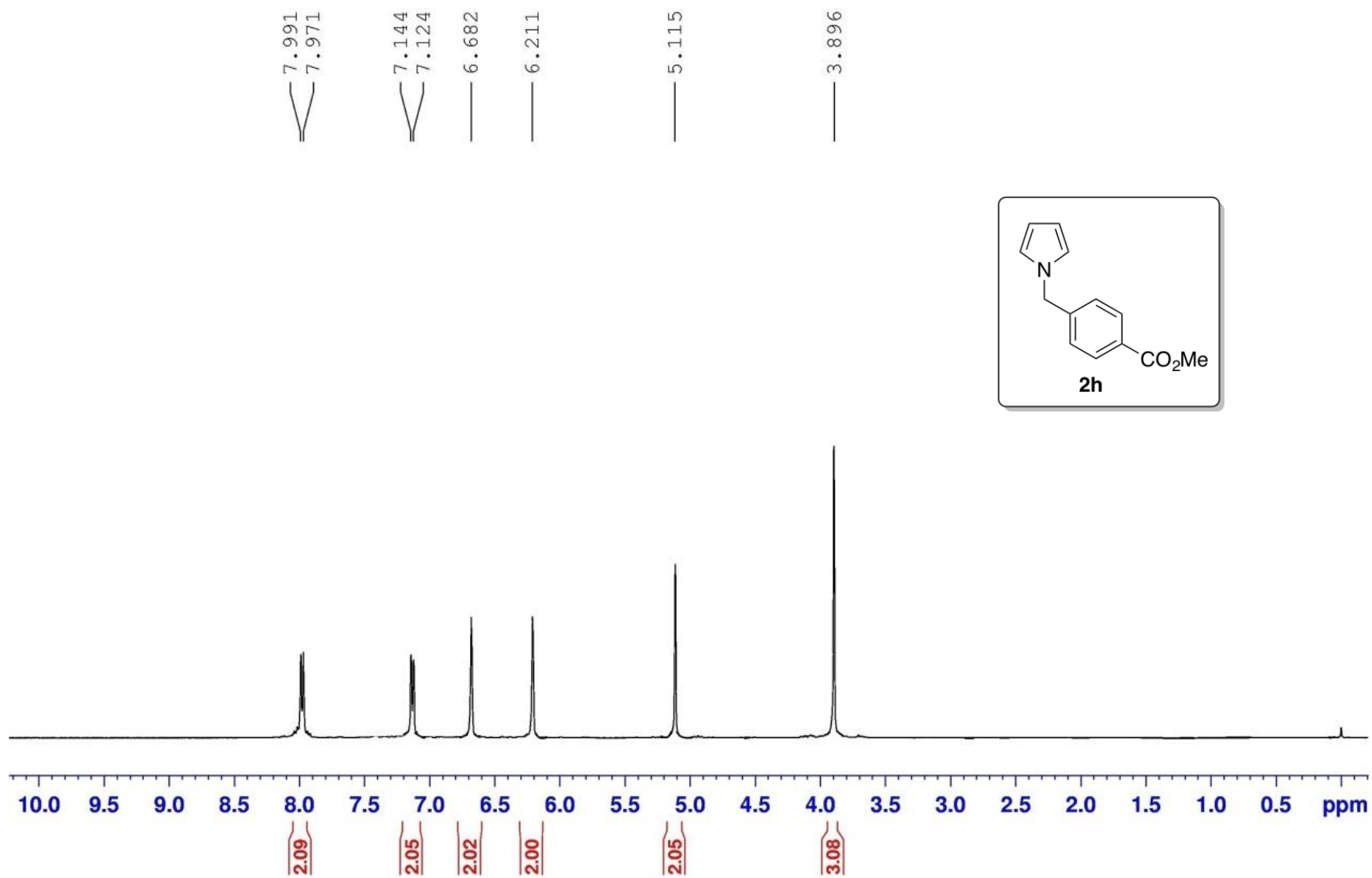
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(2,6-dimethylbenzyl)-1H-pyrrole (**2g**)



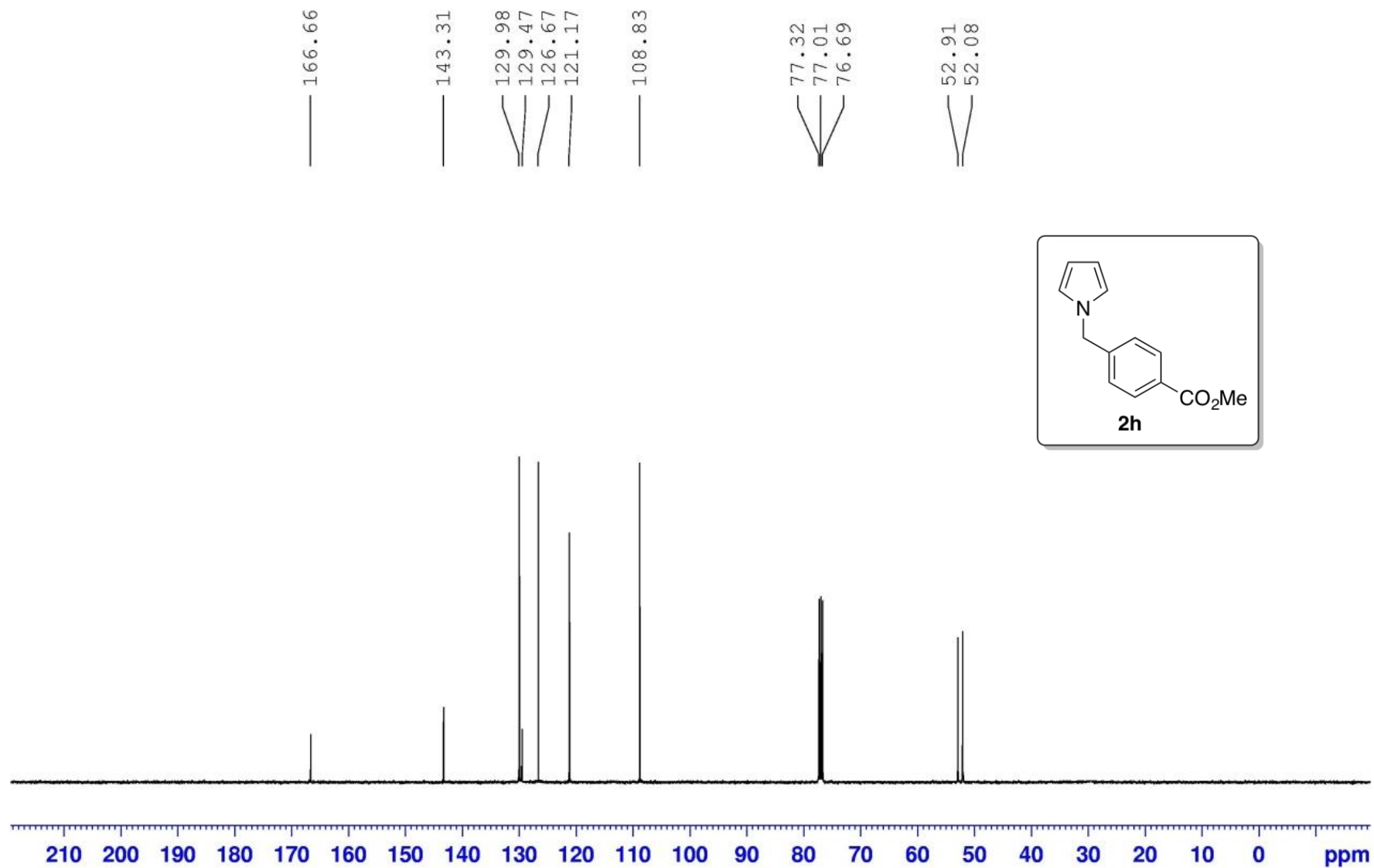
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 1-(2,6-dimethylbenzyl)-1H-pyrrole (**2g**)



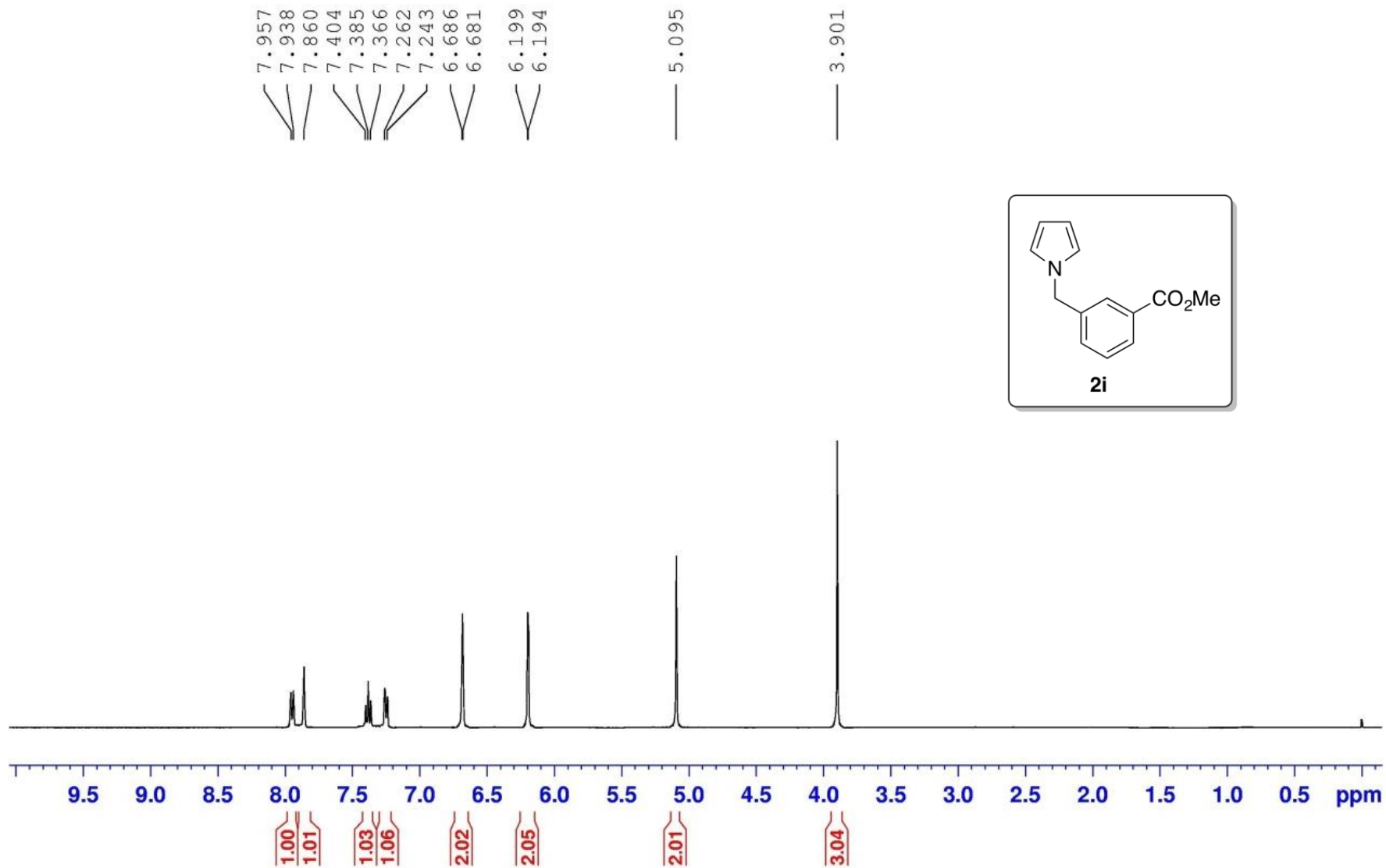
^1H NMR (CDCl_3 , 400 MHz) spectrum of methyl 4-((1*H*-pyrrol-1-yl)methyl)benzoate (**2h**)



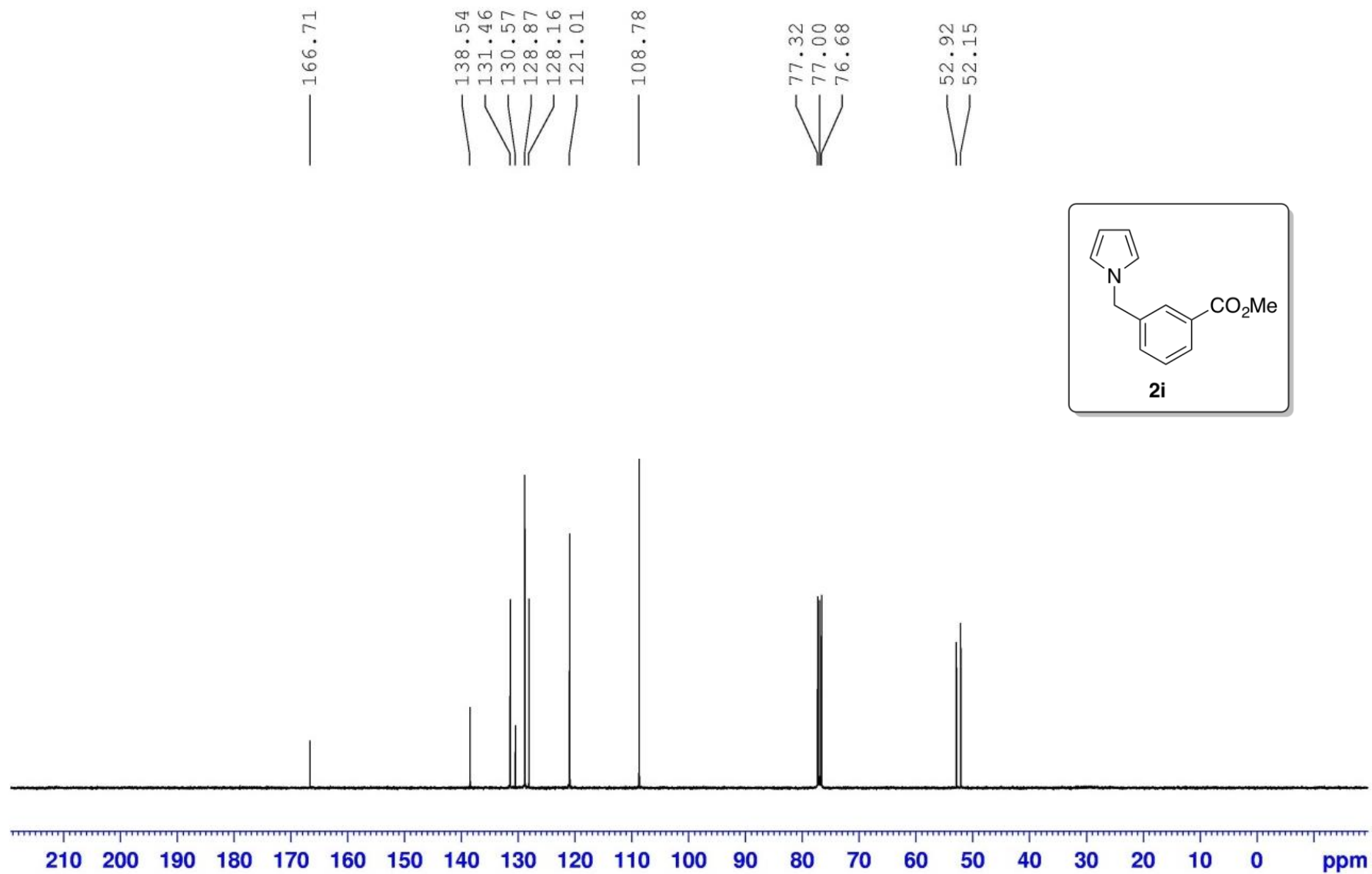
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of methyl 4-((1*H*-pyrrol-1-yl)methyl)benzoate (**2h**)



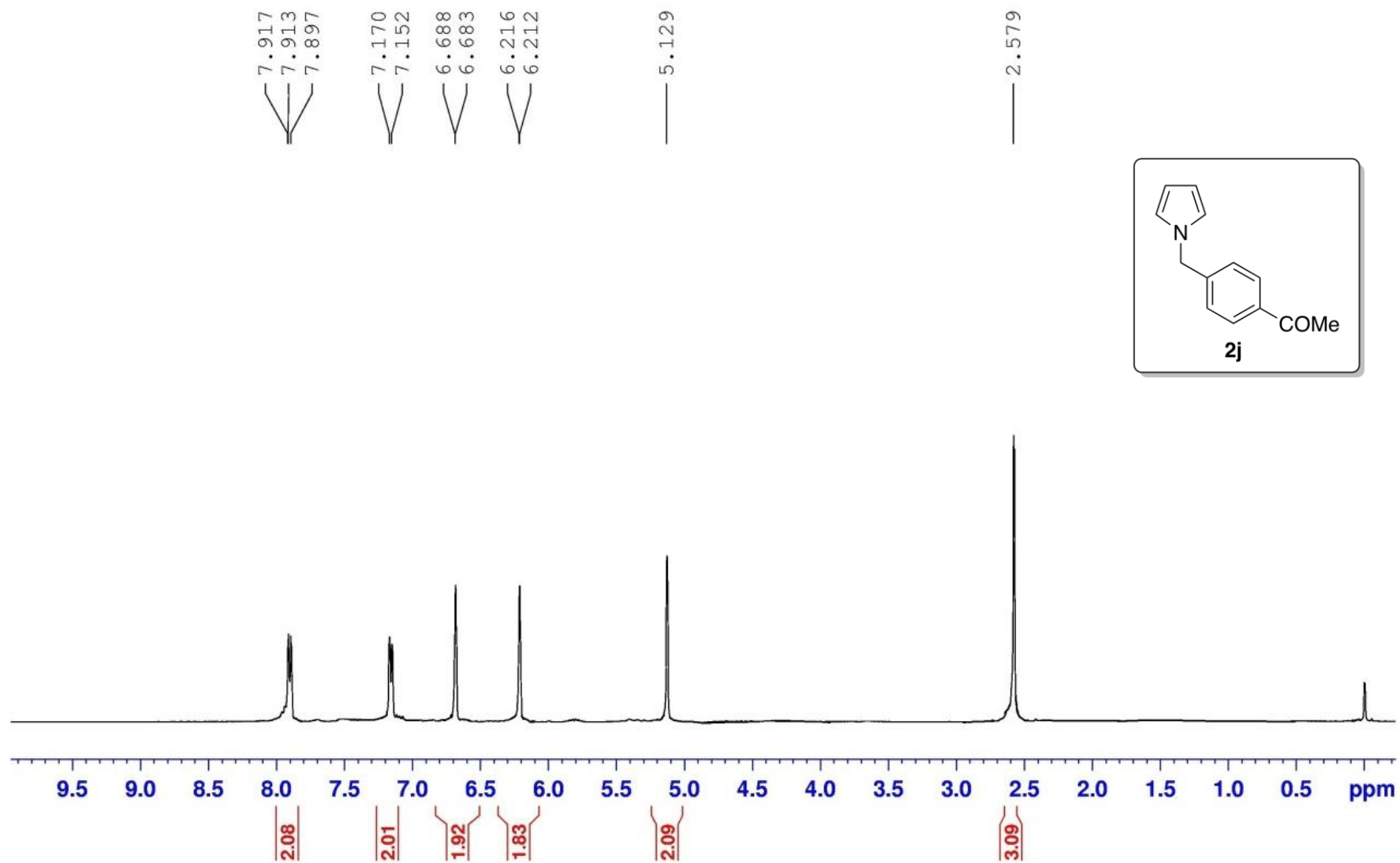
^1H NMR (CDCl_3 , 400 MHz) spectrum of methyl 3-((1*H*-pyrrol-1-yl)methyl)benzoate (**2i**)



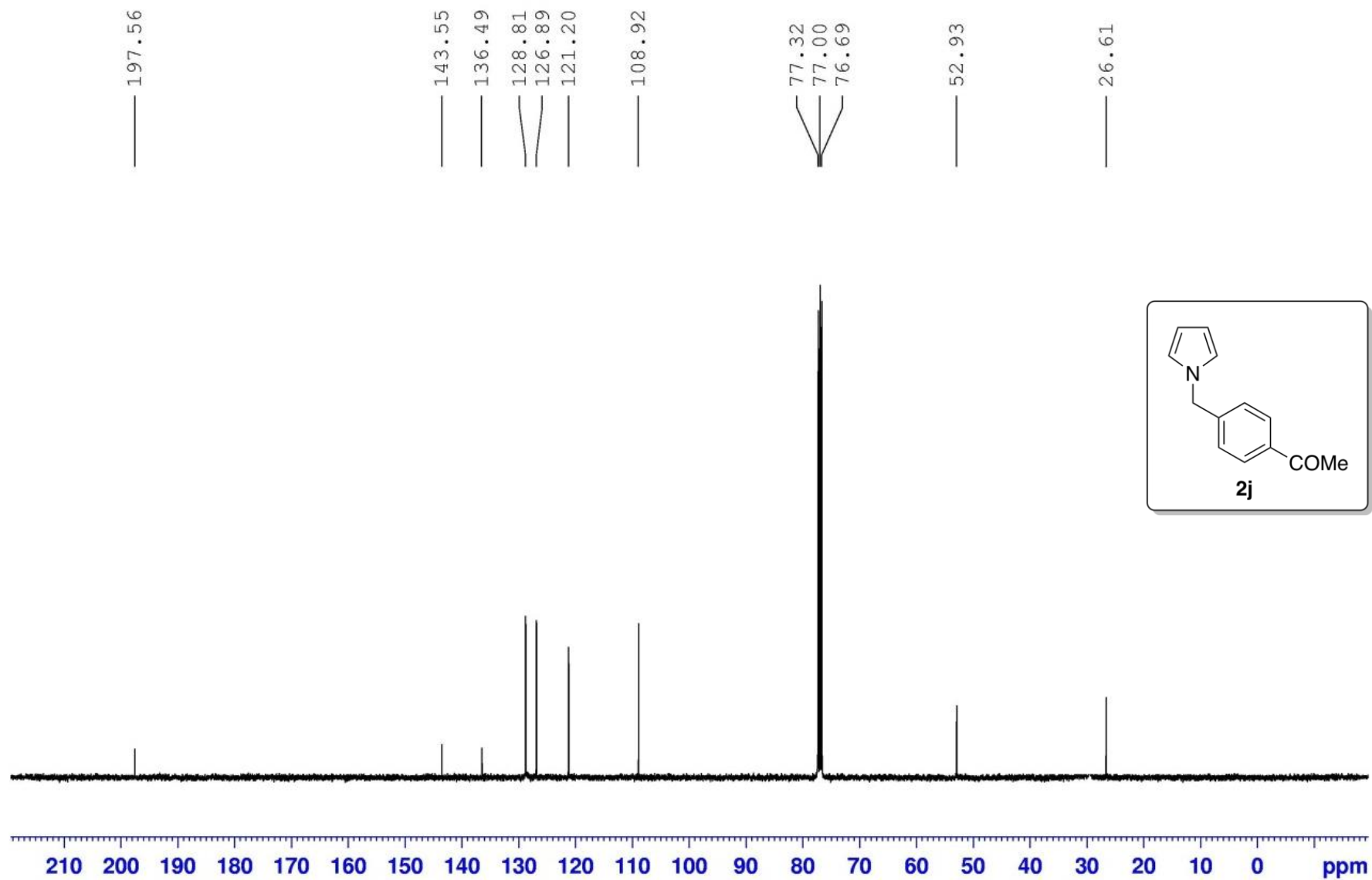
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of methyl 3-((1*H*-pyrrol-1-yl)methyl)benzoate (**2i**)



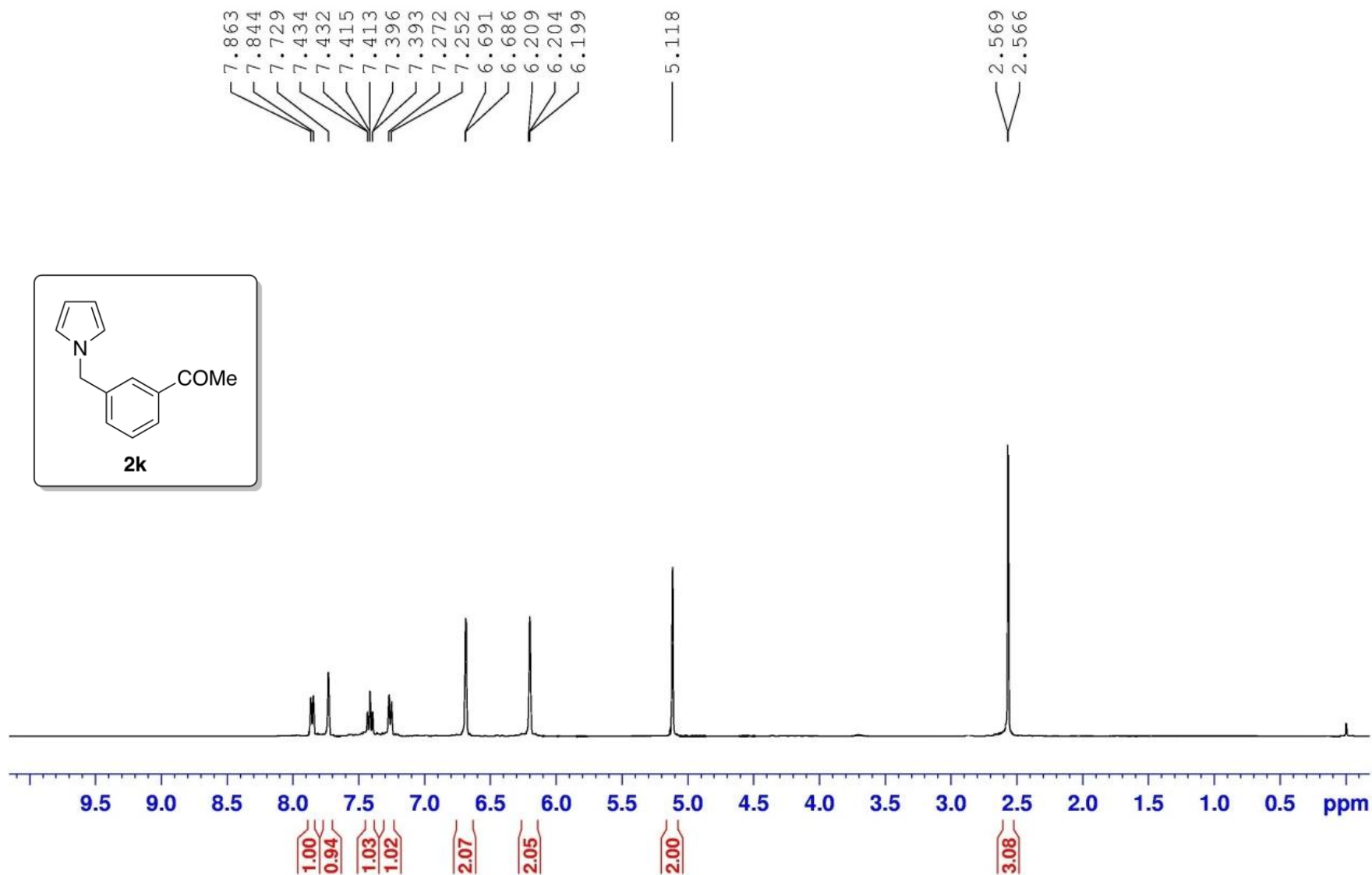
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(4-((1*H*-pyrrol-1-yl)methyl)phenyl)ethanone (**2j**)



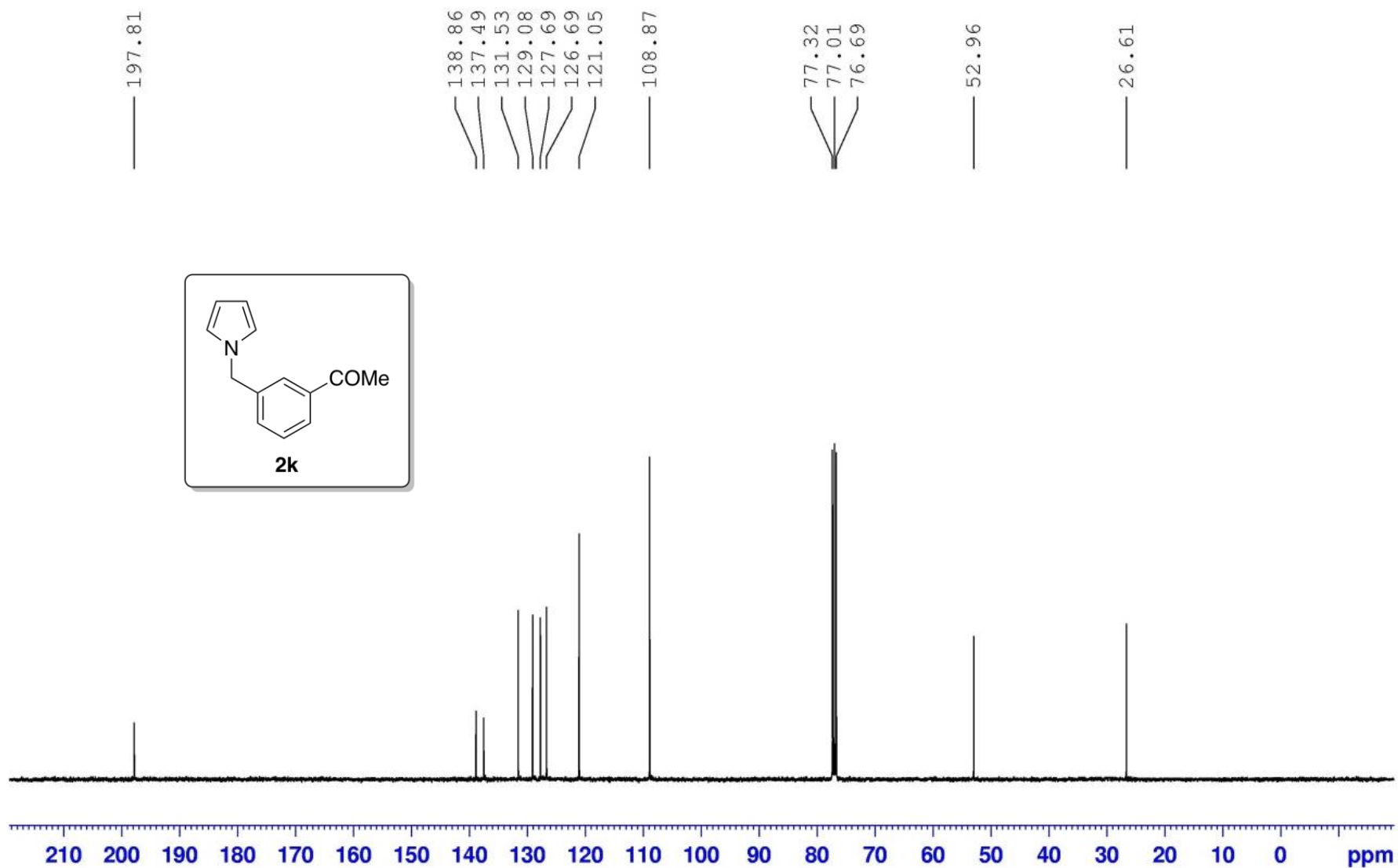
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 1-(4-((1*H*-pyrrol-1-yl)methyl)phenyl)ethanone (**2j**)



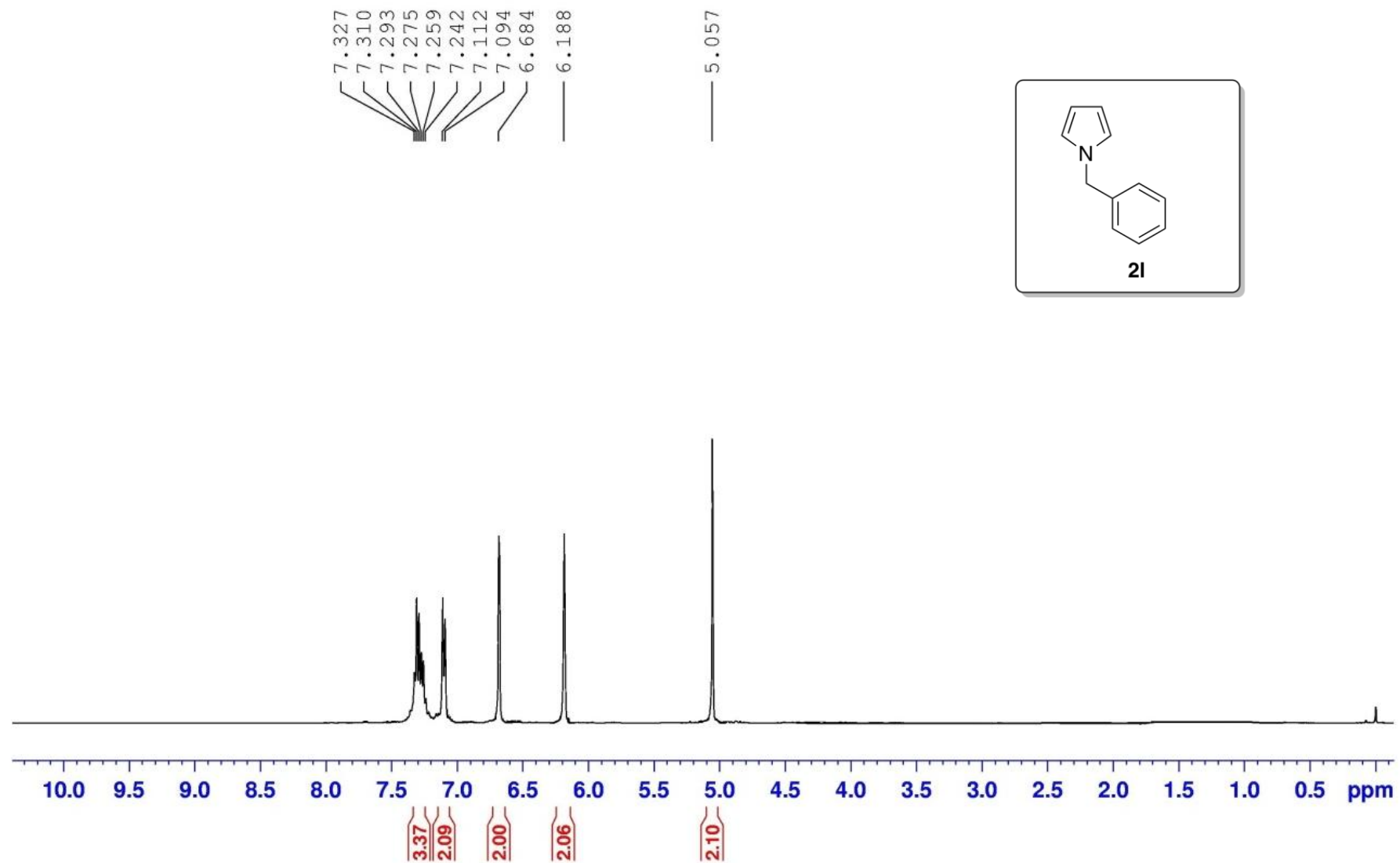
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(3-((1*H*-pyrrol-1-yl)methyl)phenyl)ethanone (**2k**)



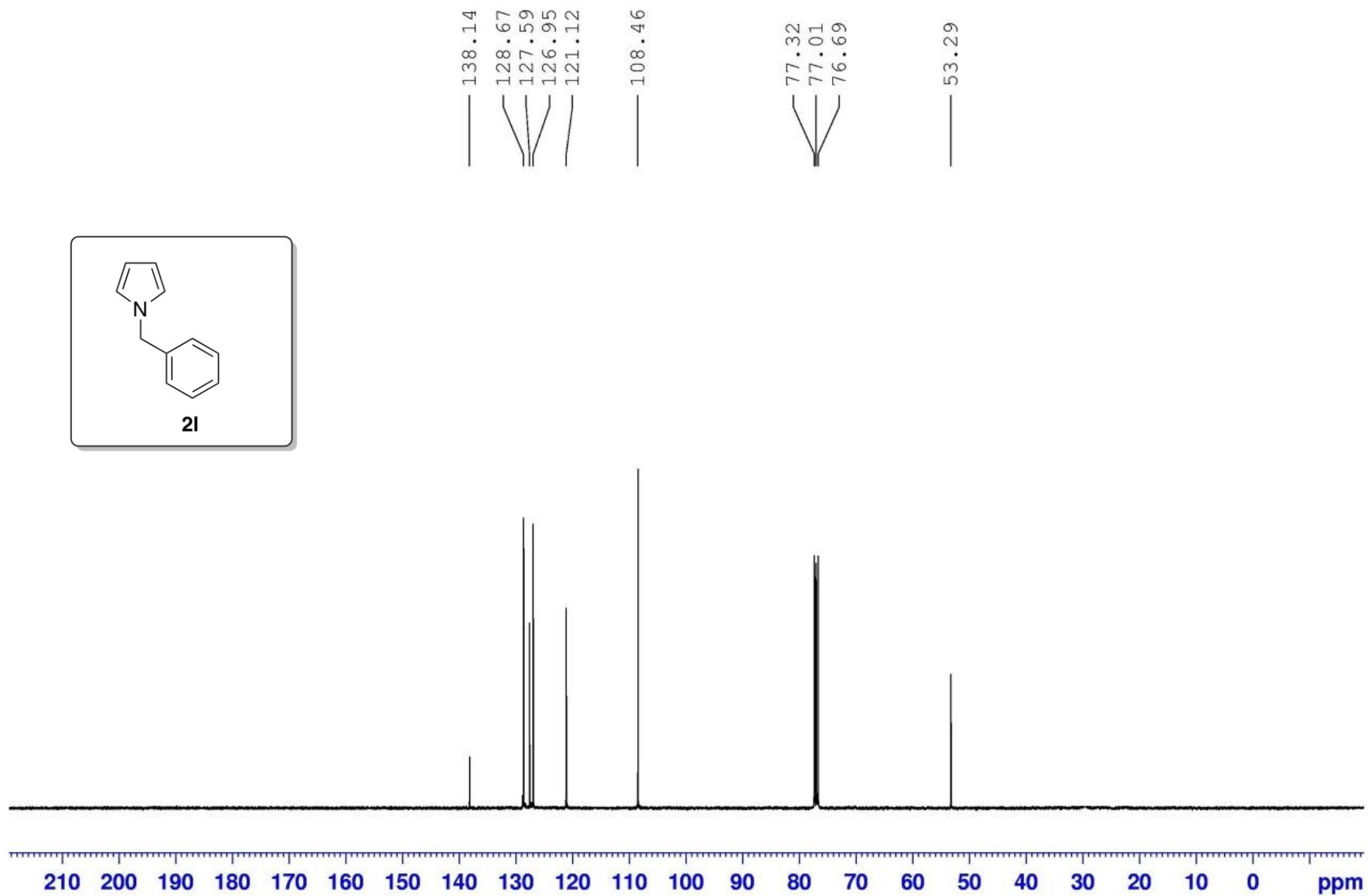
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 1-(3-((1*H*-pyrrol-1-yl)methyl)phenyl)ethanone (**2k**)



^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-benzyl-1*H*-pyrrole (**21**)

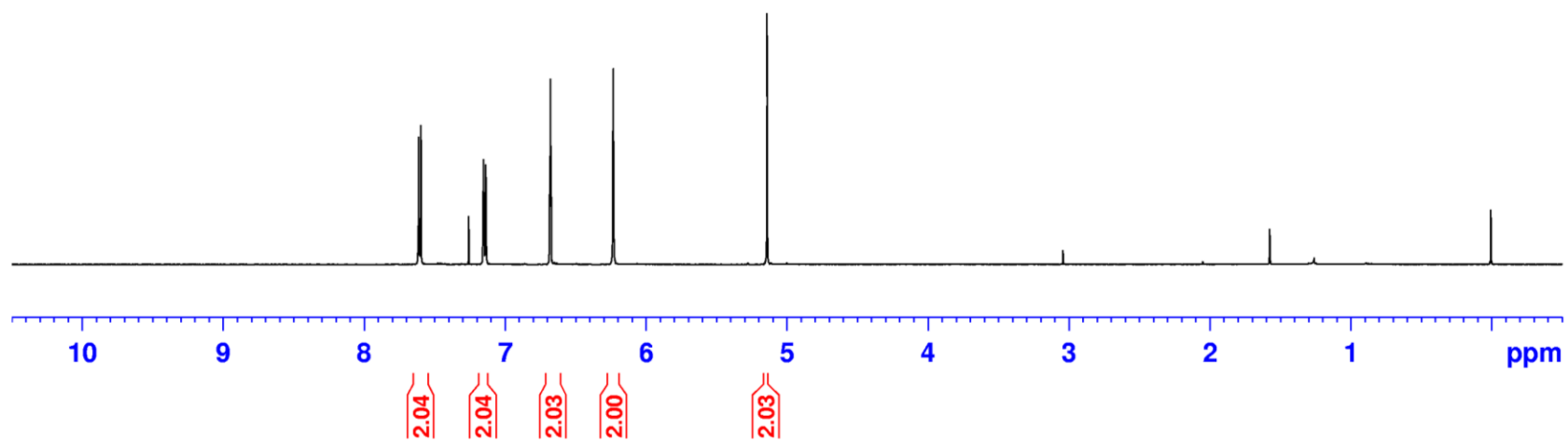
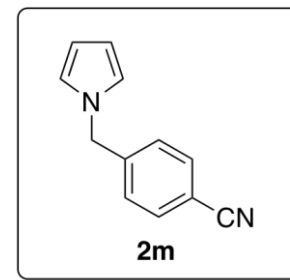


^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 1-benzyl-1*H*-pyrrole (**21**)

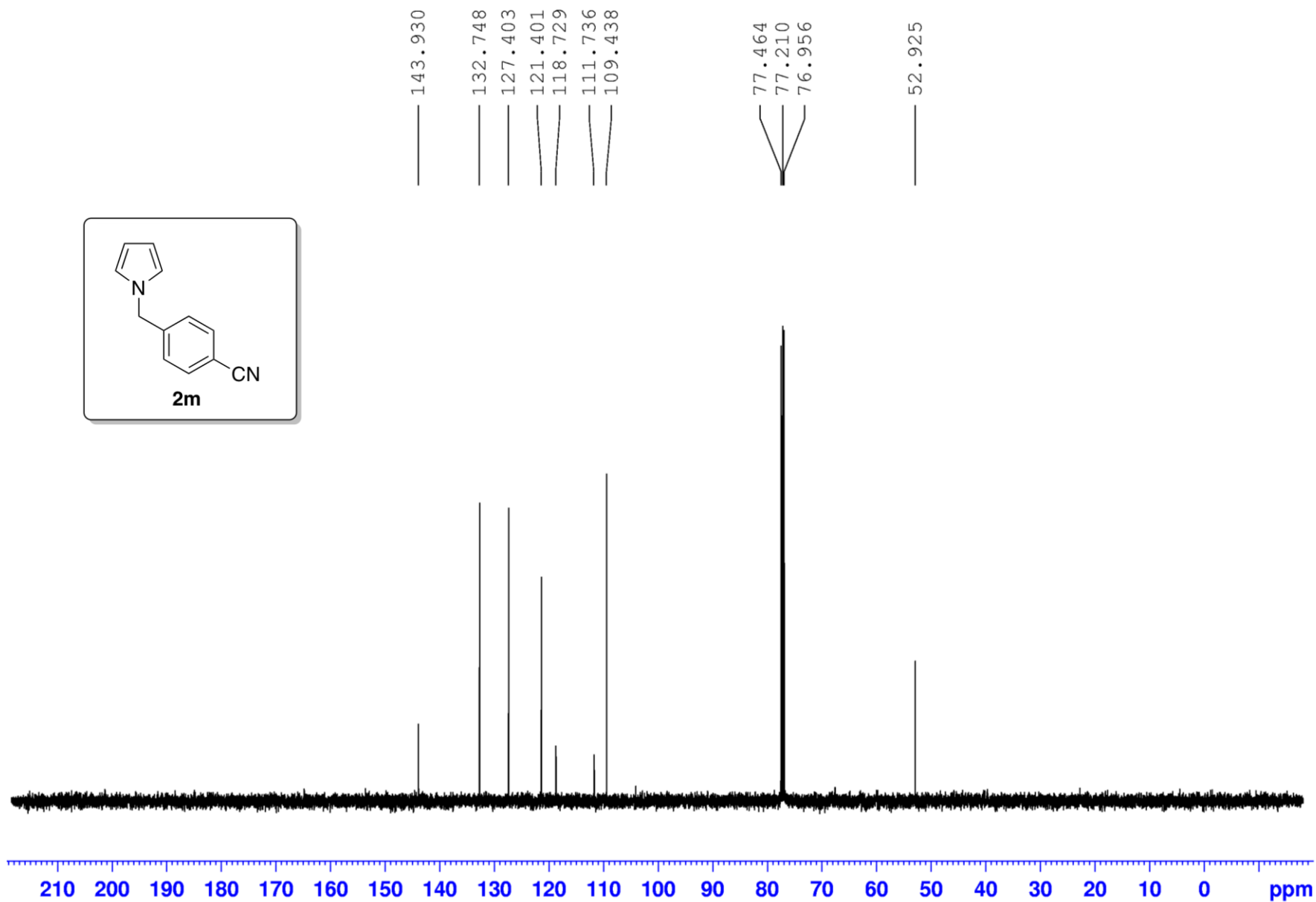


^1H NMR (CDCl_3 , 500 MHz) spectrum of 4-((1*H*-pyrrol-1-yl)methyl)benzonitrile (**2m**)

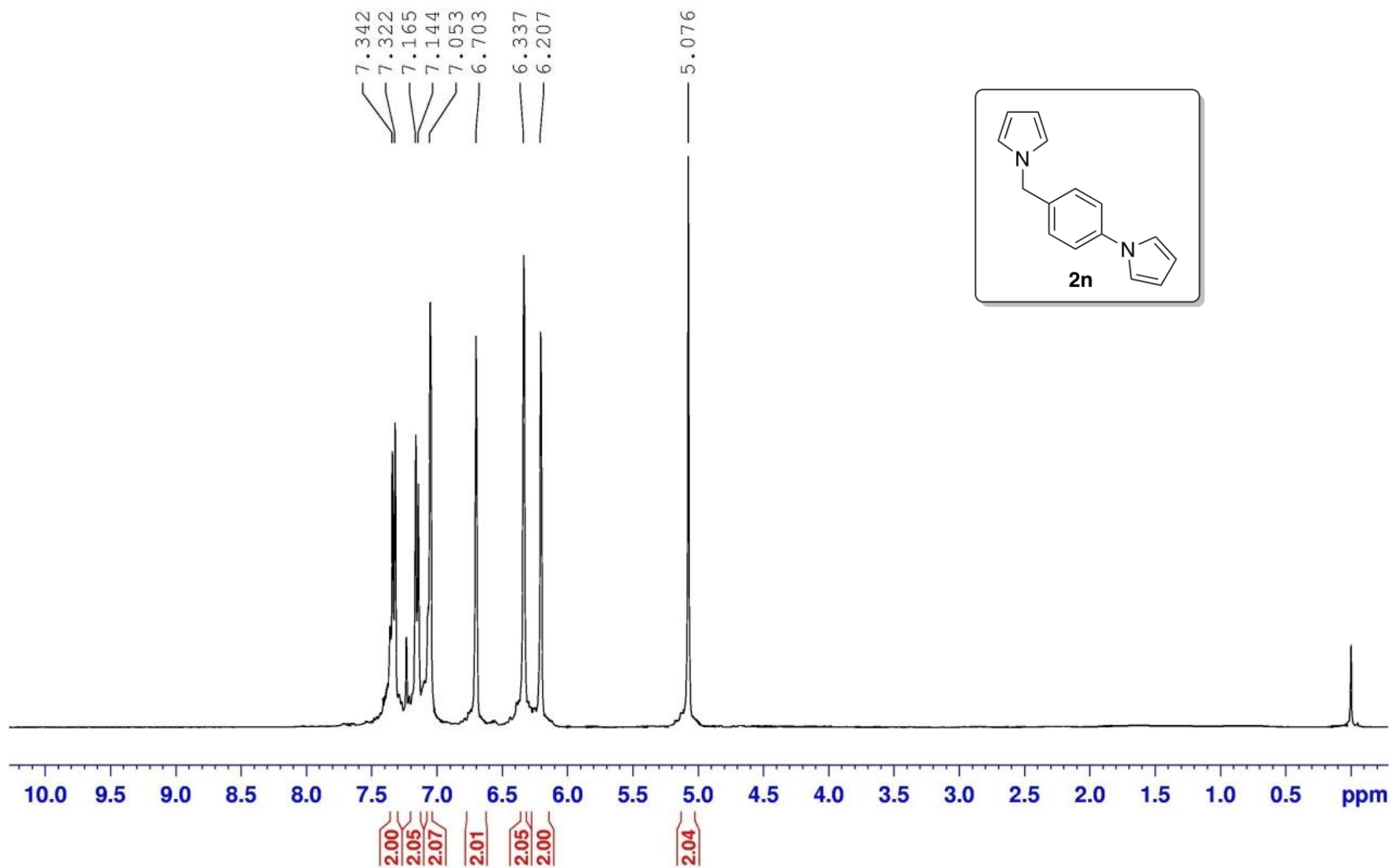
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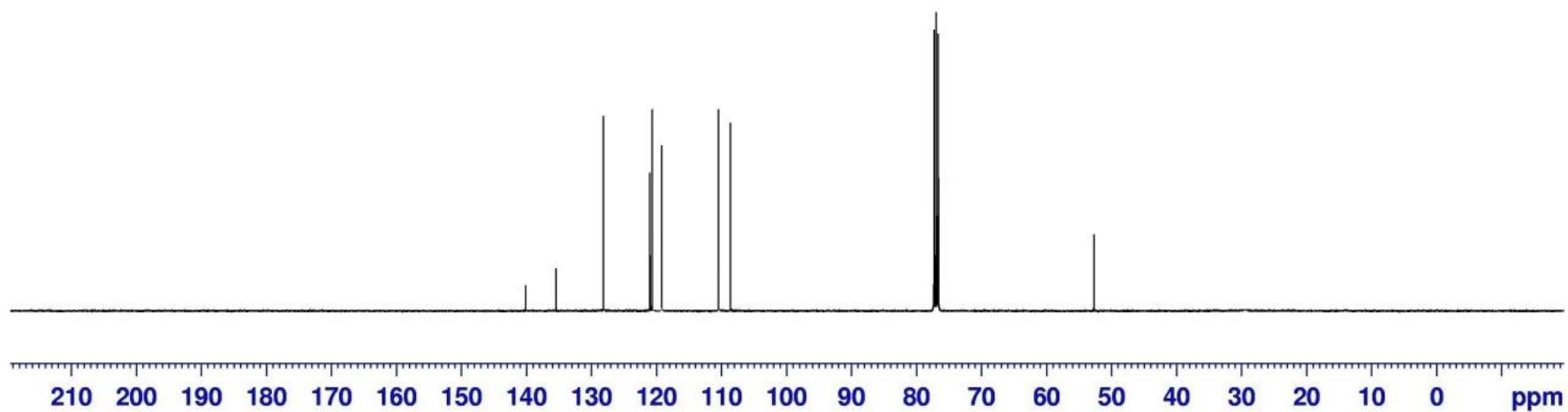
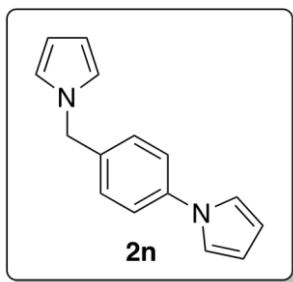
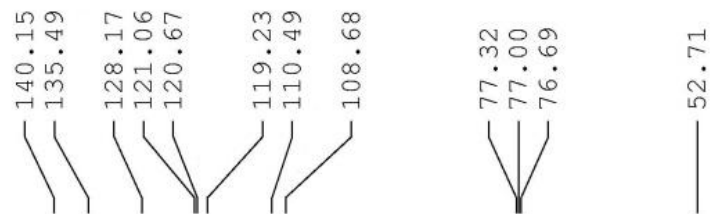
^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 4-((1*H*-pyrrol-1-yl)methyl)benzonitrile (**2m**)



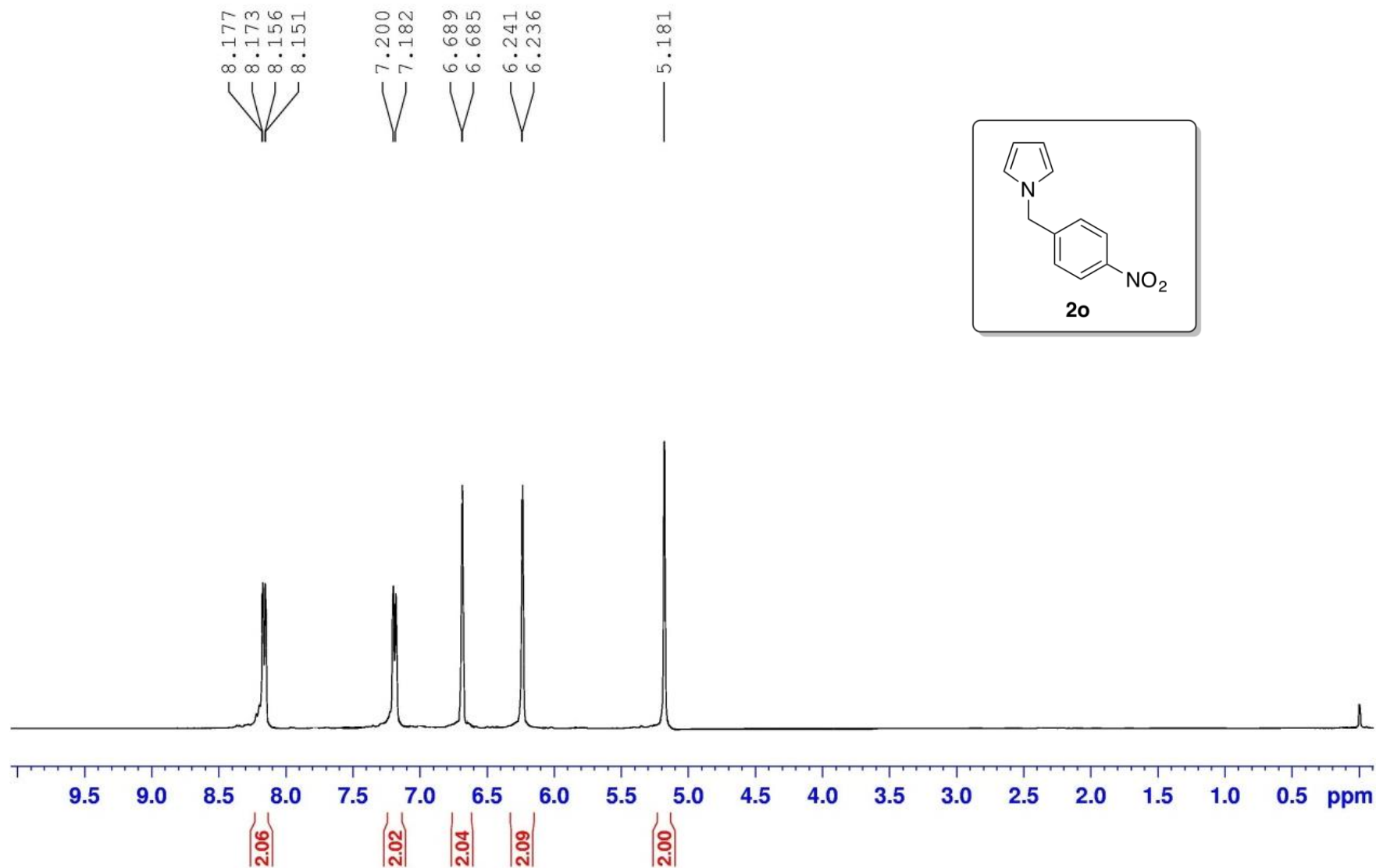
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(4-(1*H*-pyrrol-1-yl)benzyl)-1*H*-pyrrole (**2n**)



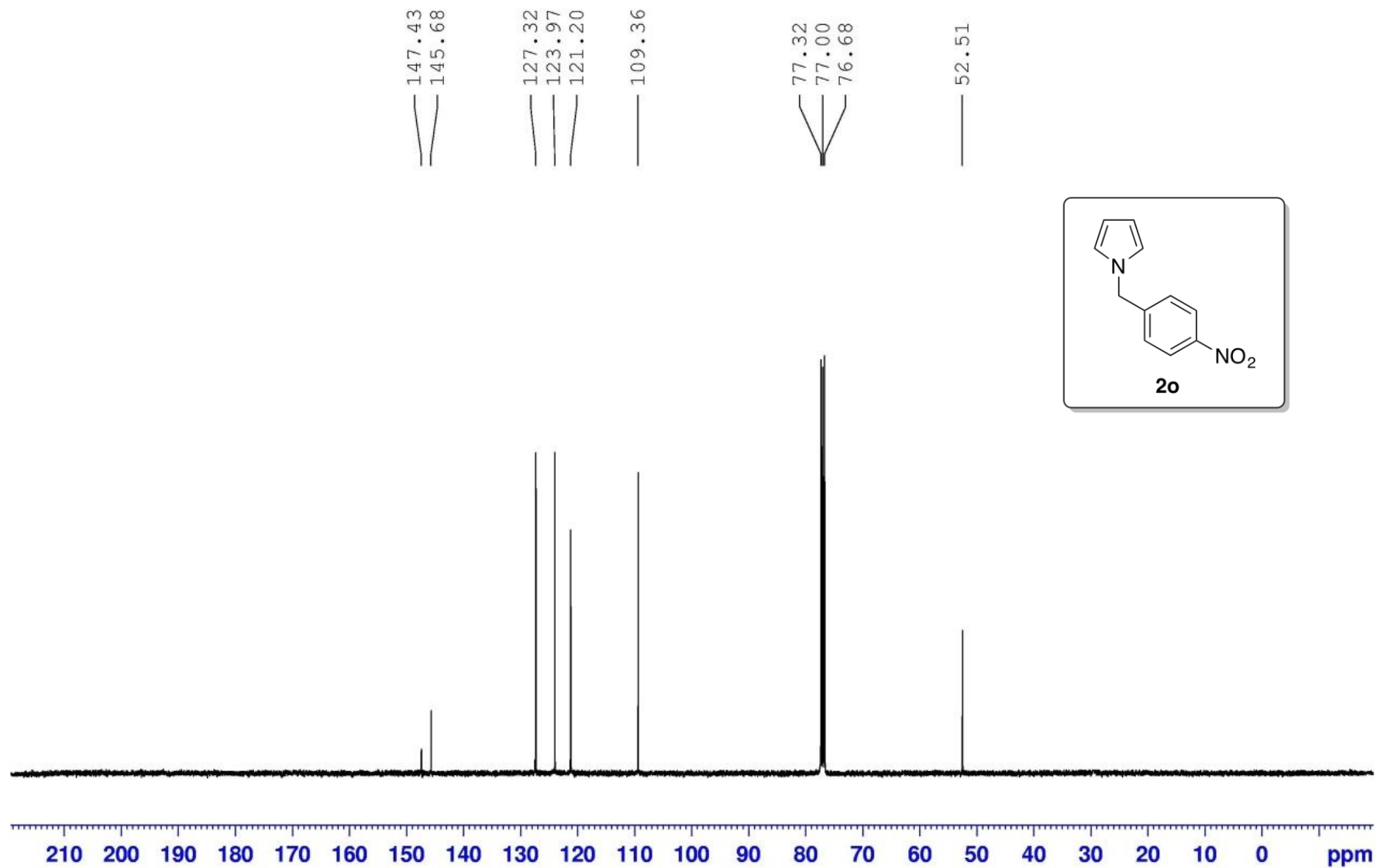
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 1-(4-(1*H*-pyrrol-1-yl)benzyl)-1*H*-pyrrole (**2n**)



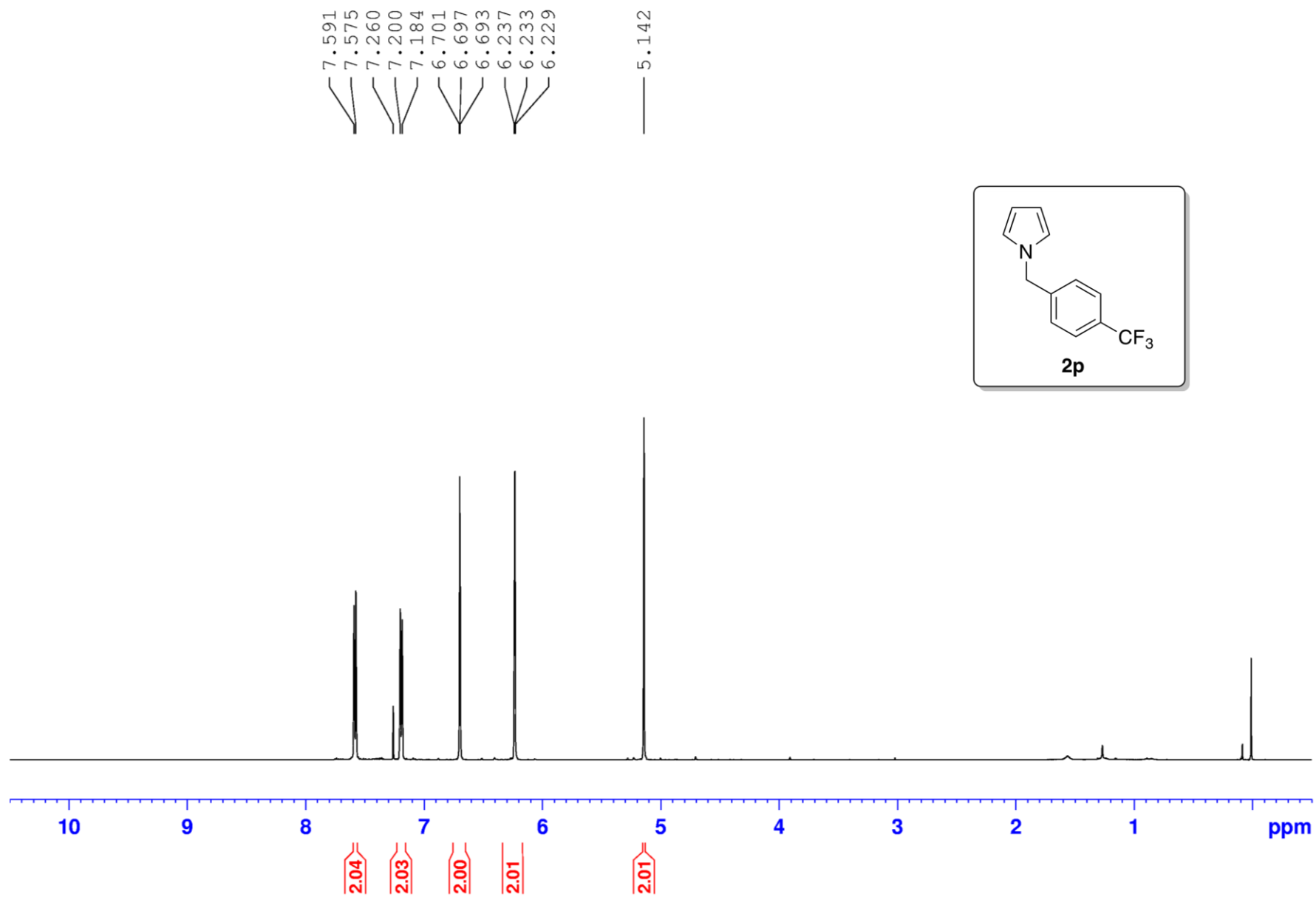
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(4-nitrobenzyl)-1*H*-pyrrole (**2o**)



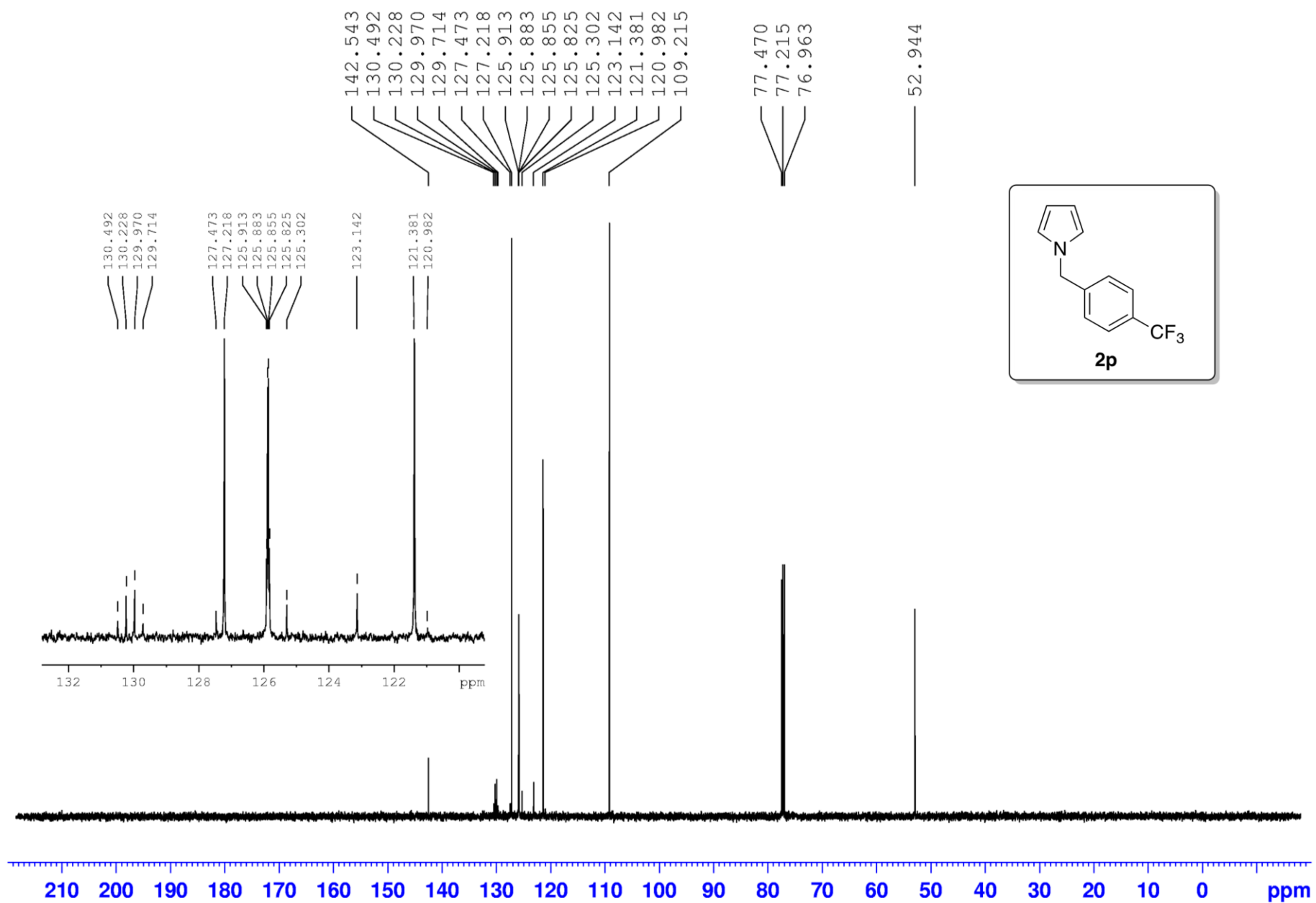
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 1-(4-nitrobenzyl)-1H-pyrrole (**2o**)



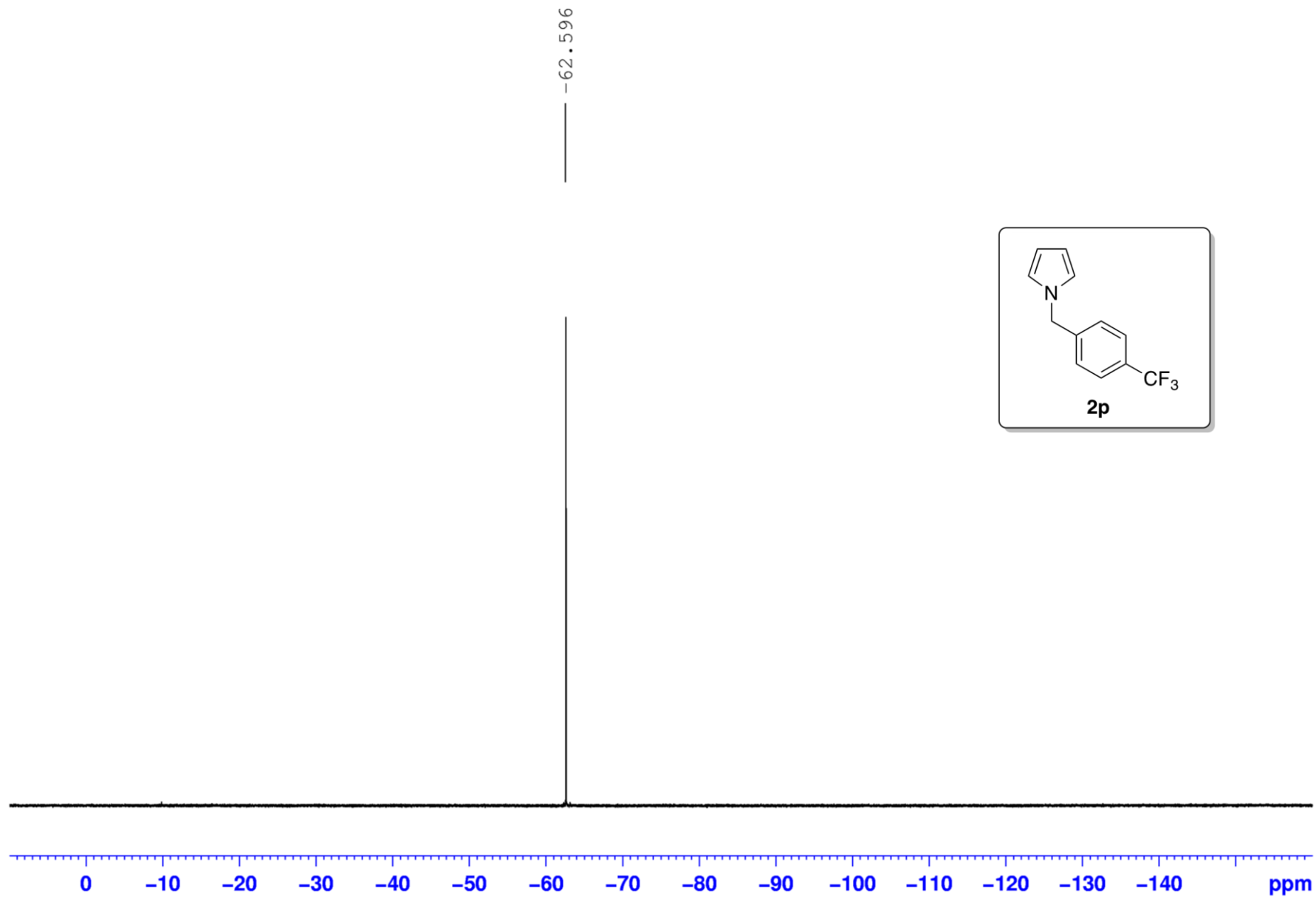
^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(4-(trifluoromethyl)benzyl)-1*H*-pyrrole (**2p**)



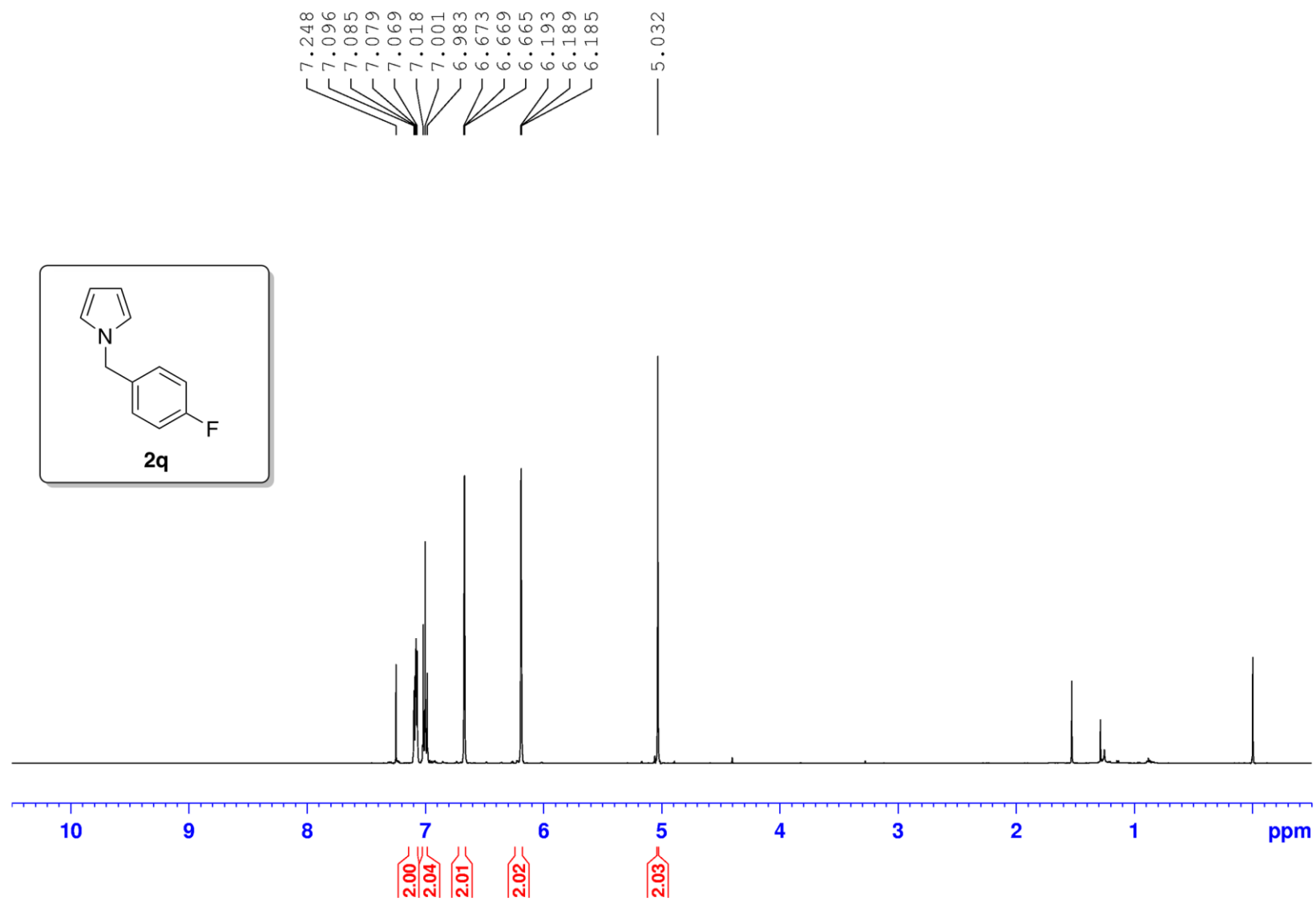
^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(4-(trifluoromethyl)benzyl)-1*H*-pyrrole (**2p**)



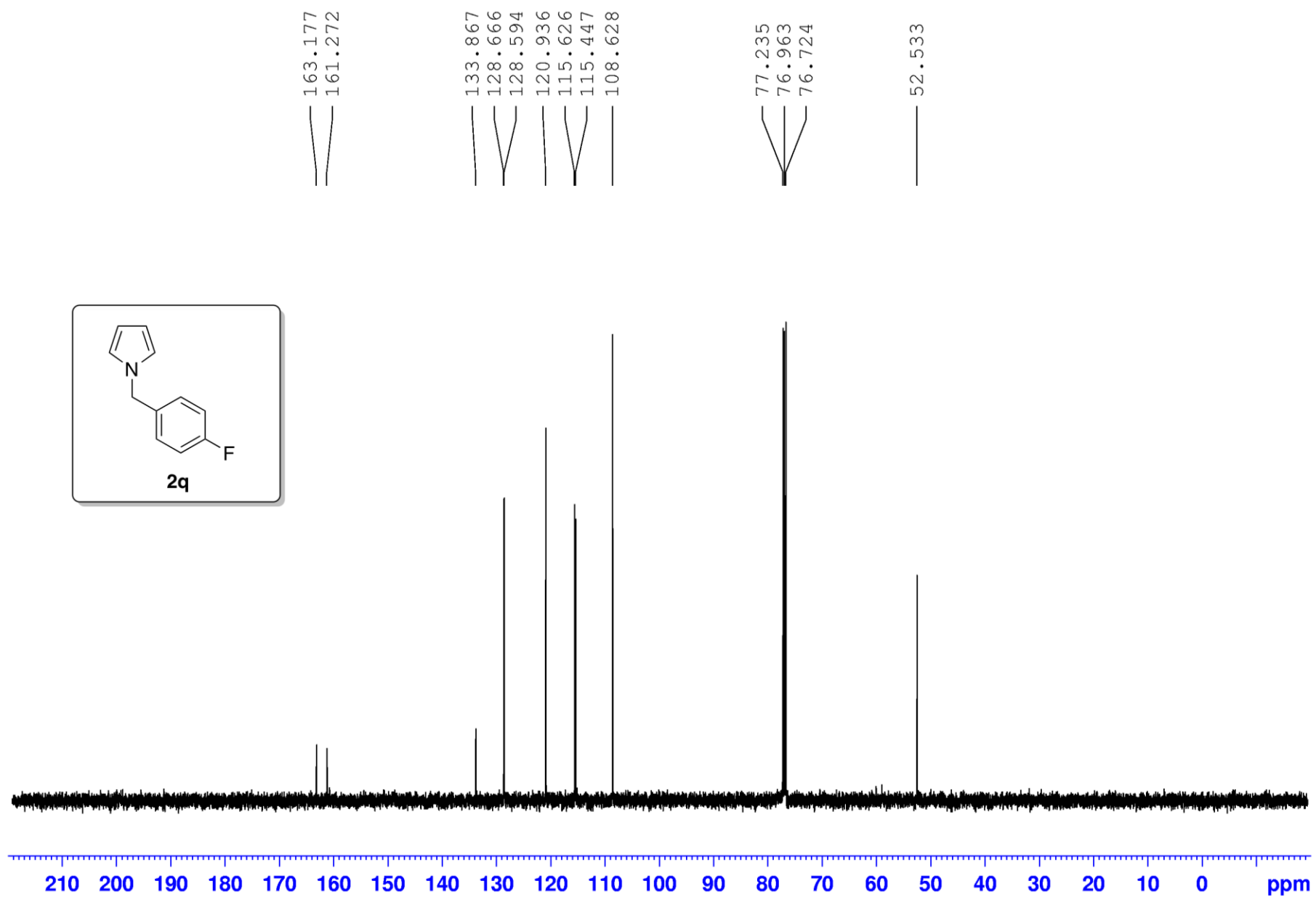
^{19}F NMR (CDCl_3 , 470.8 MHz) spectrum of 1-(4-(trifluoromethyl)benzyl)-1*H*-pyrrole (**2p**)



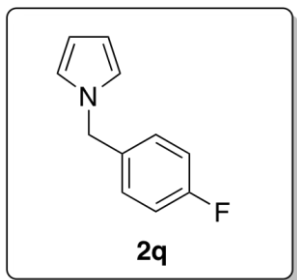
^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(4-fluorobenzyl)-1*H*-pyrrole (**2q**)



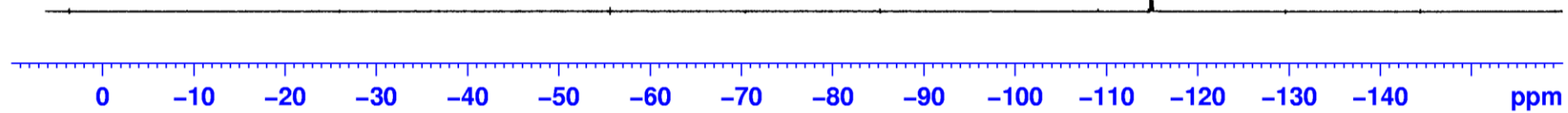
^{12}C NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(4-fluorobenzyl)-1H-pyrrole (**2q**)



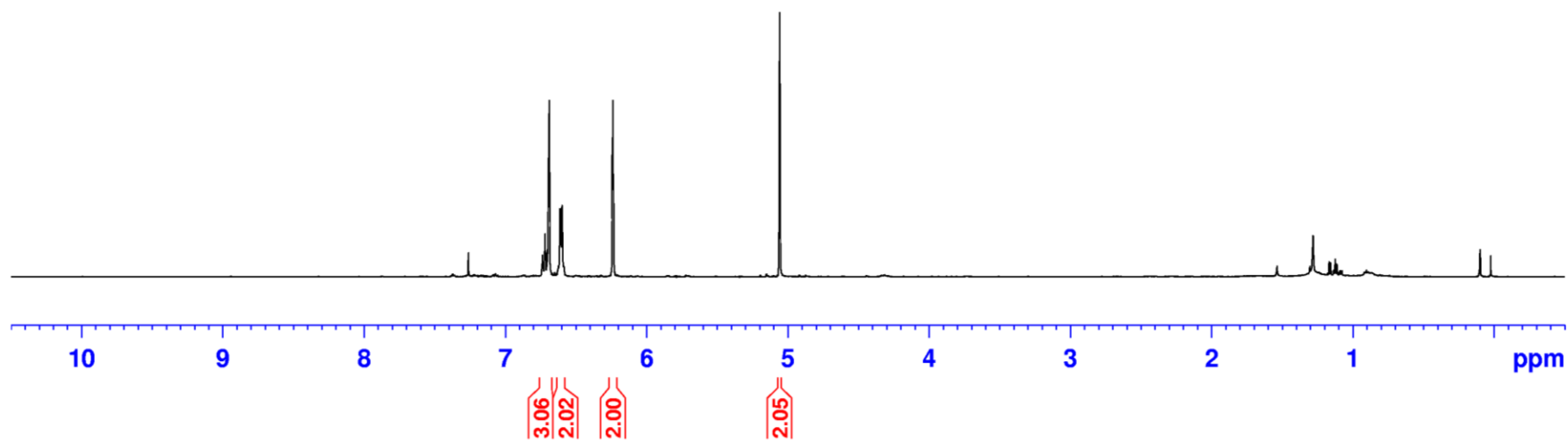
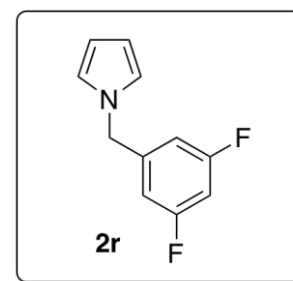
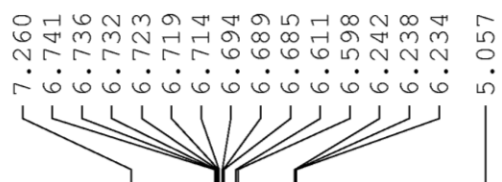
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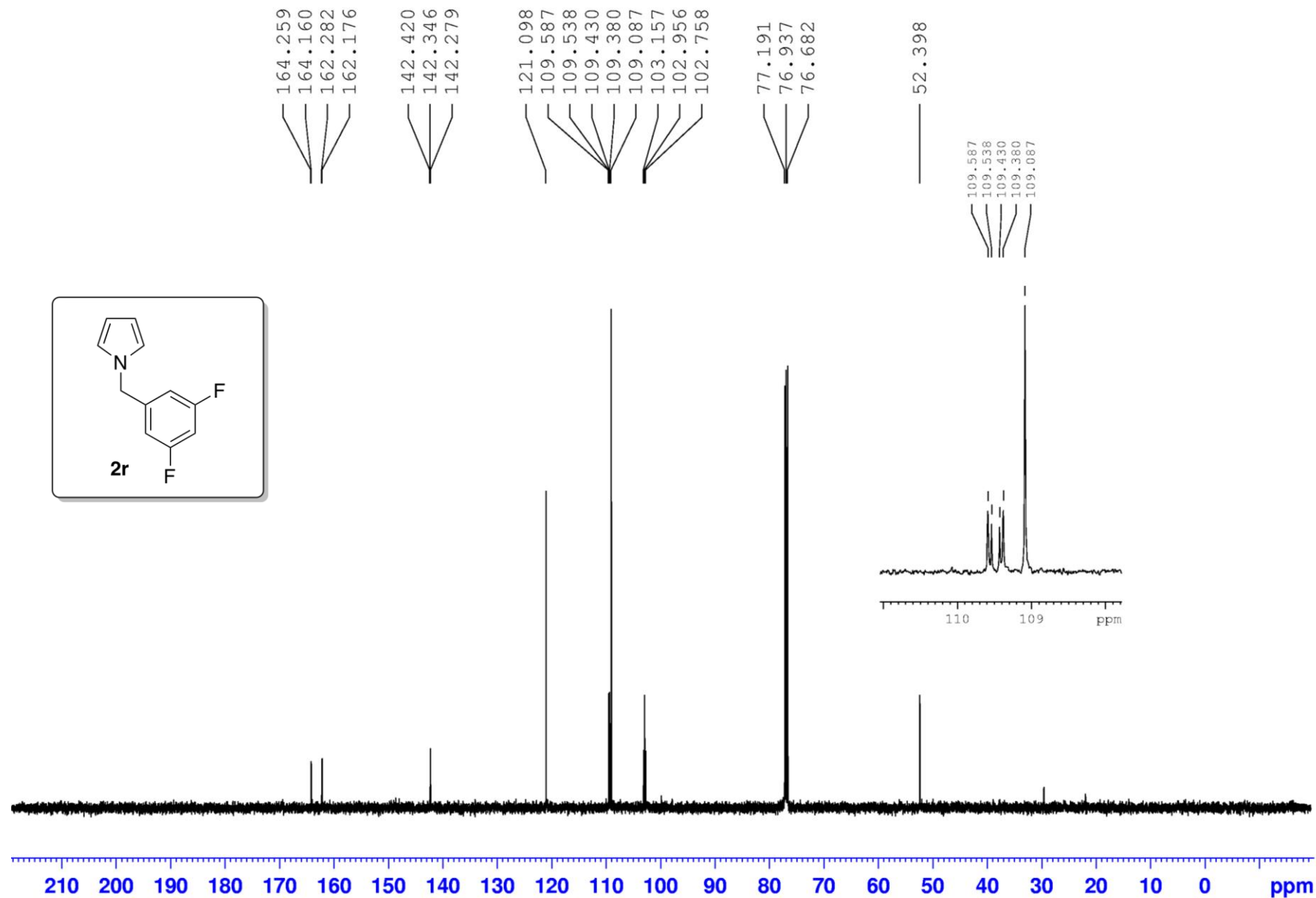
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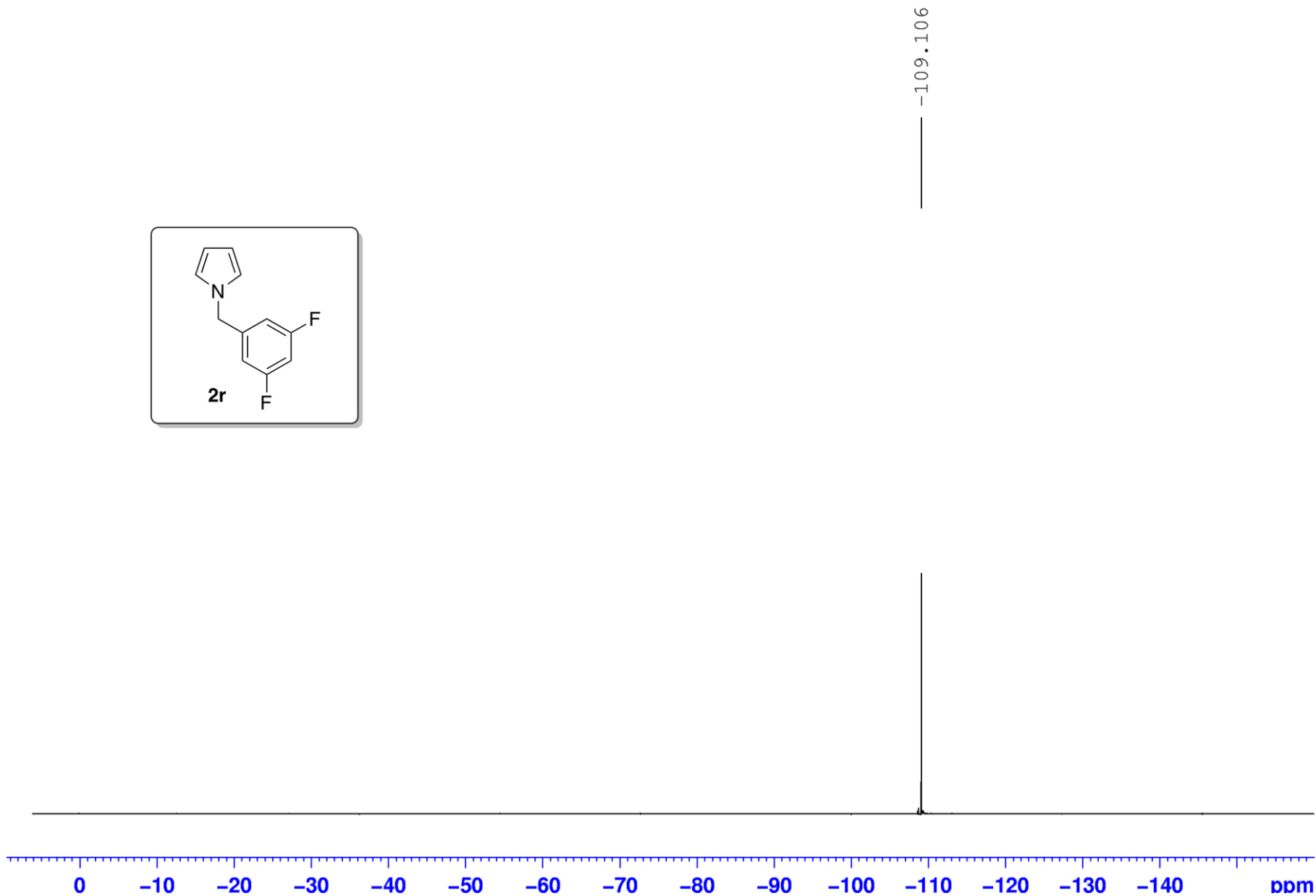
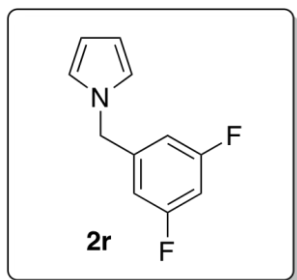
^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(3,5-difluorobenzyl)-1*H*-pyrrole (**2r**)



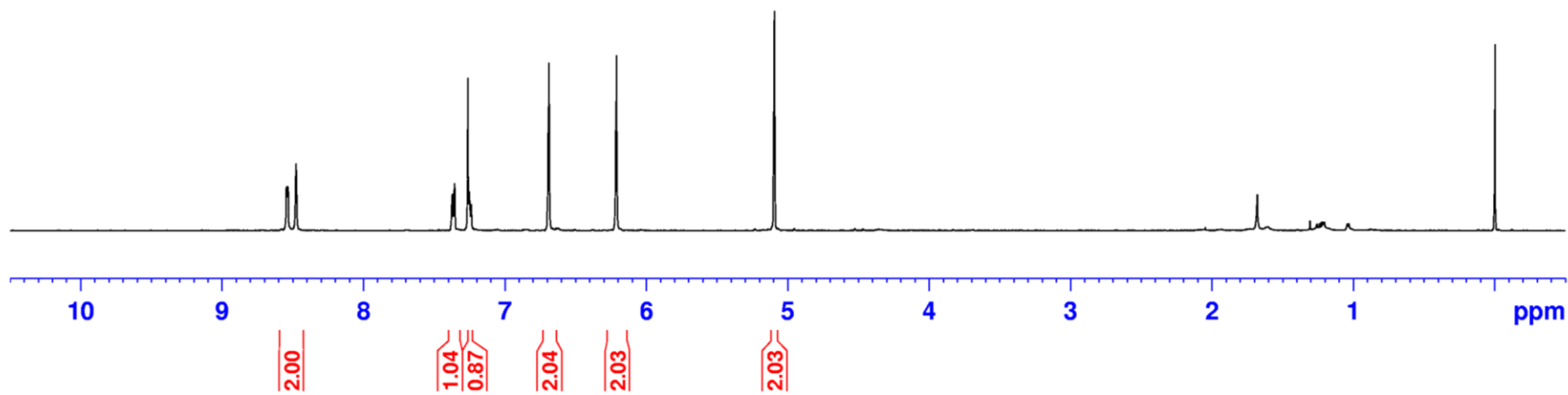
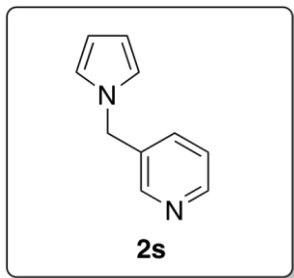
^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(3,5-difluorobenzyl)-1*H*-pyrrole (**2r**)



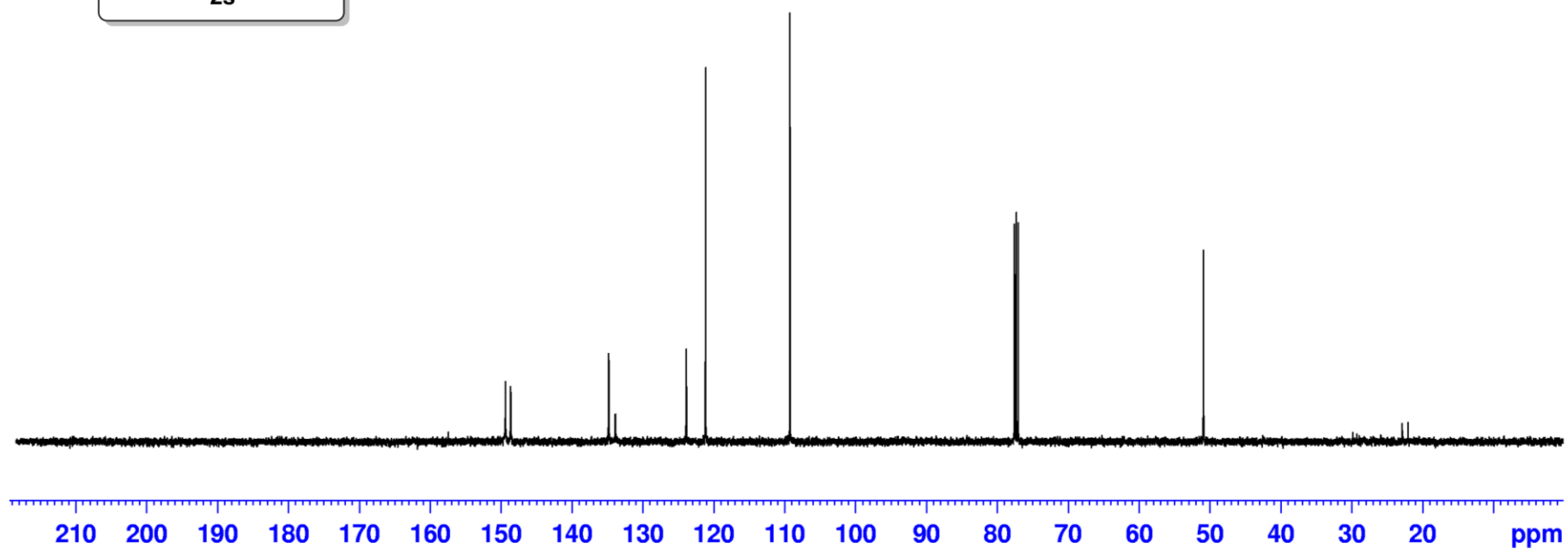
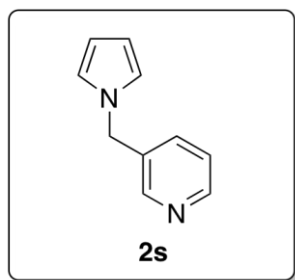
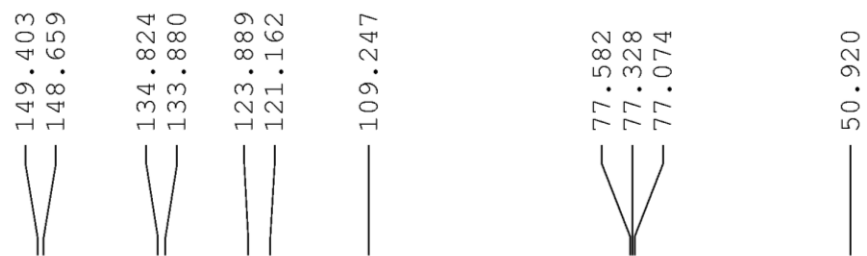
^{19}F NMR (CDCl_3 , 470.8 MHz) spectrum of 1-(3,5-difluorobenzyl)-1*H*-pyrrole (**2r**)



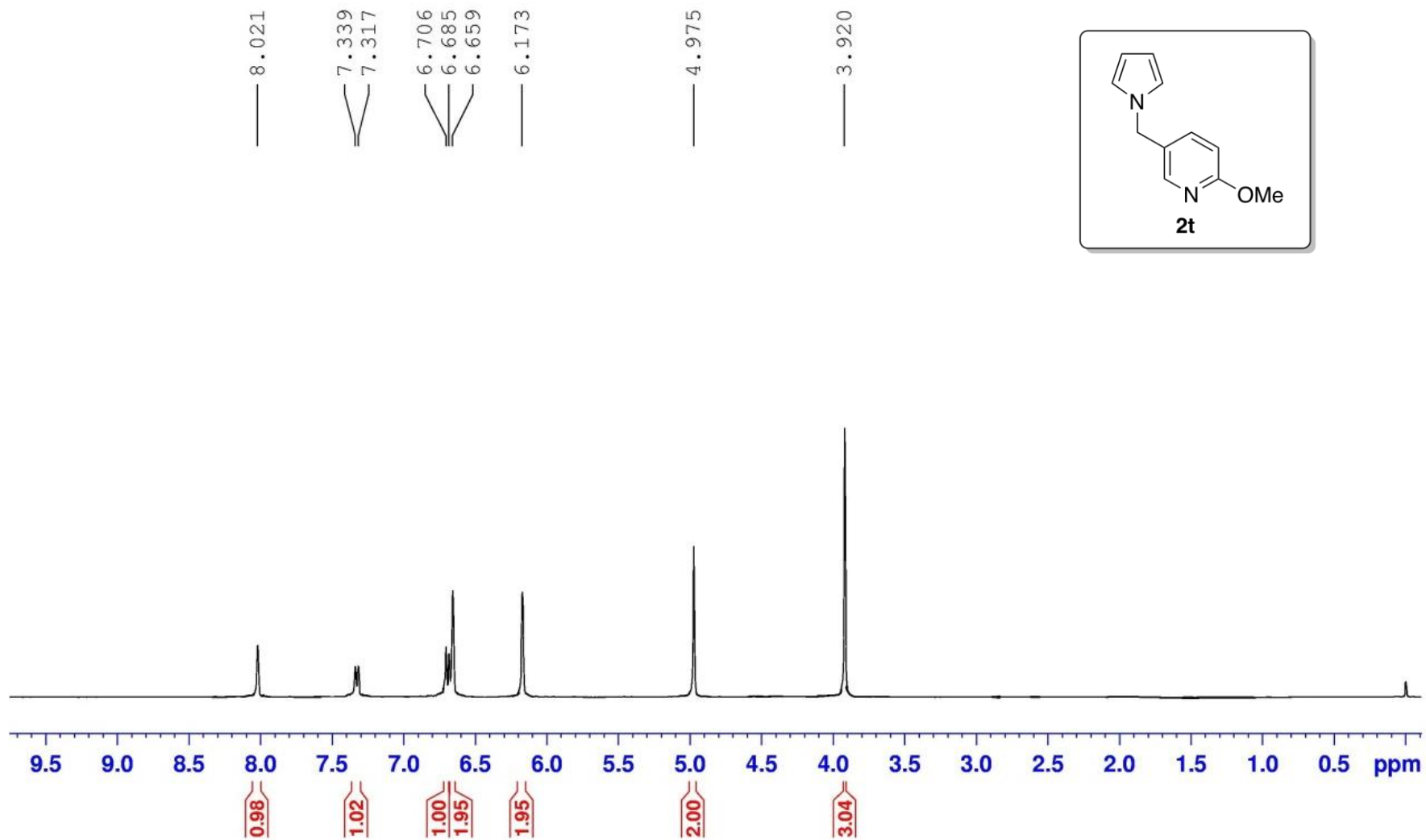
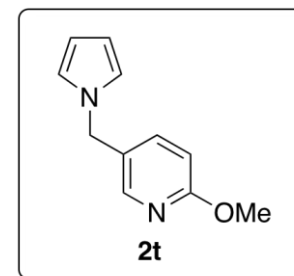
^1H NMR (CDCl_3 , 500 MHz) spectrum of 3-((1*H*-pyrrol-1-yl)methyl)pyridine (**2s**)



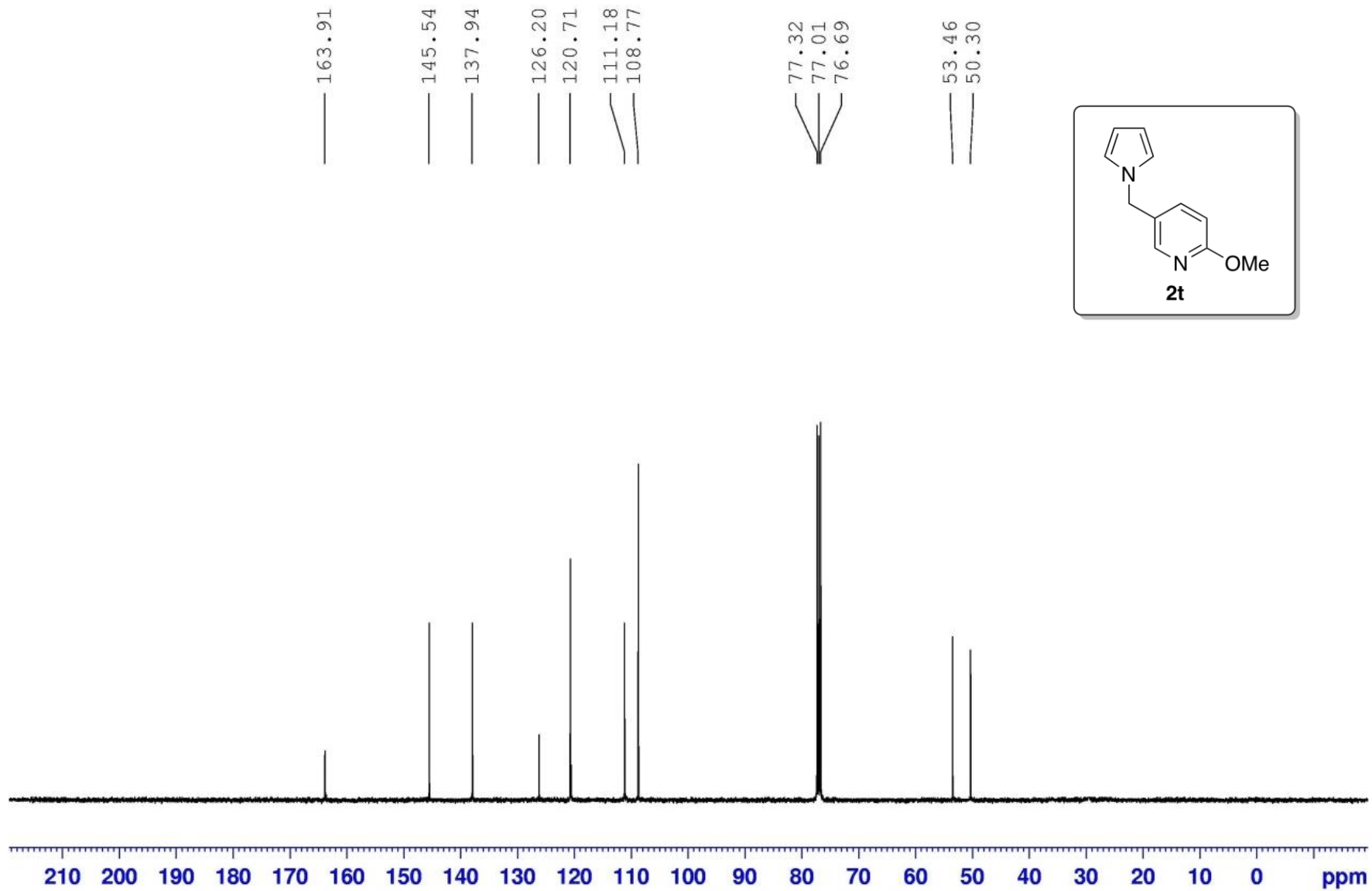
^{13}C NMR (CDCl_3 , 400 MHz) spectrum of 3-((1*H*-pyrrol-1-yl)methyl)pyridine (**2s**)



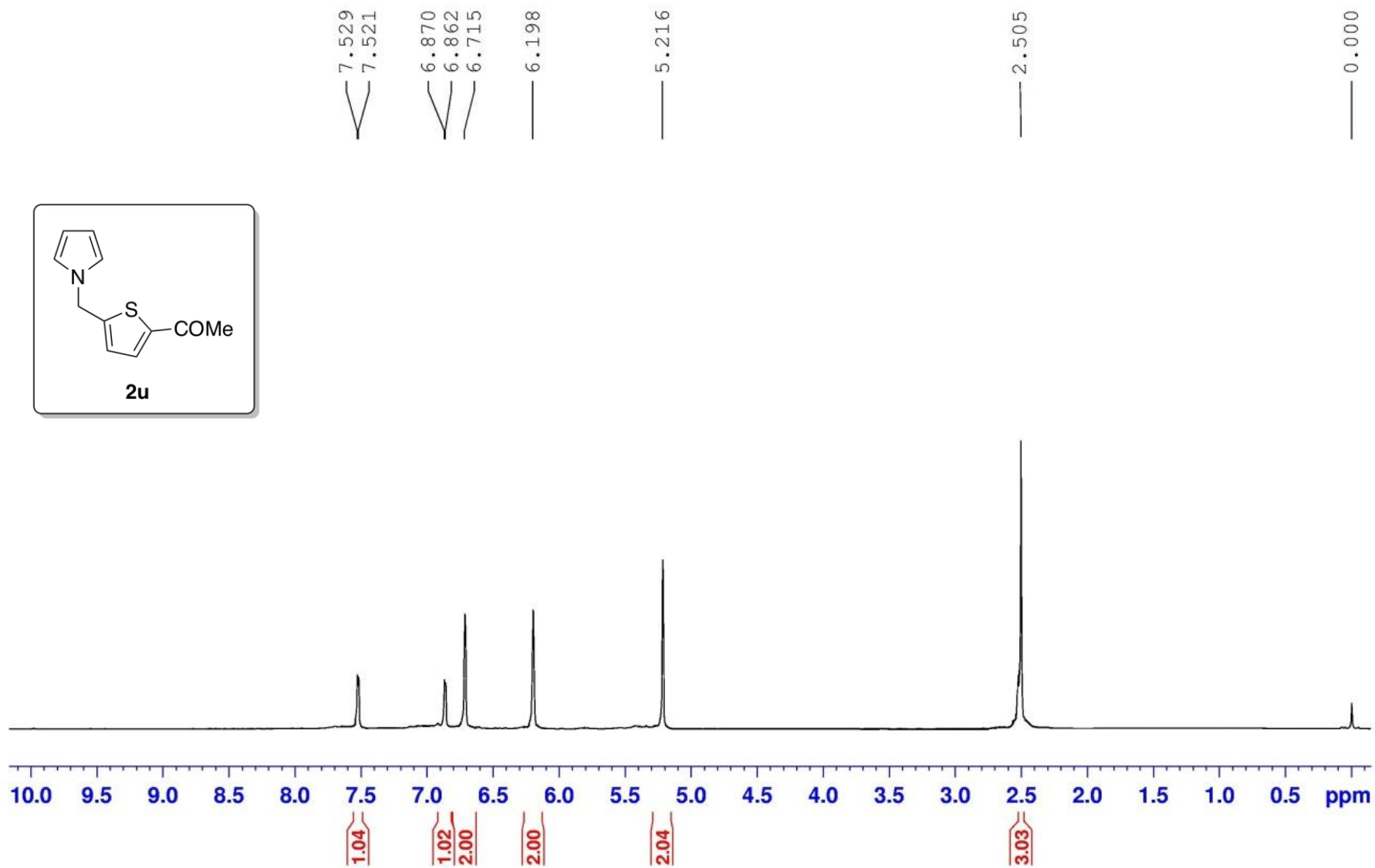
^1H NMR (CDCl_3 , 400 MHz) spectrum of 5-((1*H*-pyrrol-1-yl)methyl)-2-methoxypyridine (**2t**)



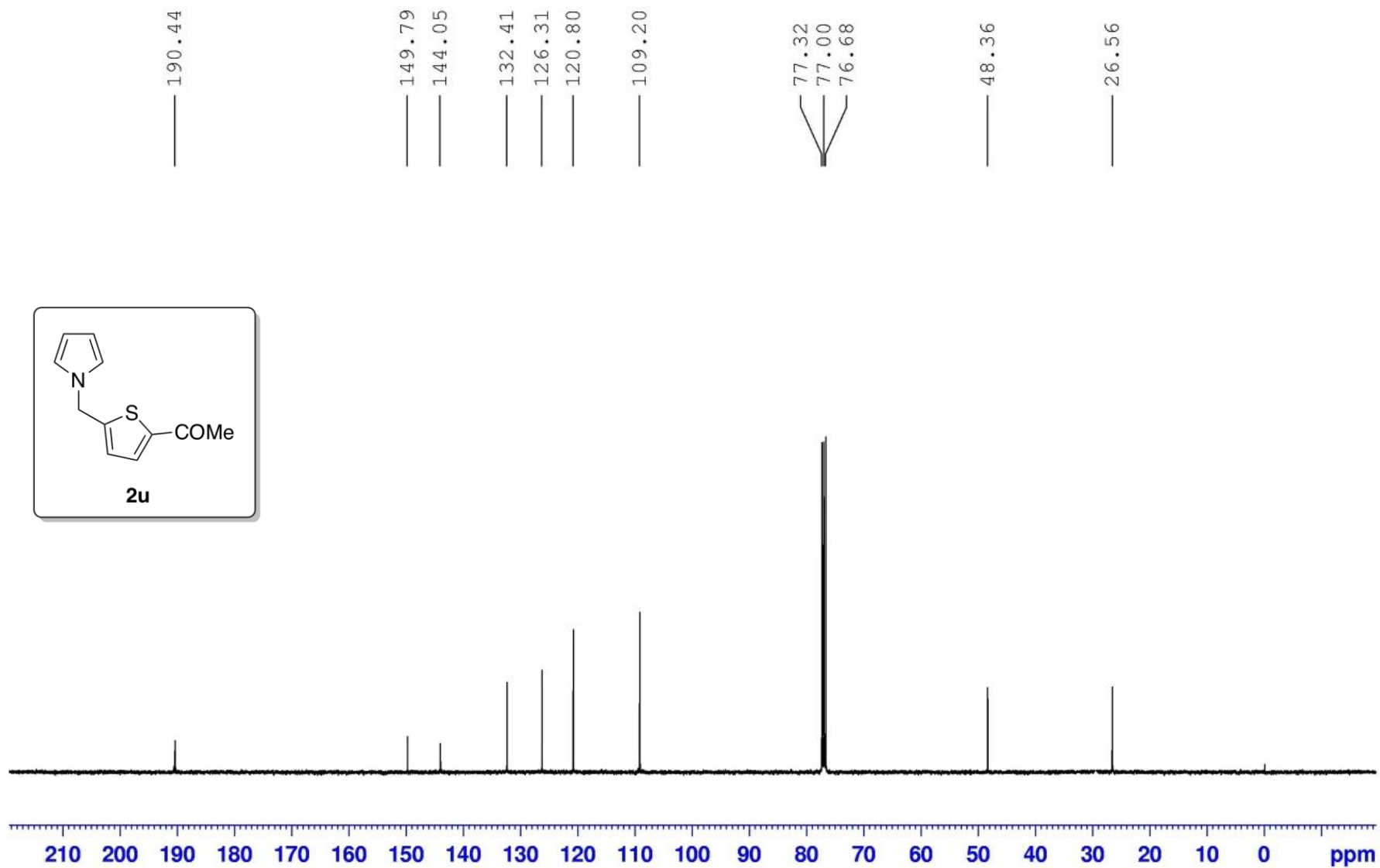
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 5-((1*H*-pyrrol-1-yl)methyl)-2-methoxypyridine (**2t**)



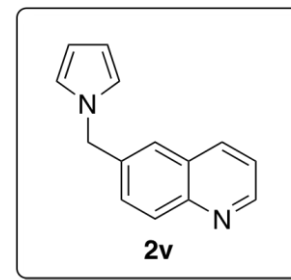
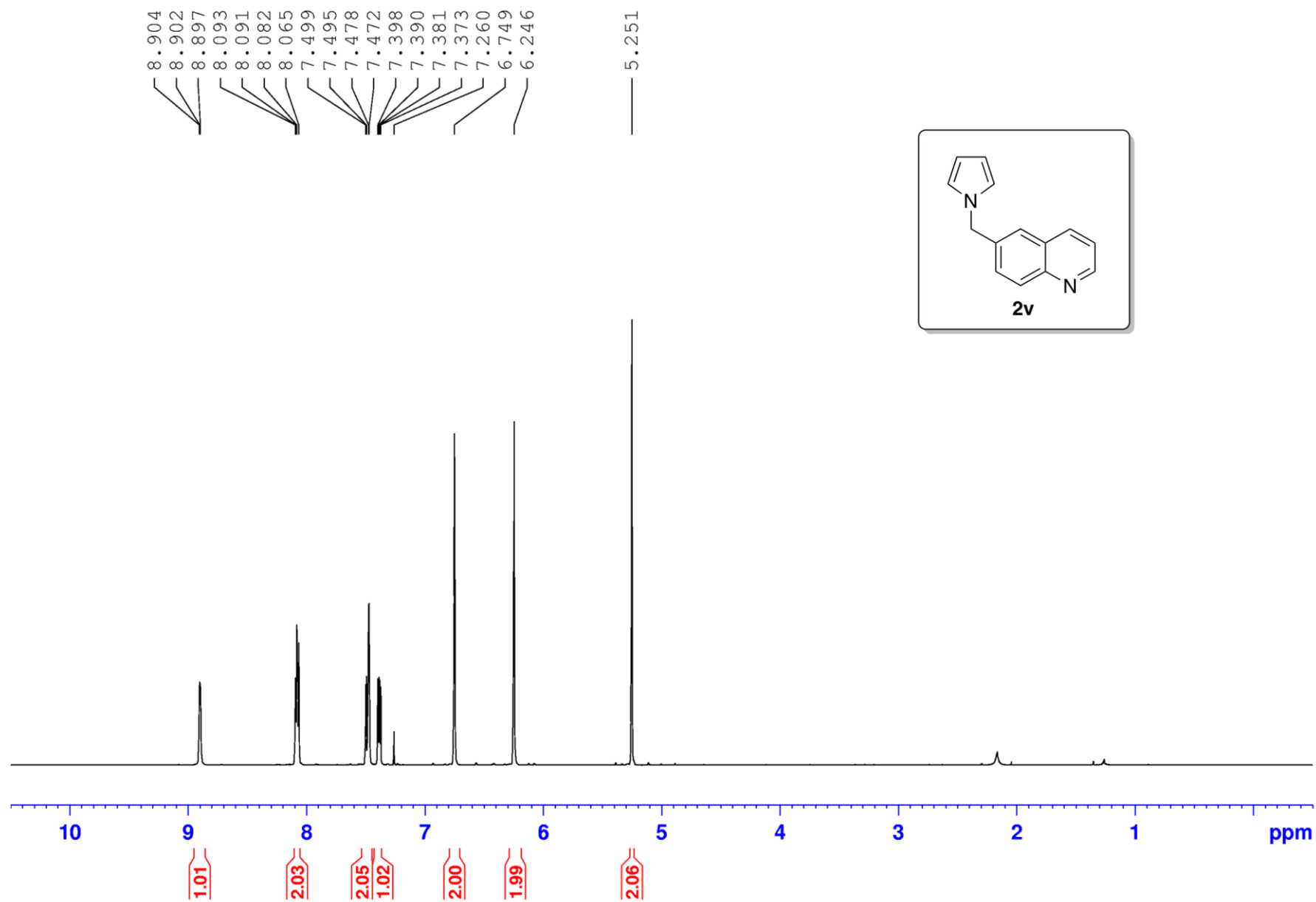
^1H NMR (CDCl_3 , 400 MHz) spectrum of 1-(5-((1*H*-pyrrol-1-yl)methyl)thiophen-2-yl)ethanone (**2u**)



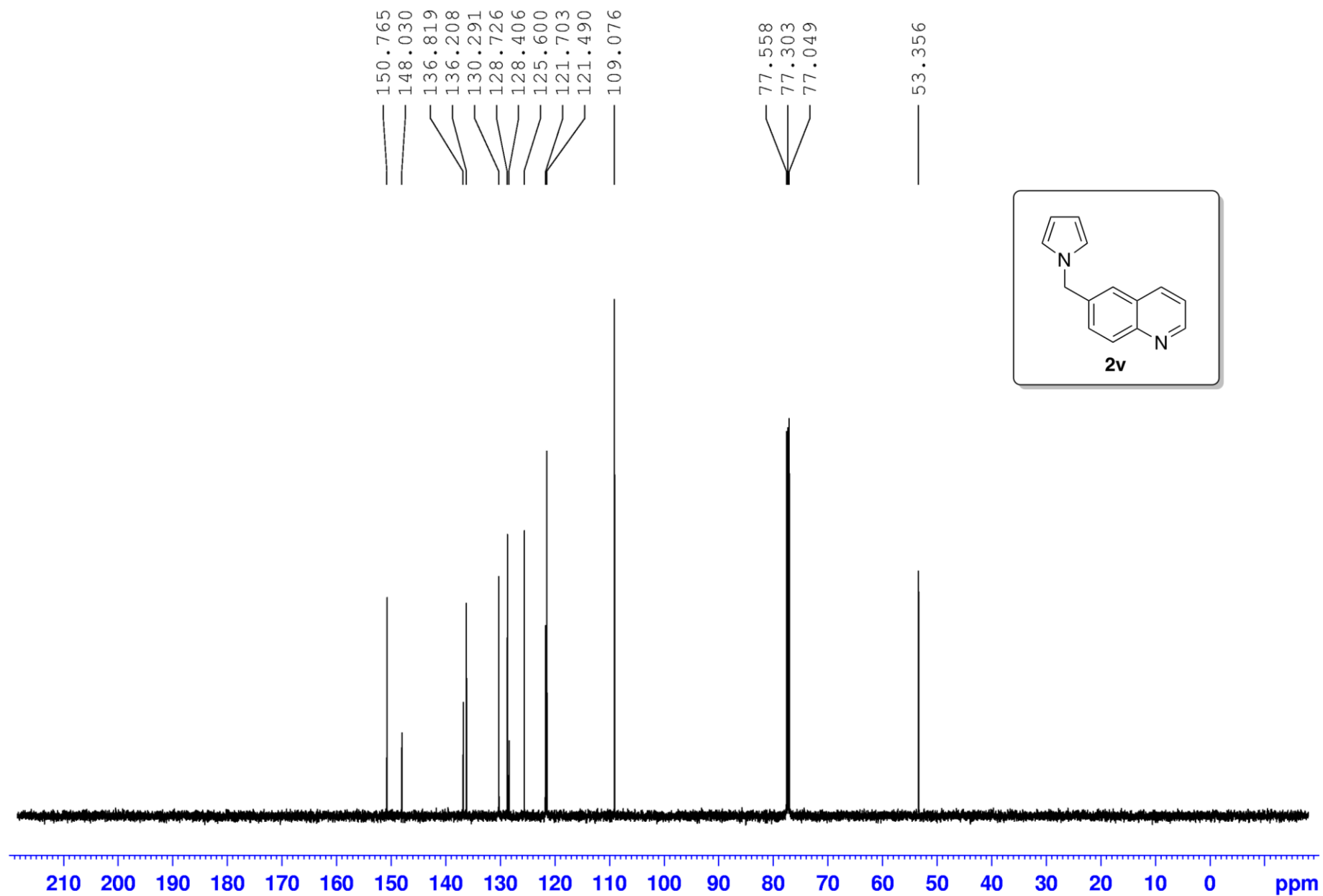
^{13}C NMR (CDCl_3 , 100 MHz) spectrum of 1-(5-((1*H*-pyrrol-1-yl)methyl)thiophen-2-yl)ethanone (**2u**)



^1H NMR (CDCl_3 , 500 MHz) spectrum of 6-((1*H*-pyrrol-1-yl)methyl)quinoline (**2v**)

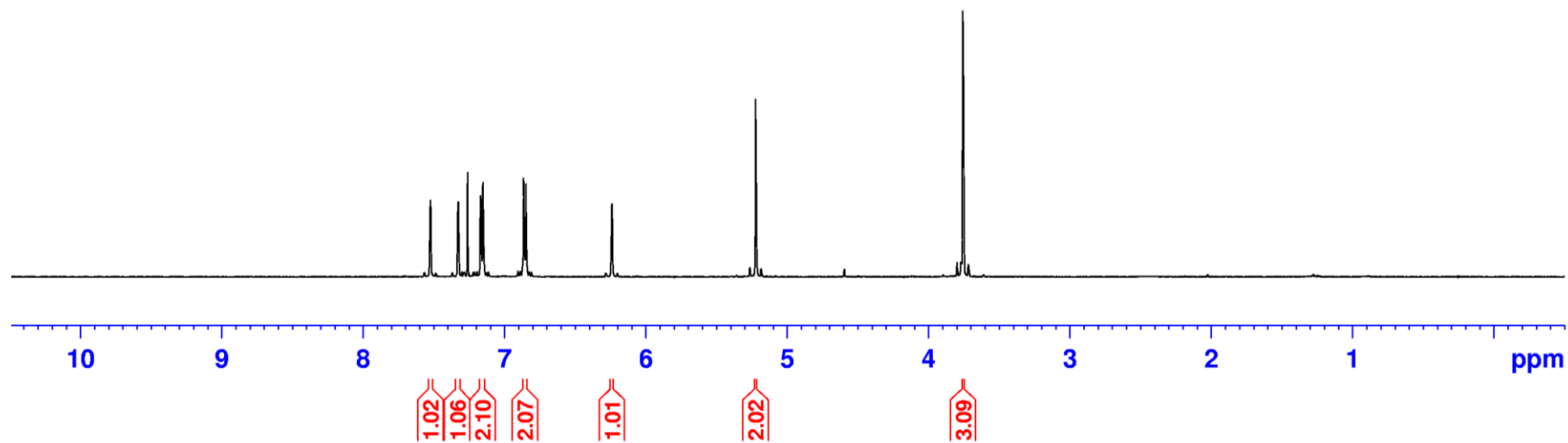
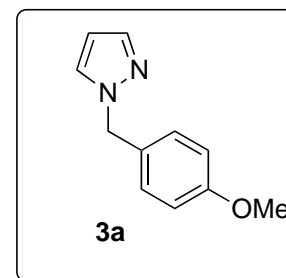


^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 6-((1*H*-pyrrol-1-yl)methyl)quinoline (**2v**)

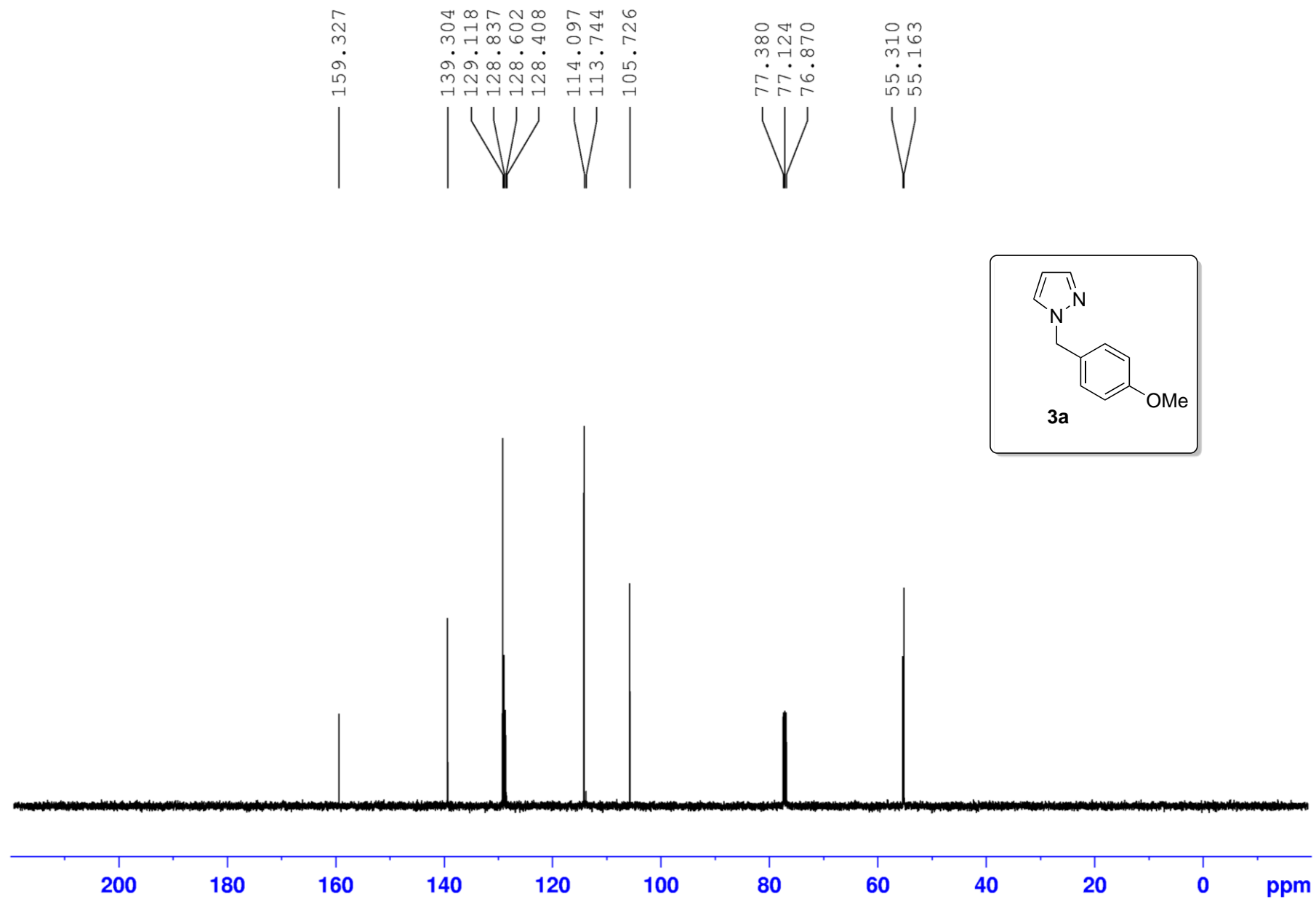


^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(4-(methoxy)benzyl)-1*H*-pyrazole (**3a**)

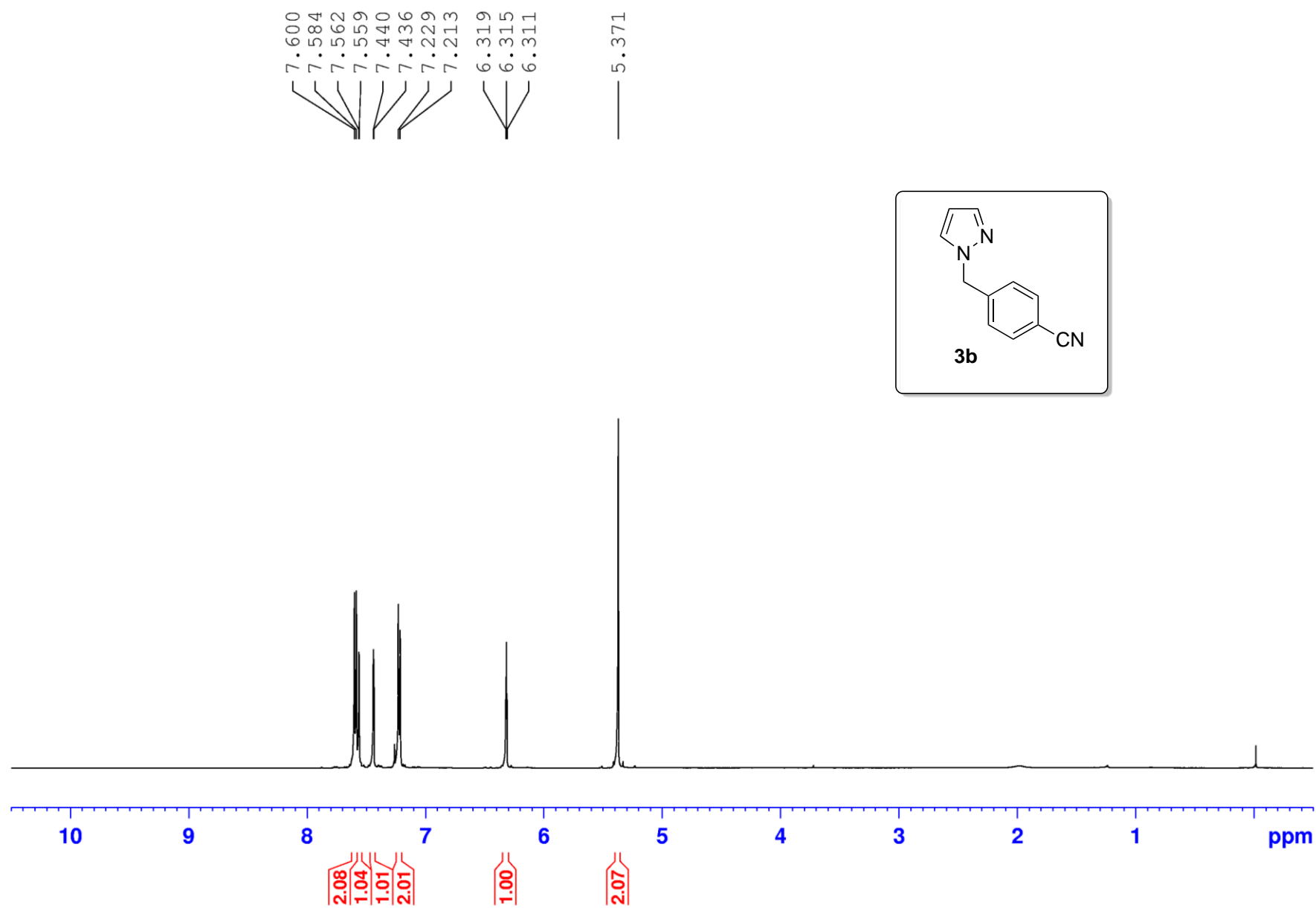
7.523
7.329
7.326
7.259
7.168
7.151
6.864
6.847
6.240
6.237
5.222
3.756



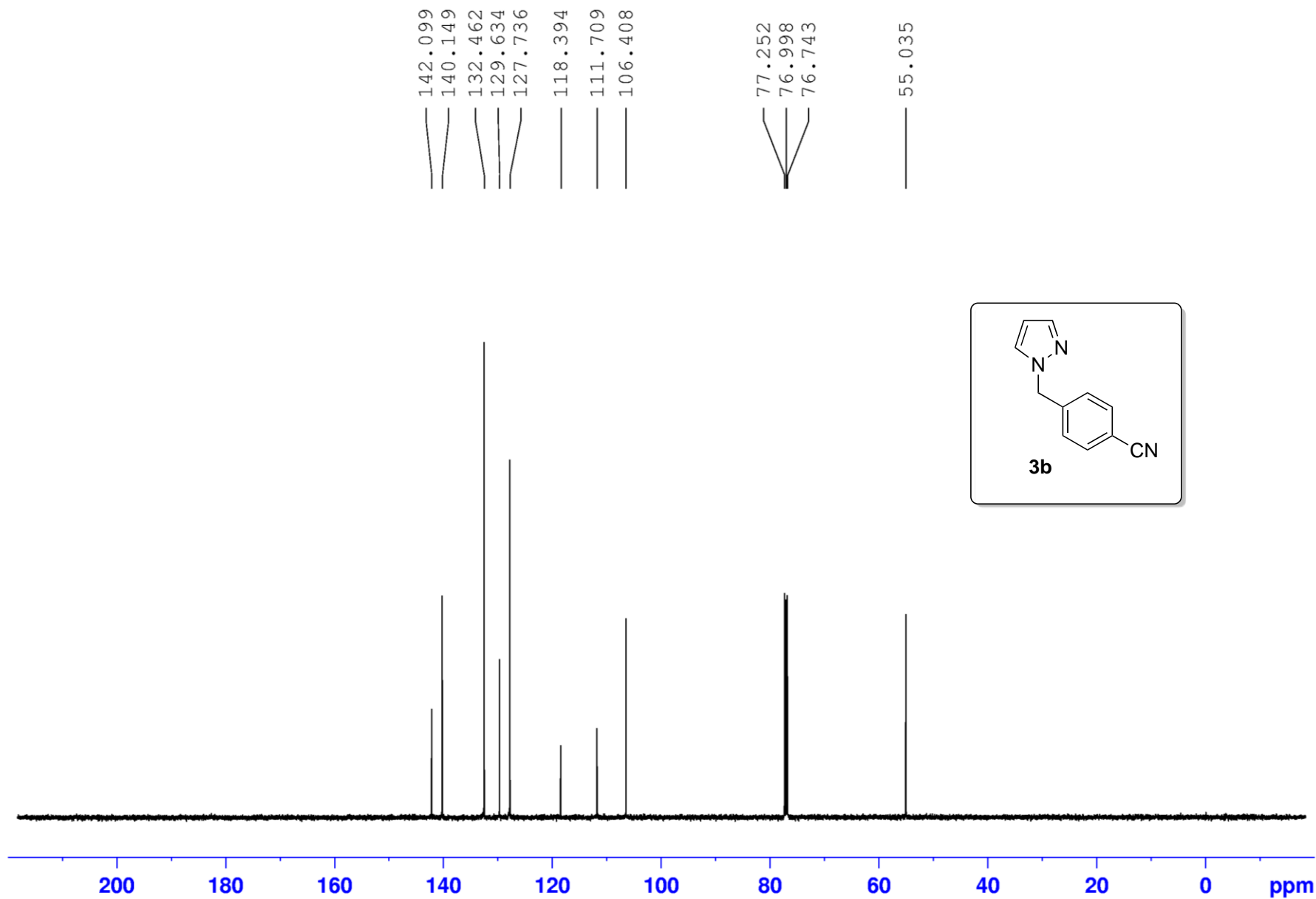
^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(4-(methoxy)benzyl)-1H-pyrazole (**3a**)



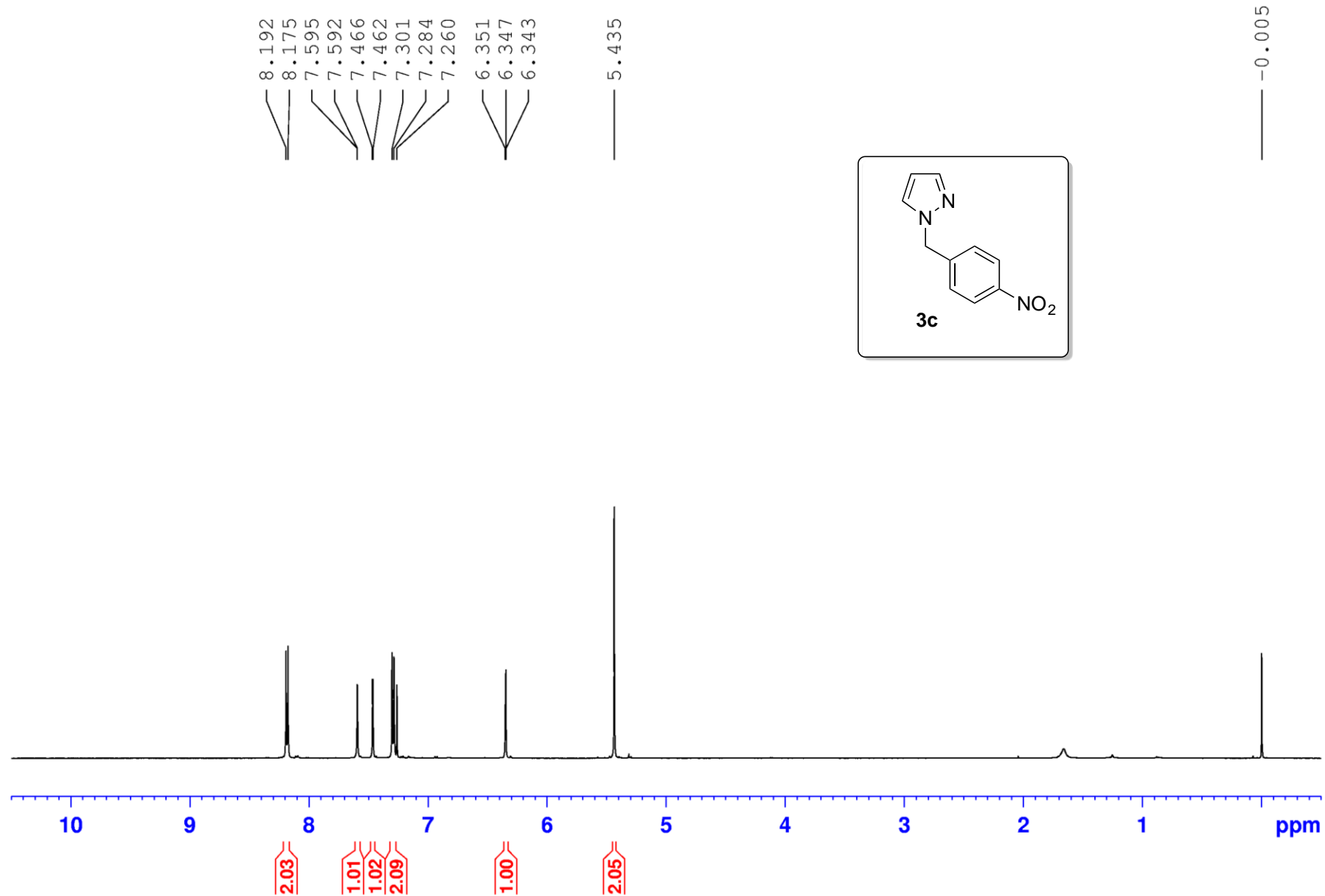
^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(4-(cyano)benzyl)-1*H*-pyrazole (**3b**)



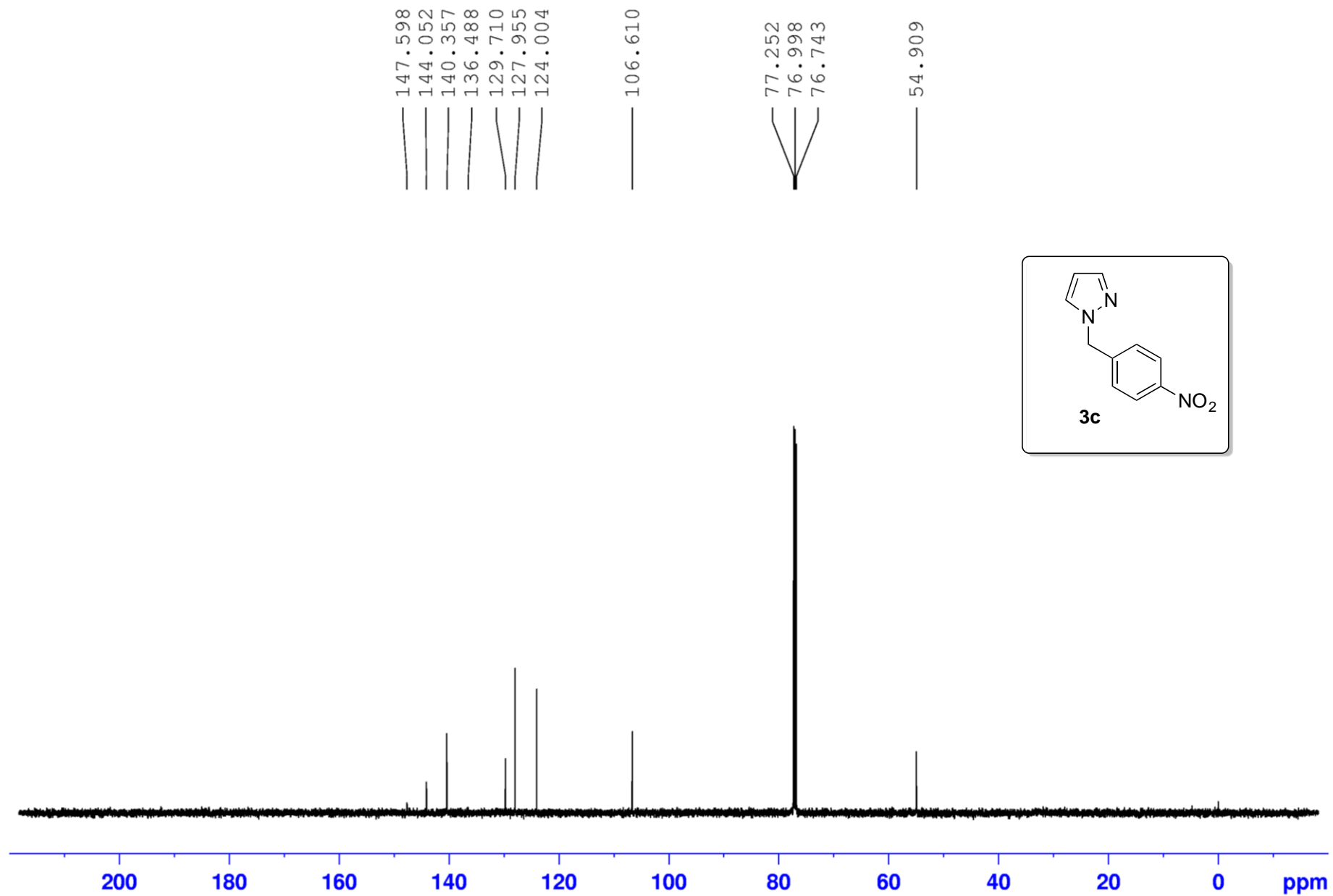
^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(4-(methoxy)benzyl)-1*H*-pyrazole (**3b**)



^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(4-(nitro)benzyl)-1*H*-pyrazole (**3c**)

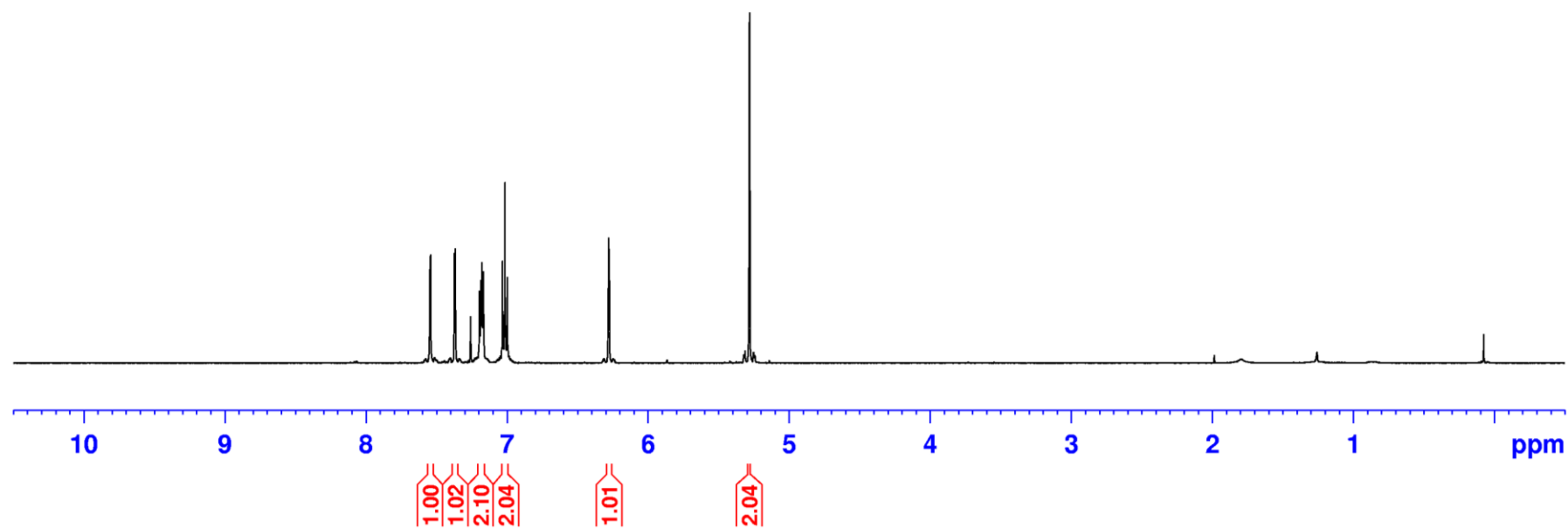
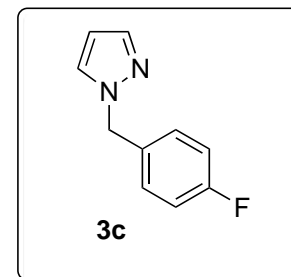


^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(4-(nitro)benzyl)-1H-pyrazole (**3c**)

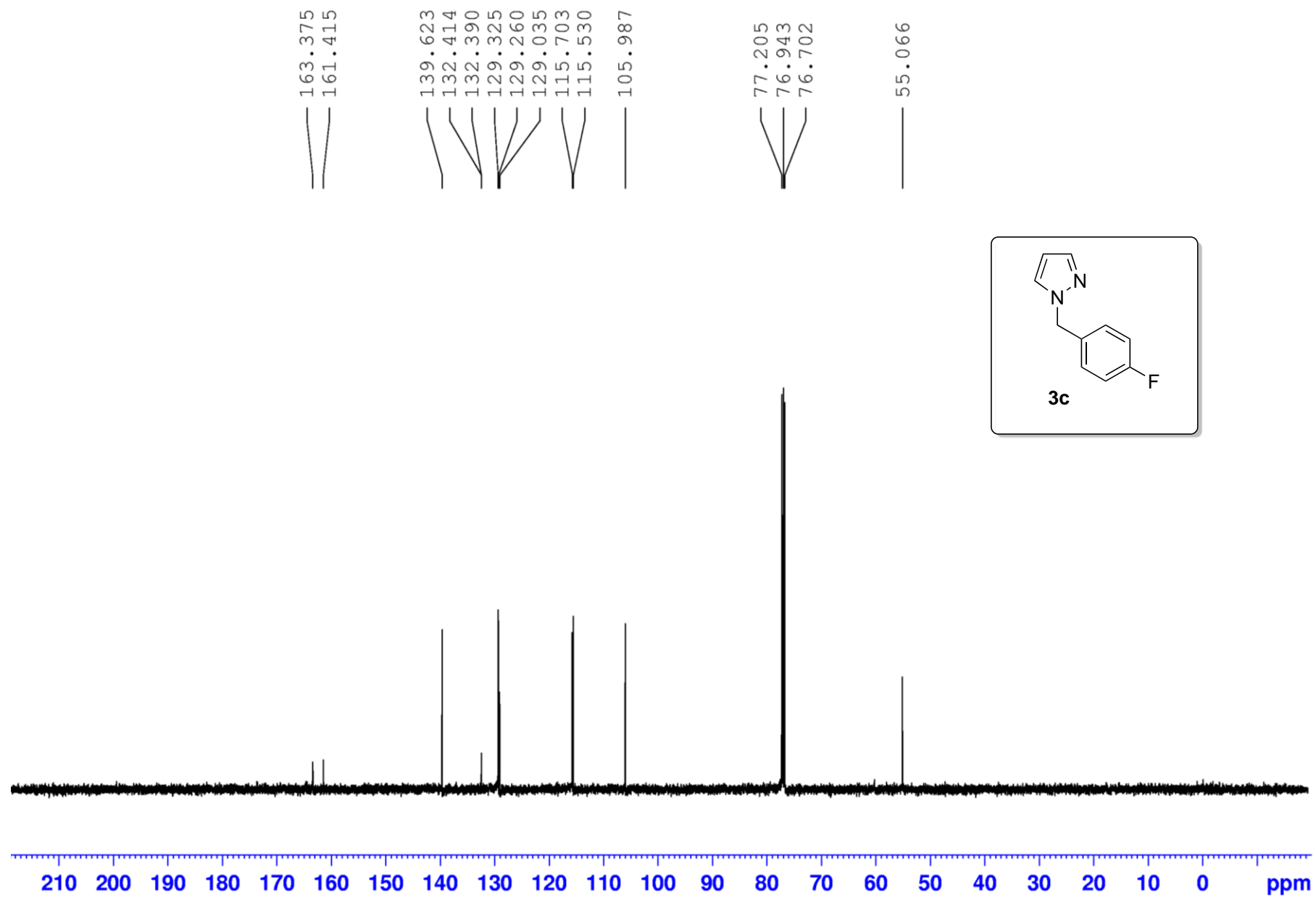


^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(4-(fluoro)benzyl)-1*H*-pyrazole (**3d**)

7.545
7.543
7.372
7.367
7.258
7.196
7.185
7.179
7.168
7.032
7.015
6.998
6.282
6.278
6.274
5.281

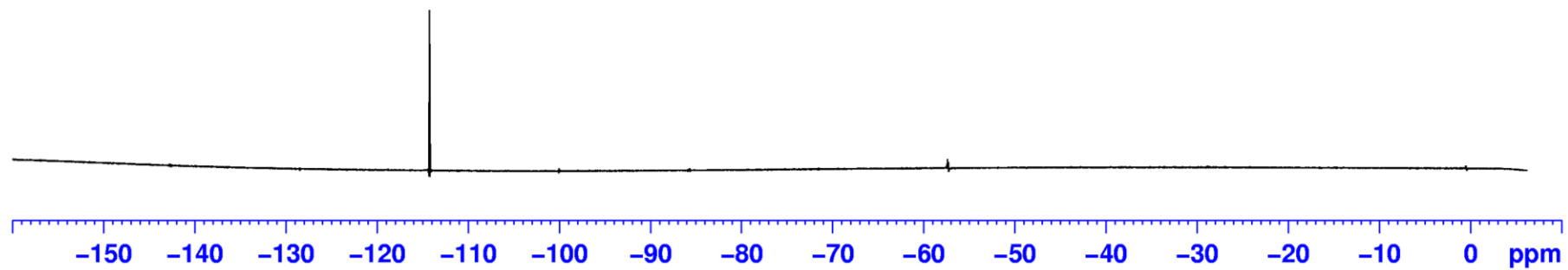
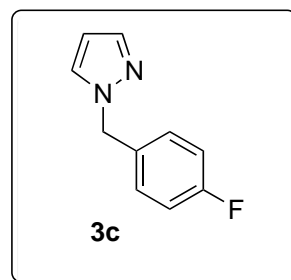


^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(4-(fluoro)benzyl)-1H-pyrazole (**3d**)

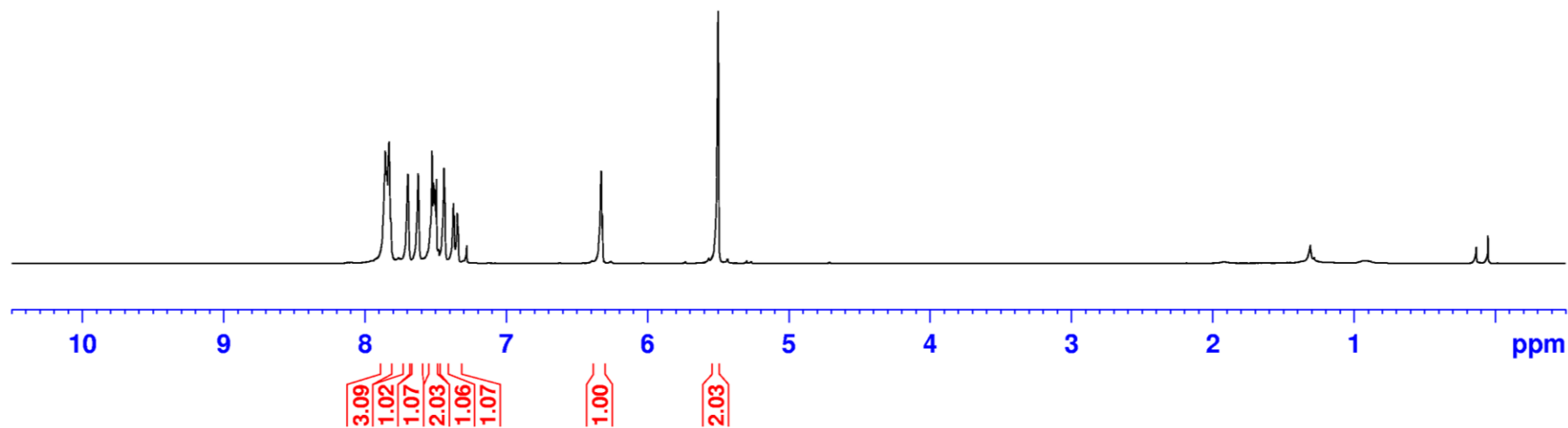
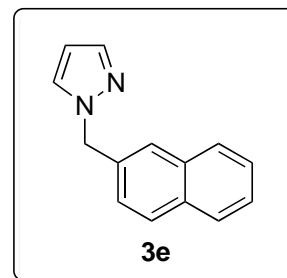
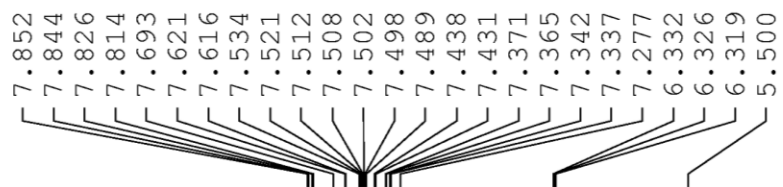


^{19}F NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(4-(fluoro)benzyl)-1*H*-pyrazole (**3d**)

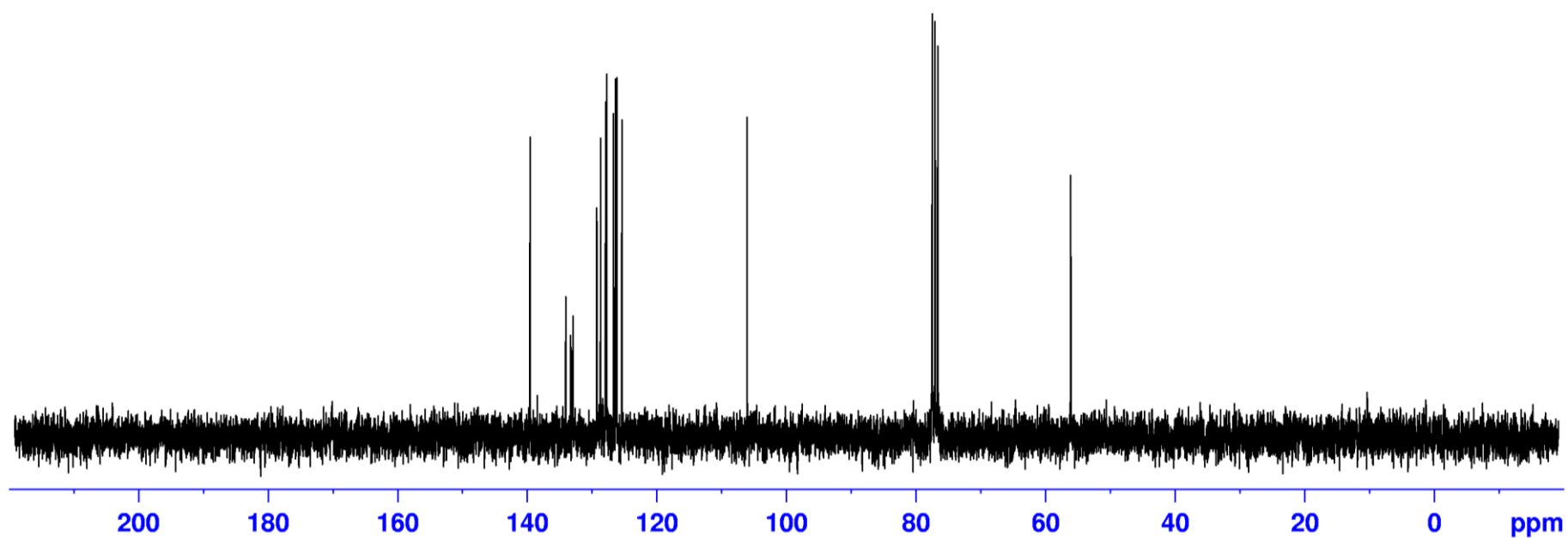
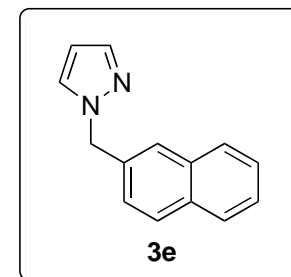
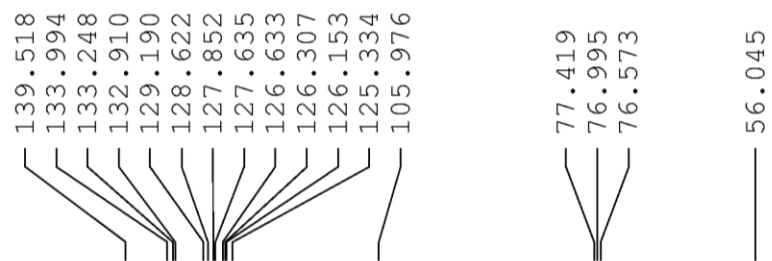
-114.221



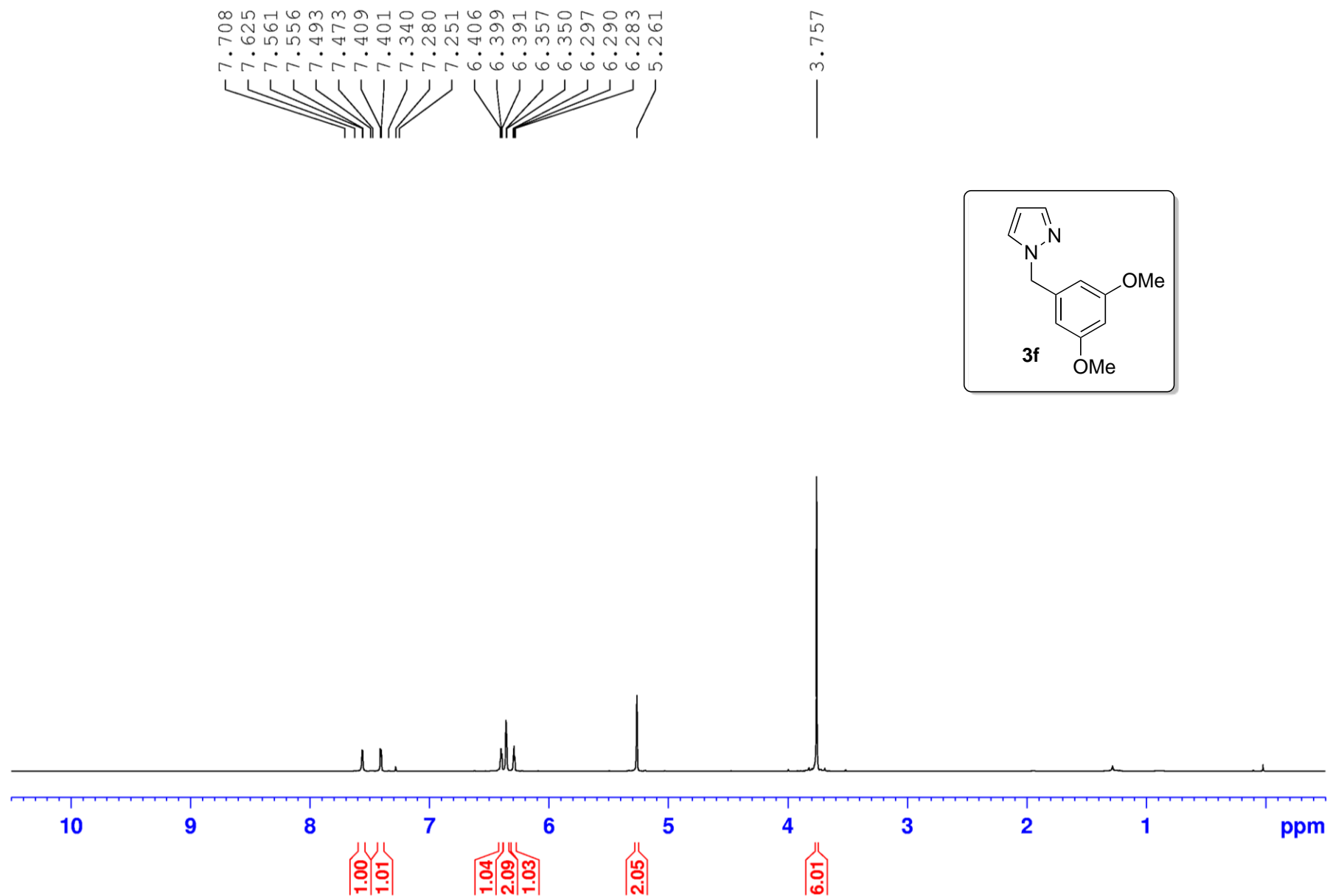
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(naphthalene-2-ylmethyl)-1*H*-pyrazole (**3e**)



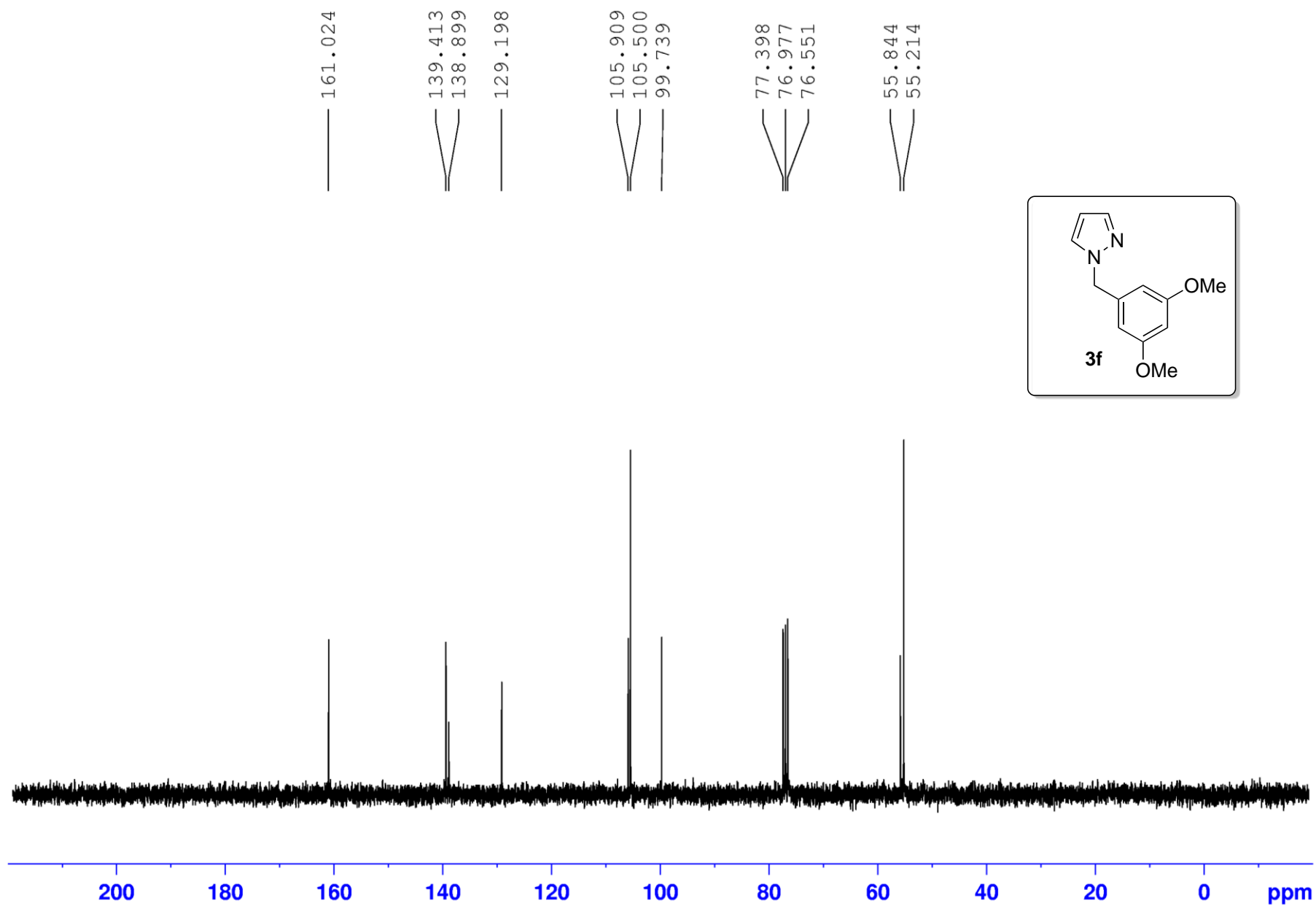
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(naphthalene-2-ylmethyl)-1H-pyrazole (**3e**)



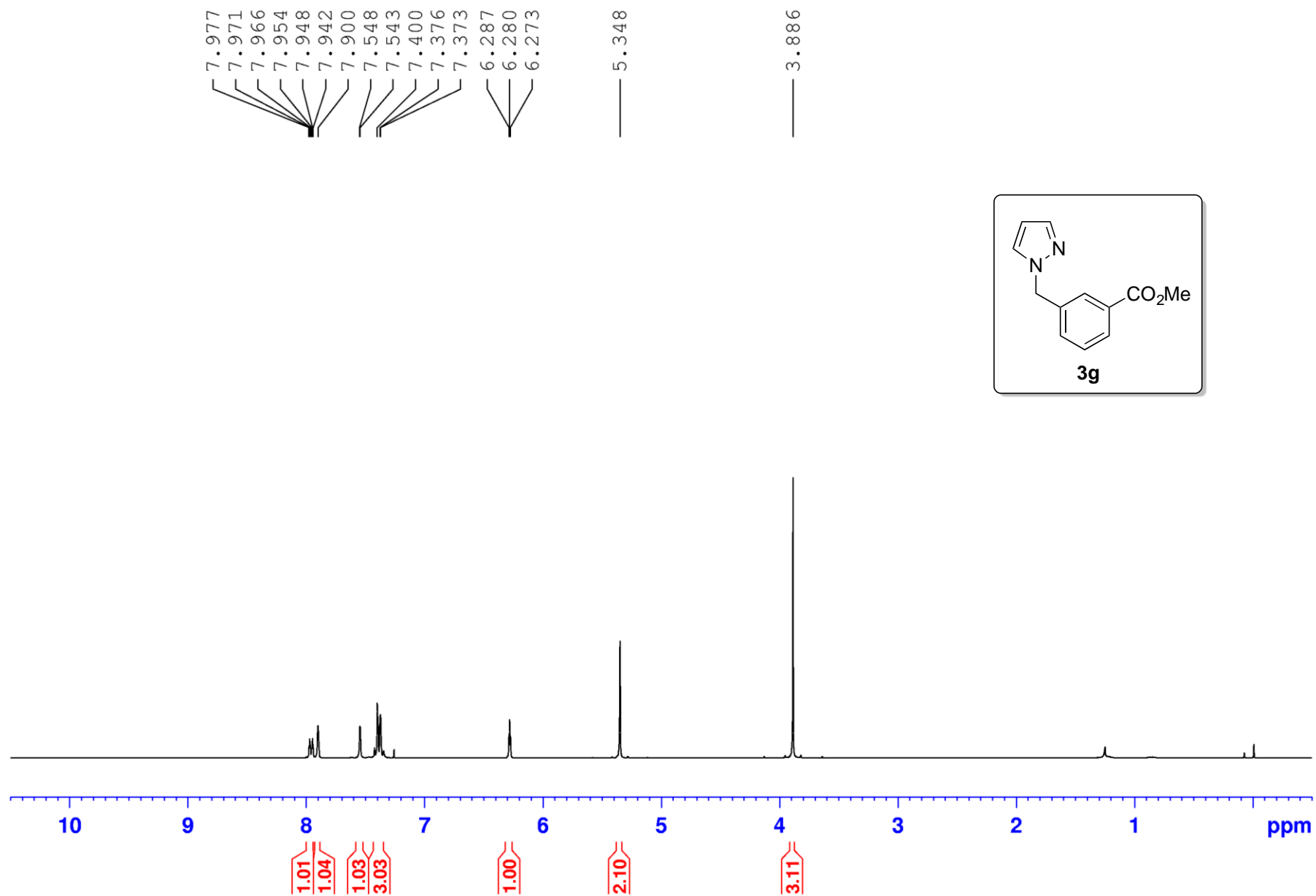
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(3,5-dimethoxybenzyl)-1*H*-pyrazole (**3f**)



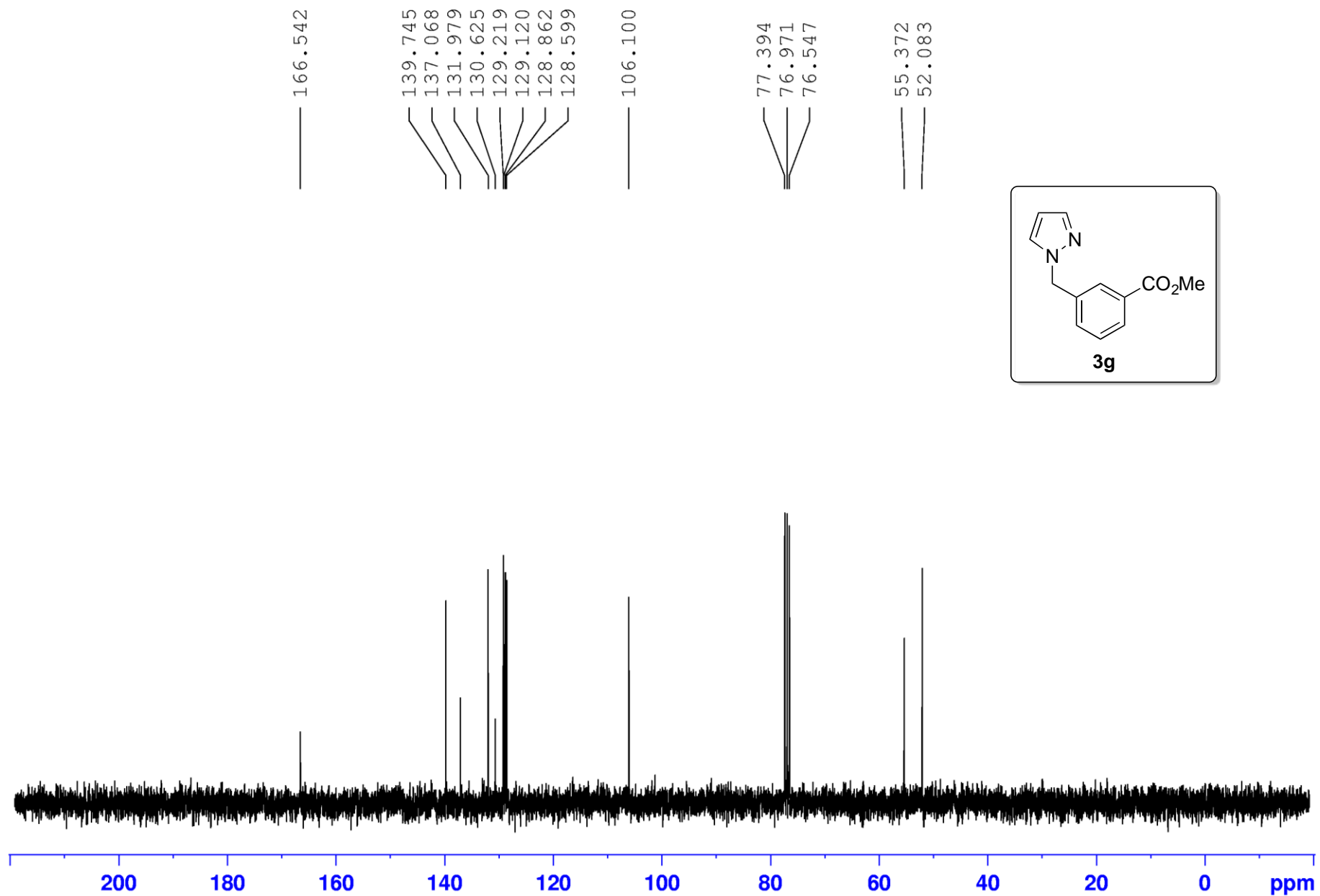
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(3,5-dimethoxybenzyl)-1*H*-pyrazole (**3f**)



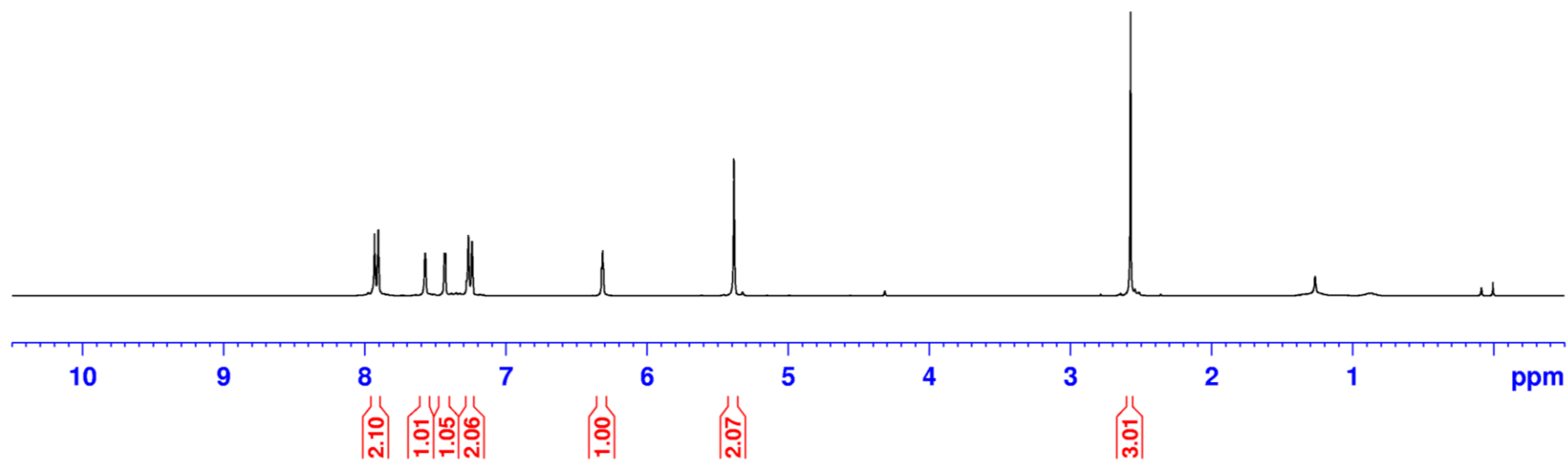
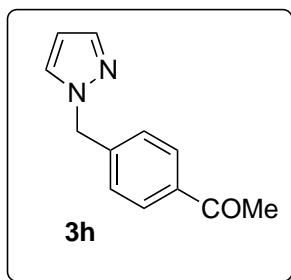
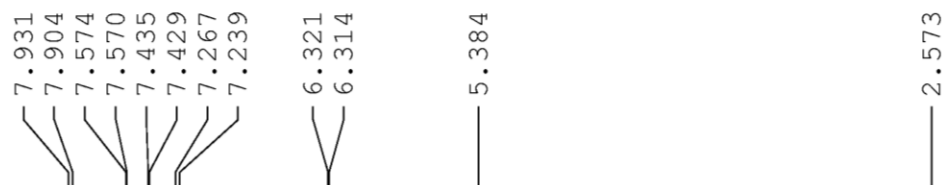
^1H NMR (CDCl_3 , 300 MHz) spectrum of methyl-3-((1*H*-pyrazol-1-yl)methyl)benzoate (**3g**)



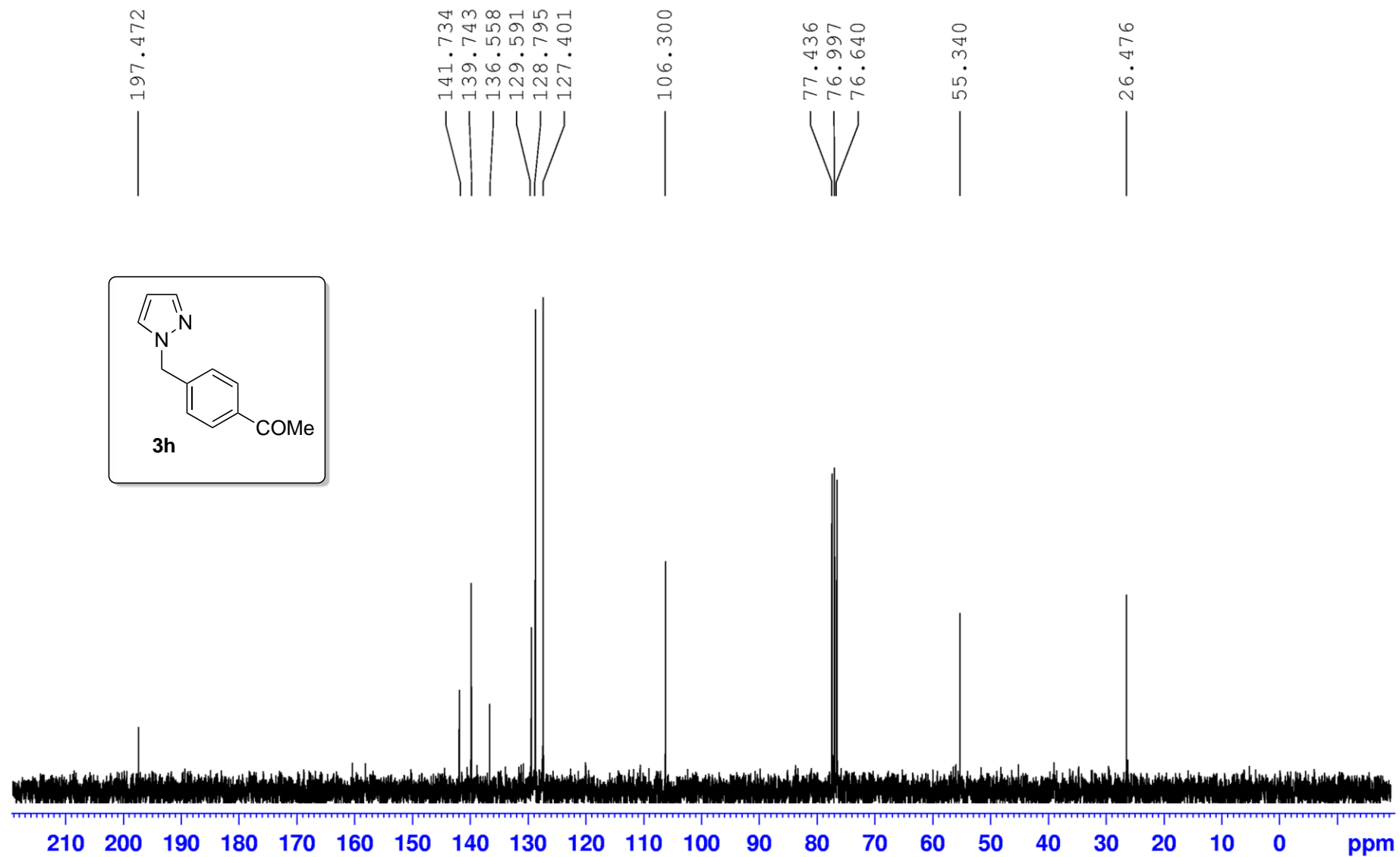
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of methyl-3-((1*H*-pyrazol-1-yl)methyl)benzoate (**3g**)



^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(4-((1*H*-pyrazol-1-yl)methyl)phenyl)ethan-1-one (**3h**)

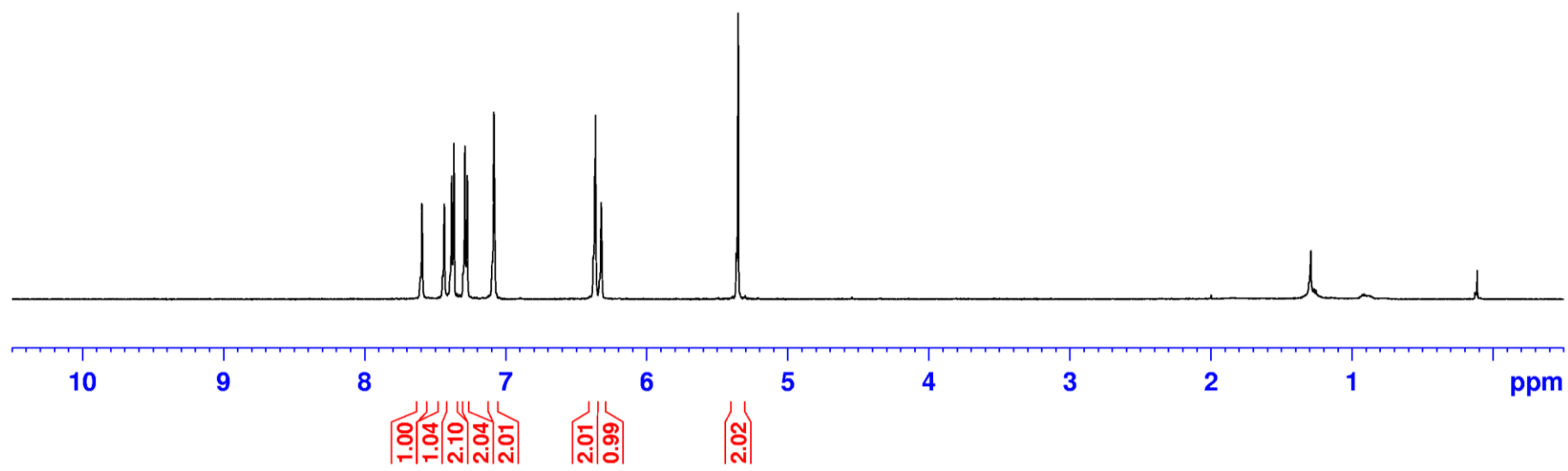
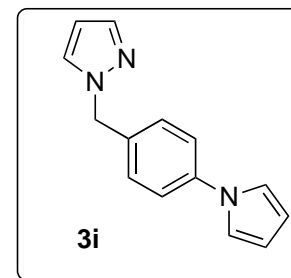


^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(4-((1*H*-pyrazol-1-yl)methyl)phenyl)ethan-1-one (**3h**)

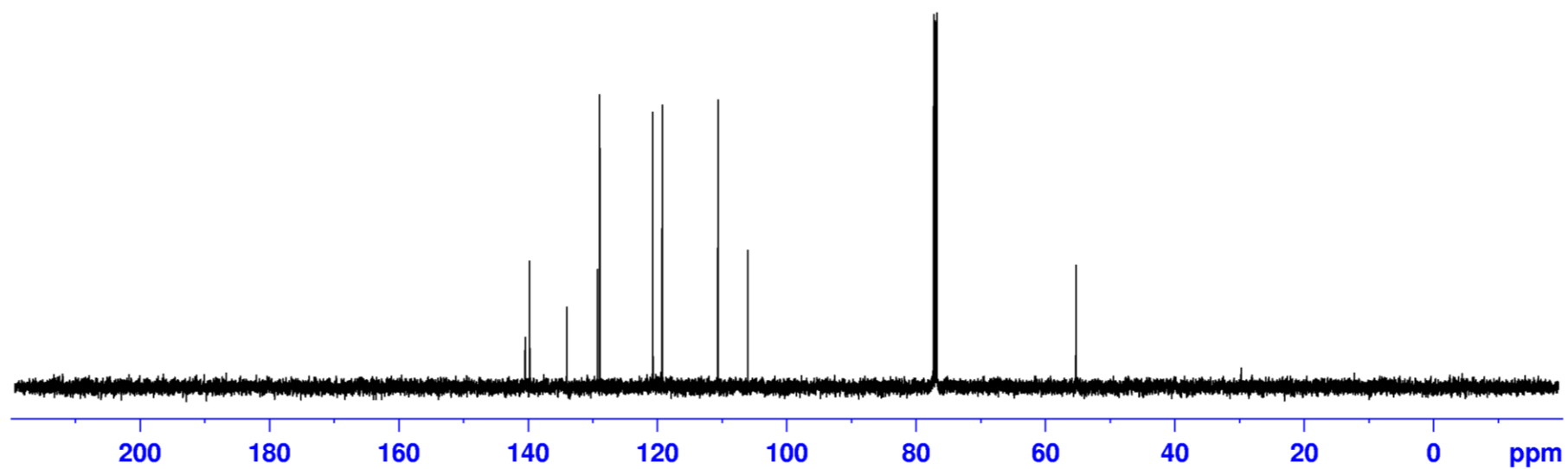
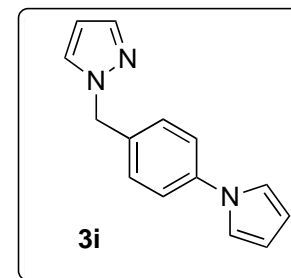
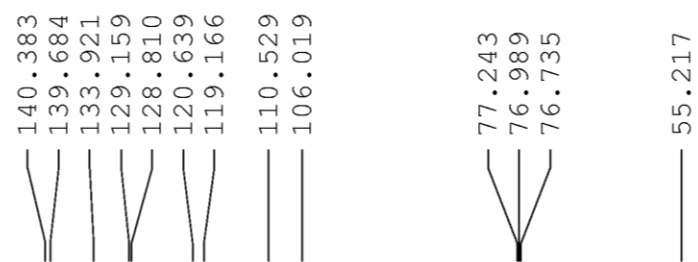


^1H NMR (CDCl_3 , 500 MHz) spectrum of 1-(4-(1*H*-Pyrrol-1-yl)benzyl)-1*H*-pyrazole (**3i**)

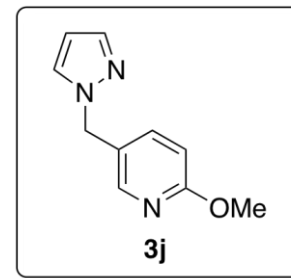
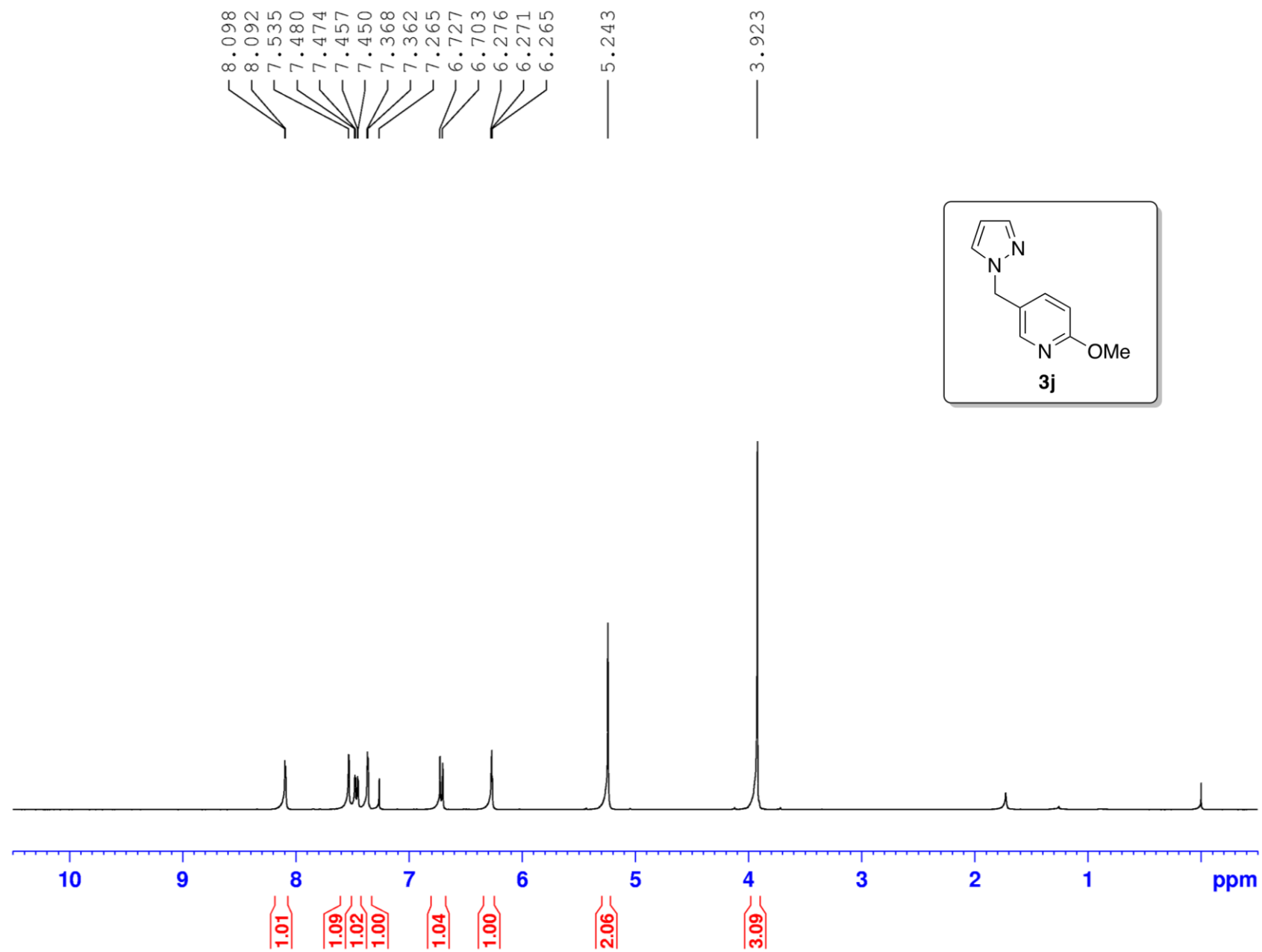
7.593
7.436
7.432
7.383
7.366
7.289
7.272
7.095
7.085
7.081
7.077
6.377
6.367
6.364
6.360
6.321
5.351



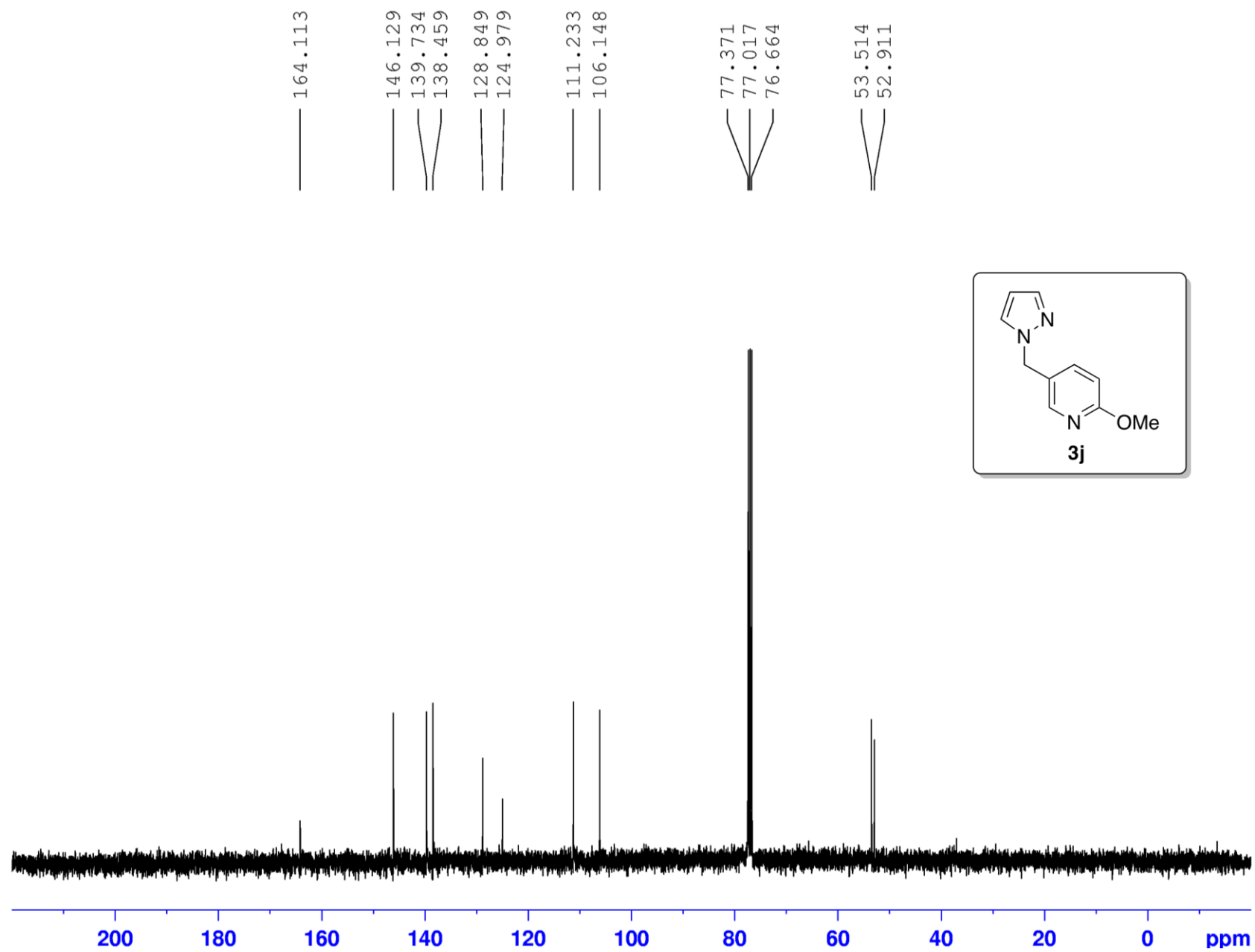
^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of 1-(4-(1*H*-Pyrrol-1-yl)benzyl)-1*H*-pyrazole (**3i**)



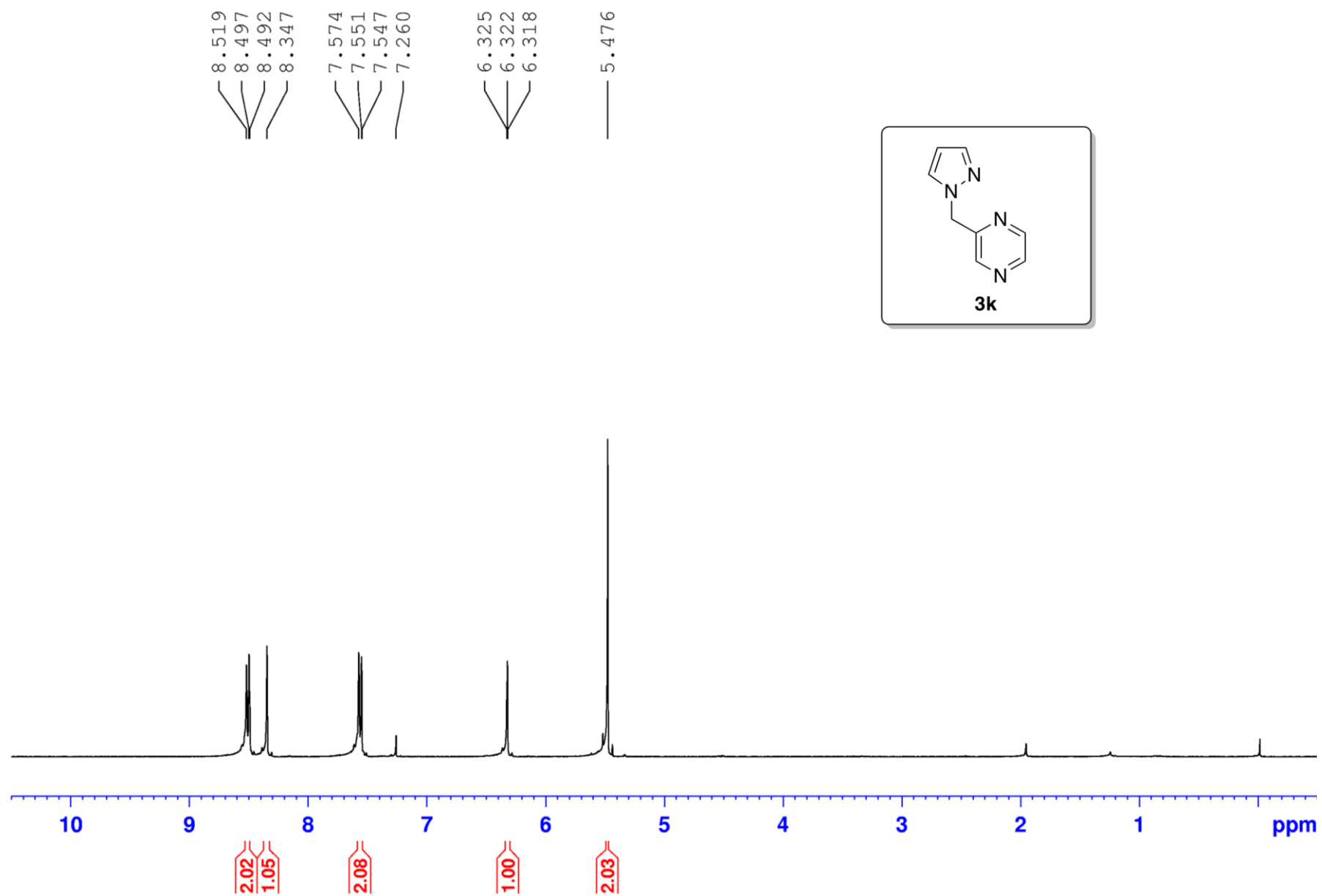
^1H NMR (CDCl_3 , 360 MHz) spectrum of 5-((1*H*-pyrazol-1-yl)methyl)-2-methoxypyridine (**3j**)



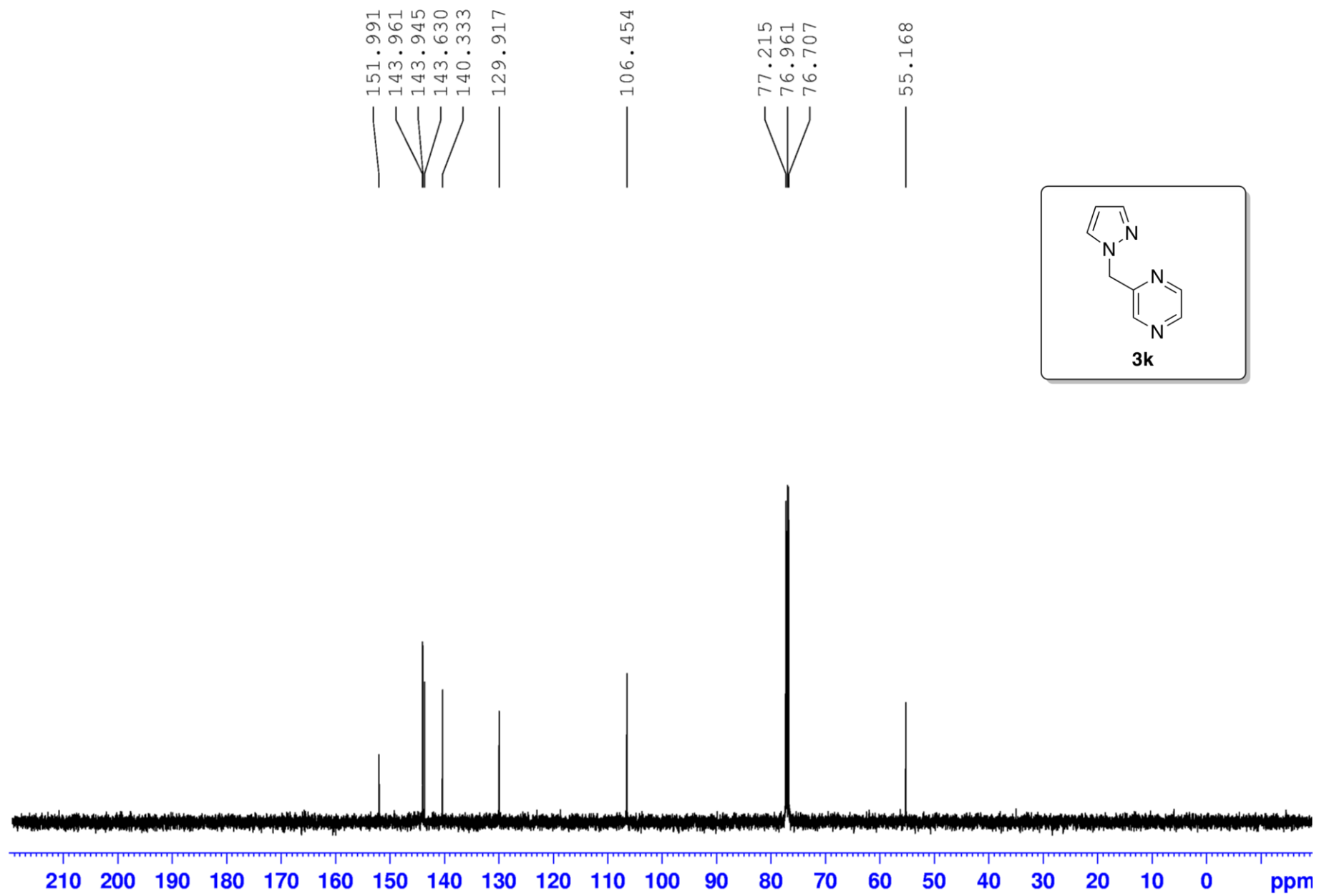
^{13}C NMR (CDCl_3 , 90.5 MHz) spectrum of 5-((1*H*-pyrazol-1-yl)methyl)-2-methoxypyridine (**3j**)



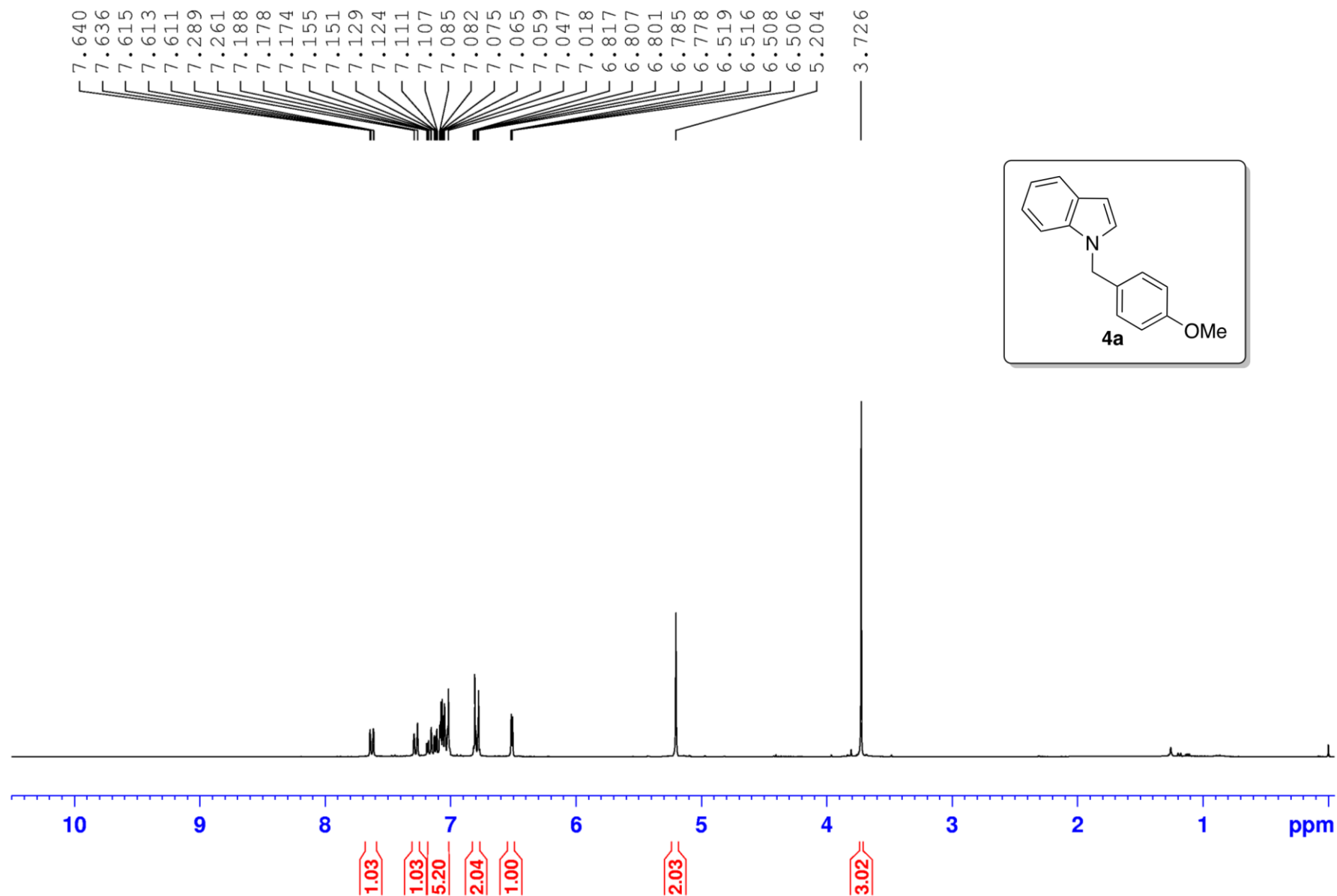
^1H NMR (CDCl_3 , 360 MHz) spectrum of 2-((1*H*-pyrazol-1-yl)methyl)pyrazine (**3k**)



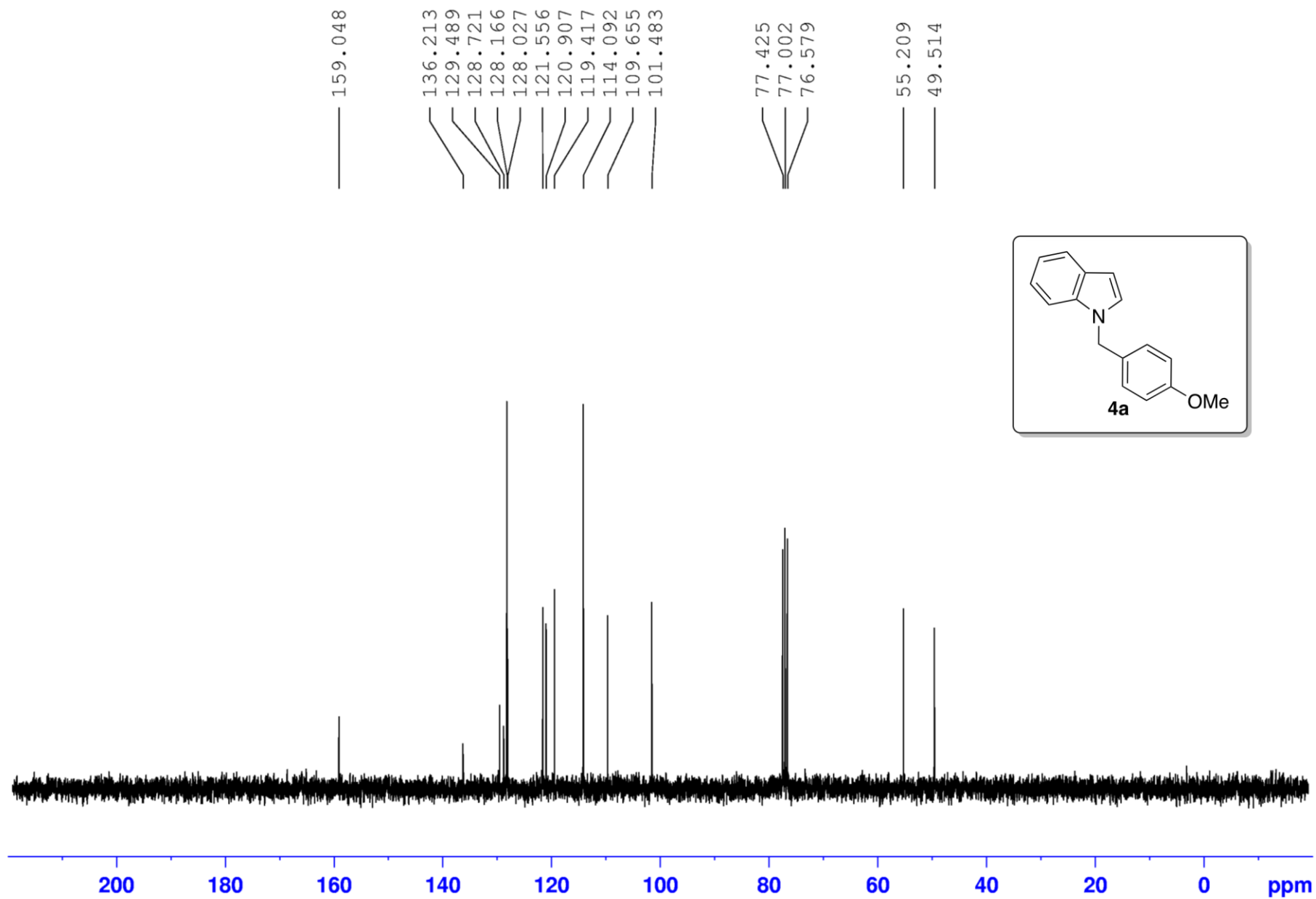
^{13}C NMR (CDCl_3 , 90.5 MHz) spectrum of 2-((1*H*-pyrazol-1-yl)methyl)pyrazine (**3k**)



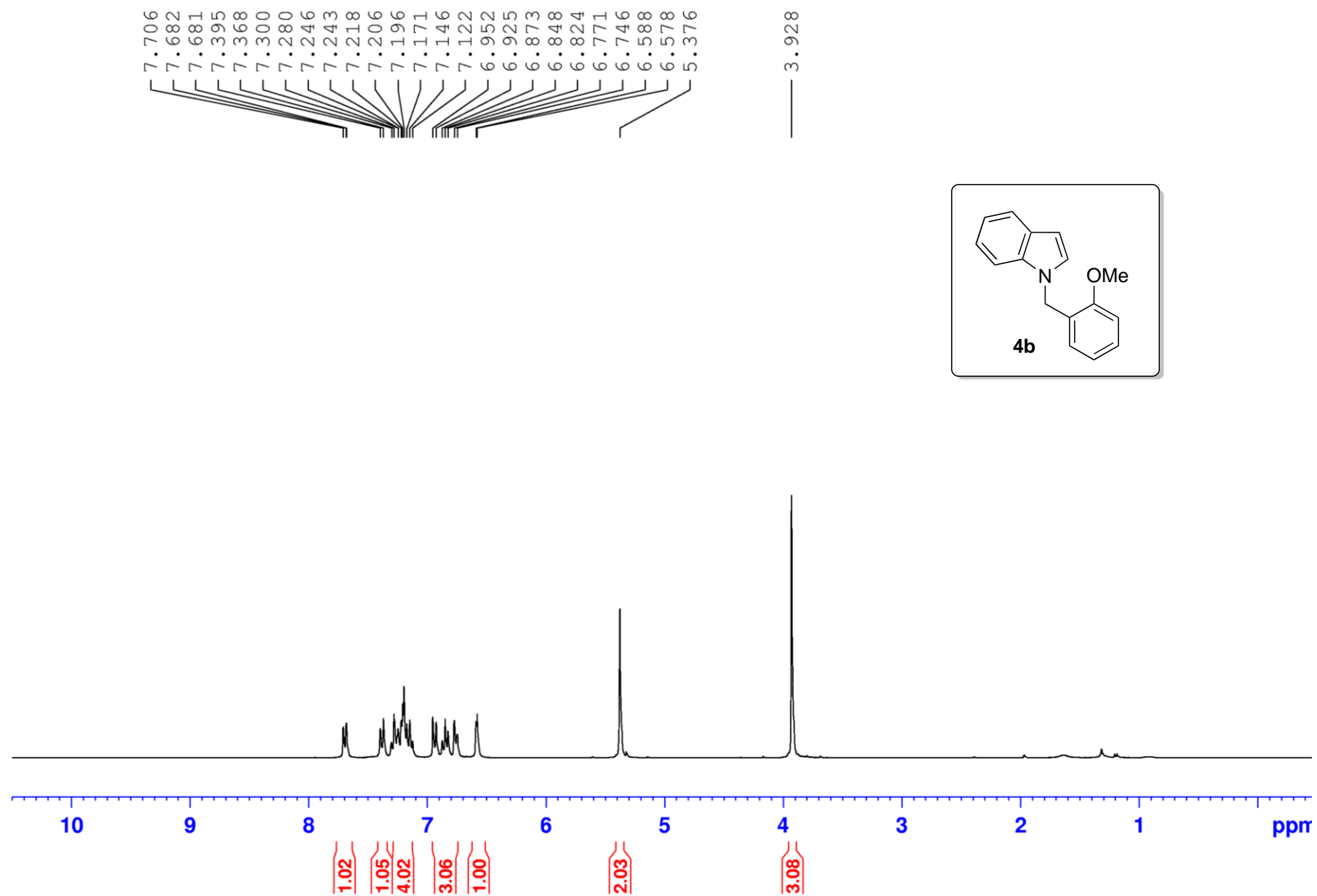
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(4-(methoxy)benzyl)-1*H*-indole (**4a**)



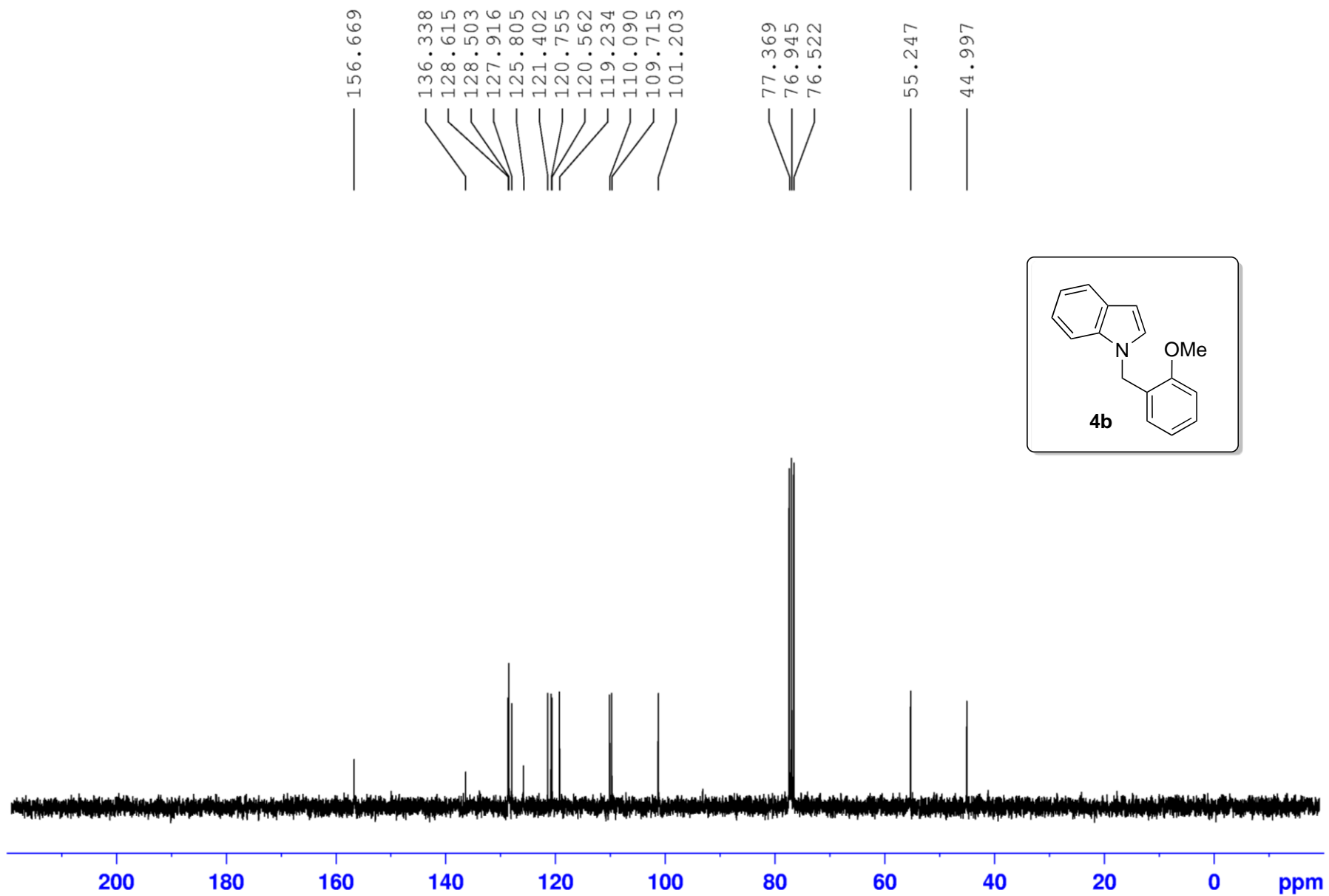
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(4-(methoxy)benzyl)-1*H*-indole (**4a**)



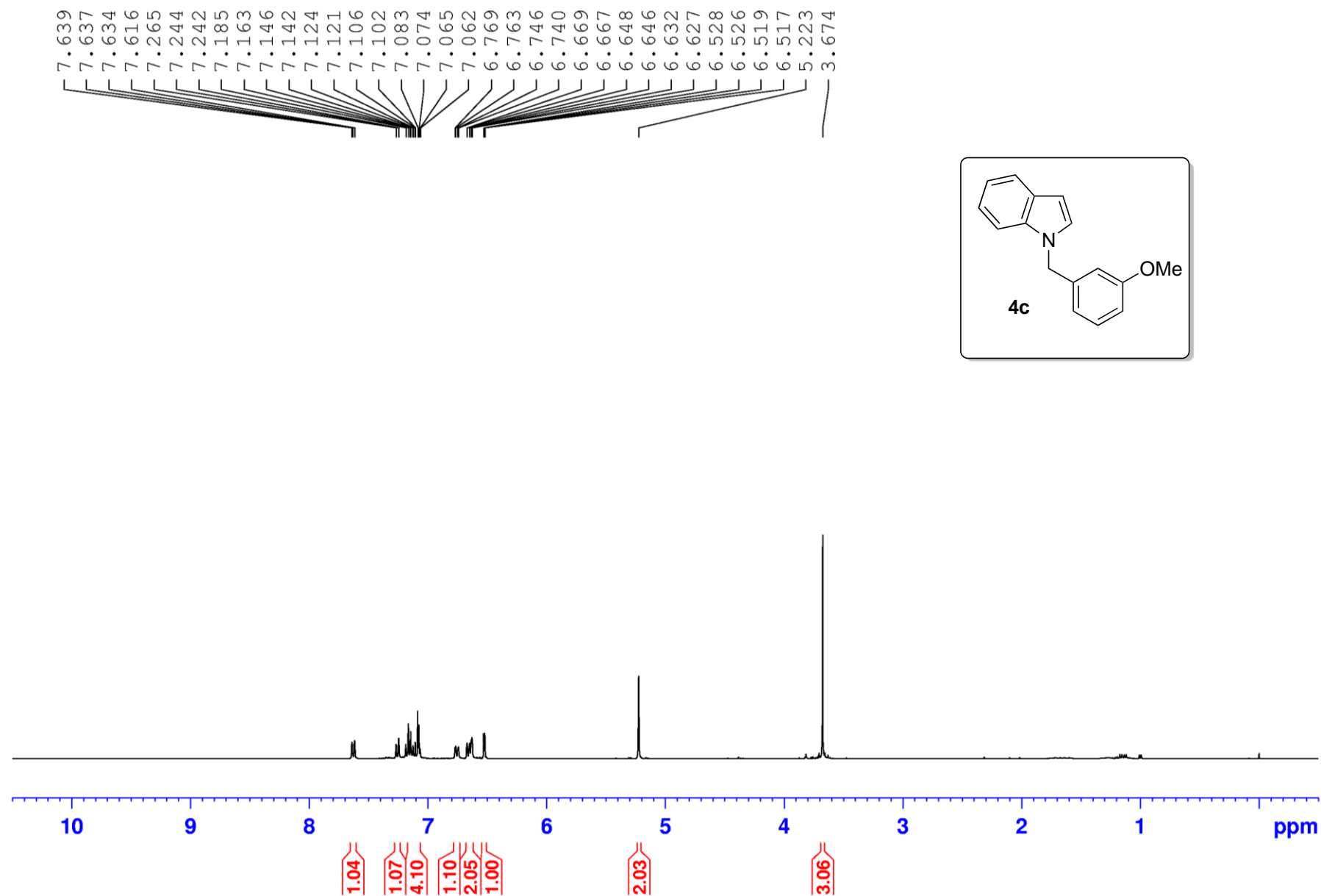
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(2-methoxybenzyl)-1*H*-indole (**4b**)



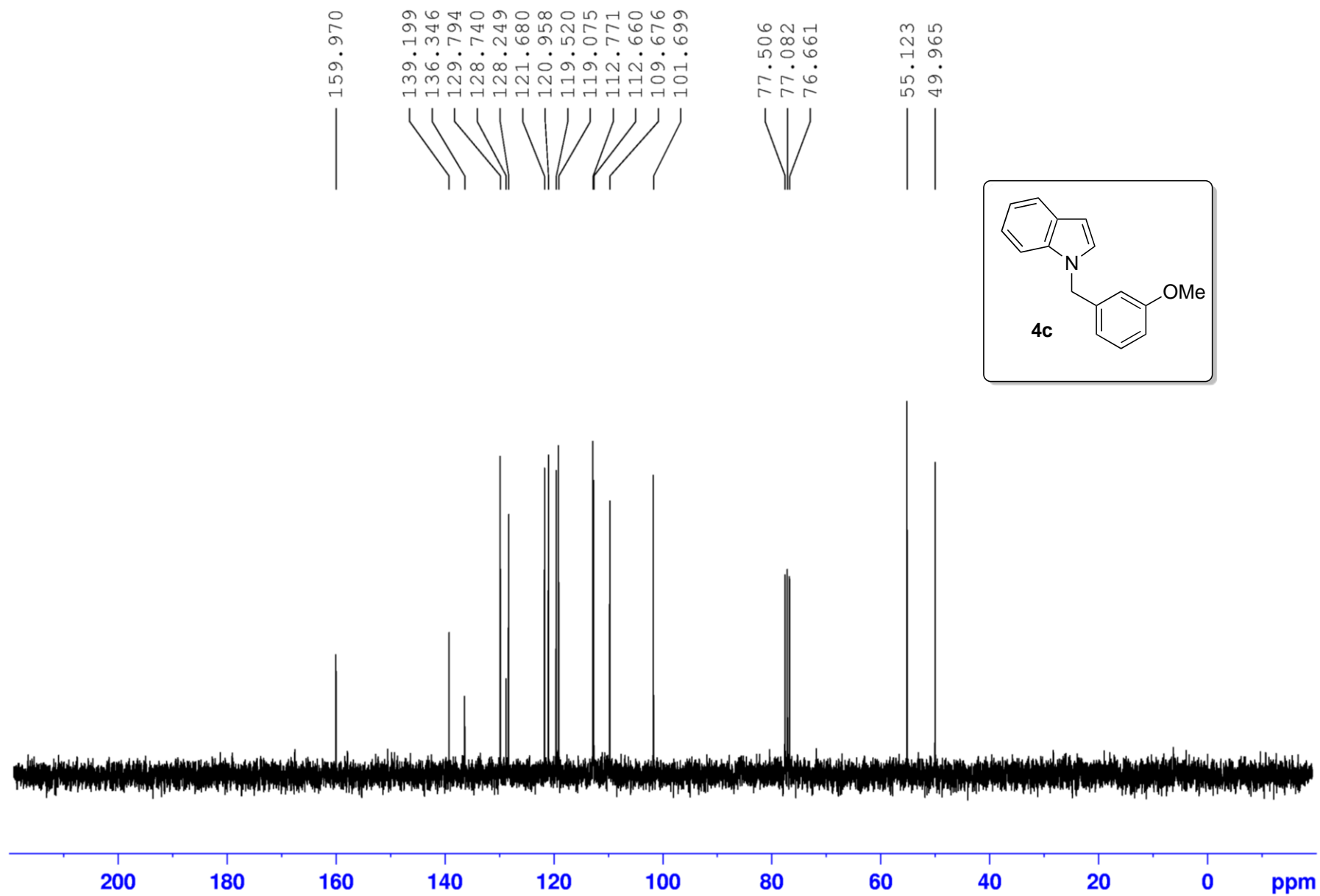
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(2-methoxybenzyl)-1*H*-indole (**4b**)



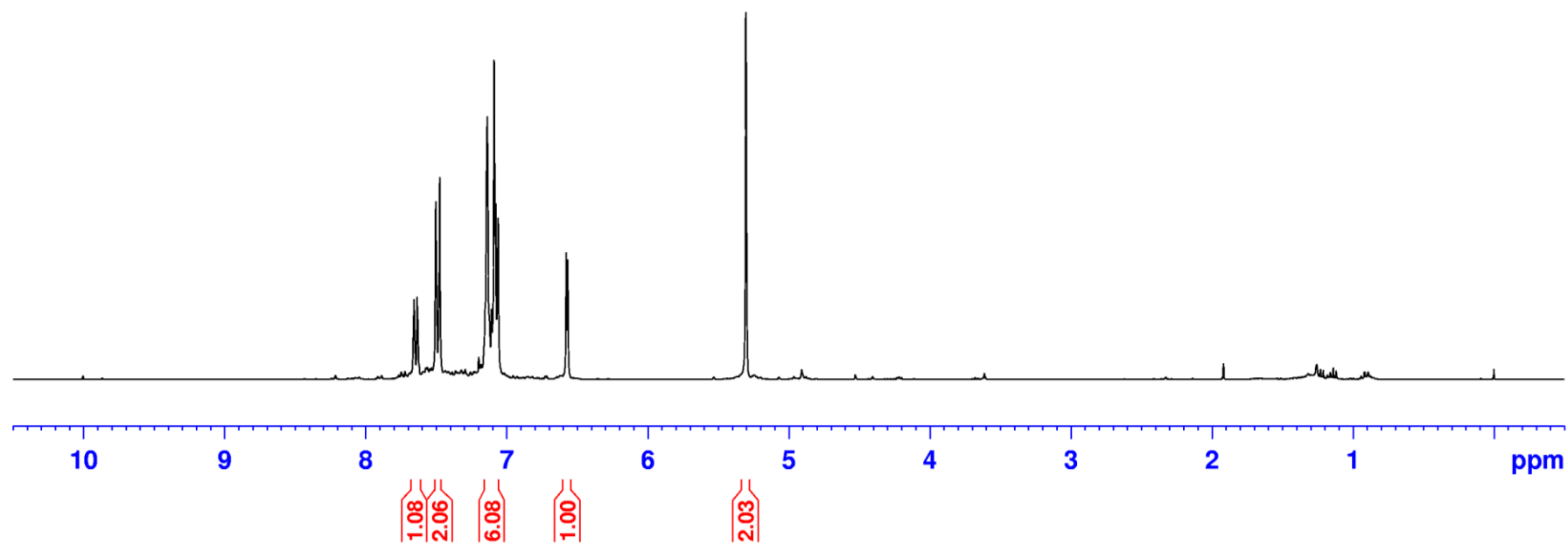
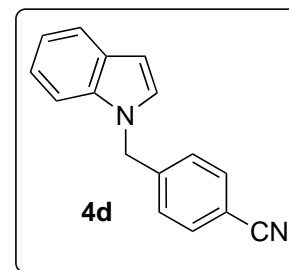
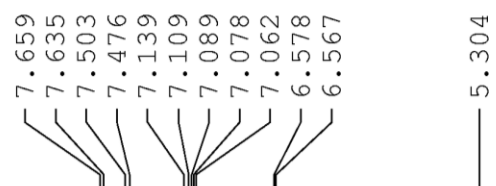
^1H NMR (CDCl_3 , 360 MHz) spectrum of 1-(3-methoxybenzyl)-1*H*-indole (**4c**)



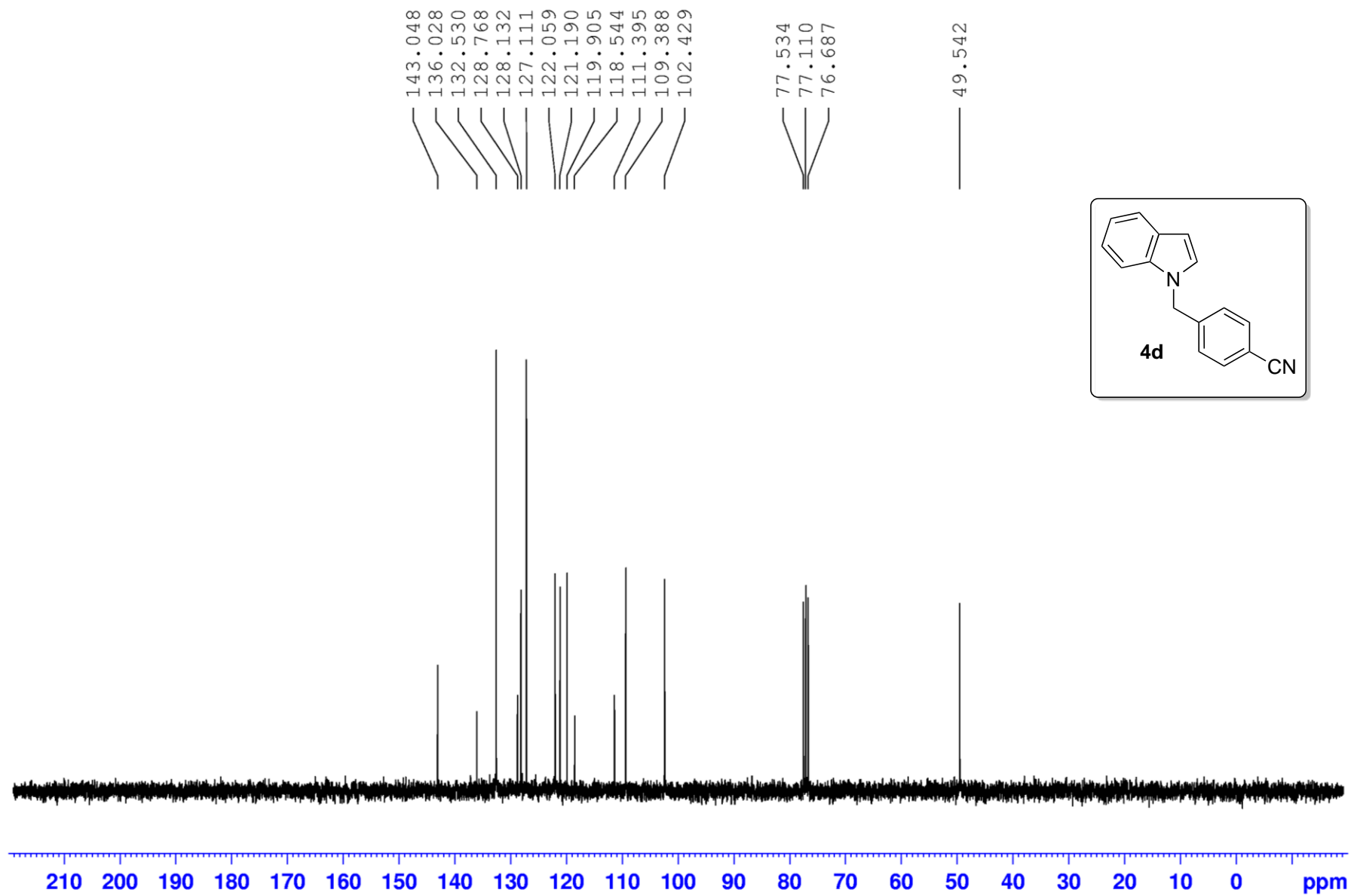
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(3-methoxybenzyl)-1*H*-indole (**4c**)



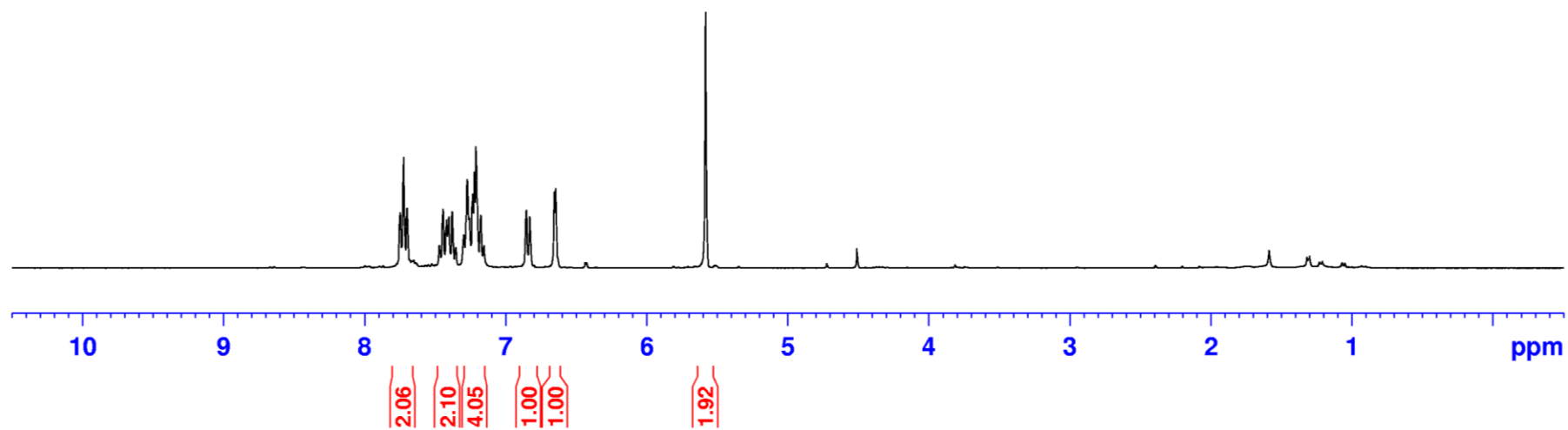
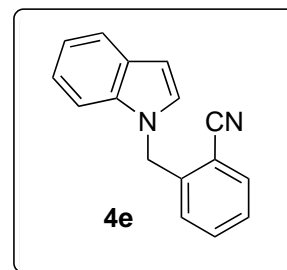
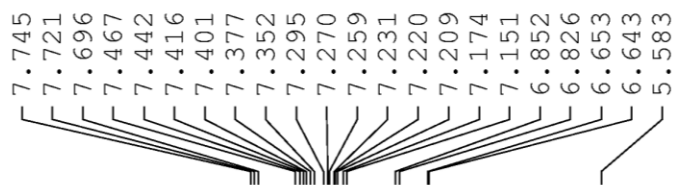
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(4-cyanobenzyl)-1*H*-indole (**4d**)



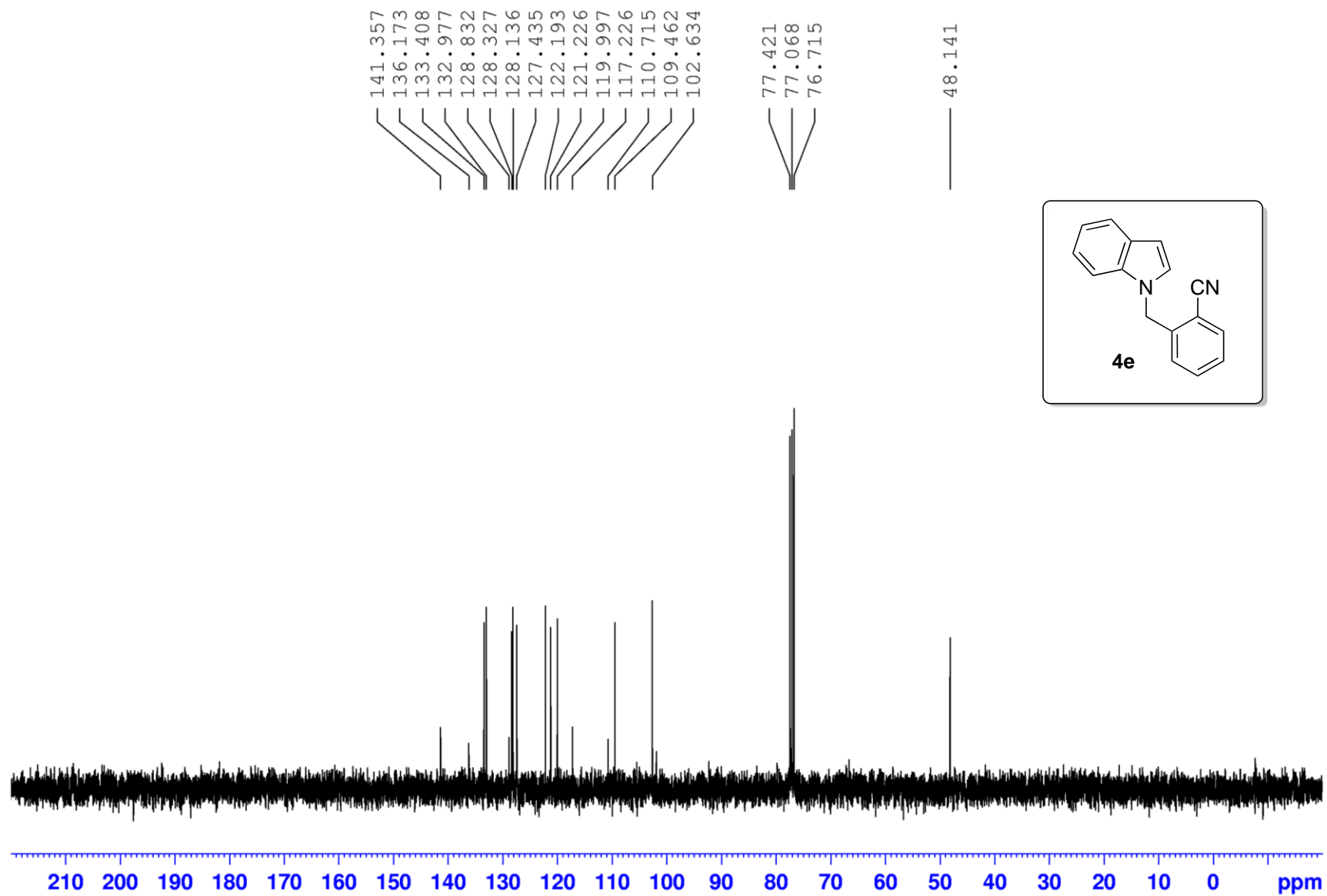
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(4-cyanobenzyl)-1H-indole (**4d**)



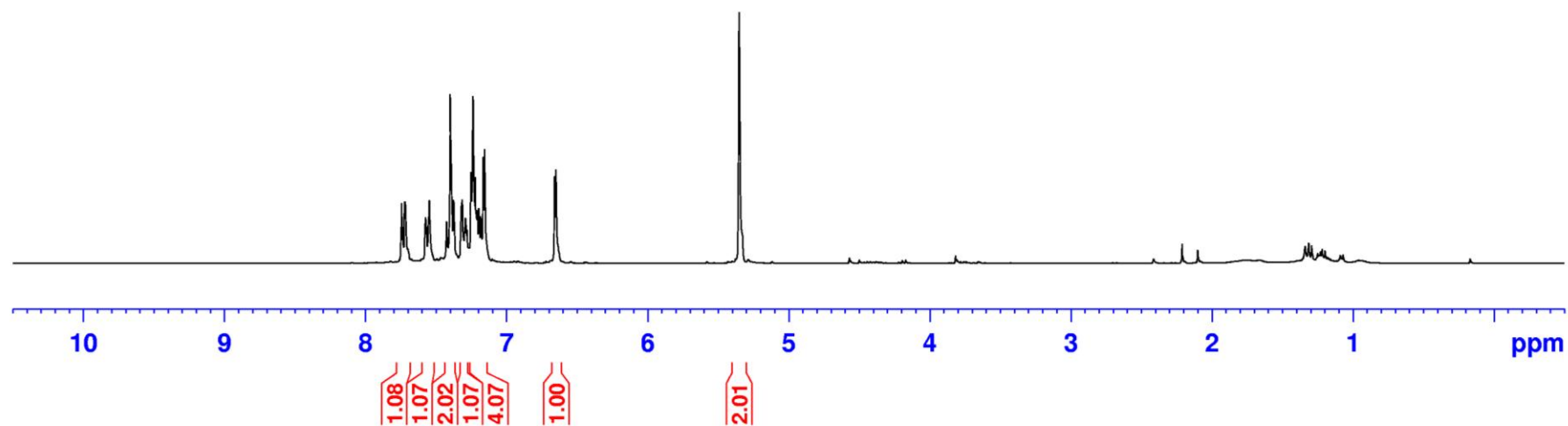
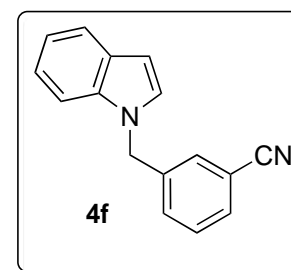
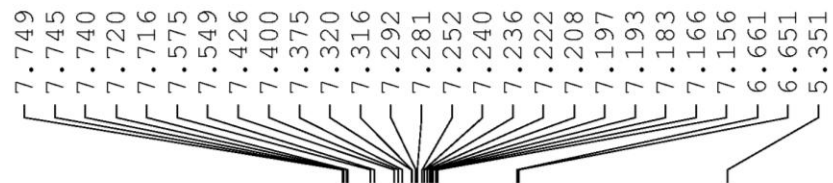
^1H NMR (CDCl_3 , 360 MHz) spectrum of 1-(2-cyanobenzyl)-1*H*-indole (**4e**)



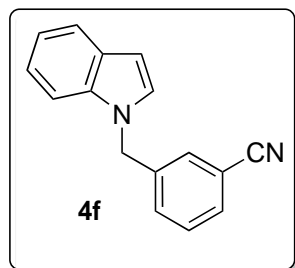
^{13}C NMR (CDCl_3 , 90.5 MHz) spectrum of 1-(2-cyanobenzyl)-1*H*-indole (**4e**)



^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(3-cyanobenzyl)-1*H*-indole (**4f**)



^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(3-cyanobenzyl)-1*H*-indole (**4f**)

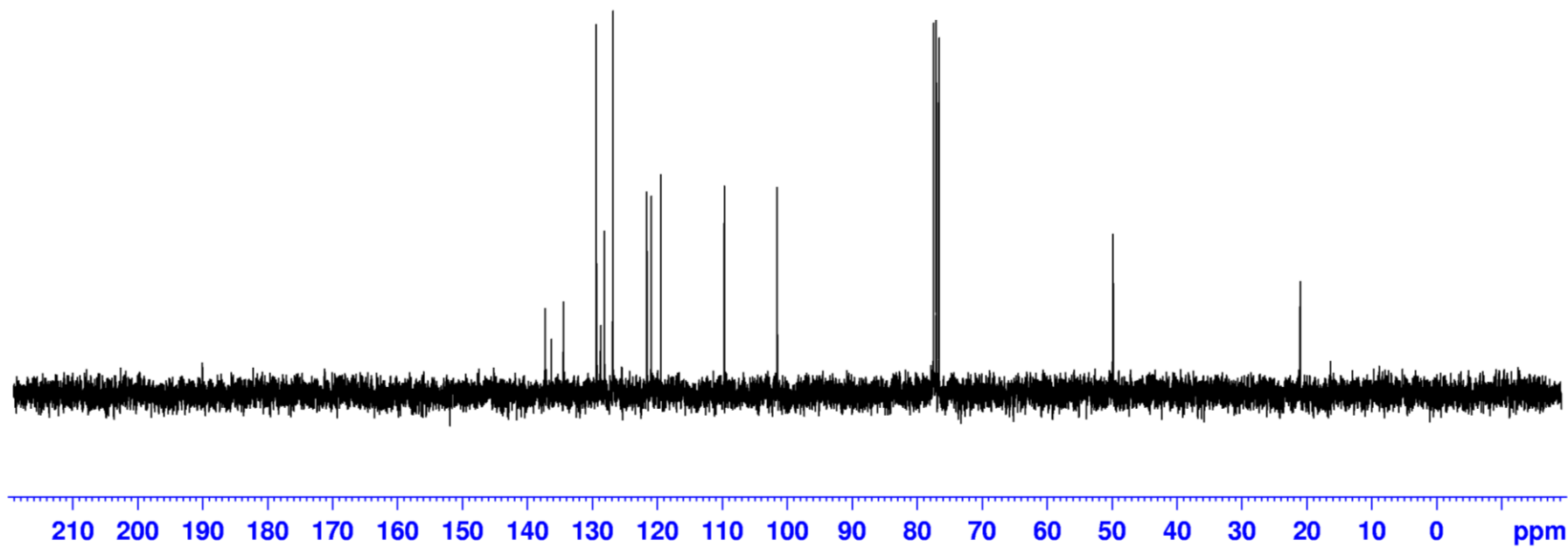


137.220
136.247
134.421
129.343
128.667
128.114
126.760
121.550
120.872
119.394
109.634
101.490

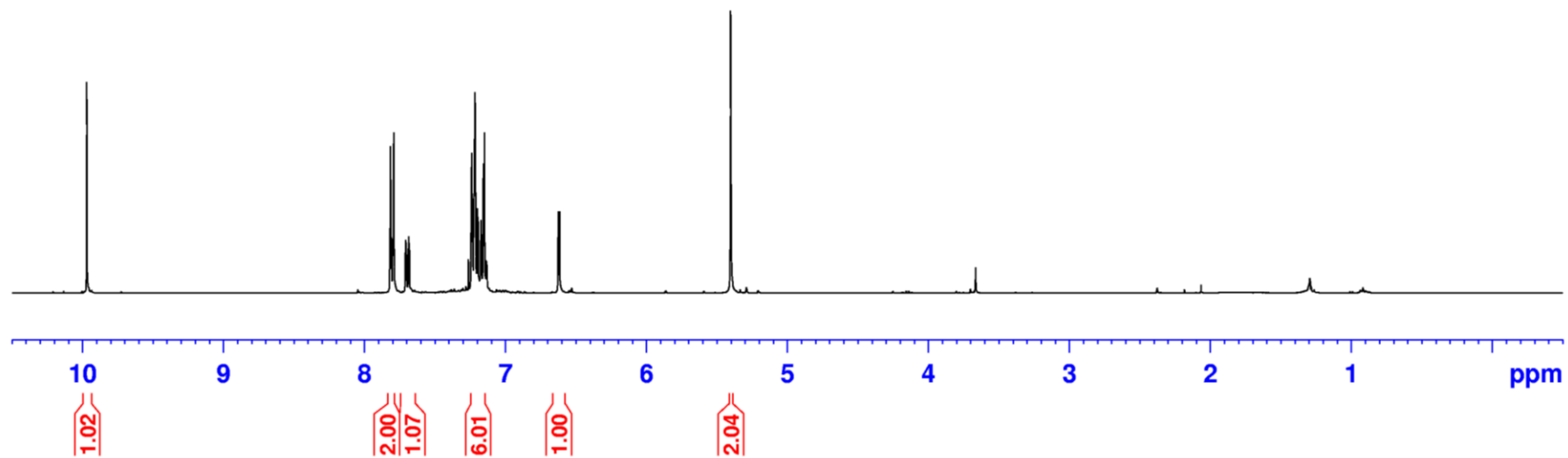
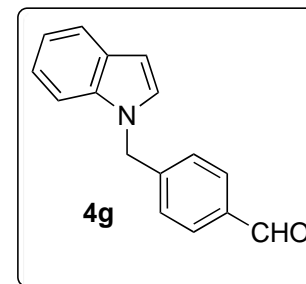
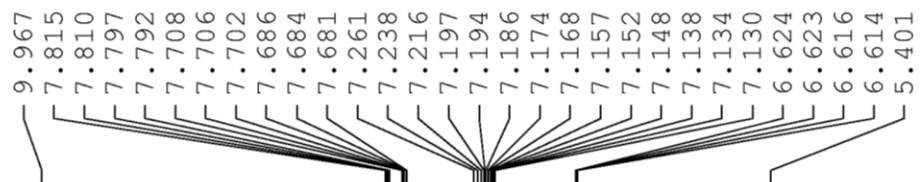
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76.542

49.803

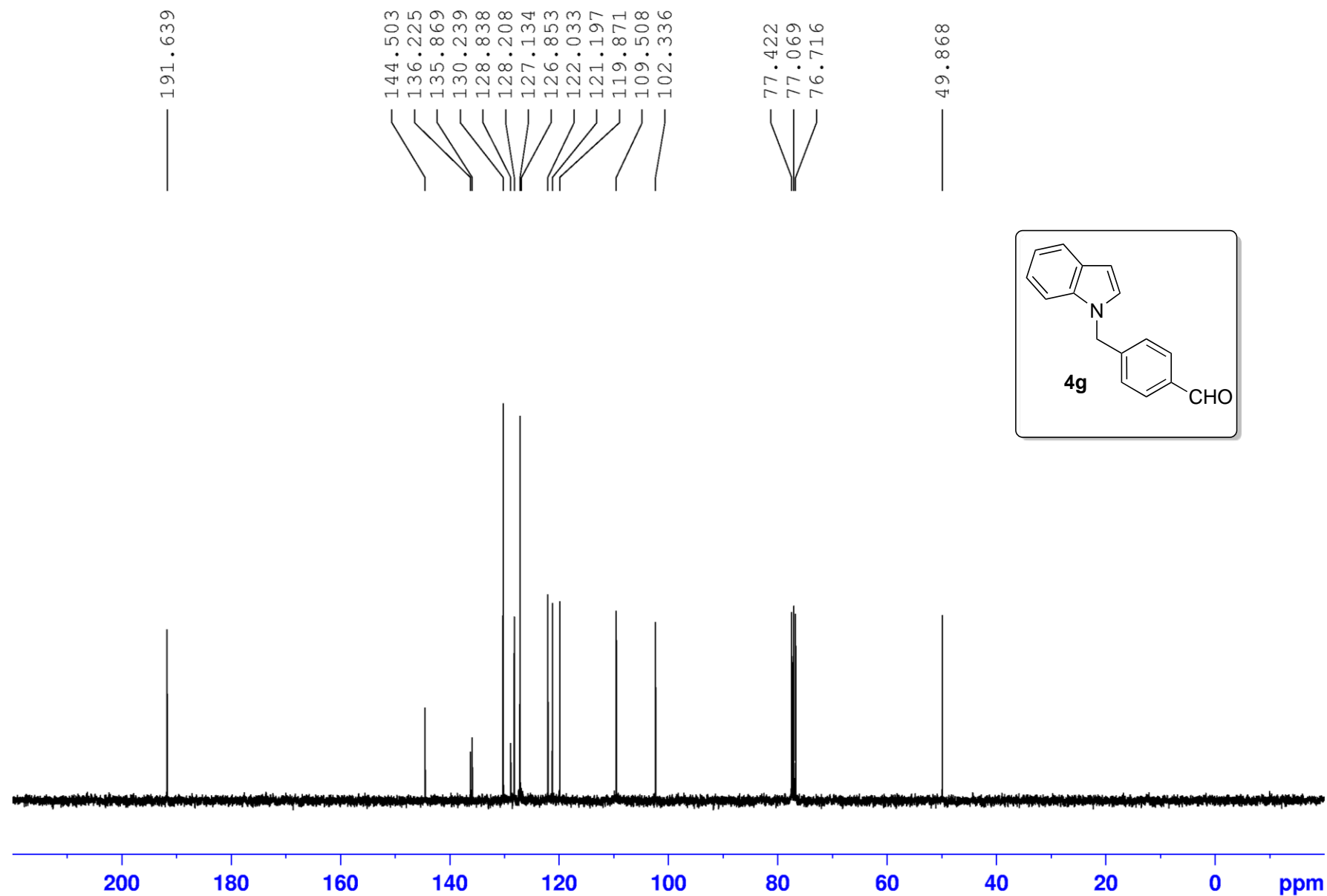
21.004



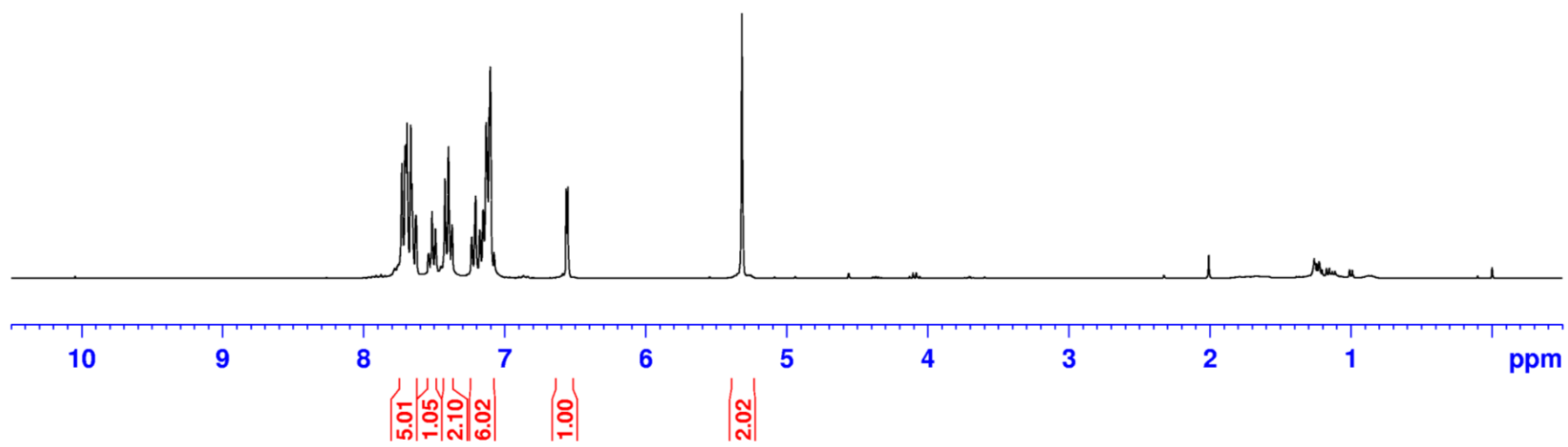
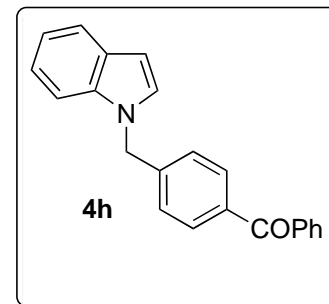
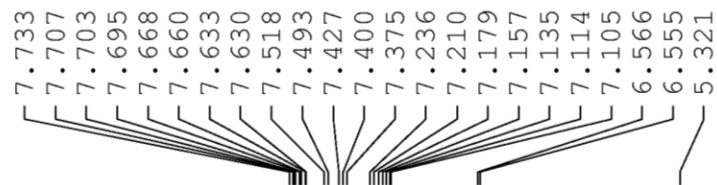
^1H NMR (CDCl_3 , 300 MHz) spectrum of 4-((1*H*-indol-1-yl)methyl)benzaldehyde (**4g**)



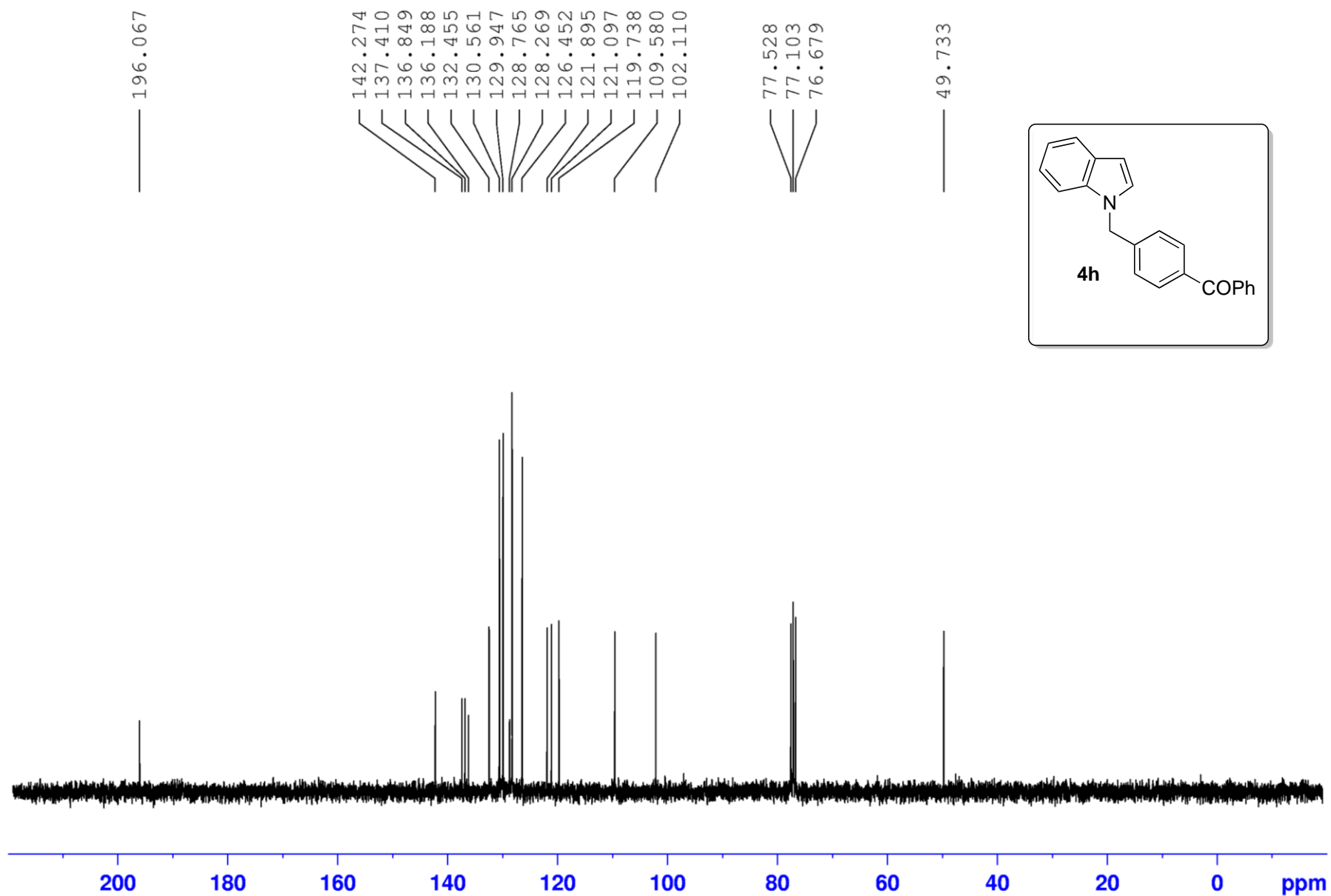
^{13}C NMR (CDCl_3 , 90.5 MHz) spectrum of 4-((1*H*-indol-1-yl)methyl)benzaldehyde (**4g**)



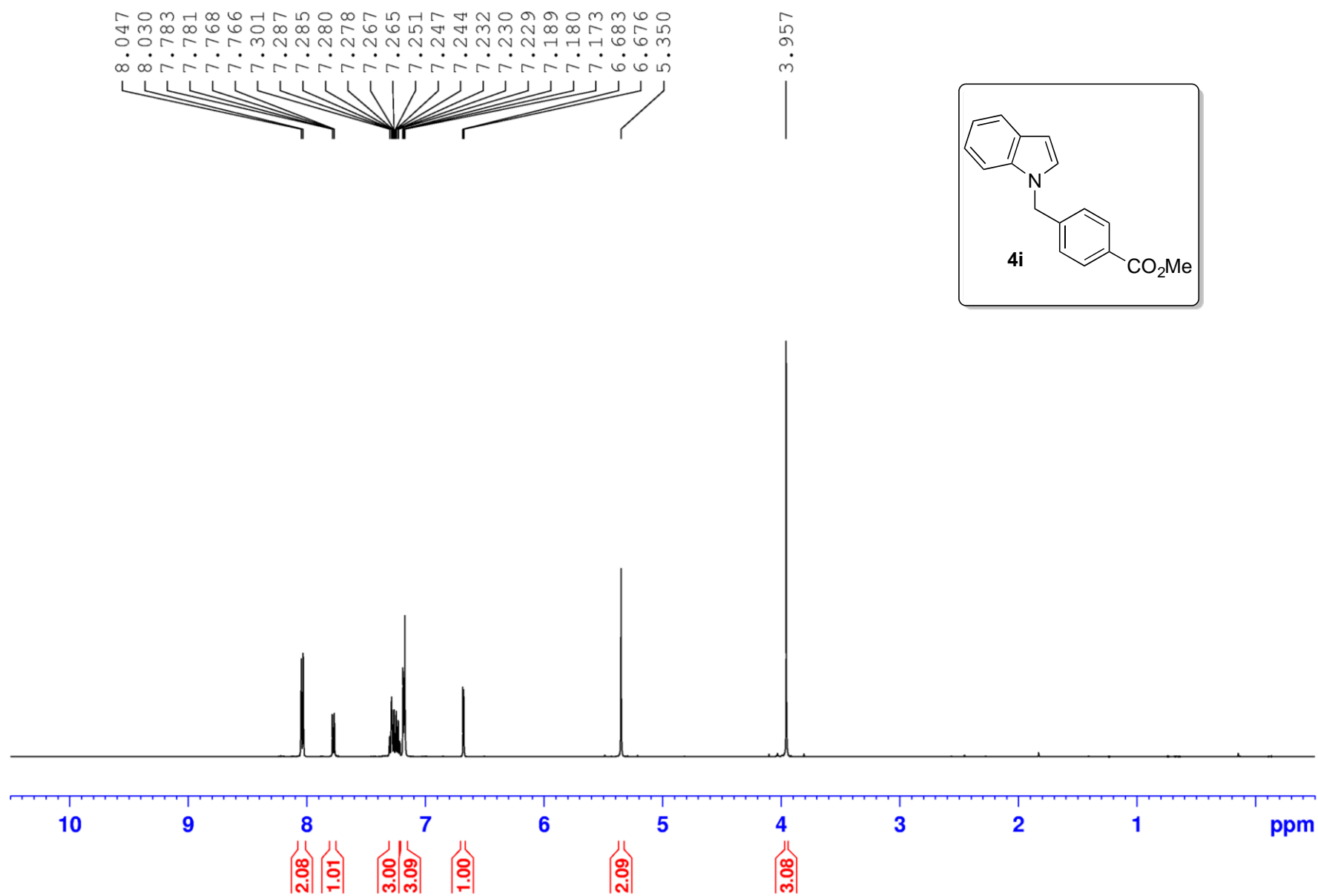
^1H NMR (CDCl_3 , 300 MHz) spectrum of (4-((1*H*-indol-1-yl)methyl)phenyl)(phenyl)methanone (**4h**)



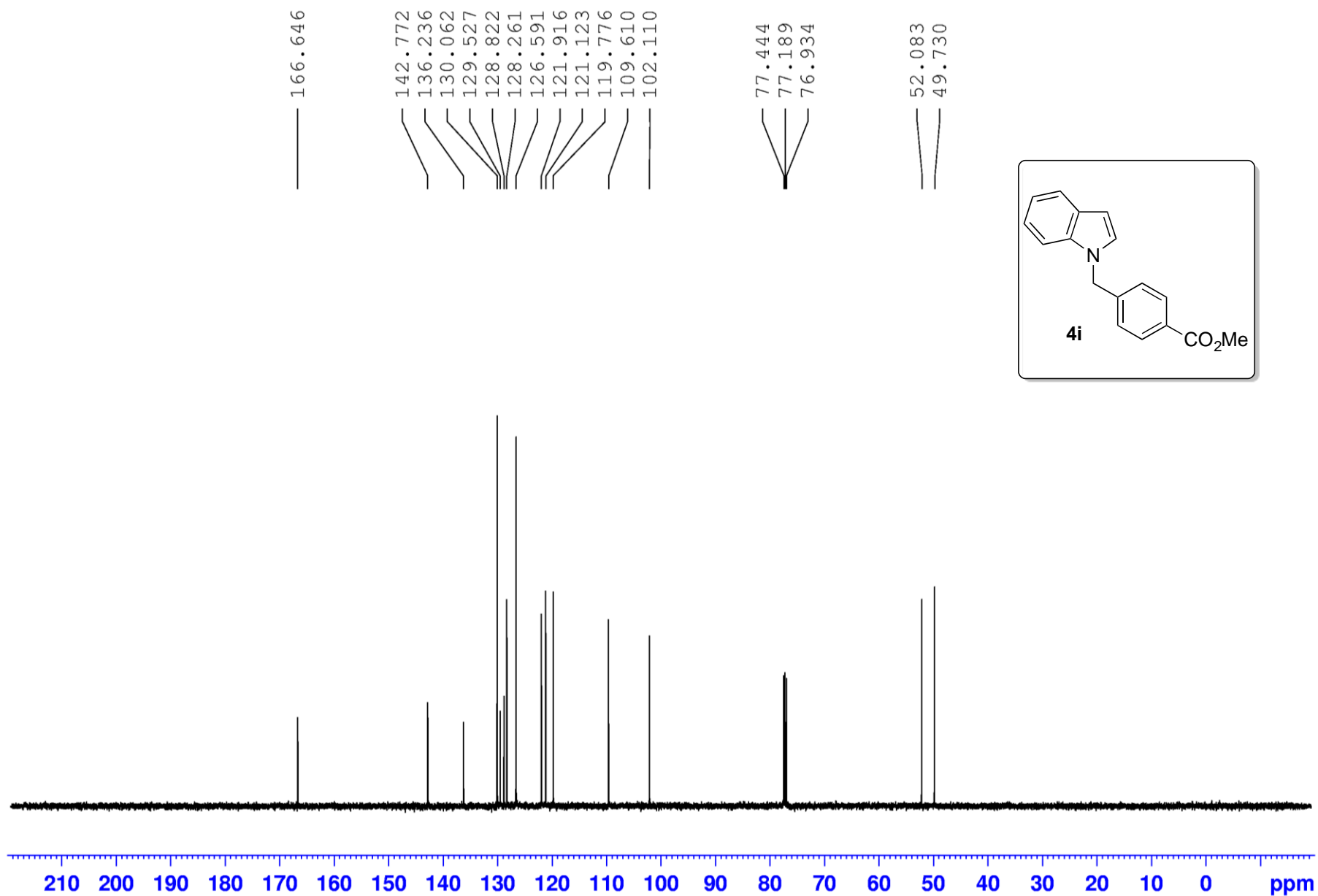
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of (4-((1*H*-indol-1-yl)methyl)phenyl)(phenyl)methanone (**4h**)



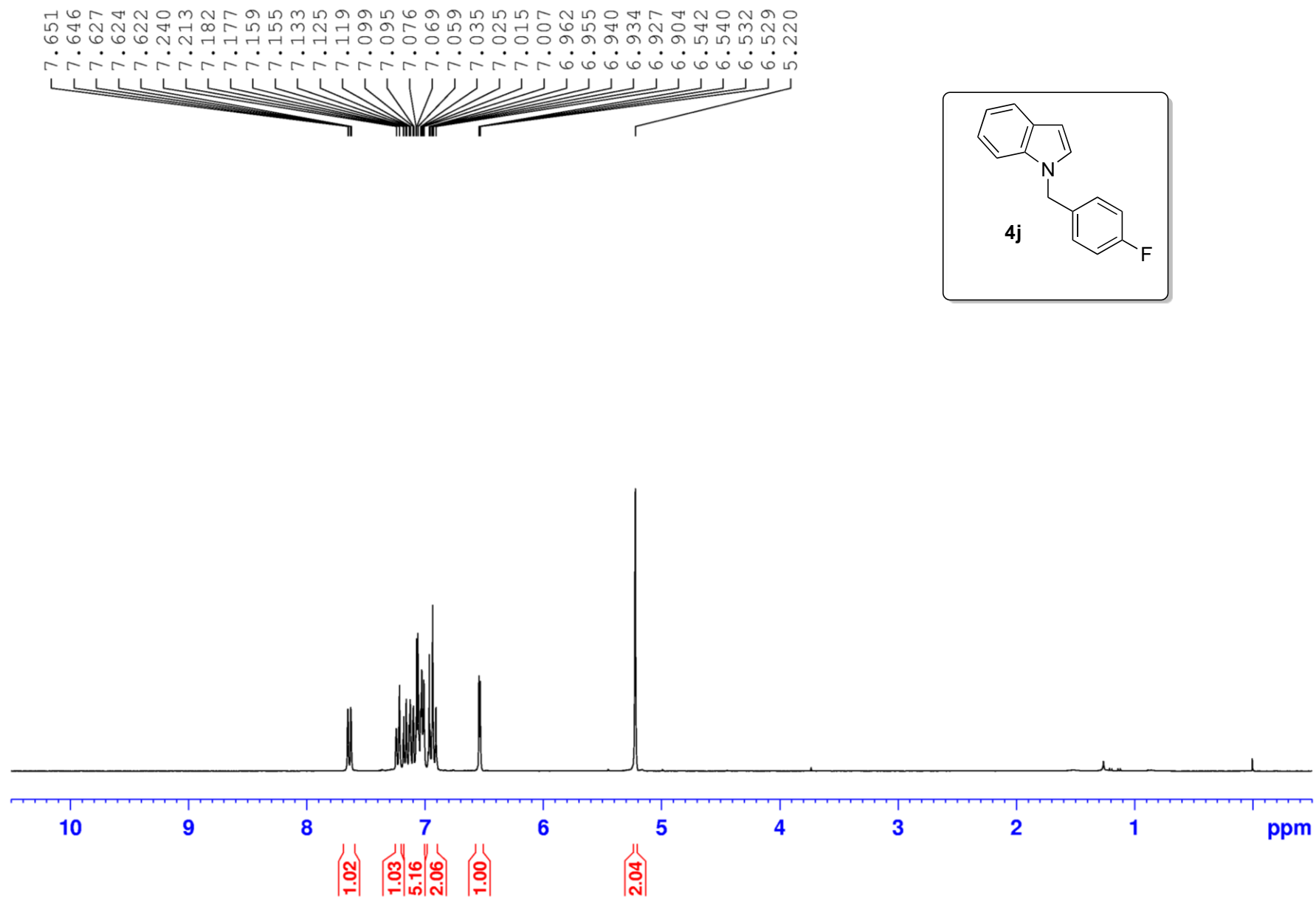
^1H NMR (CDCl_3 , 500 MHz) spectrum of methyl-4-((1*H*-indol-1-yl)methyl)benzoate (**4i**)



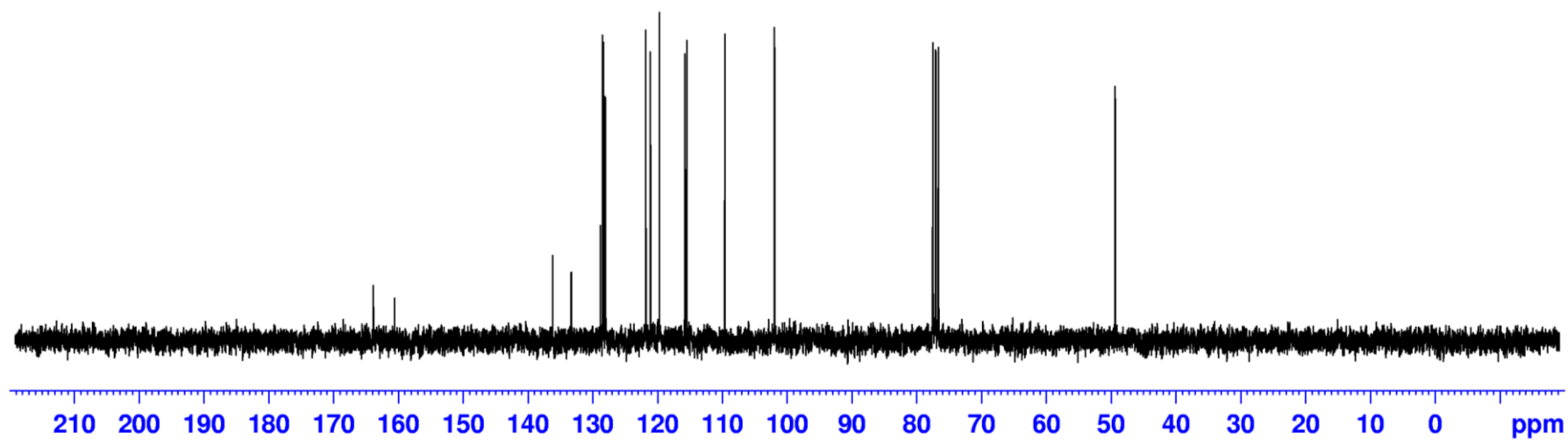
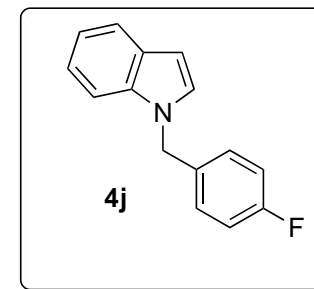
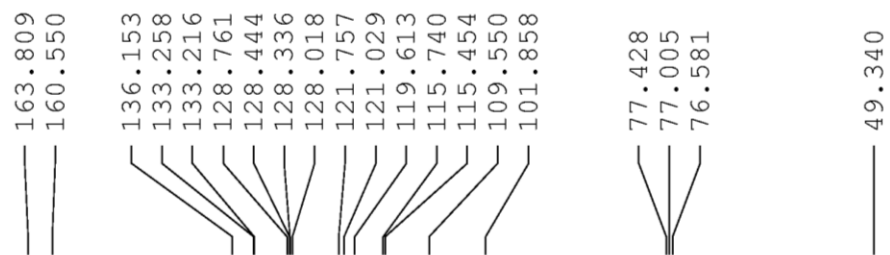
^{13}C NMR (CDCl_3 , 125.8 MHz) spectrum of methyl-4-((1*H*-indol-1-yl)methyl)benzoate (**4i**)



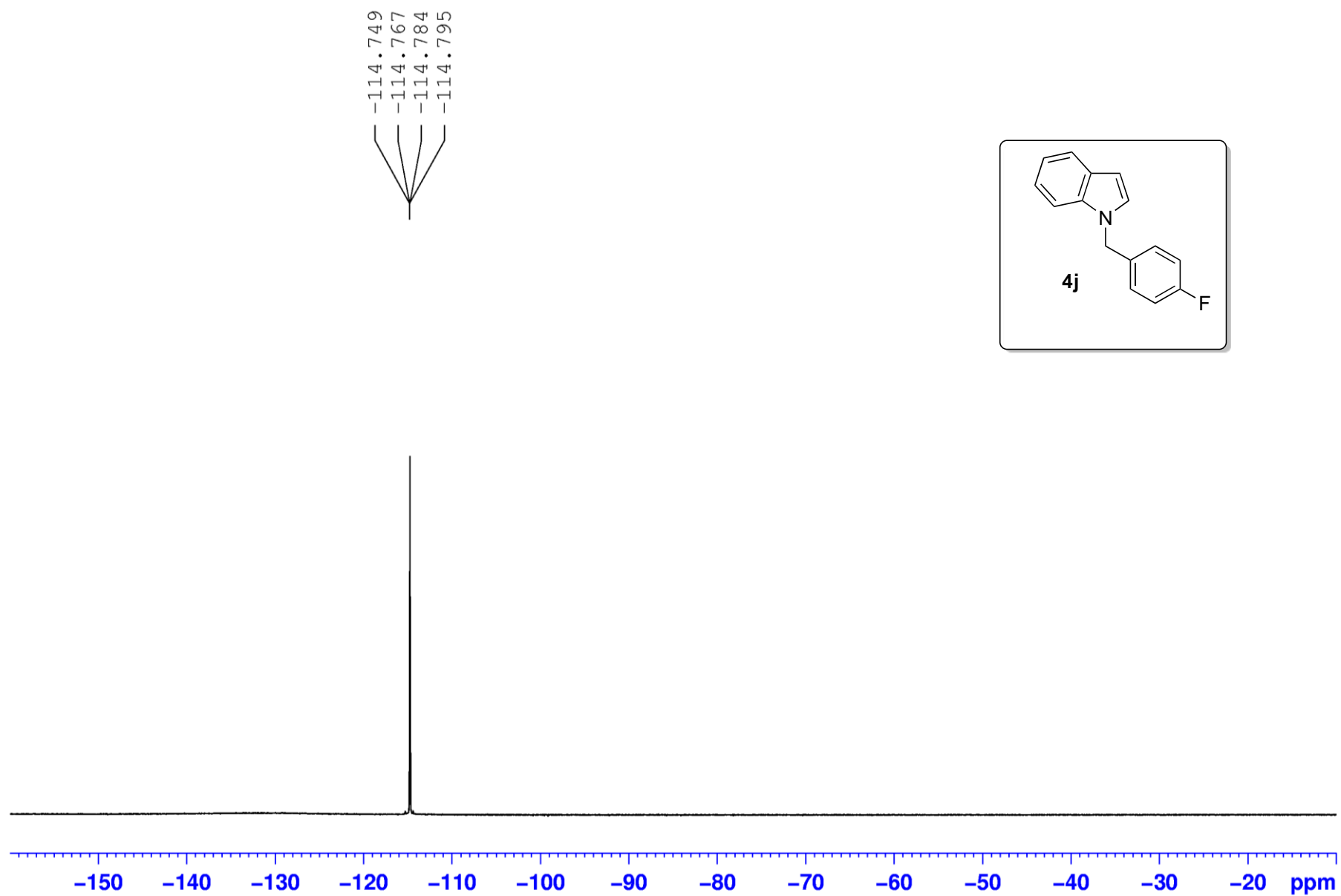
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(4-fluorobenzyl)-1*H*-indole (**4j**)



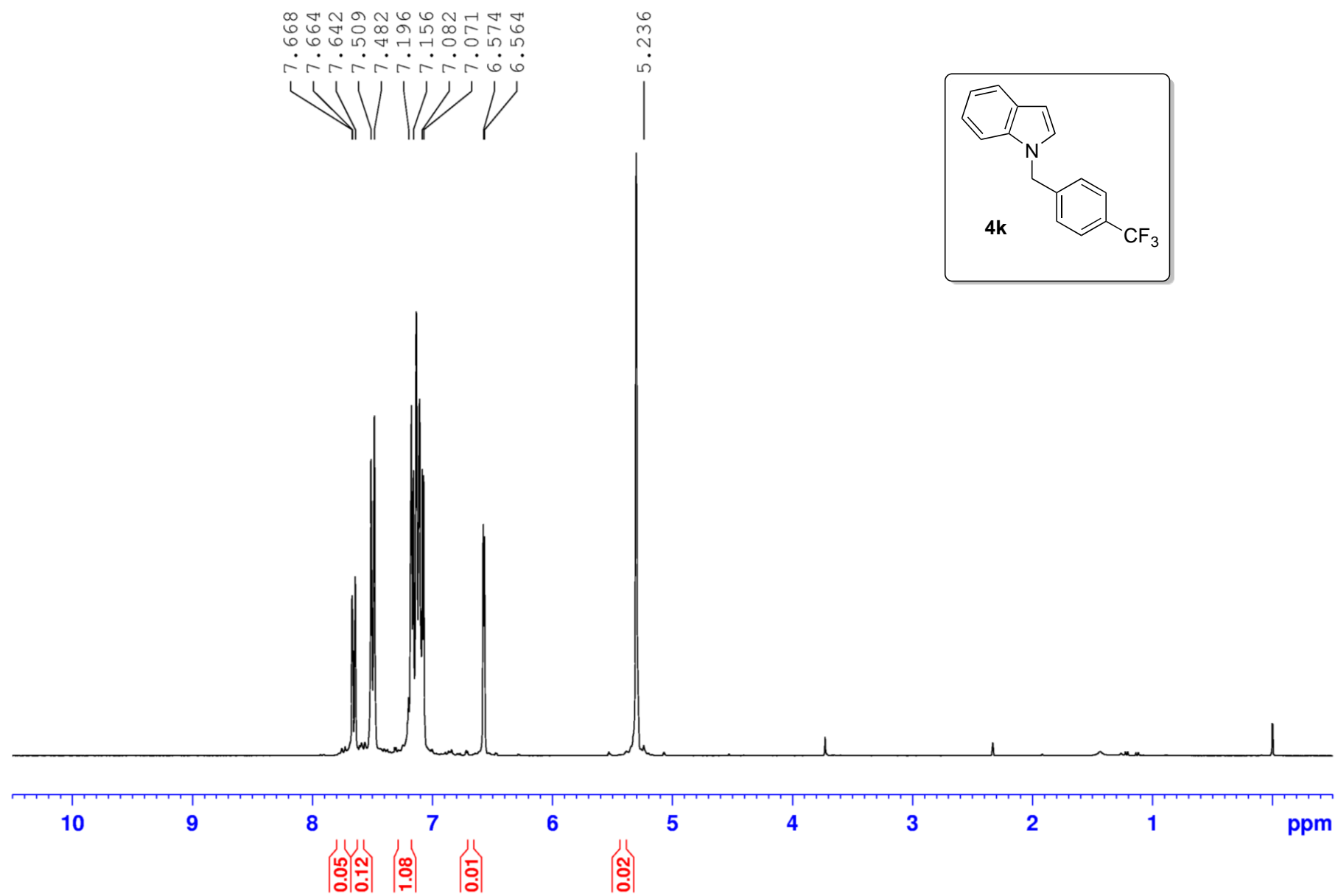
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(4-fluorobenzyl)-1*H*-indole (**4j**)



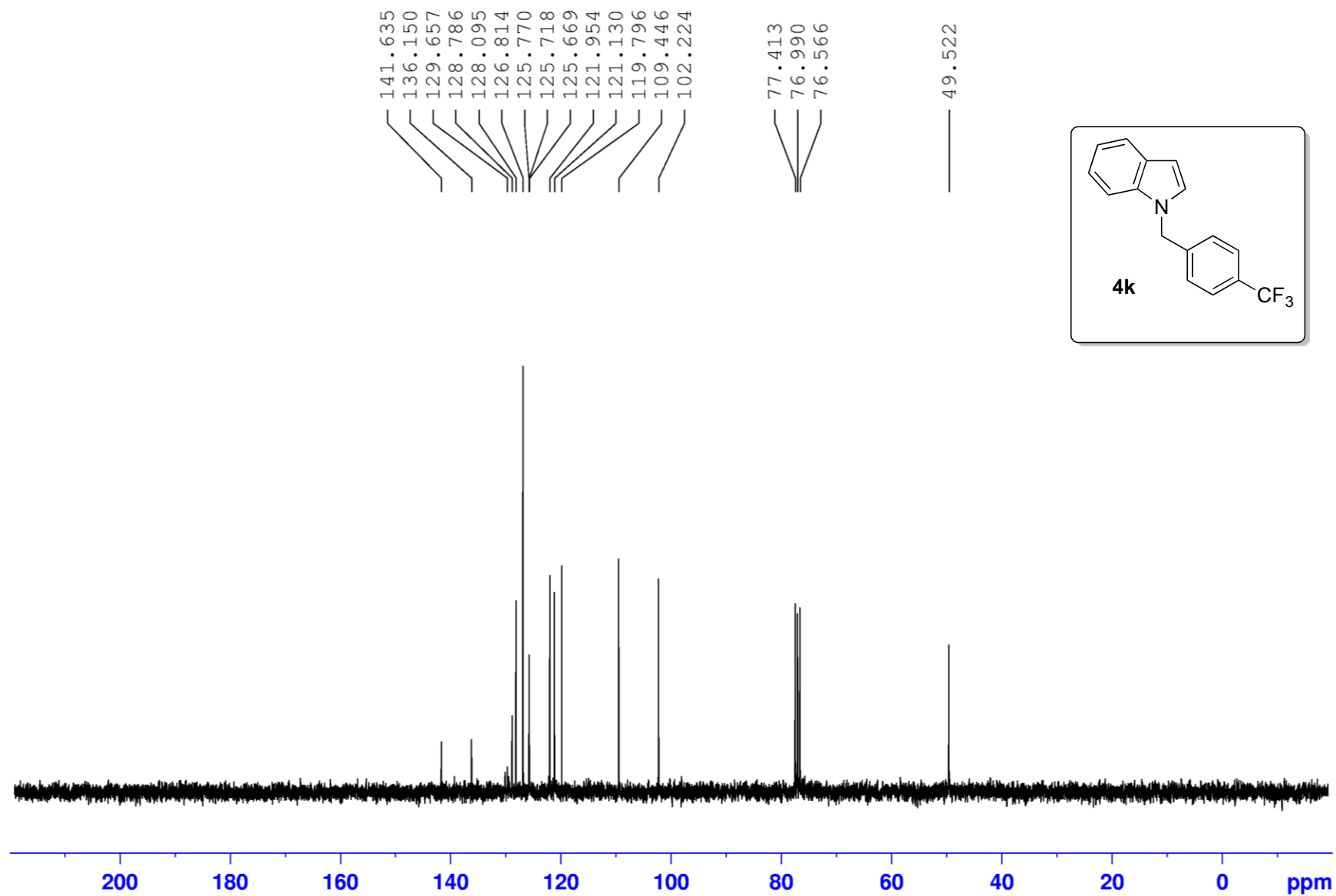
^{19}F NMR (CDCl_3 , 282.4 MHz) spectrum of 1-(4-fluorobenzyl)-1*H*-indole (**4j**)



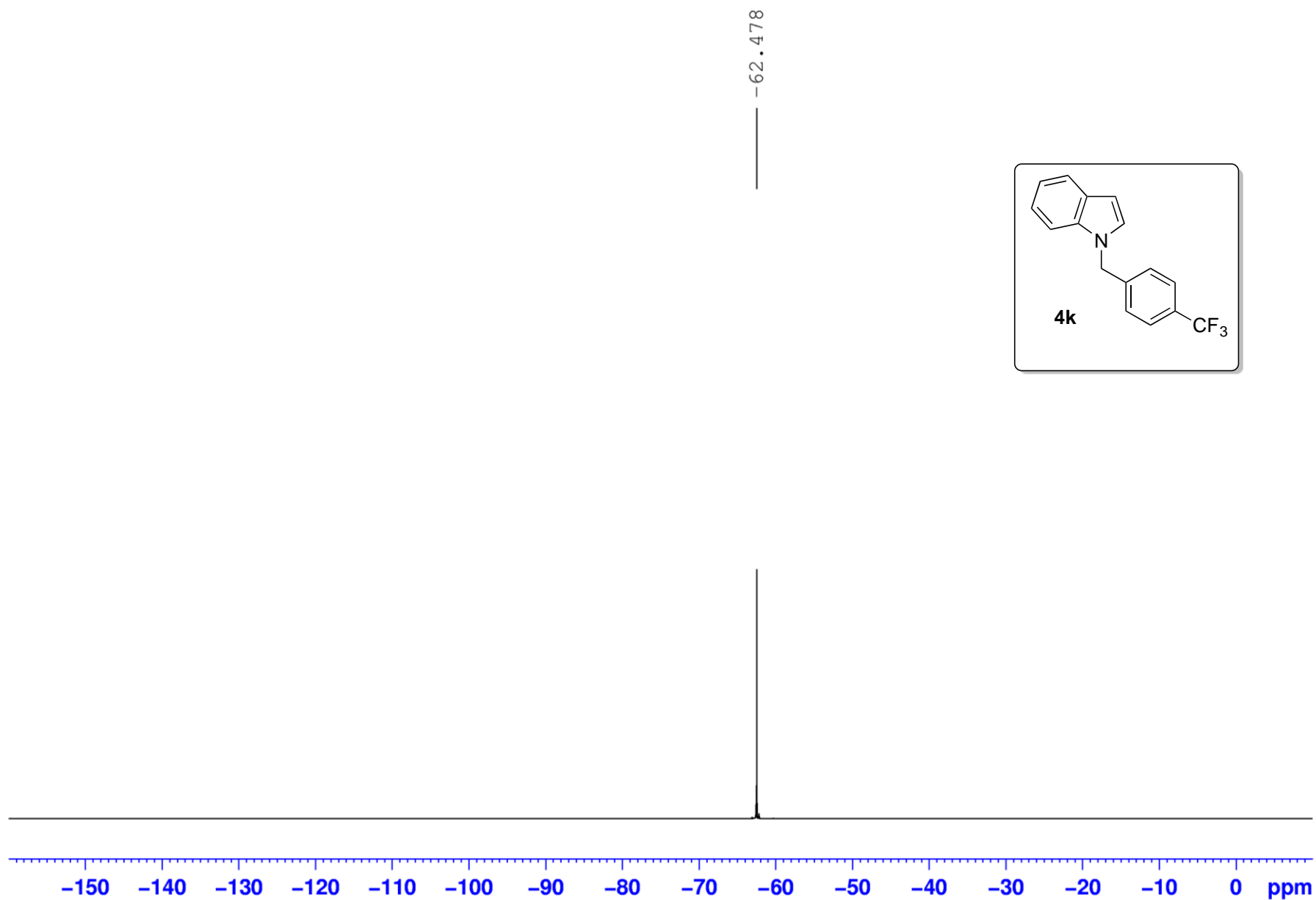
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(4-(trifluoromethyl)benzyl)-1*H*-indole (**4k**)



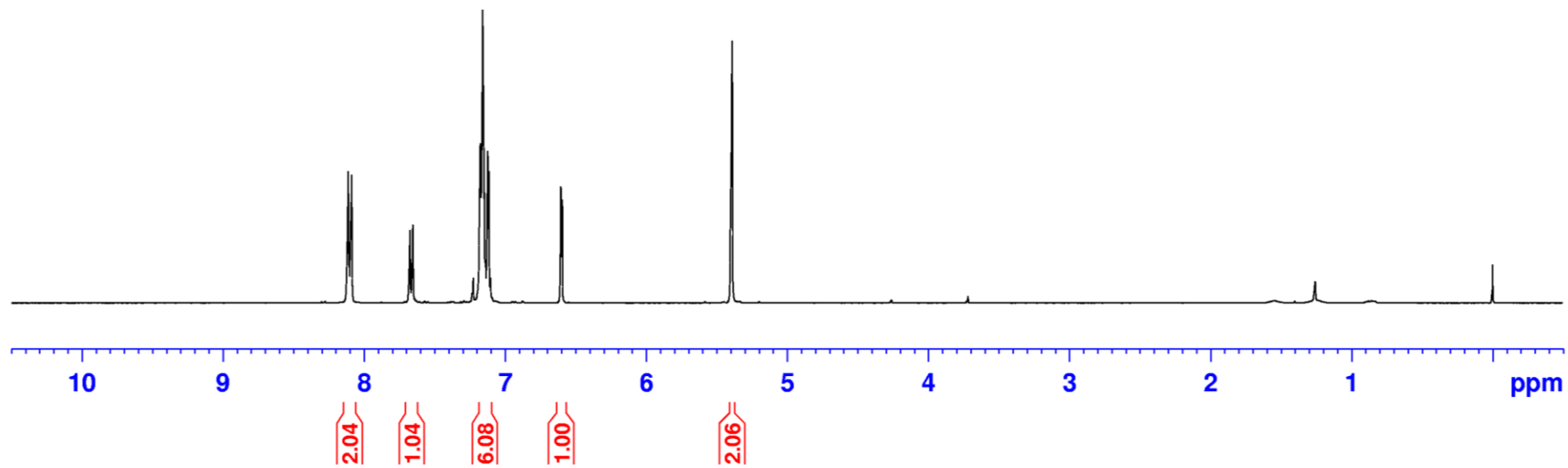
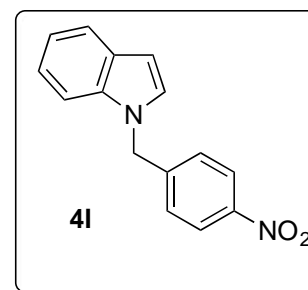
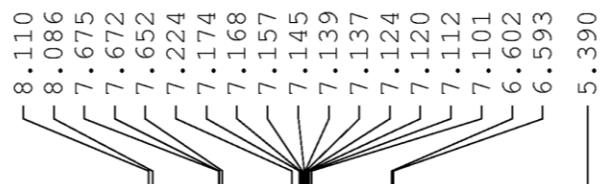
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(4-(trifluoromethyl)benzyl)-1H-indole (**4k**)



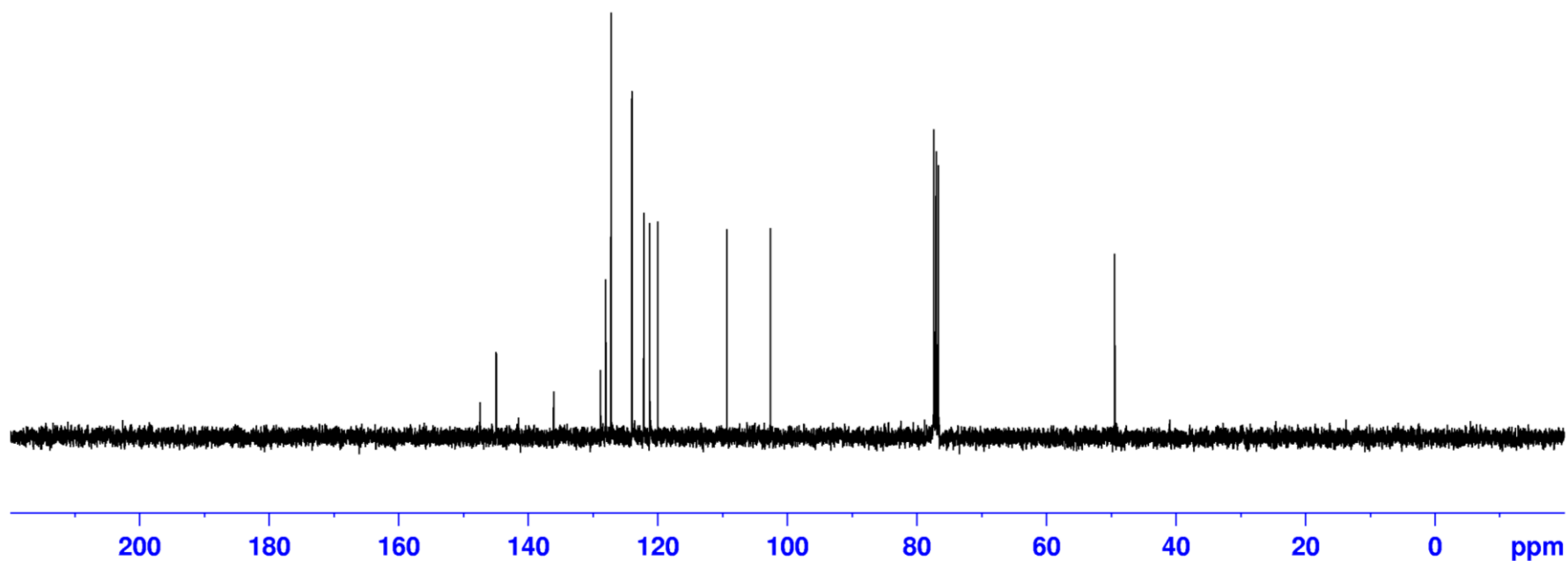
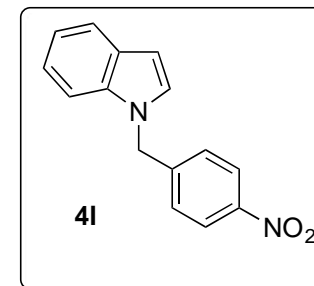
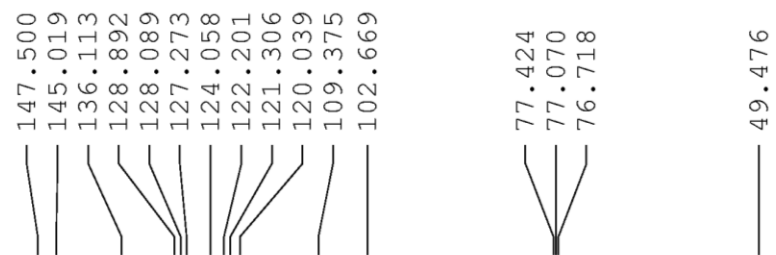
^{19}F NMR (CDCl_3 , 282.4 MHz) spectrum of 1-(4-(trifluoromethyl)benzyl)-1*H*-indole (**4k**)



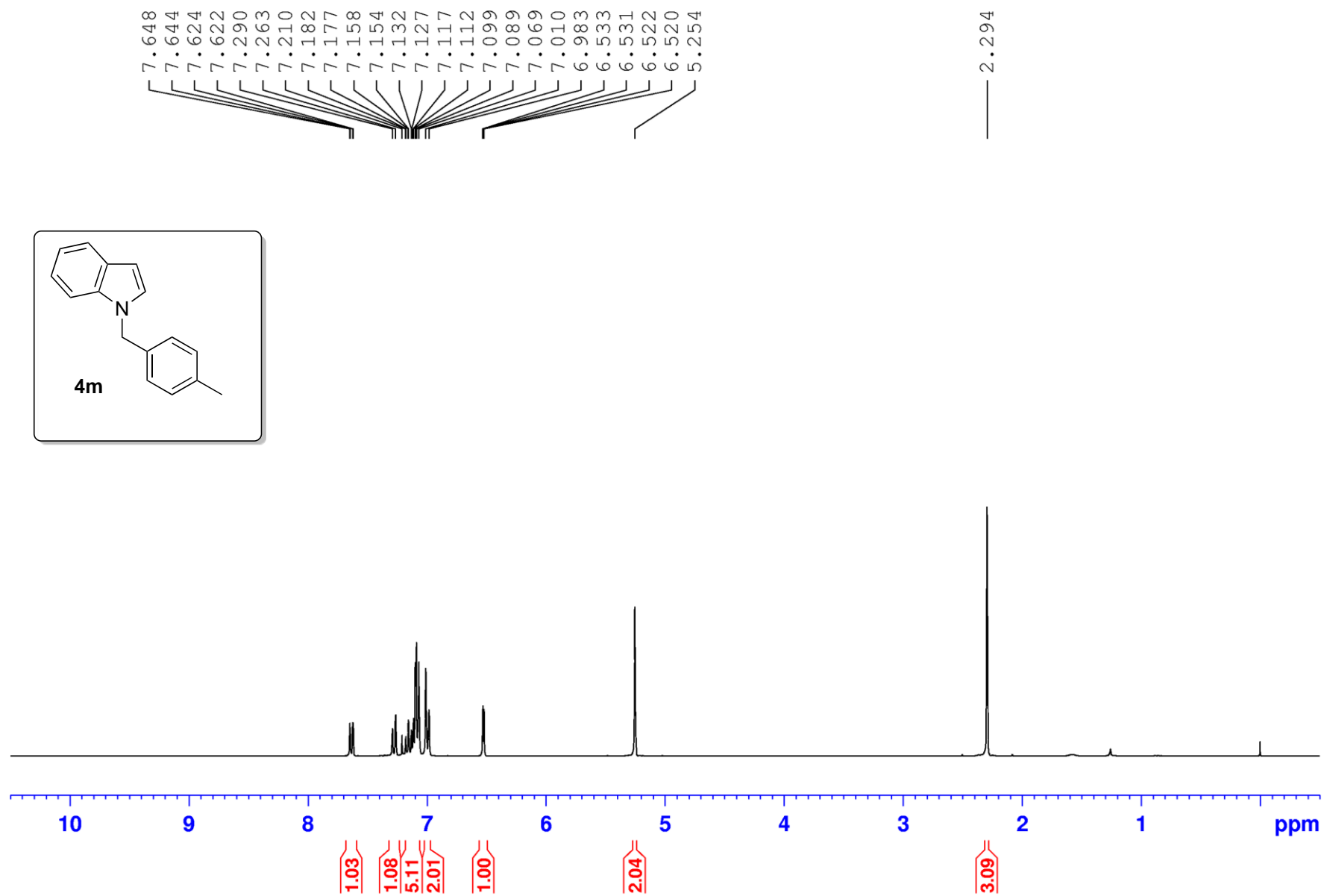
^1H NMR (CDCl_3 , 360 MHz) spectrum of 1-(4-nitrobenzyl)-1*H*-indole (**4I**)



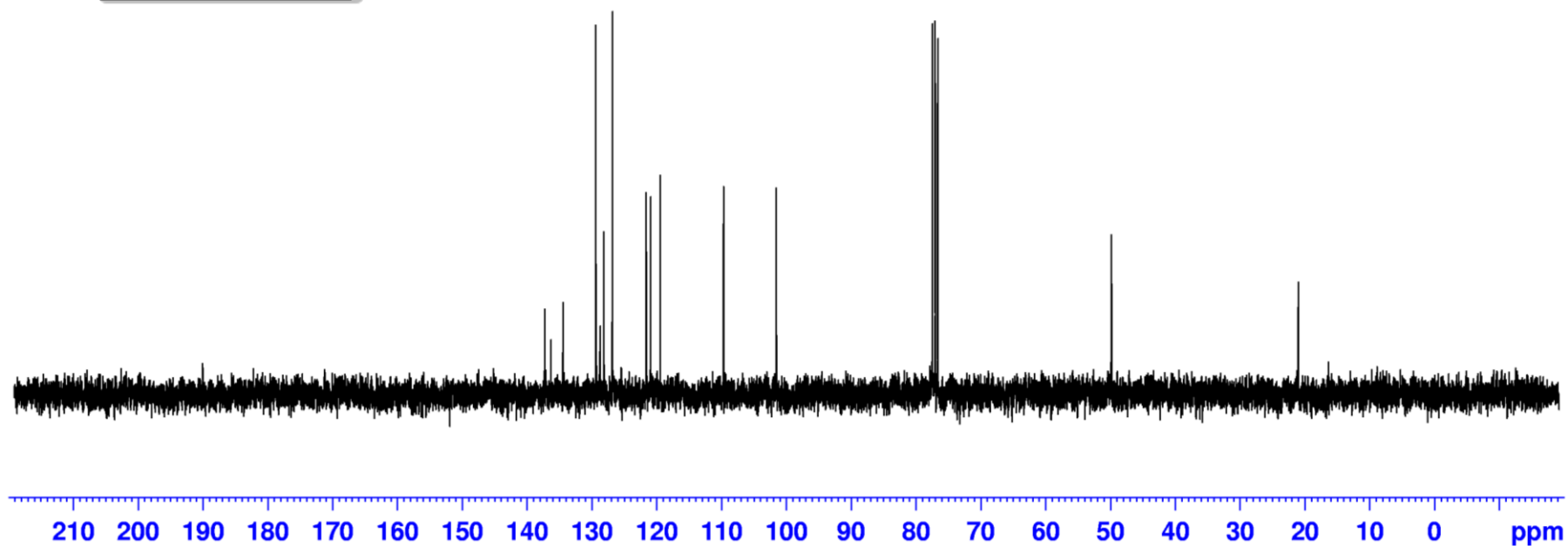
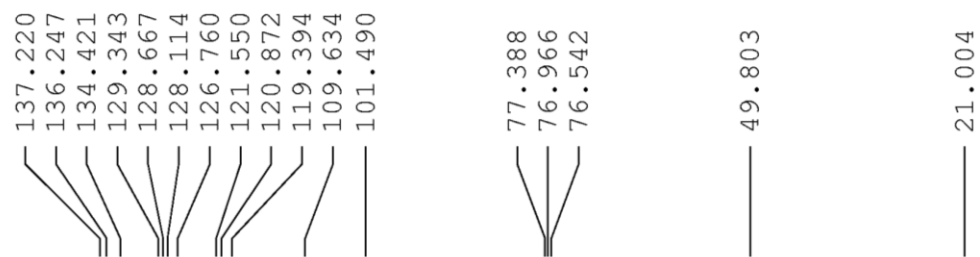
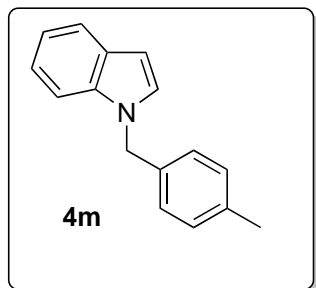
^{13}C NMR (CDCl_3 , 90.5 MHz) spectrum of 1-(4-nitrobenzyl)-1*H*-indole (**4I**)



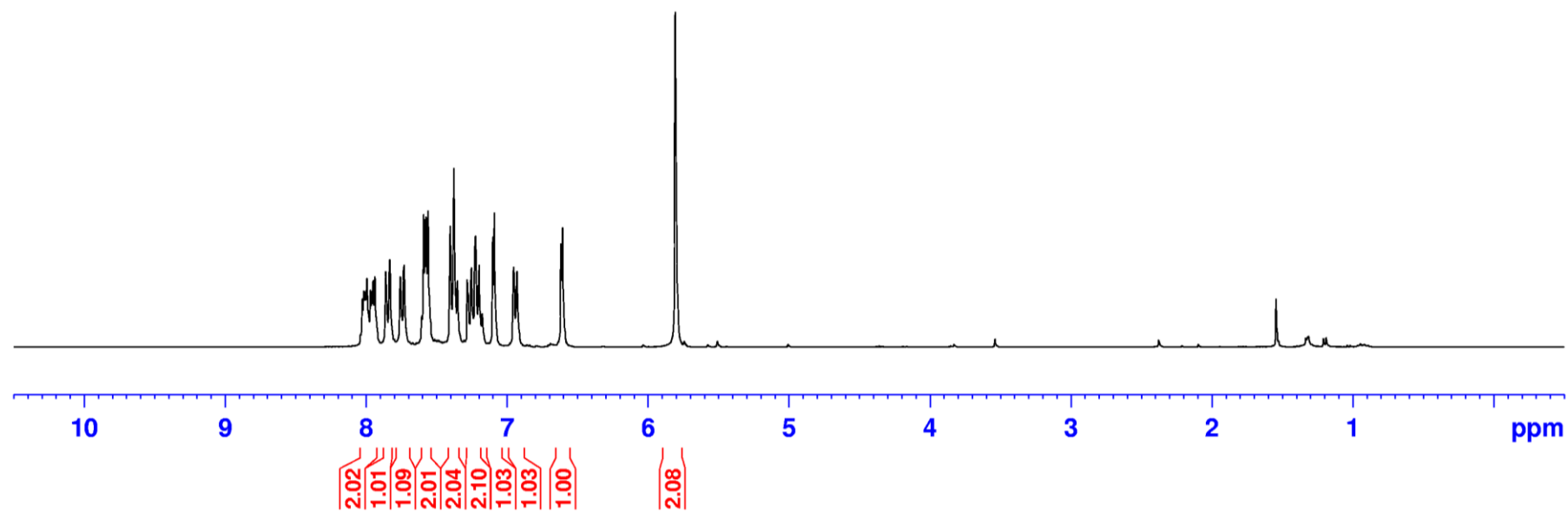
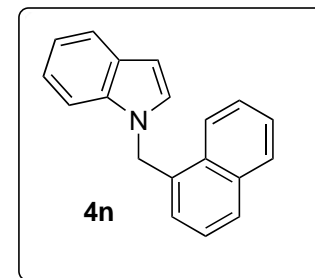
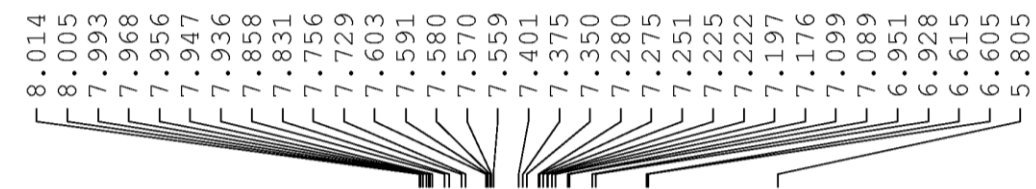
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(4-methylbenzyl)-1*H*-indole (**4m**)



^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(4-methylbenzyl)-1H-indole (**4m**)

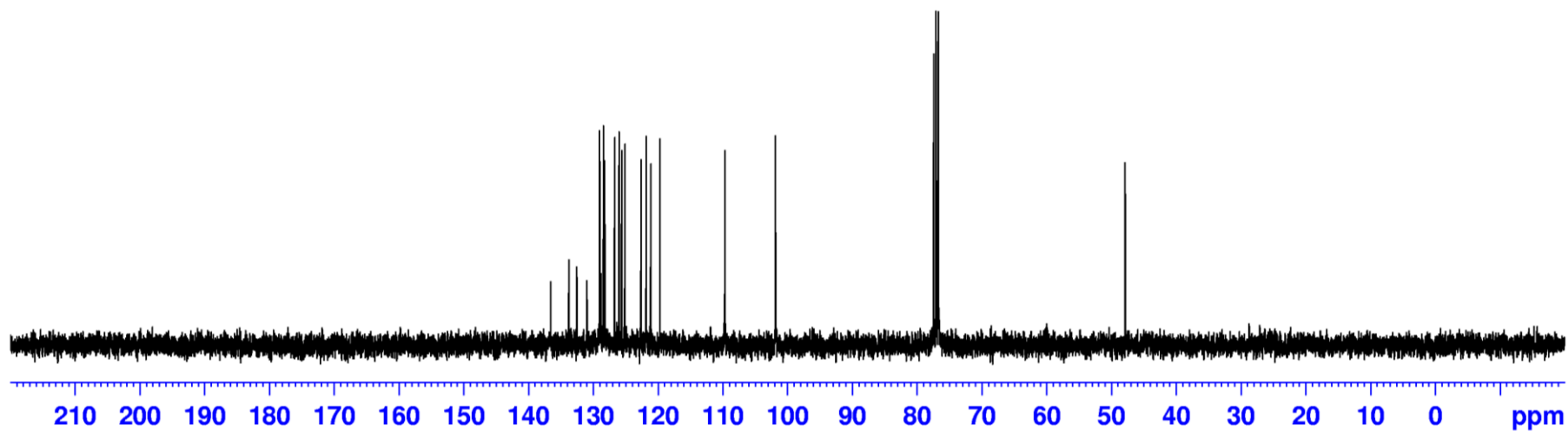
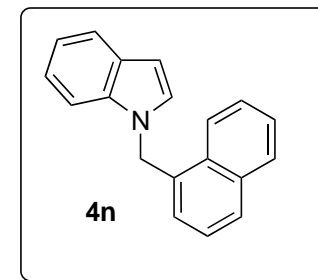


^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(naphthalene-1-ylmethyl)-1*H*-indole (**4n**)

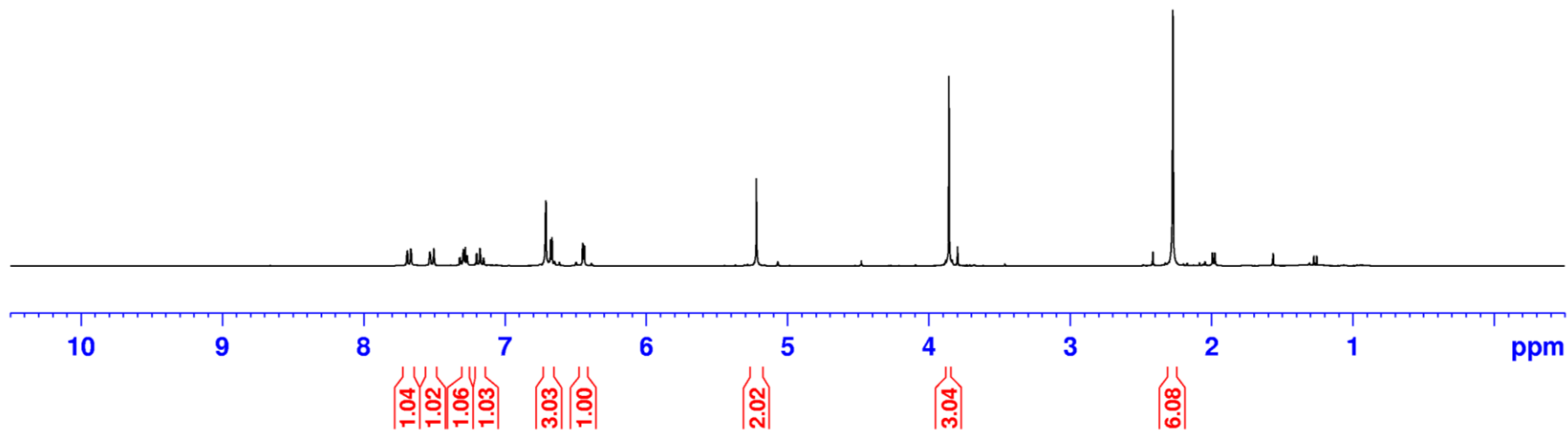
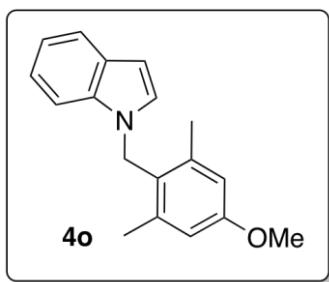
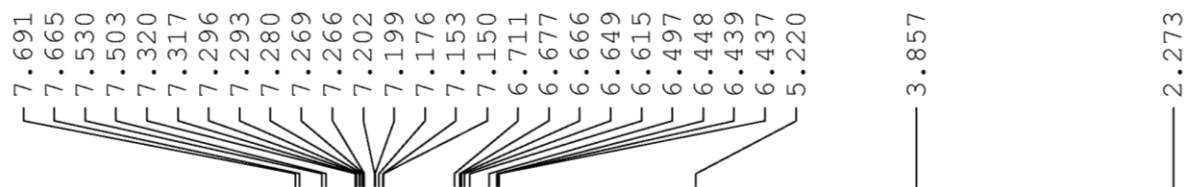


^{13}C NMR (CDCl_3 , 90.5 MHz) spectrum of 1-(naphthalene-1-ylmethyl)-1*H*-indole (**4n**)

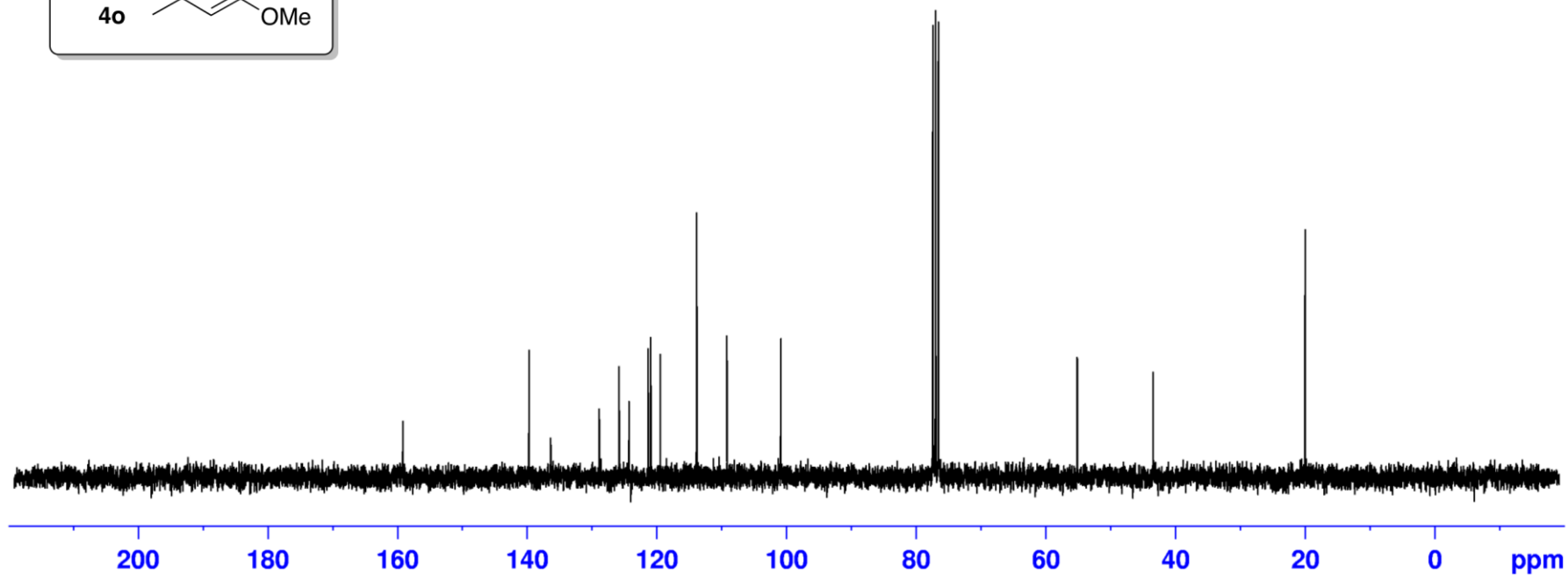
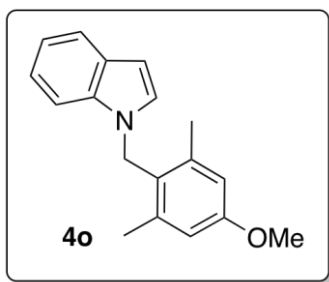
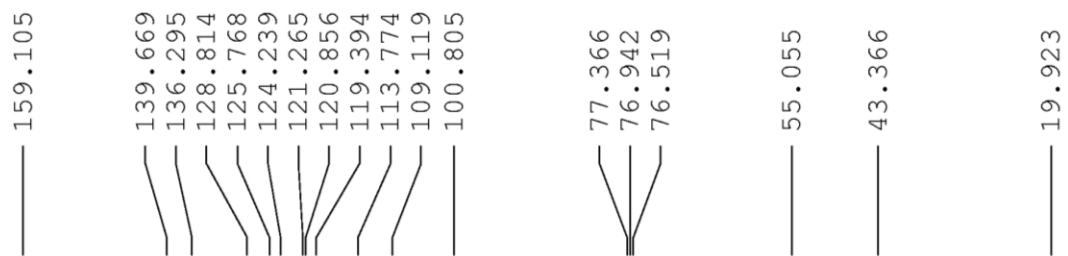
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119.698
109.648
101.851
77.426
77.075
76.722
47.850



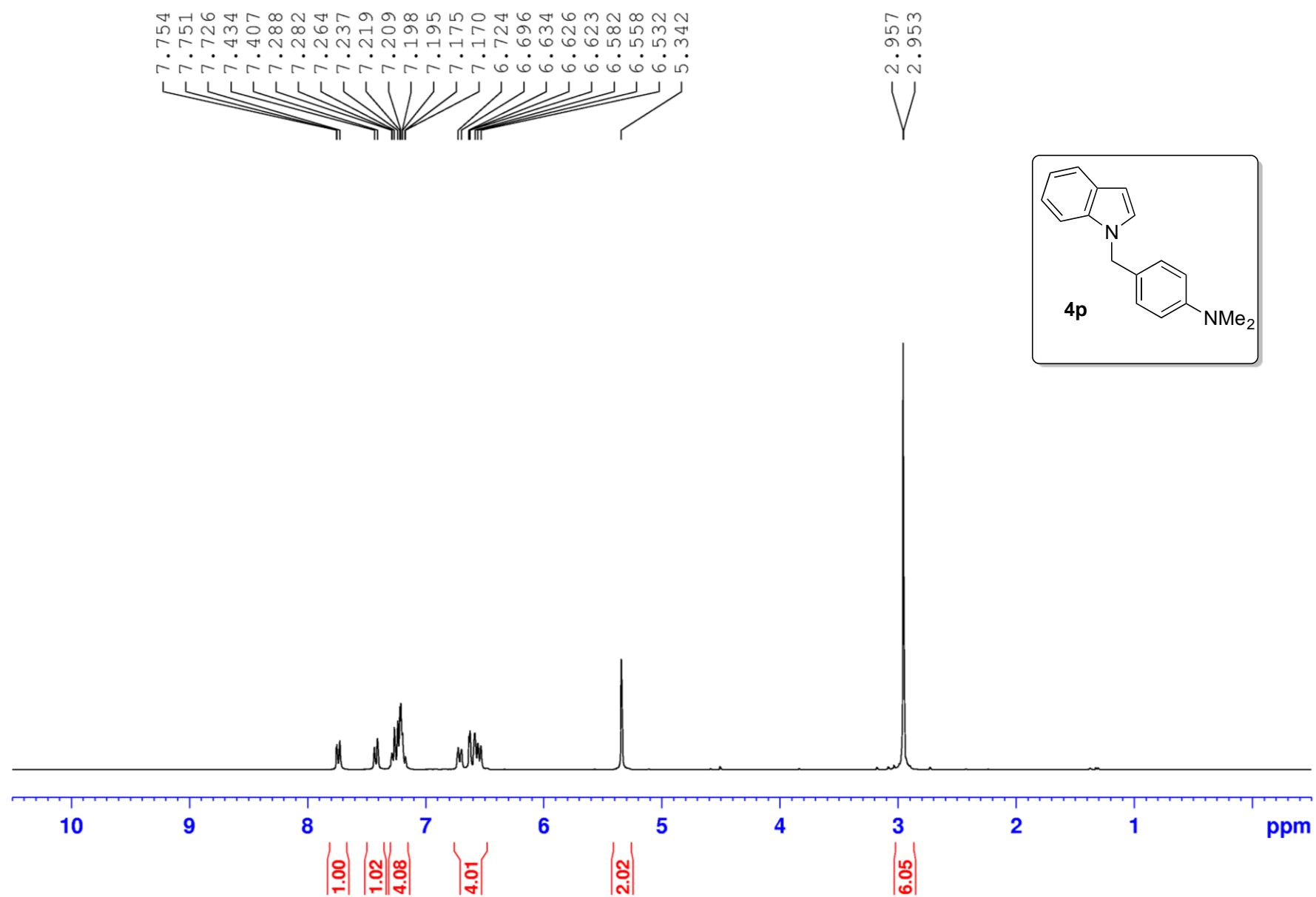
^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(4-methoxy-2,6-dimethylbenzyl)-1*H*-indole (**4o**)



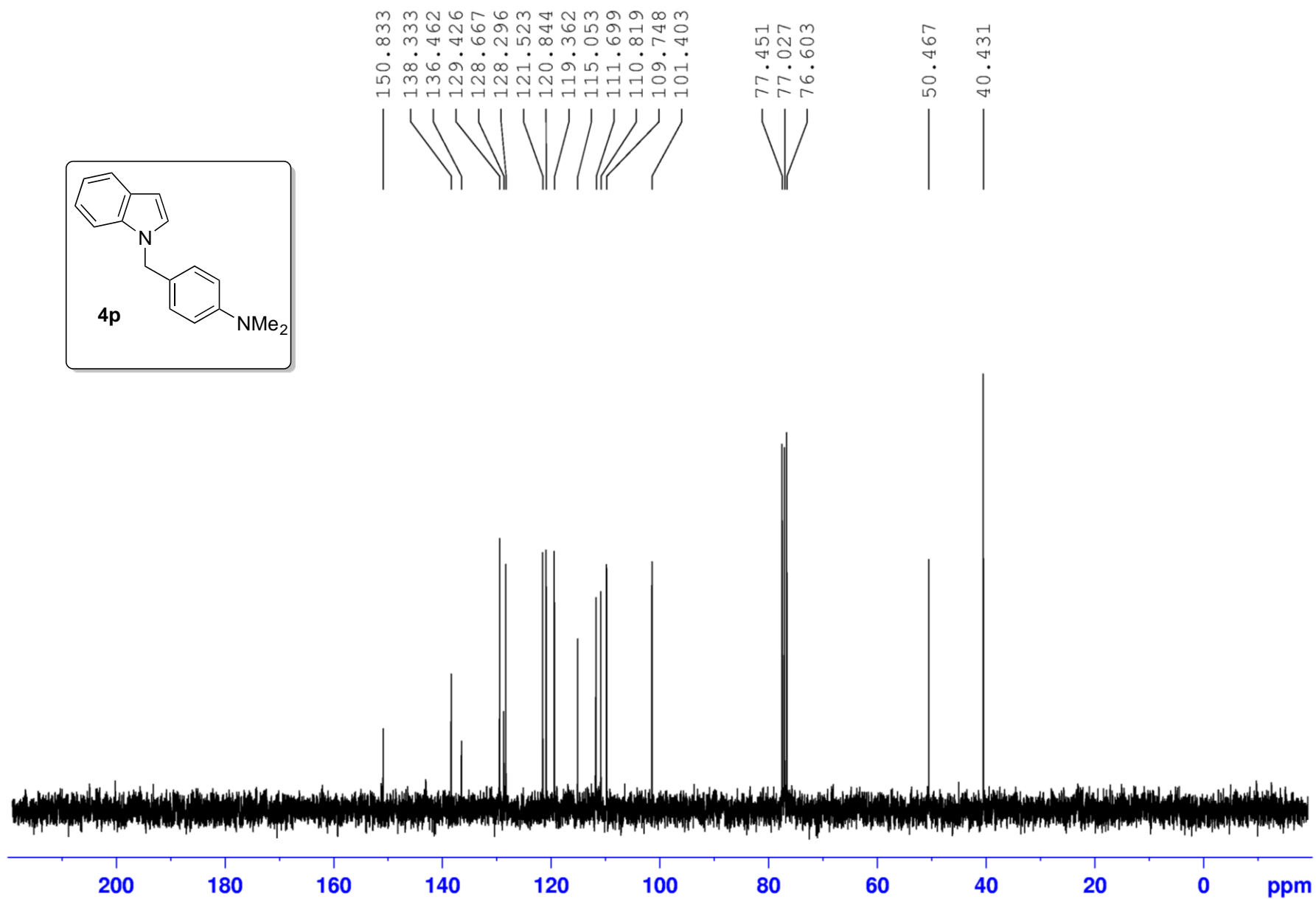
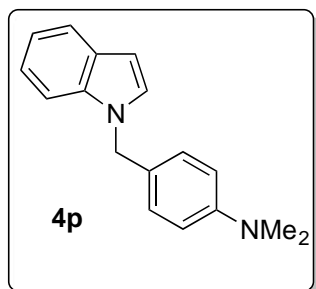
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(4-methoxy-2,6-dimethylbenzyl)-1*H*-indole (**4o**)



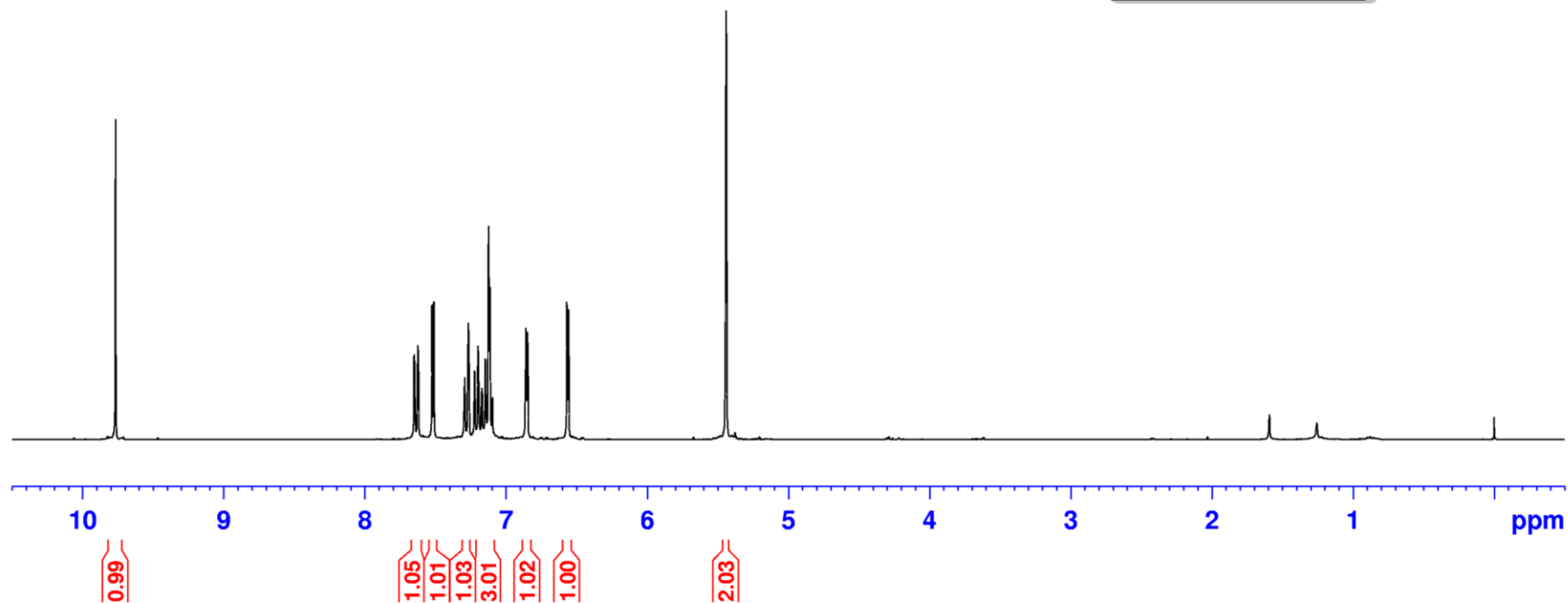
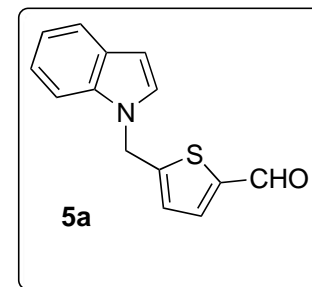
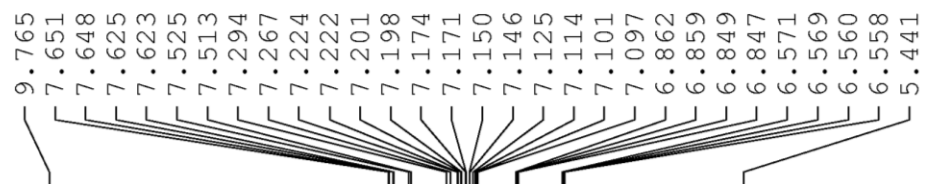
^1H NMR (CDCl_3 , 300 MHz) spectrum of 4-((1*H*-indole-1-yl)methyl)-*N,N*-dimethylbenzeneamine (**4p**)



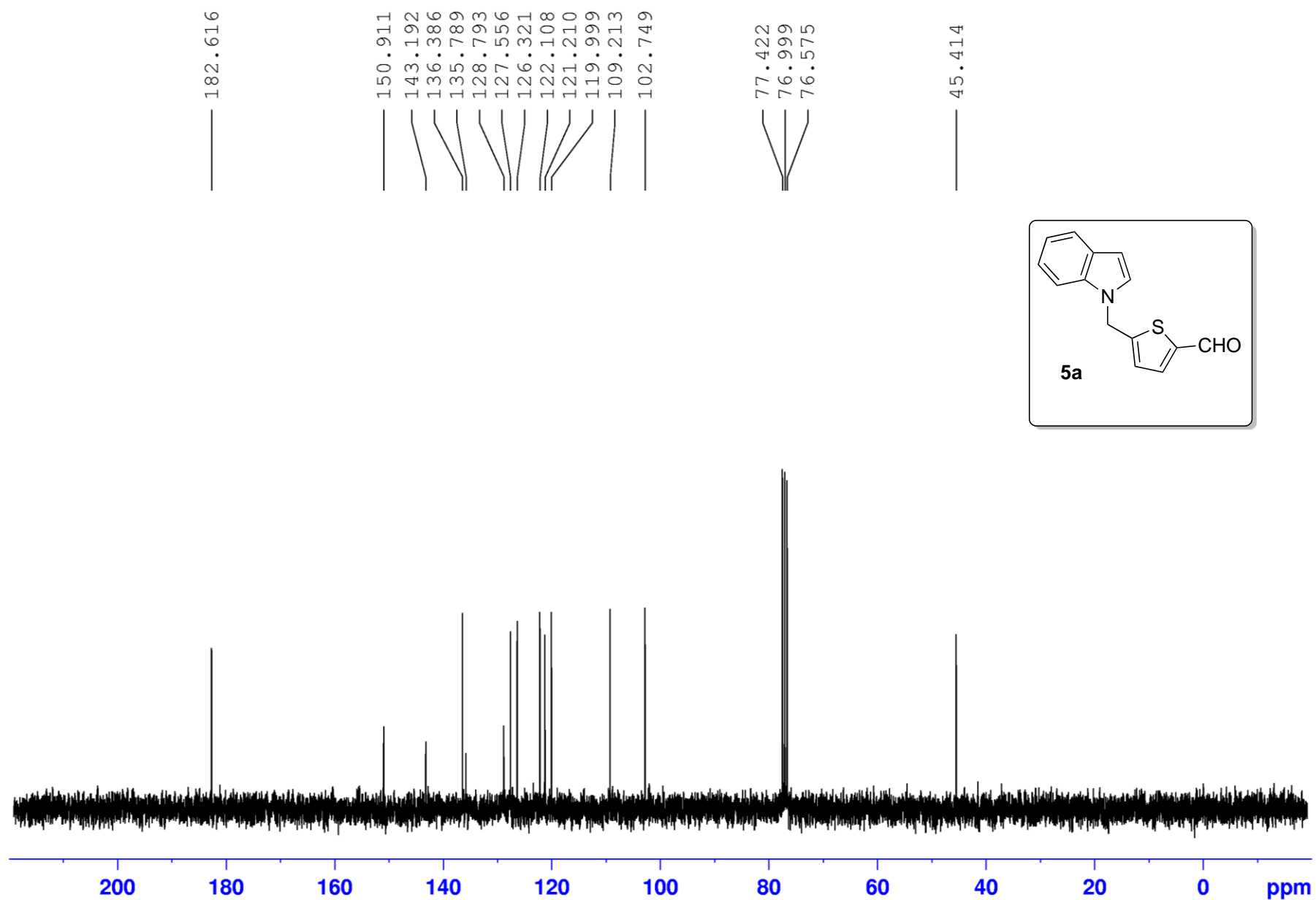
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 4-((1*H*-indole-1-yl)methyl)-*N,N*-dimethylbenzeneamine (**4p**)



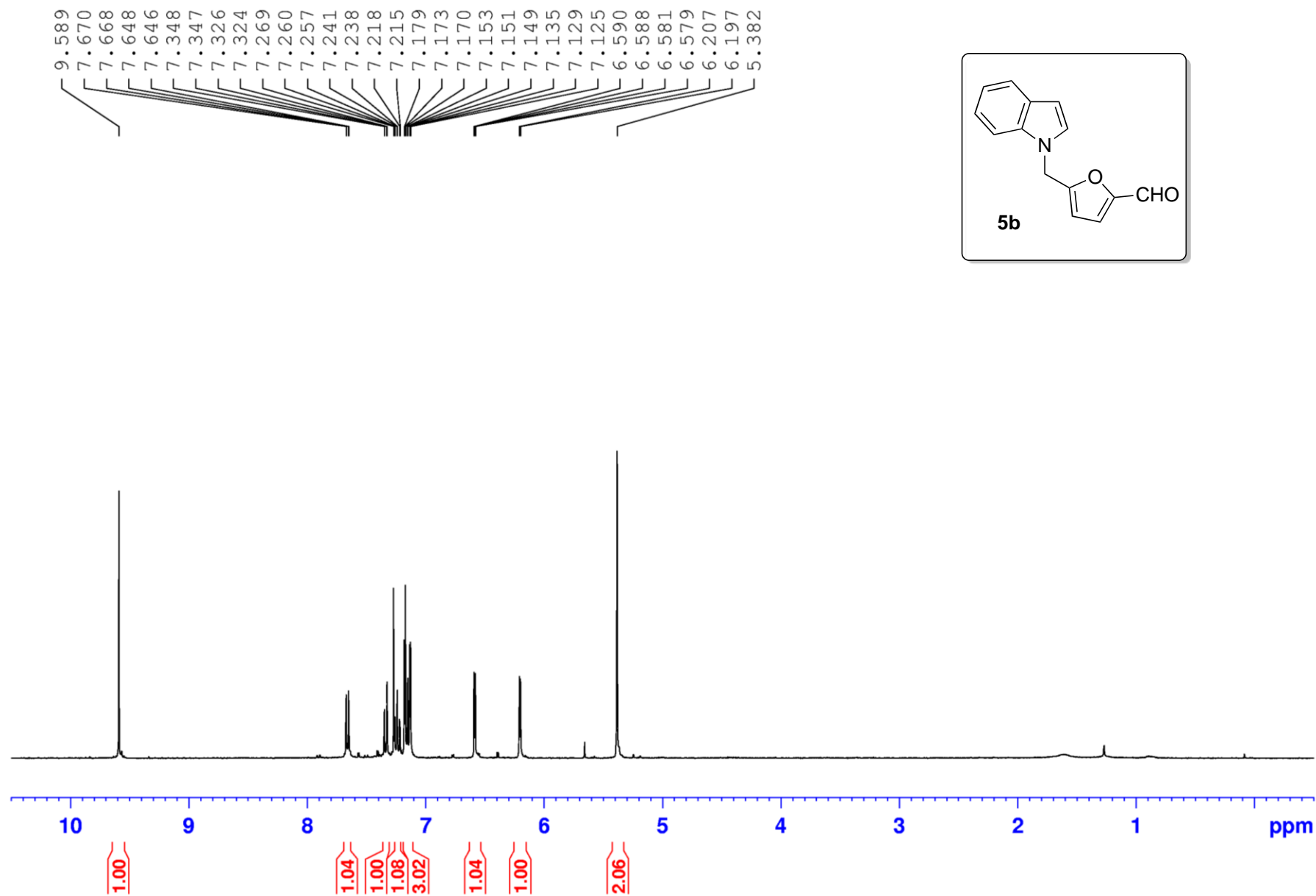
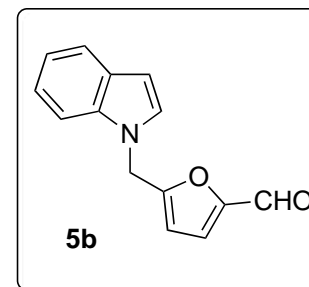
^1H NMR (CDCl_3 , 300 MHz) spectrum of 5-((1*H*-indol-1-yl)methyl)thiophene-2-carbaldehyde (**5a**)



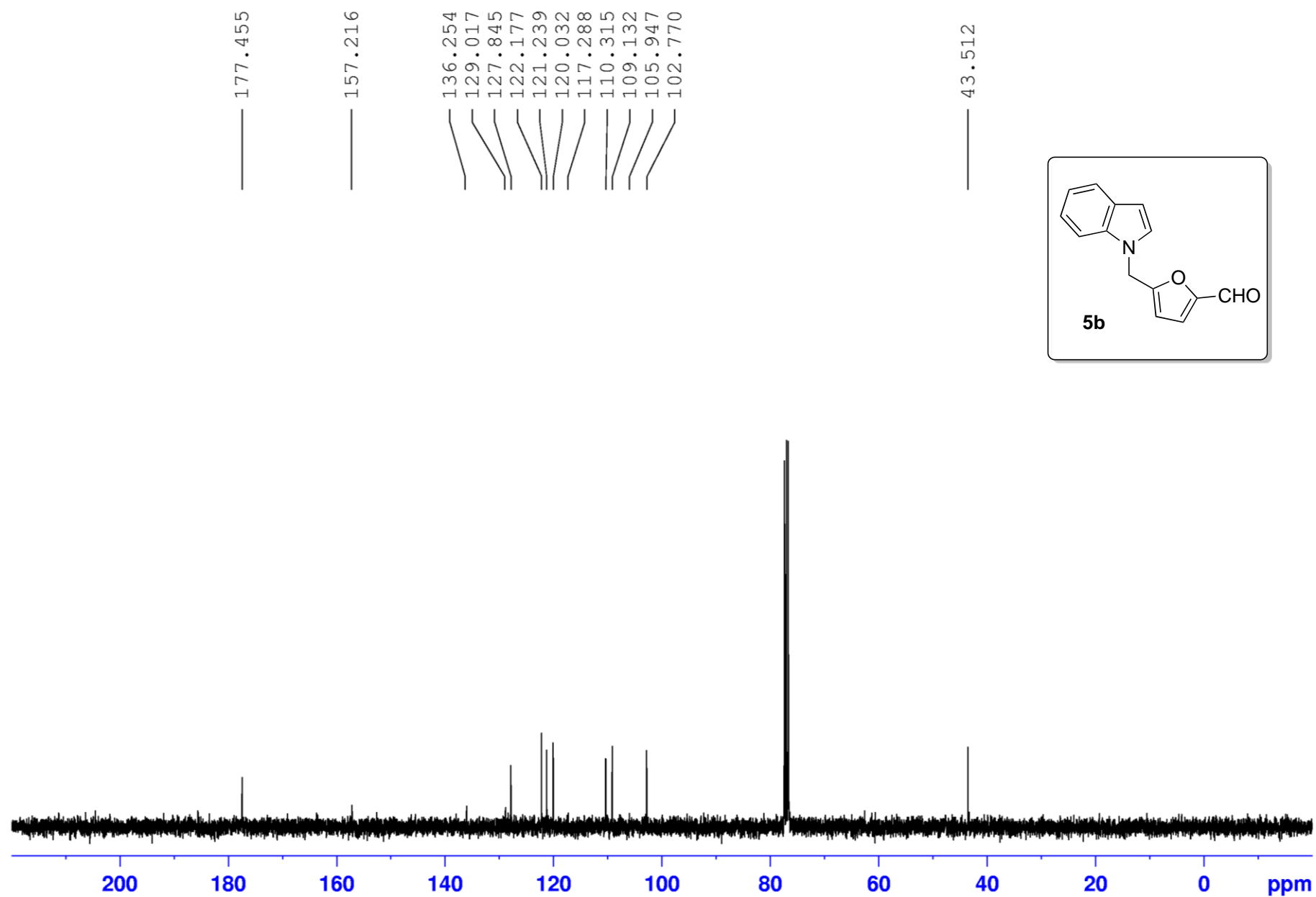
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 5-((1*H*-indol-1-yl)methyl)thiophene-2-carbaldehyde (**5a**)



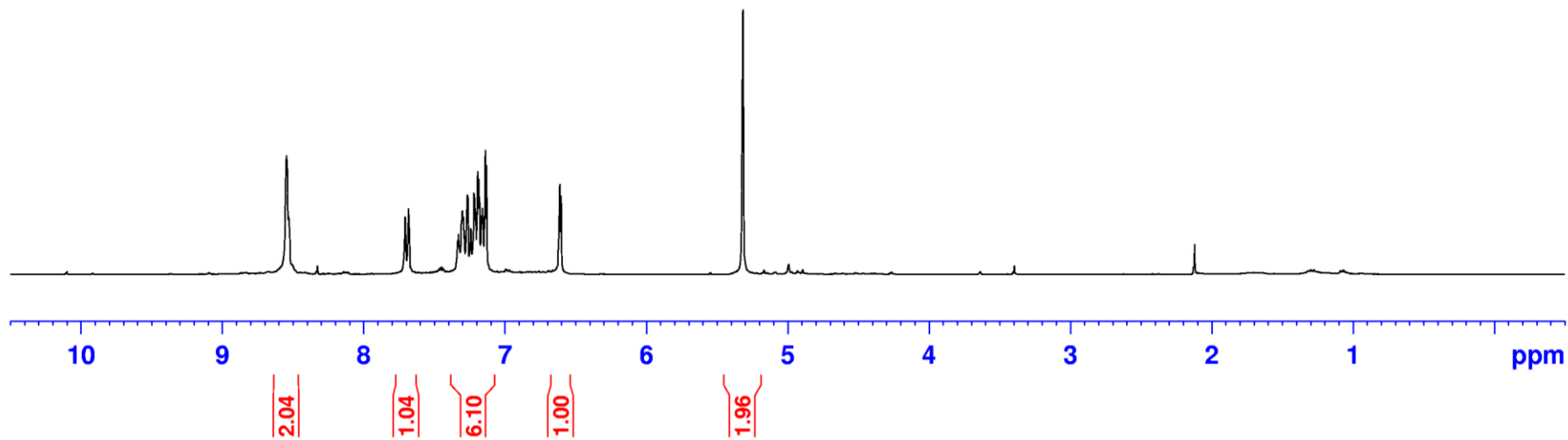
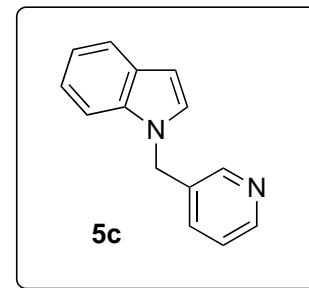
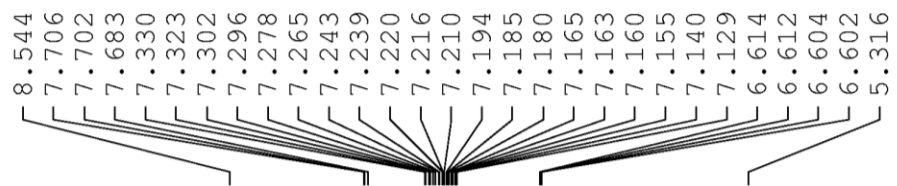
^1H NMR (CDCl_3 , 300 MHz) spectrum of 5-((1*H*-indol-1-yl)methyl)furan-2-carbaldehyde (**5b**)



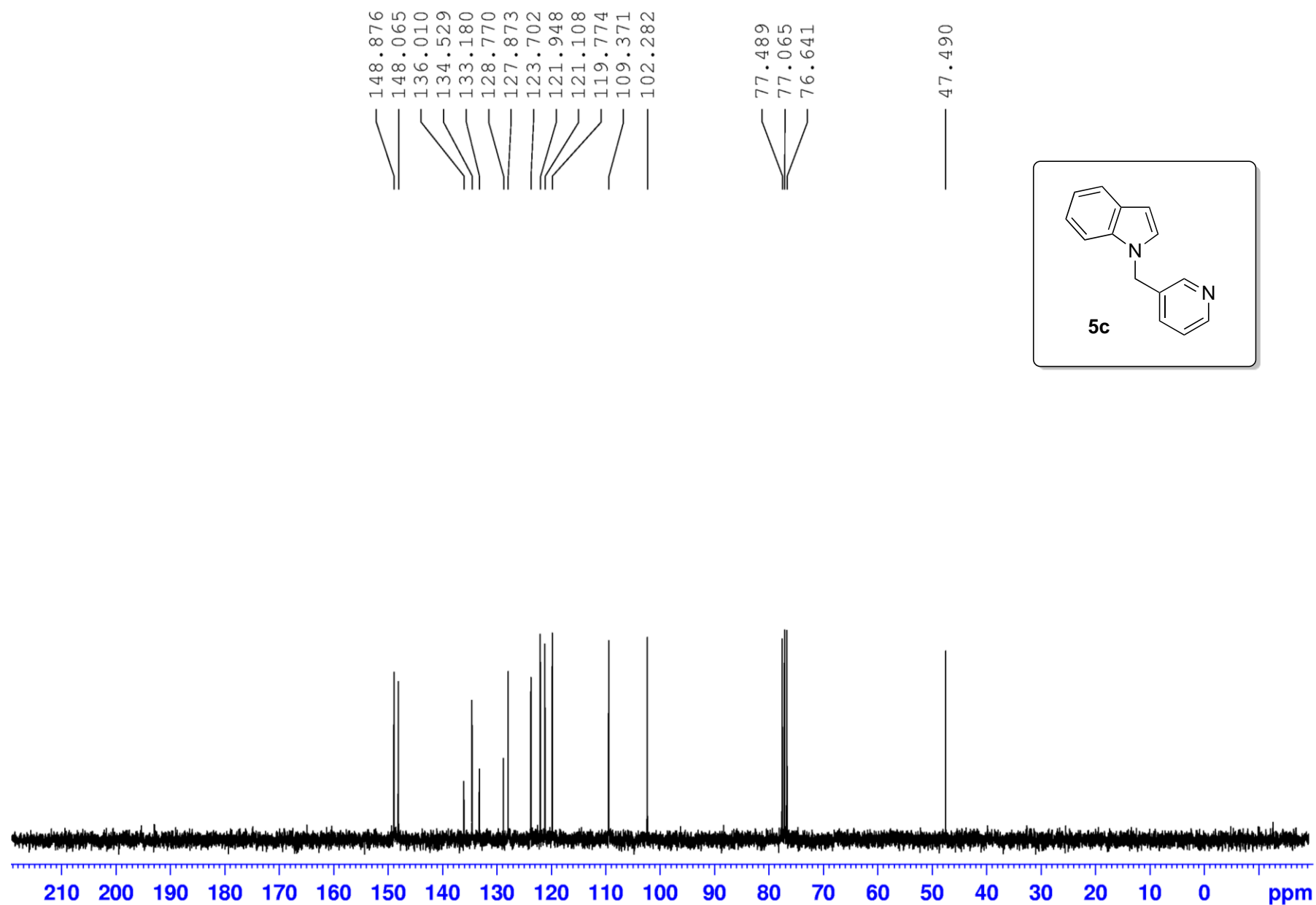
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 5-((1*H*-indol-1-yl)methyl)furan-2-carbaldehyde (**5b**)



^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(pyridin-3-ylmethyl)-1H-indole (**5c**)

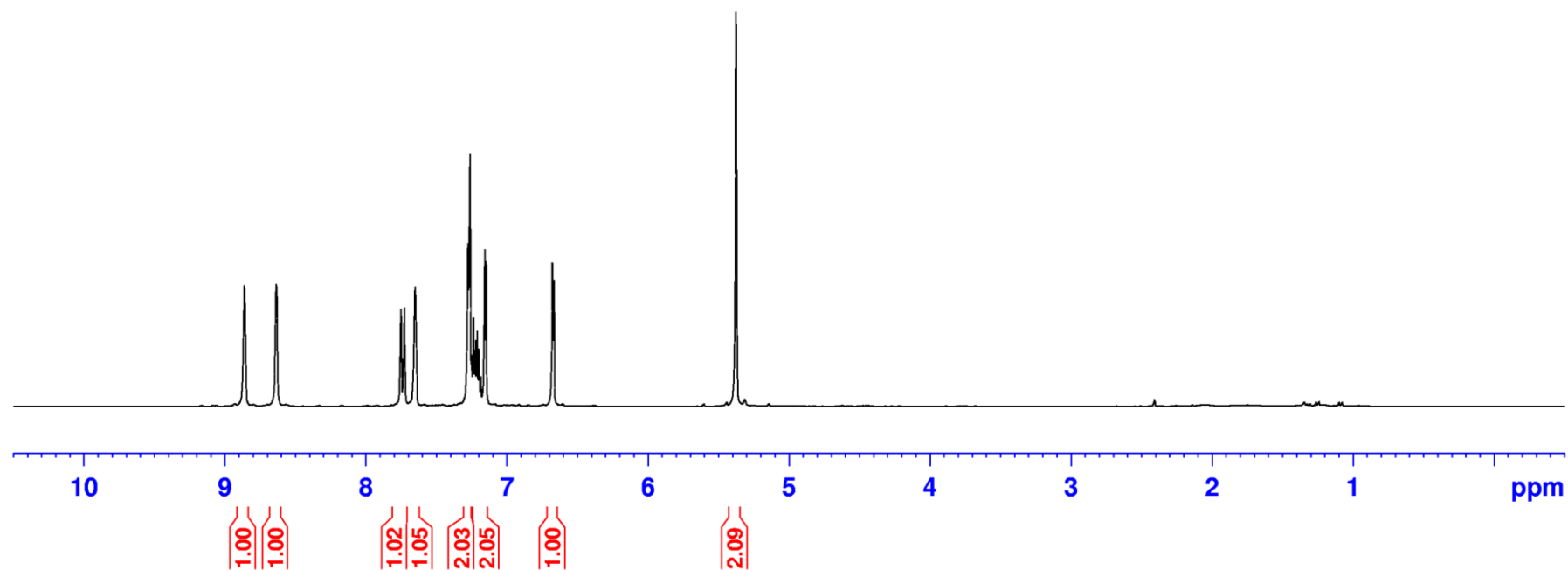
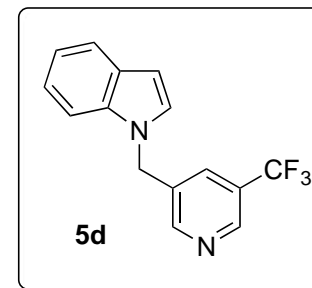


^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(pyridin-3-ylmethyl)-1*H*-indole (**5c**)

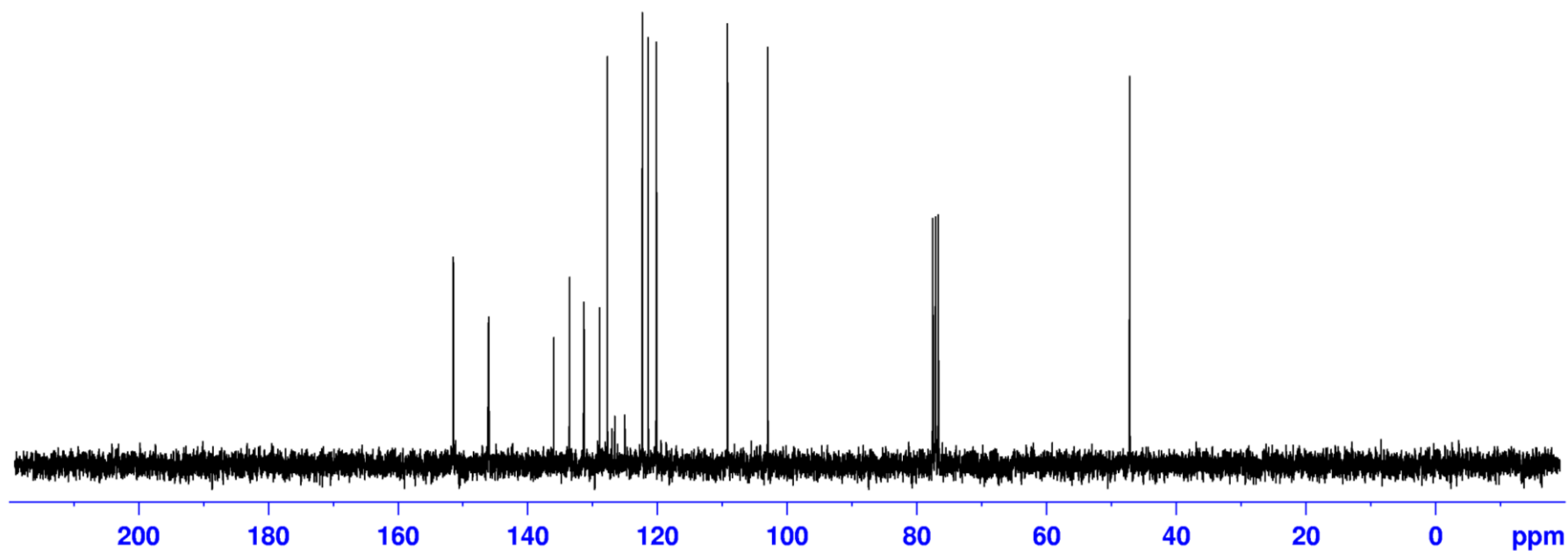
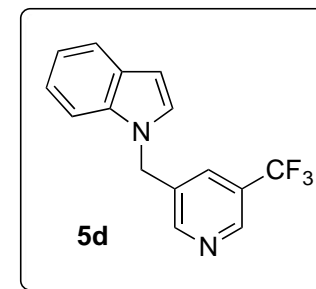
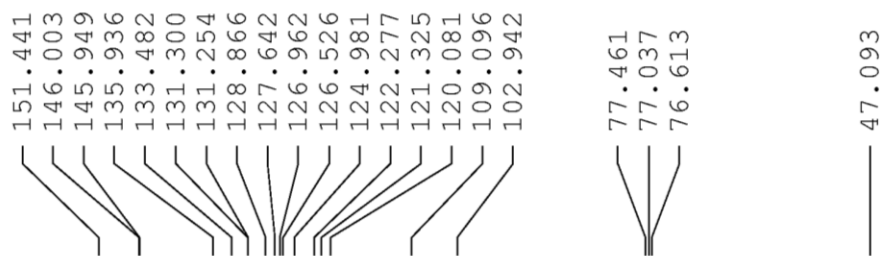


^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-5-((trifluoromethyl)pyridin-3-yl)methyl)-1*H*-indole (**5d**)

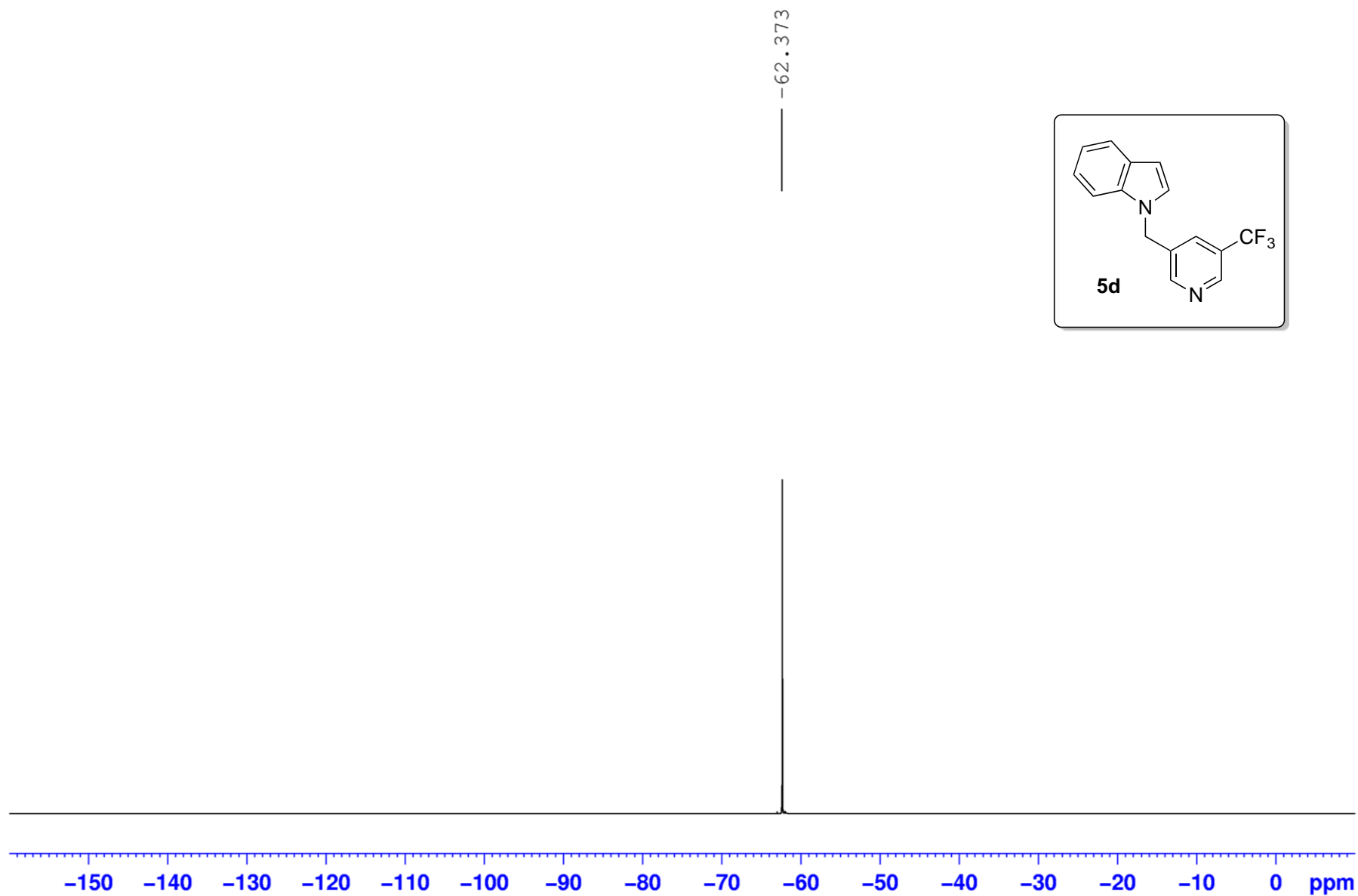
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7.722
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7.278
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7.263
7.251
7.237
7.226
7.223
7.211
7.197
7.157
7.146
6.677
6.666
5.375



^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-5-((trifluoromethyl)pyridin-3-yl)methyl)-1*H*-indole (**5d**)

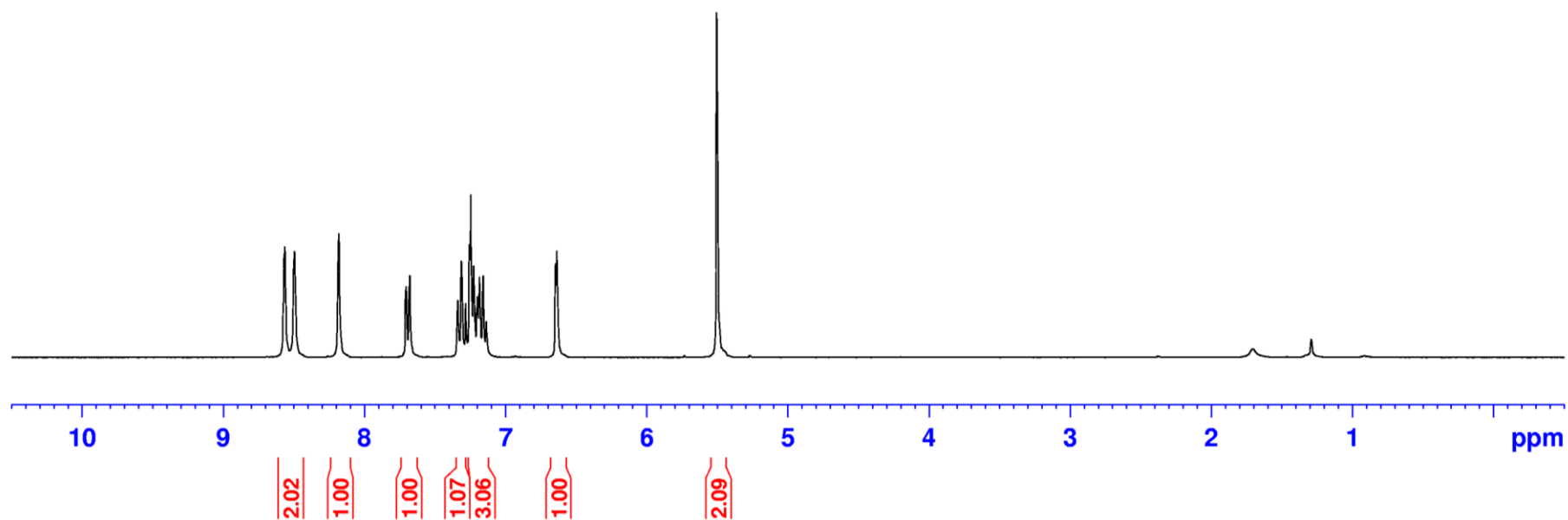
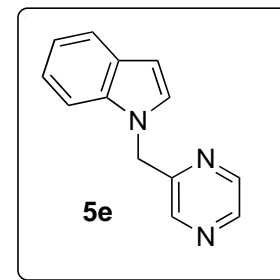


^{19}F NMR (CDCl_3 , 282.4 MHz) spectrum of 1-5-((trifluoromethyl)pyridin-3-yl)methyl)-1*H*-indole (**5d**)

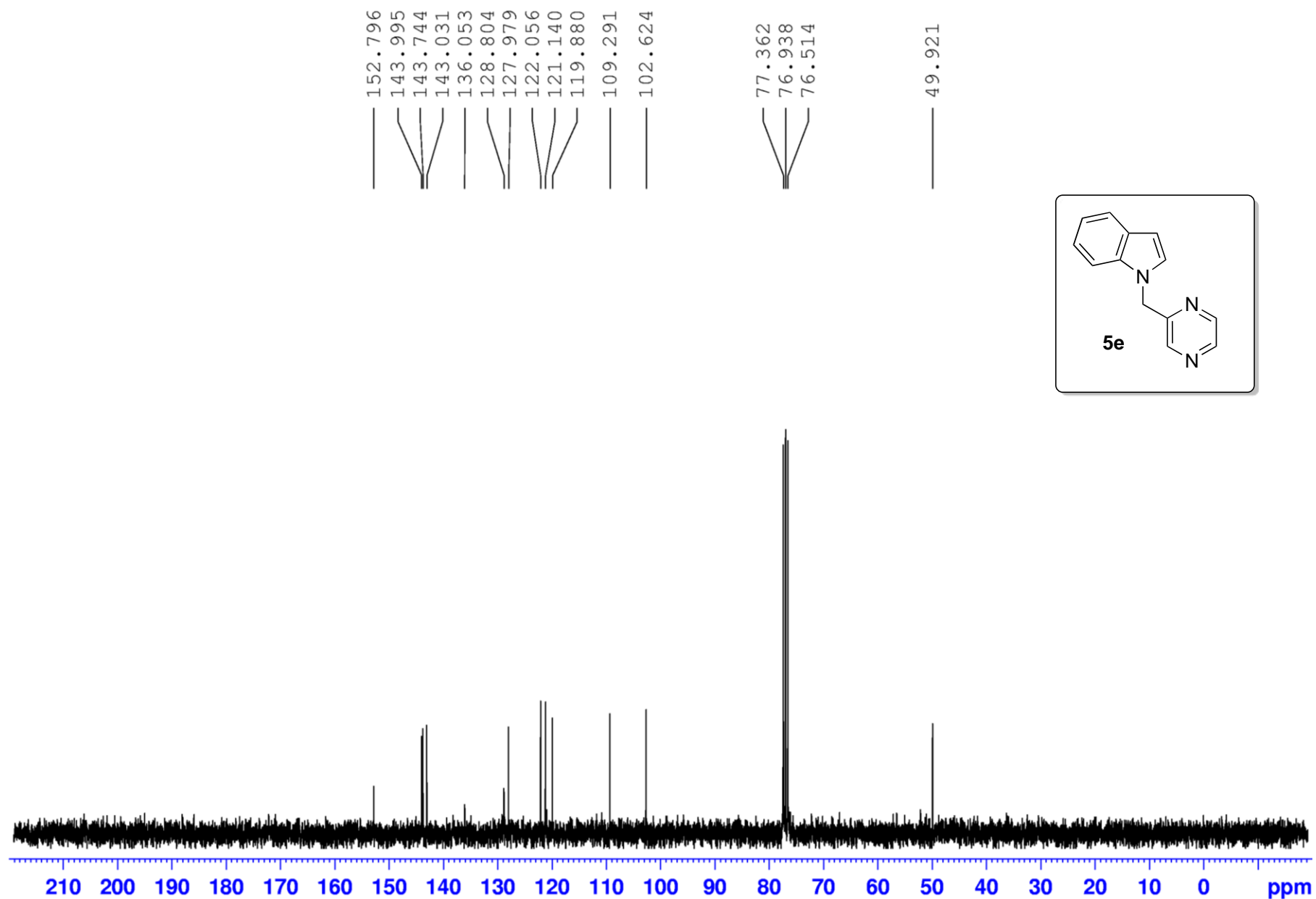


^1H NMR (CDCl_3 , 300 MHz) spectrum of 1-(pyrazin-2-ylmethyl)-1*H*-indole (**5e**)

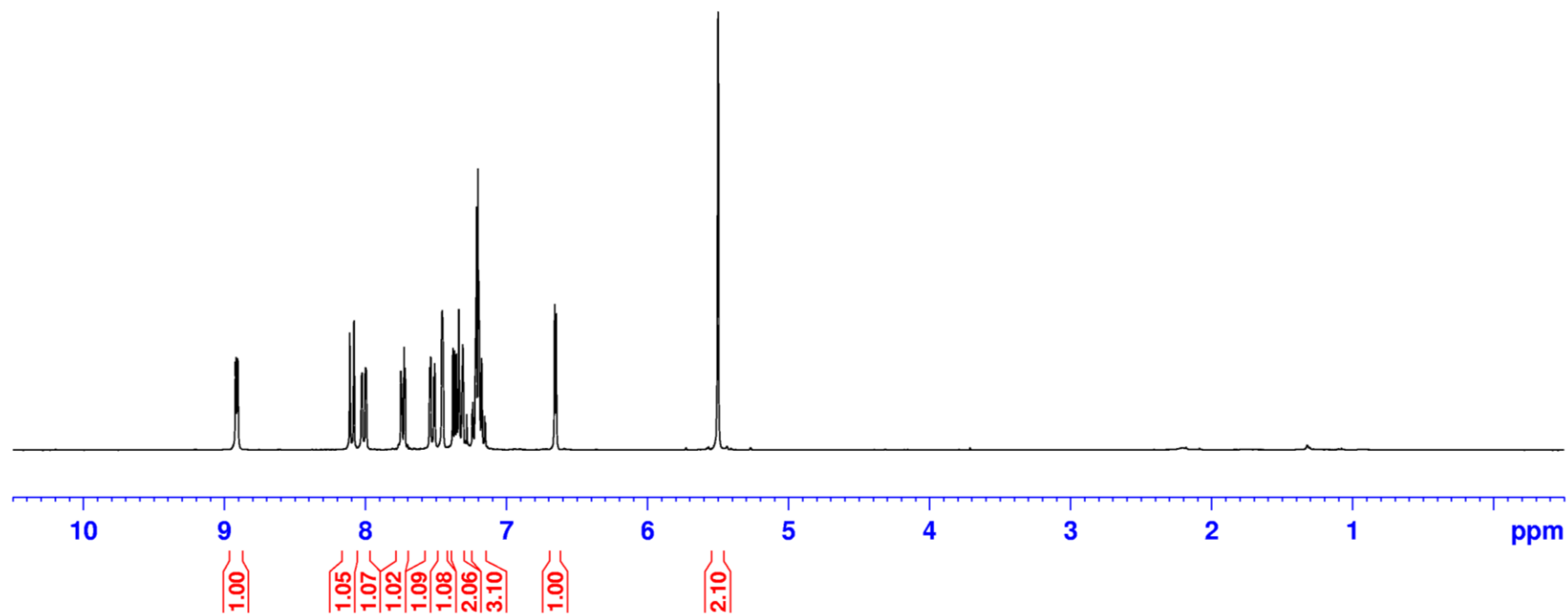
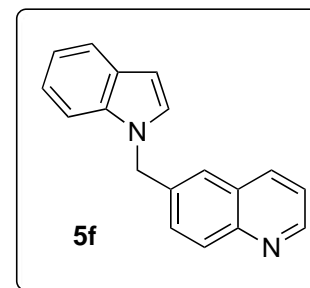
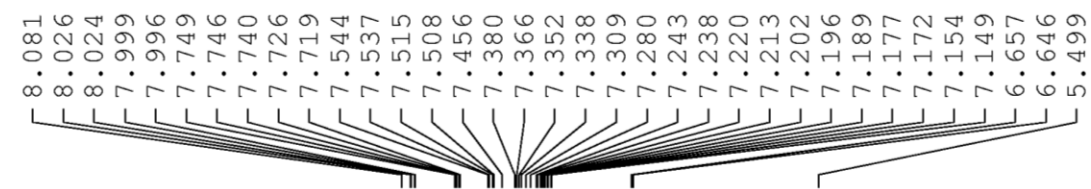
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7.250
7.245
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7.201
7.196
7.187
7.182
7.157
7.137
7.133
6.643
6.633
5.501



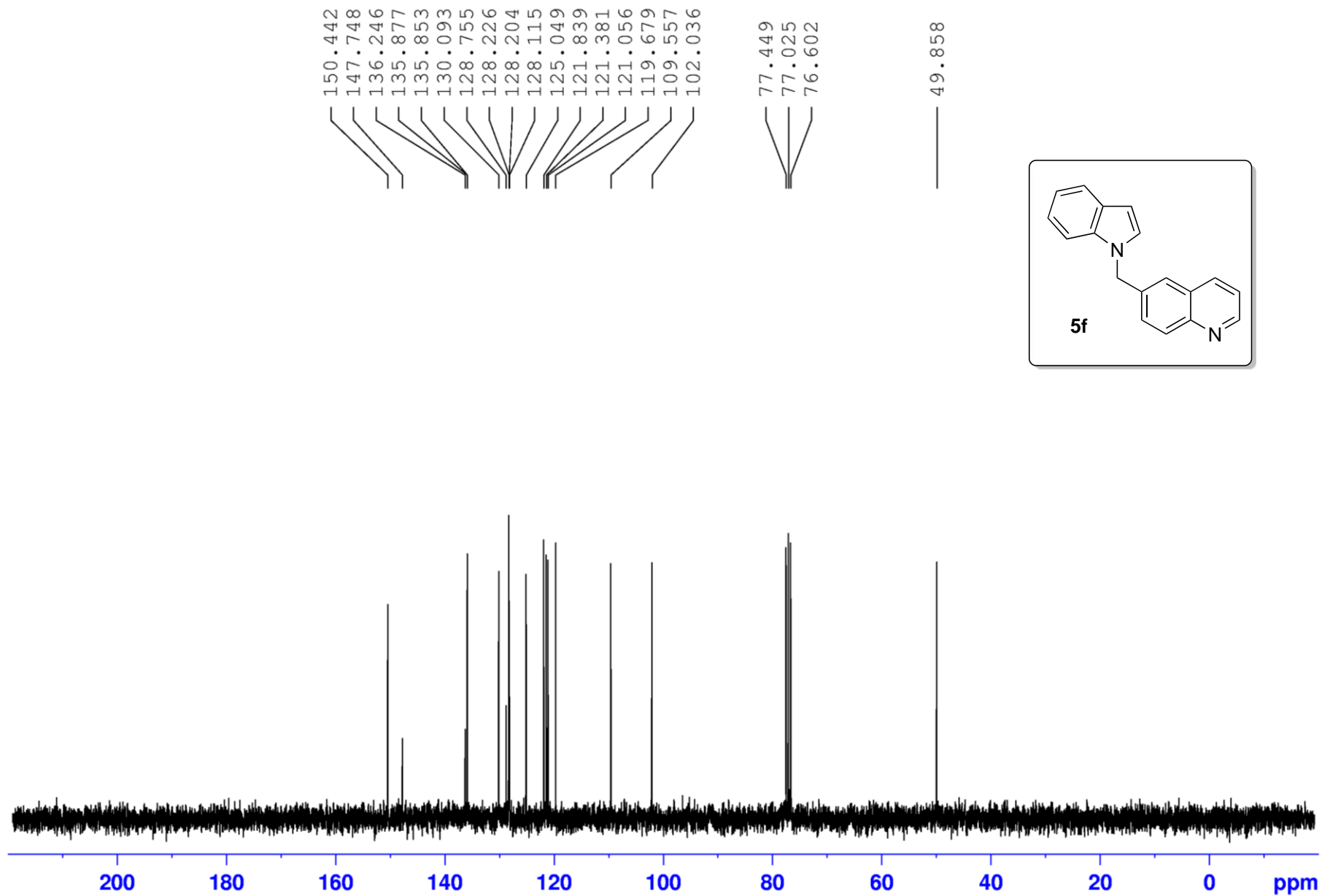
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 1-(pyrazin-2-ylmethyl)-1*H*-indole (**5e**)



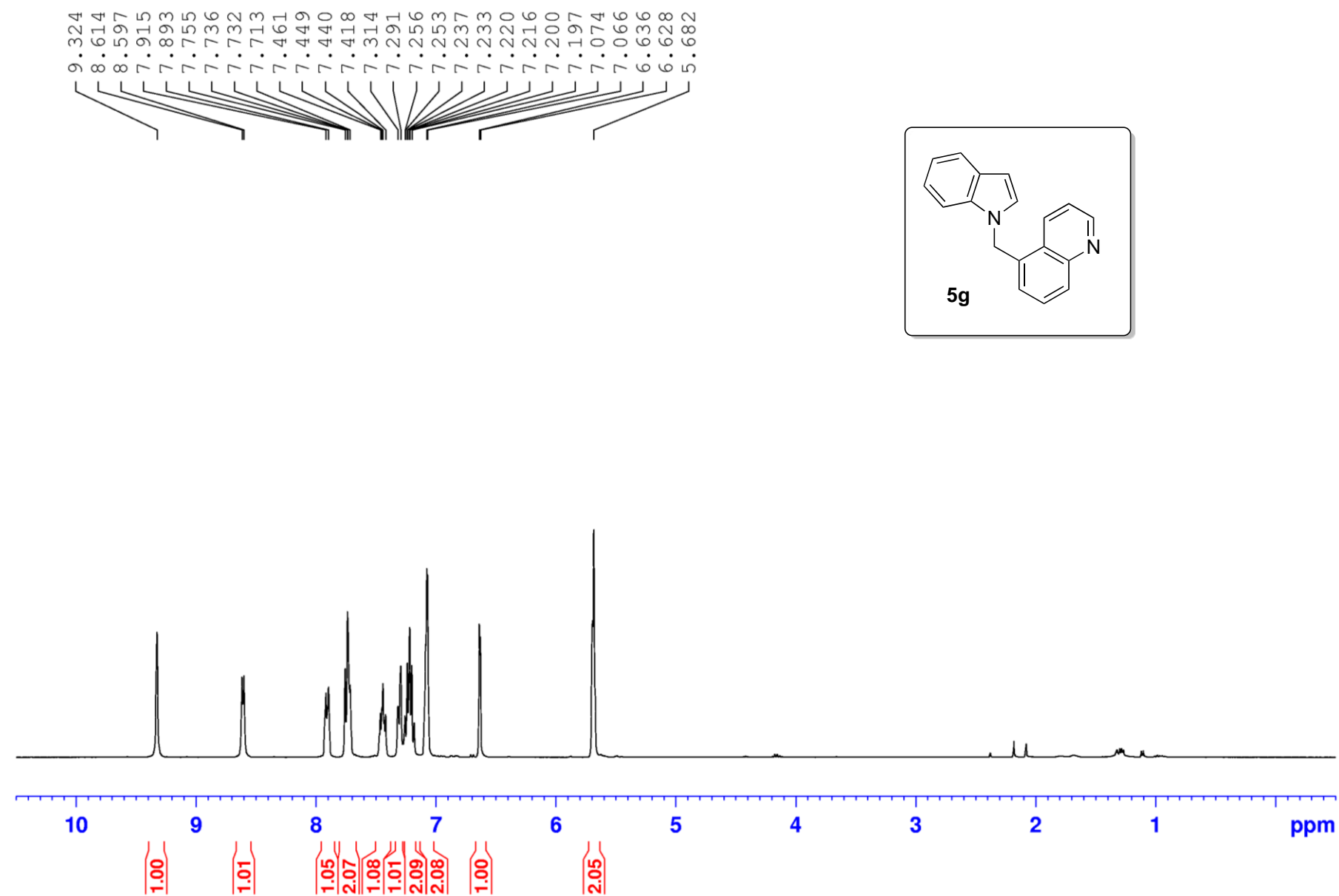
^1H NMR (CDCl_3 , 300 MHz) spectrum of 6-((1*H*-indol-1-yl)methyl)quinolone (**5f**)



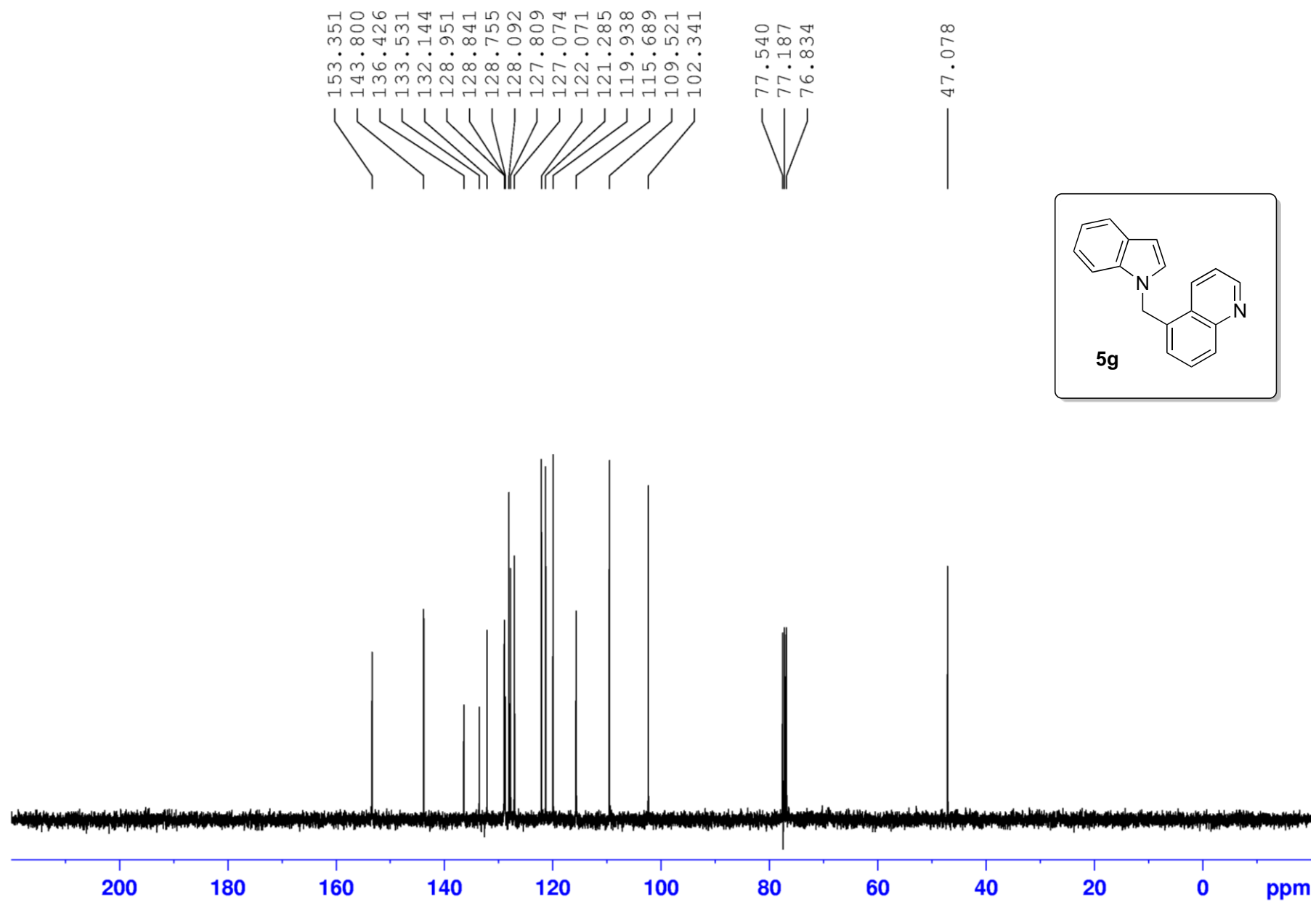
^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 6-((1*H*-indol-1-yl)methyl)quinolone (**5f**)



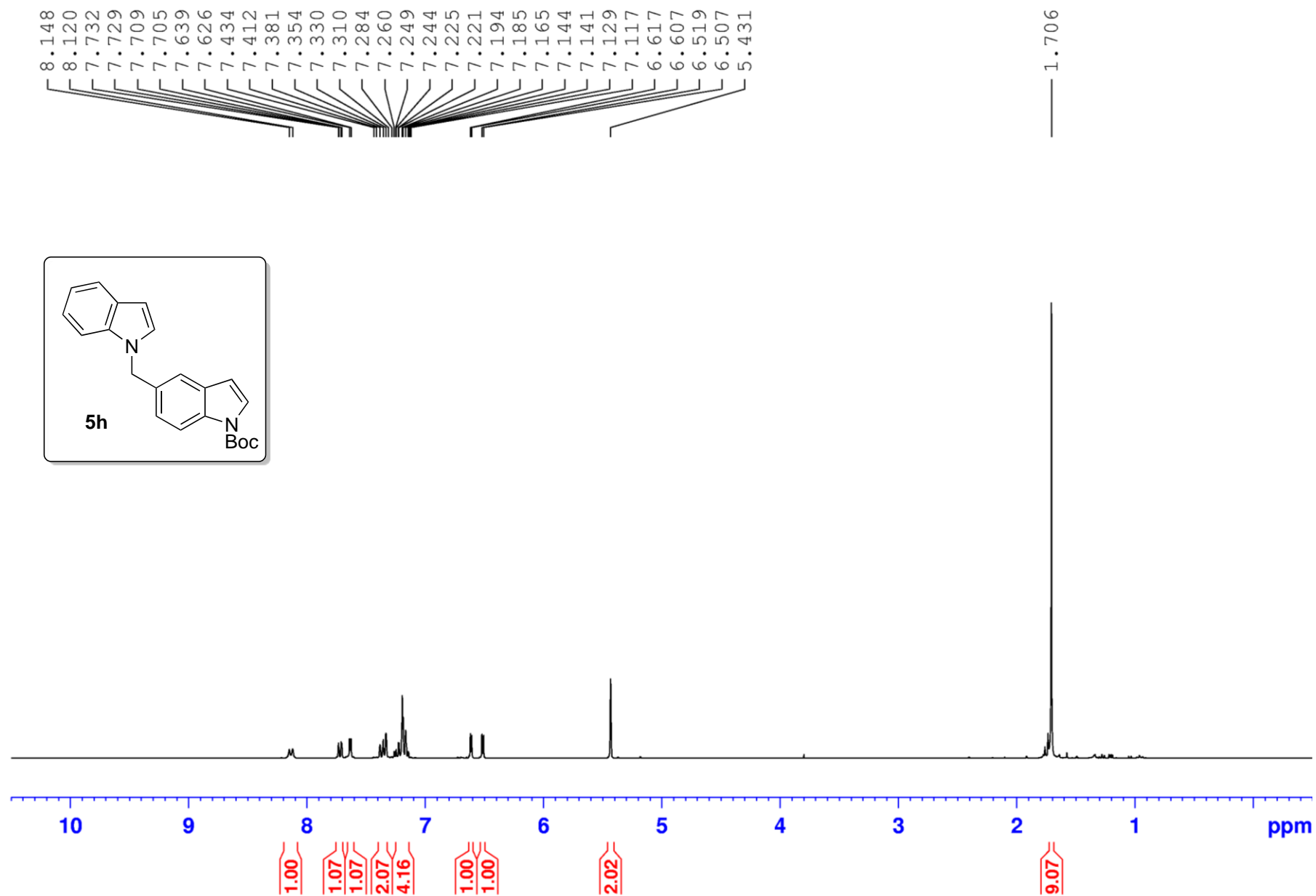
^1H NMR (CDCl_3 , 360 MHz) spectrum of 5-((1*H*-indol-1-yl)methyl)quinolone (**5g**)



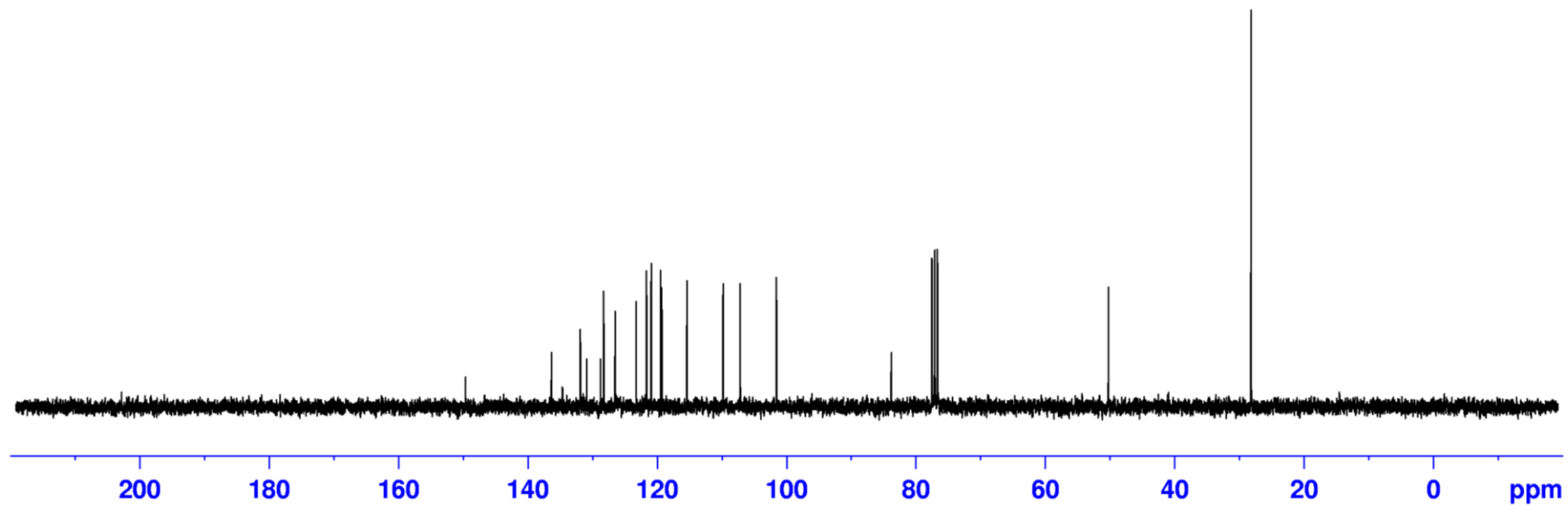
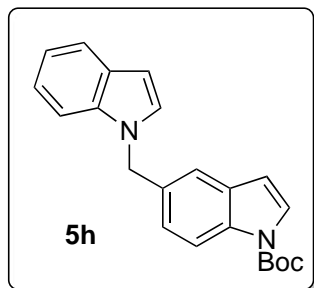
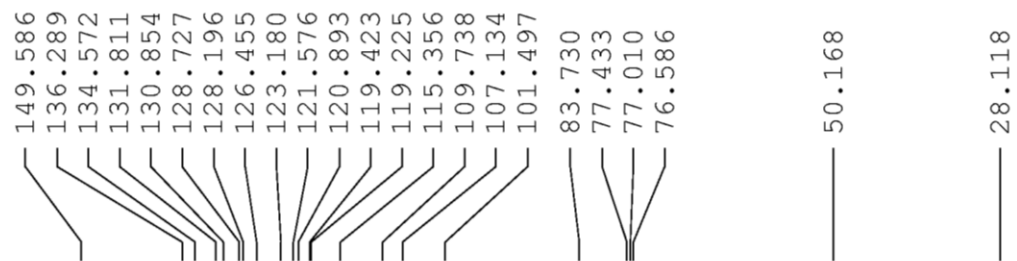
^{13}C NMR (CDCl_3 , 90.5 MHz) spectrum of 5-((1*H*-indol-1-yl)methyl)quinoline (**5g**)



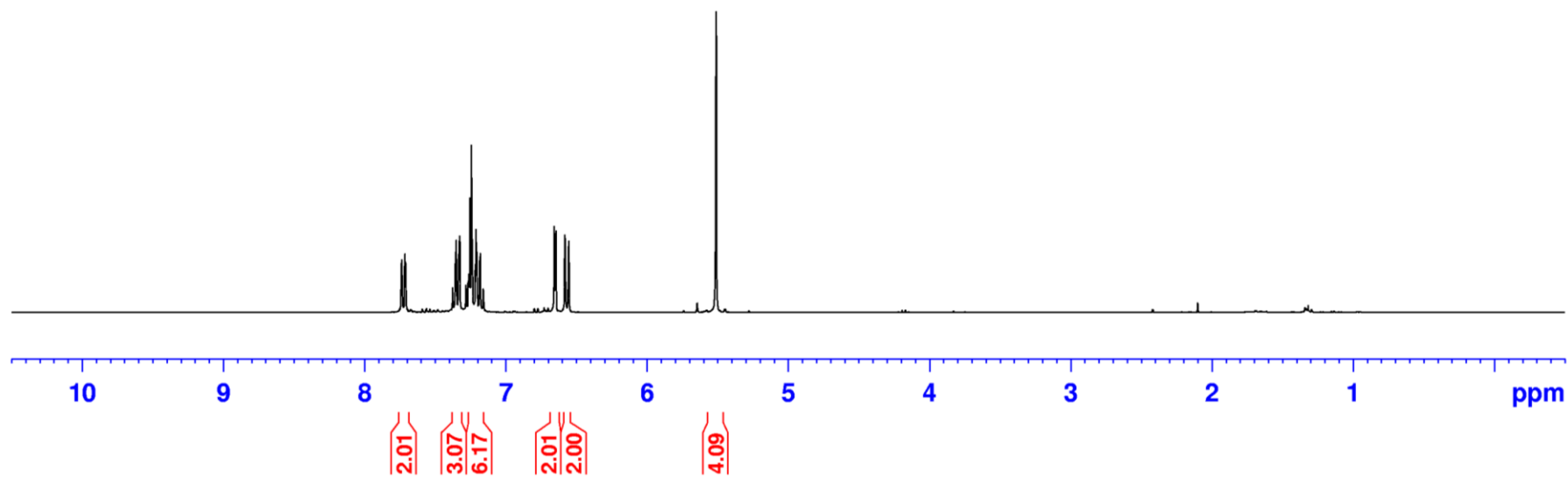
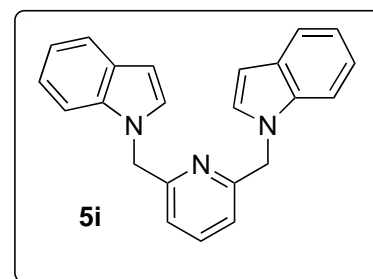
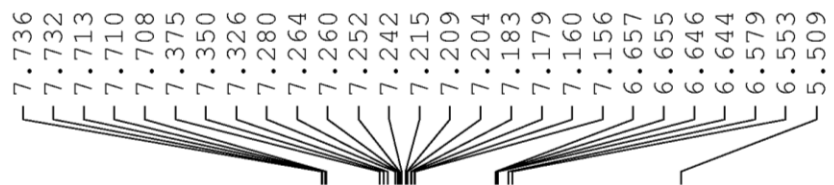
^1H NMR (CDCl_3 , 300 MHz) spectrum of *tert*-butyl-5-((1*H*-Indol-1-yl)methyl)-1*H*-indole-1-carboxylate (**5h**)



^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of *tert*-butyl-5-((1*H*-Indol-1-yl)methyl)-1*H*-indole-1-carboxylate (**5h**)



^1H NMR (CDCl_3 , 300 MHz) spectrum of 2,6-bis((1*H*-indol-1-yl)methyl)pyridine (**5i**)



^{13}C NMR (CDCl_3 , 75.4 MHz) spectrum of 2,6-bis((1*H*-indol-1-yl)methyl)pyridine (**5i**)

