

Supplementary Information

Synthesis of 4-Chalcogenyl Pyrazoles via Electrophilic Chalcogenation/Cyclization of α,β -Alkynic Hydrazones

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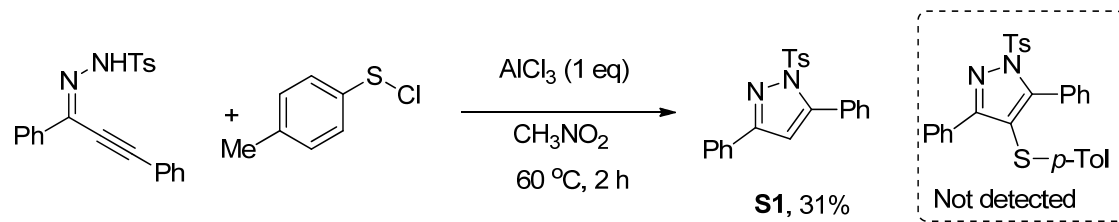
^b Taiyuan University of Technology, Taiyuan, 030024

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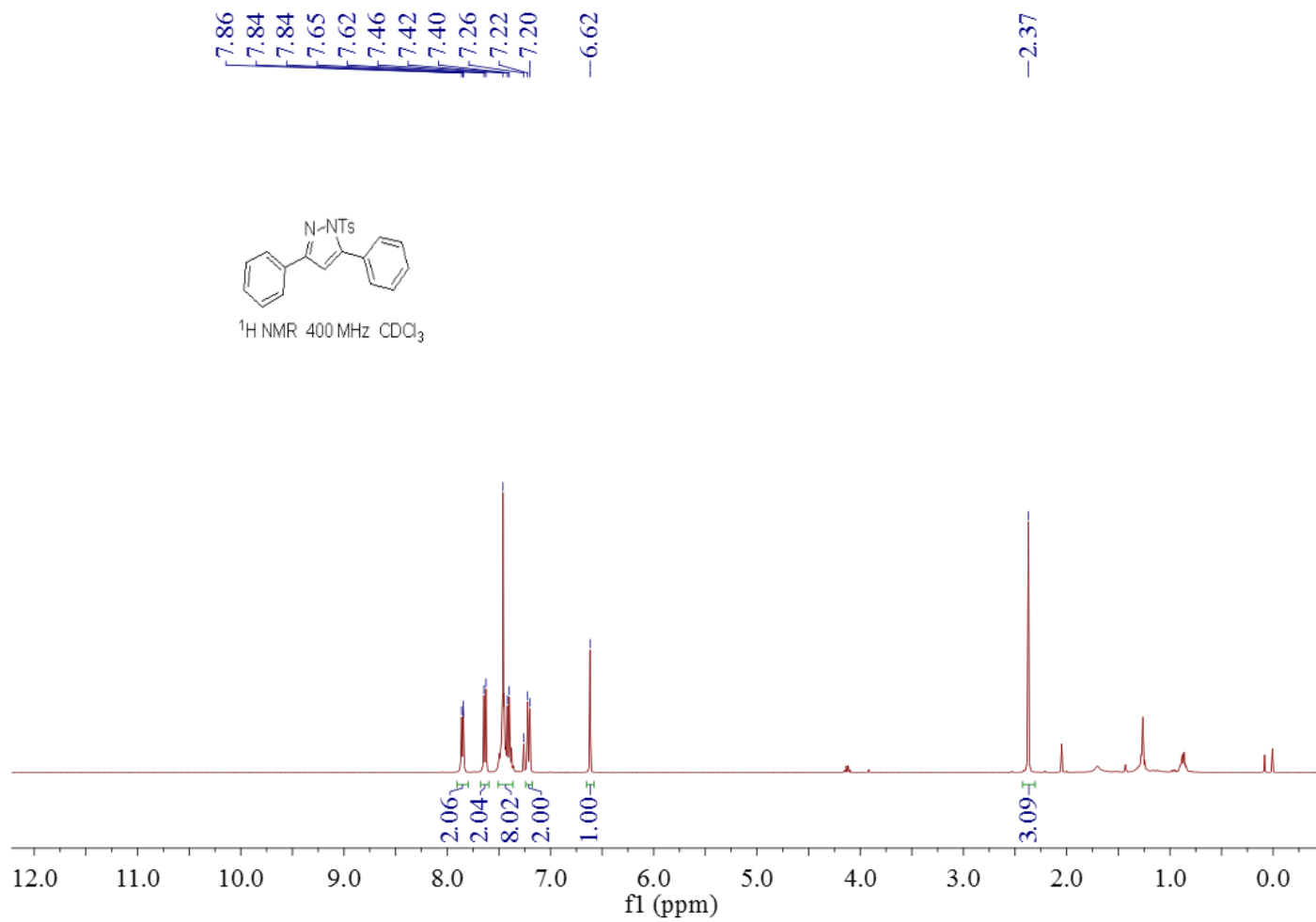
Cyclization of N-sulfonyl hydrazones.....S2

Copies of NMR spectra.....S3

Cyclization of N-sulfonyl hydrazones

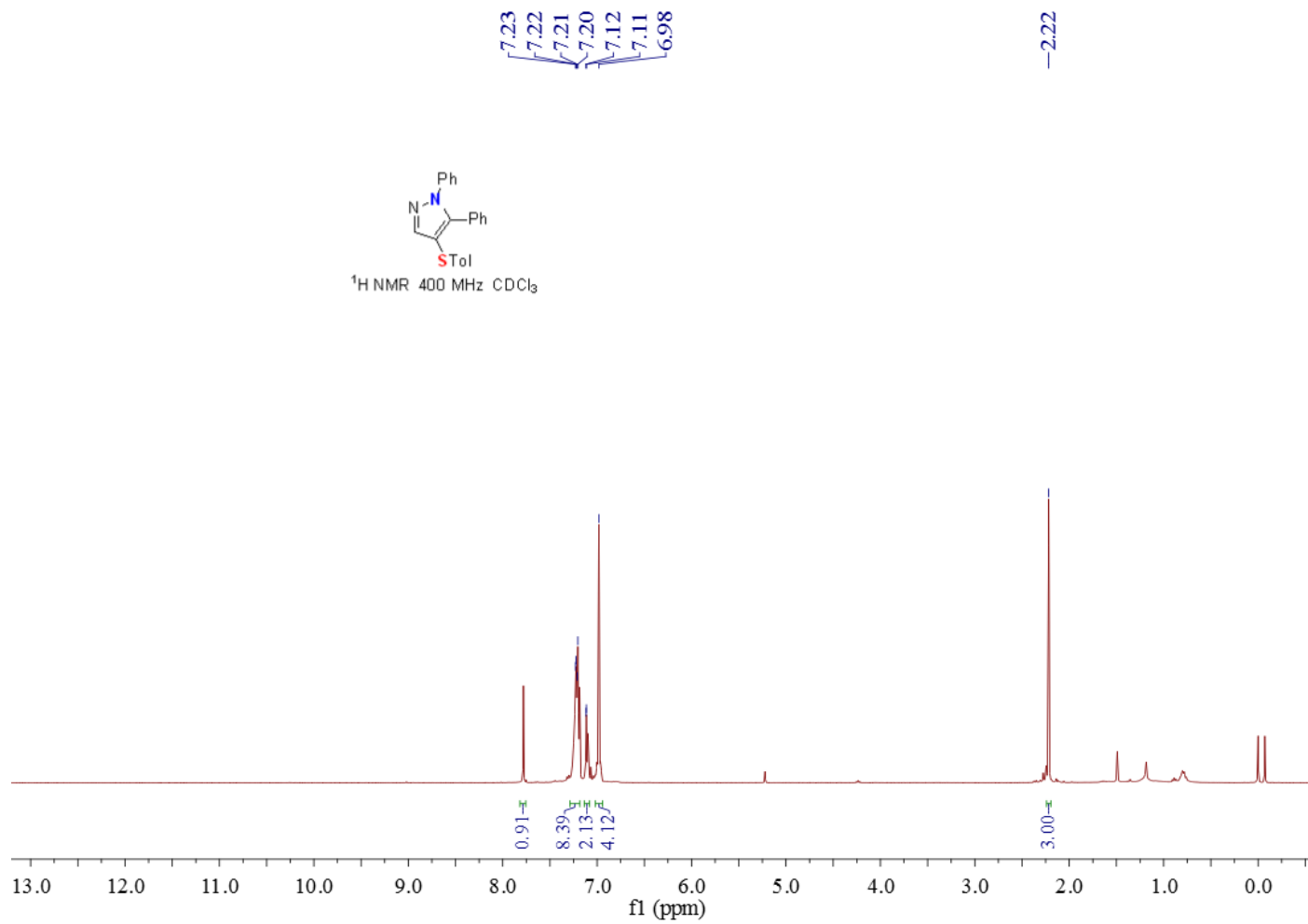


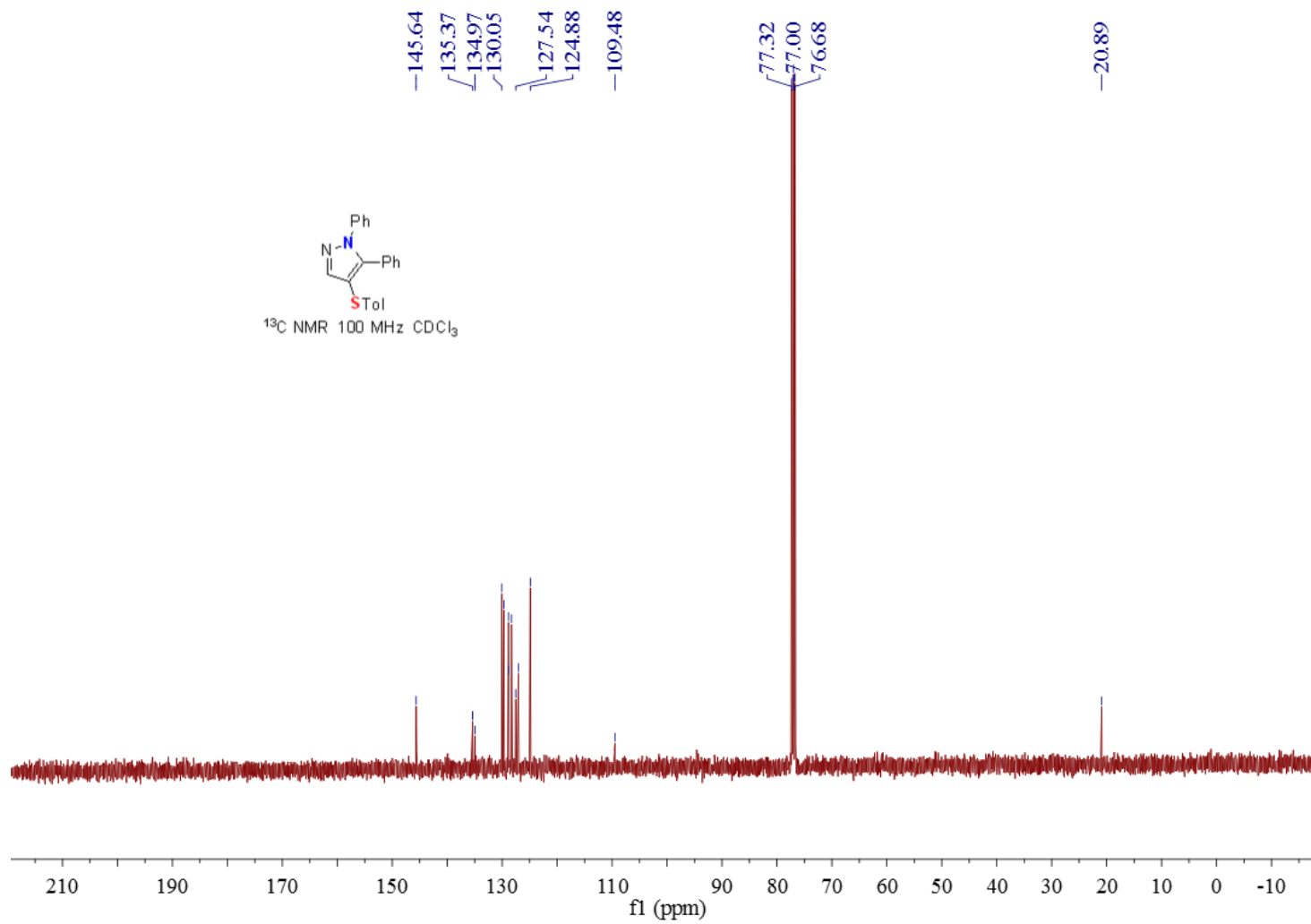
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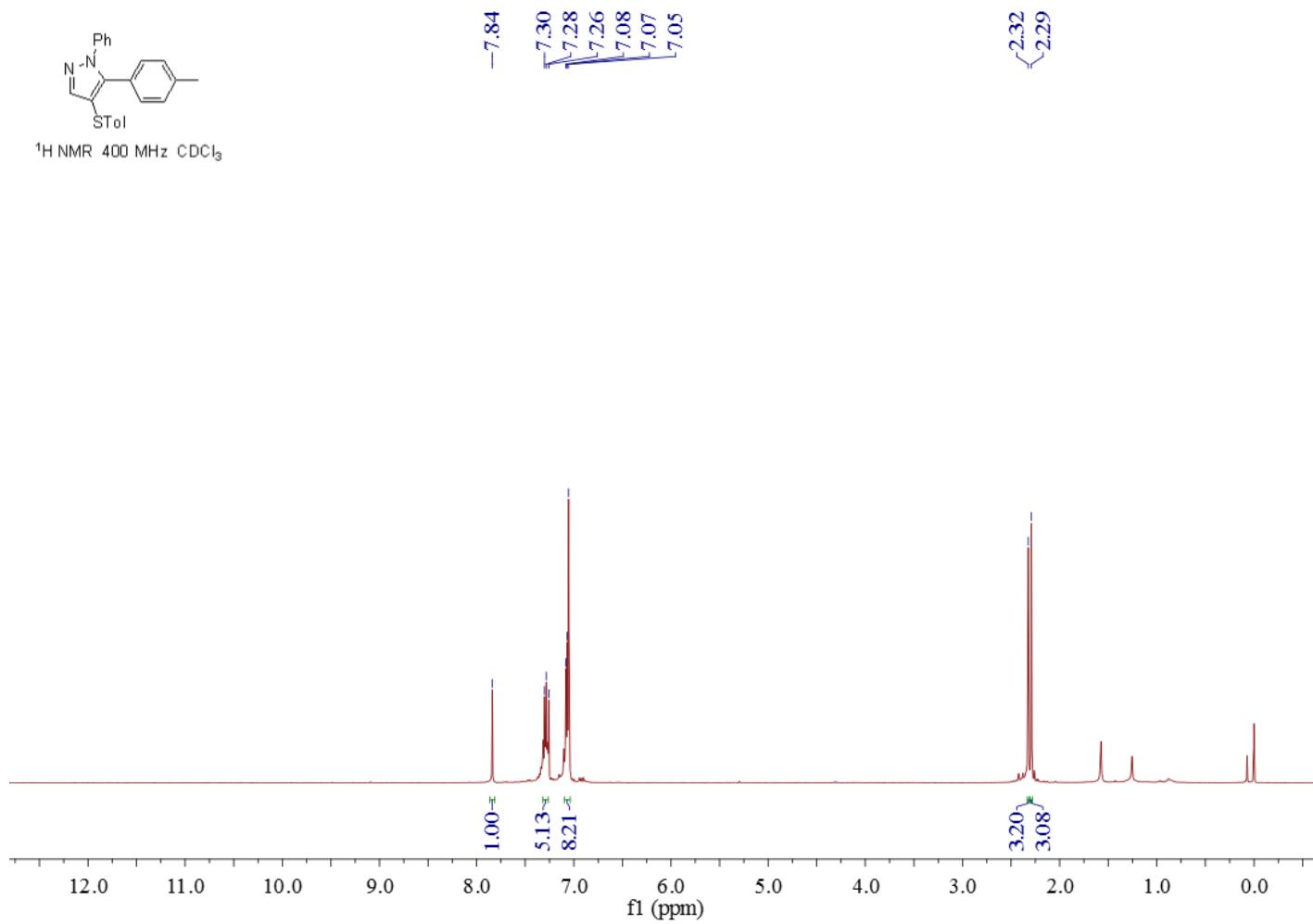
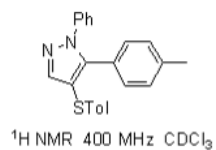
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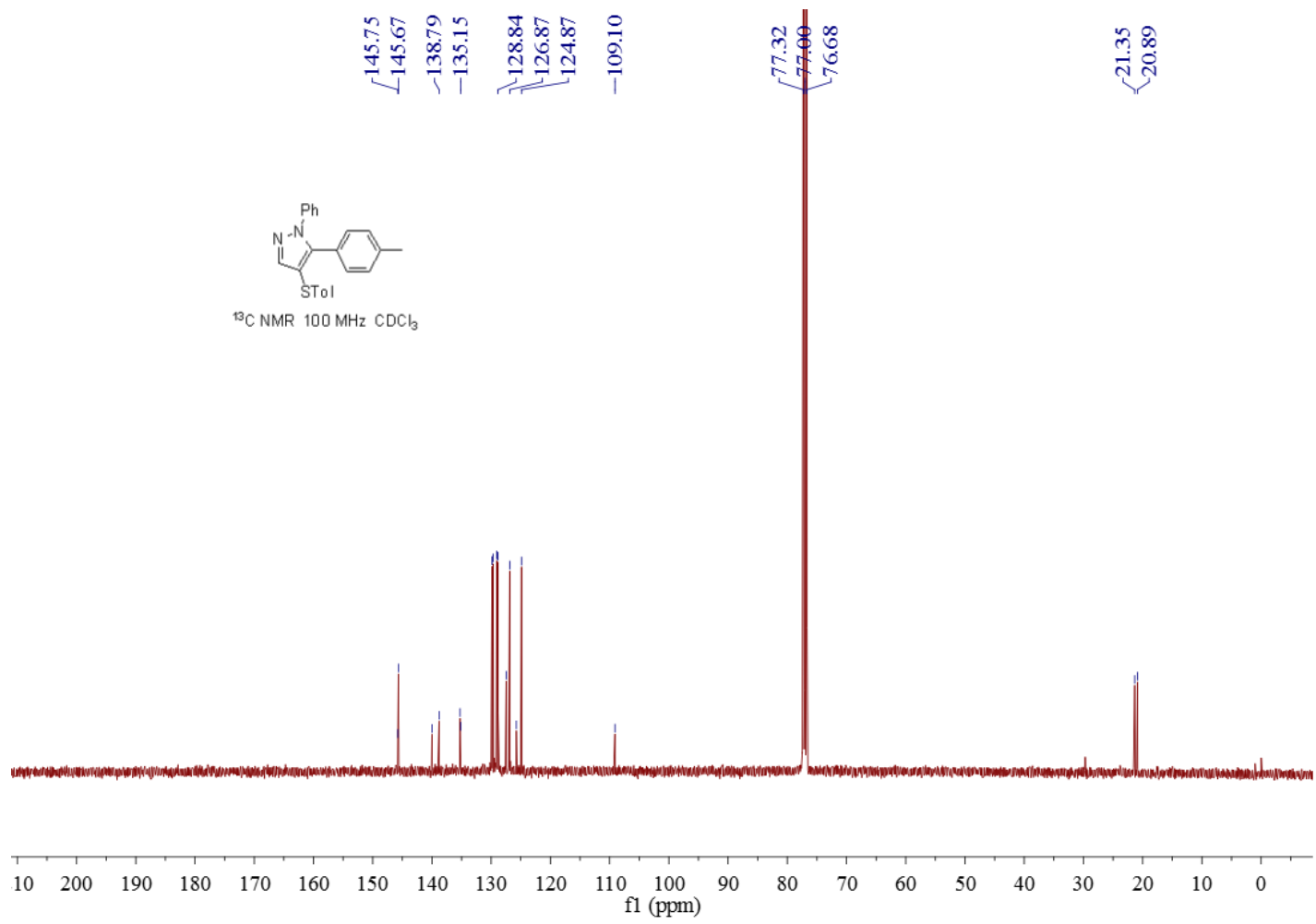
3a



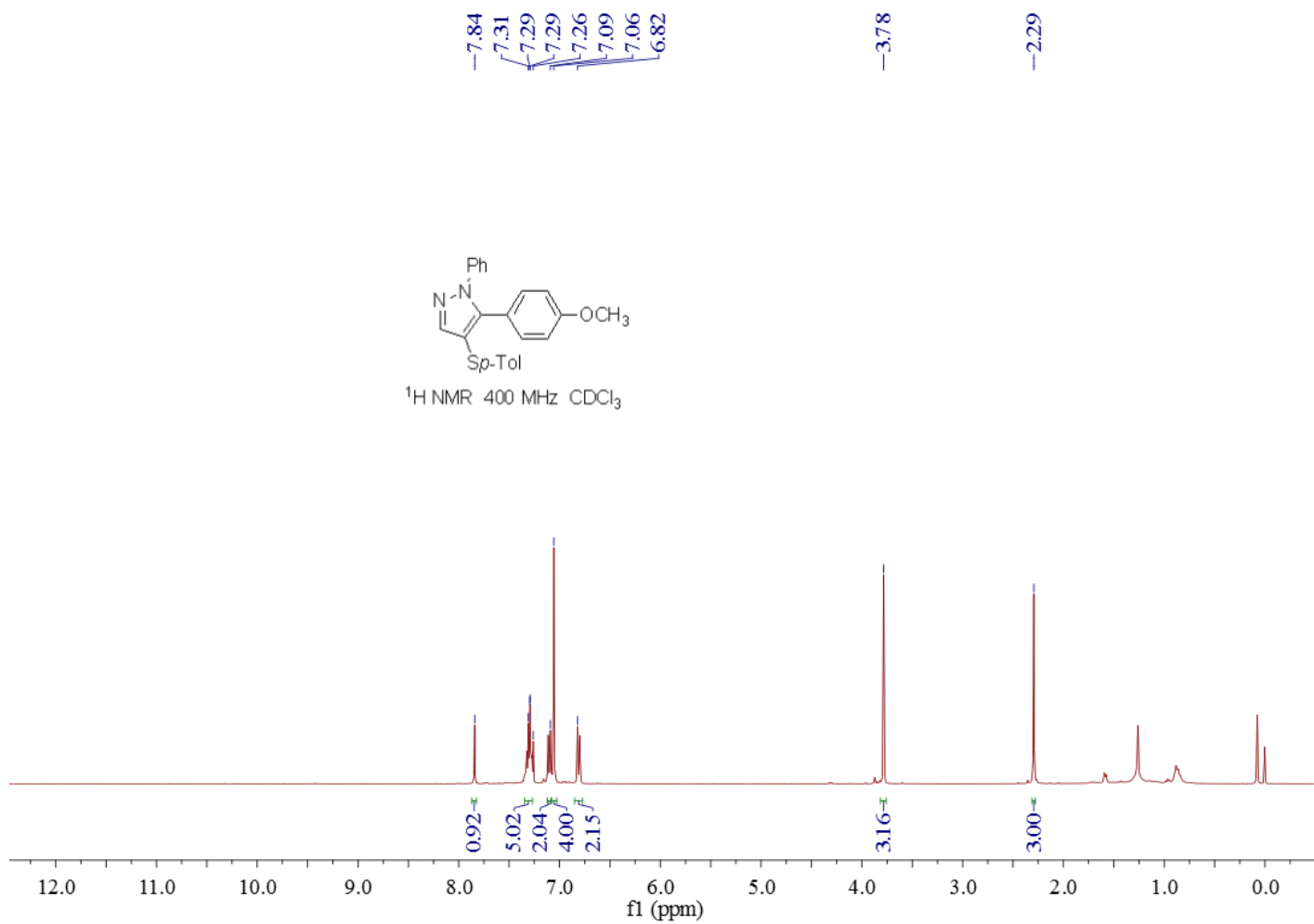


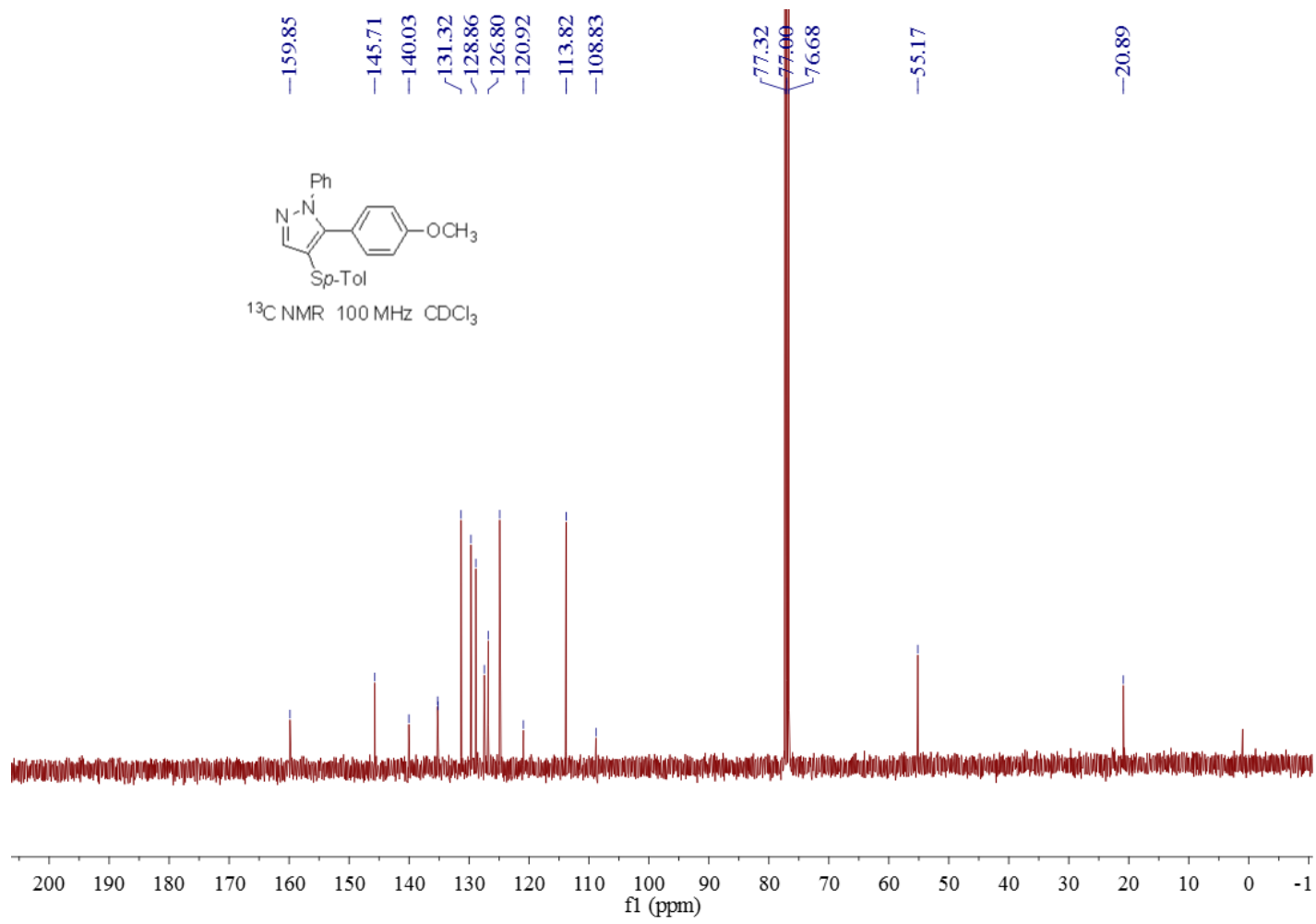
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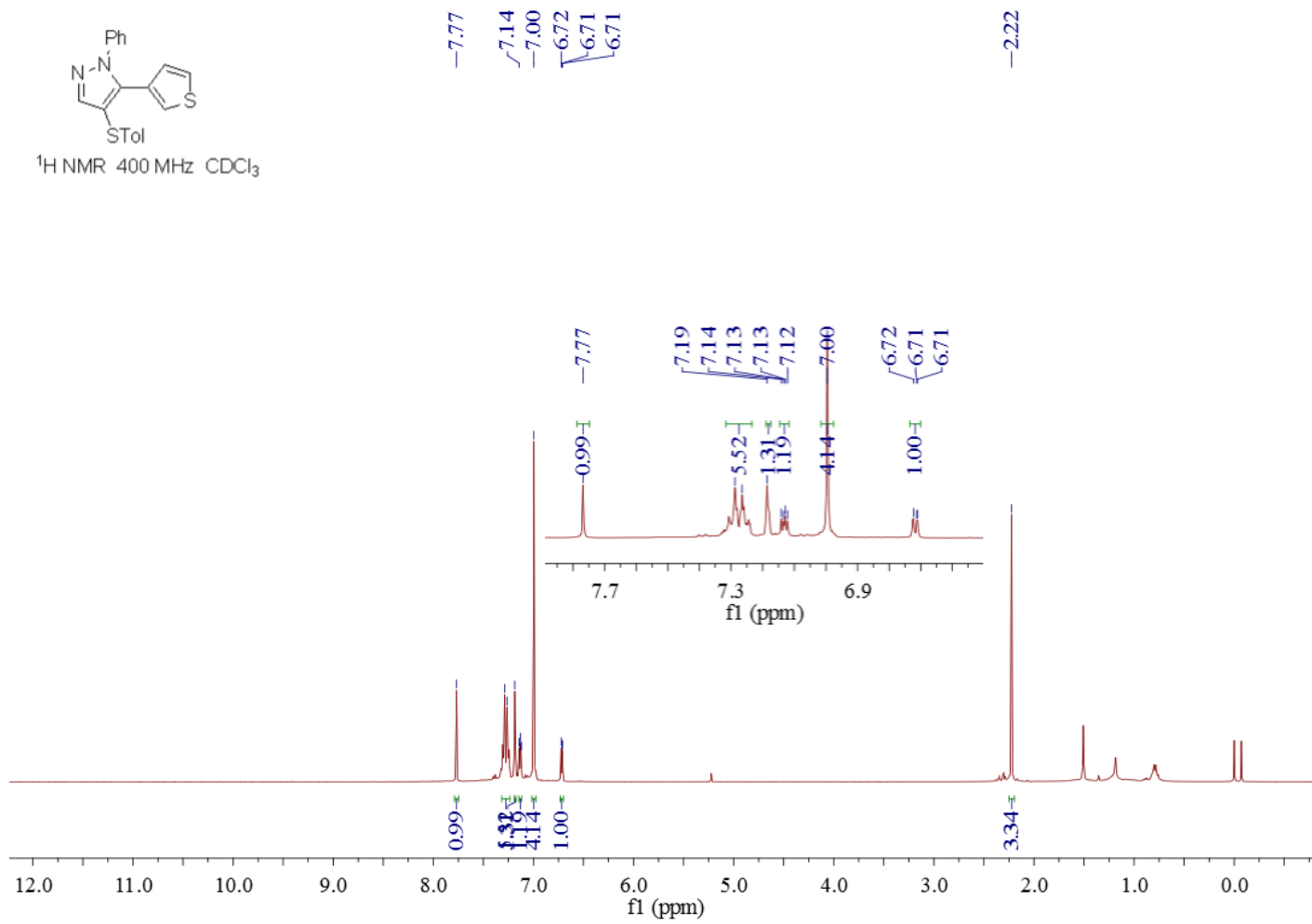
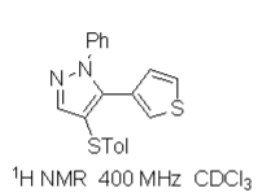


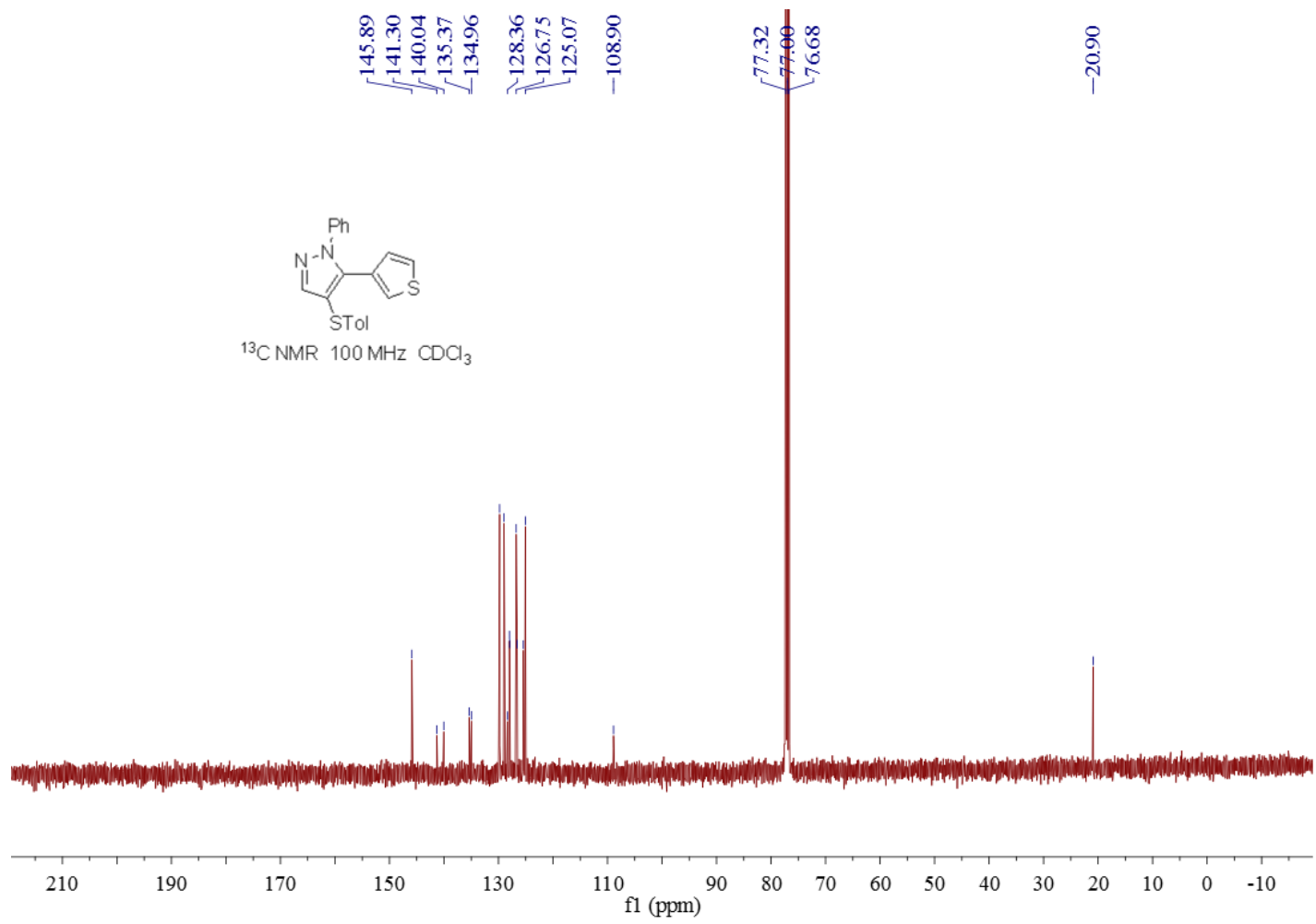
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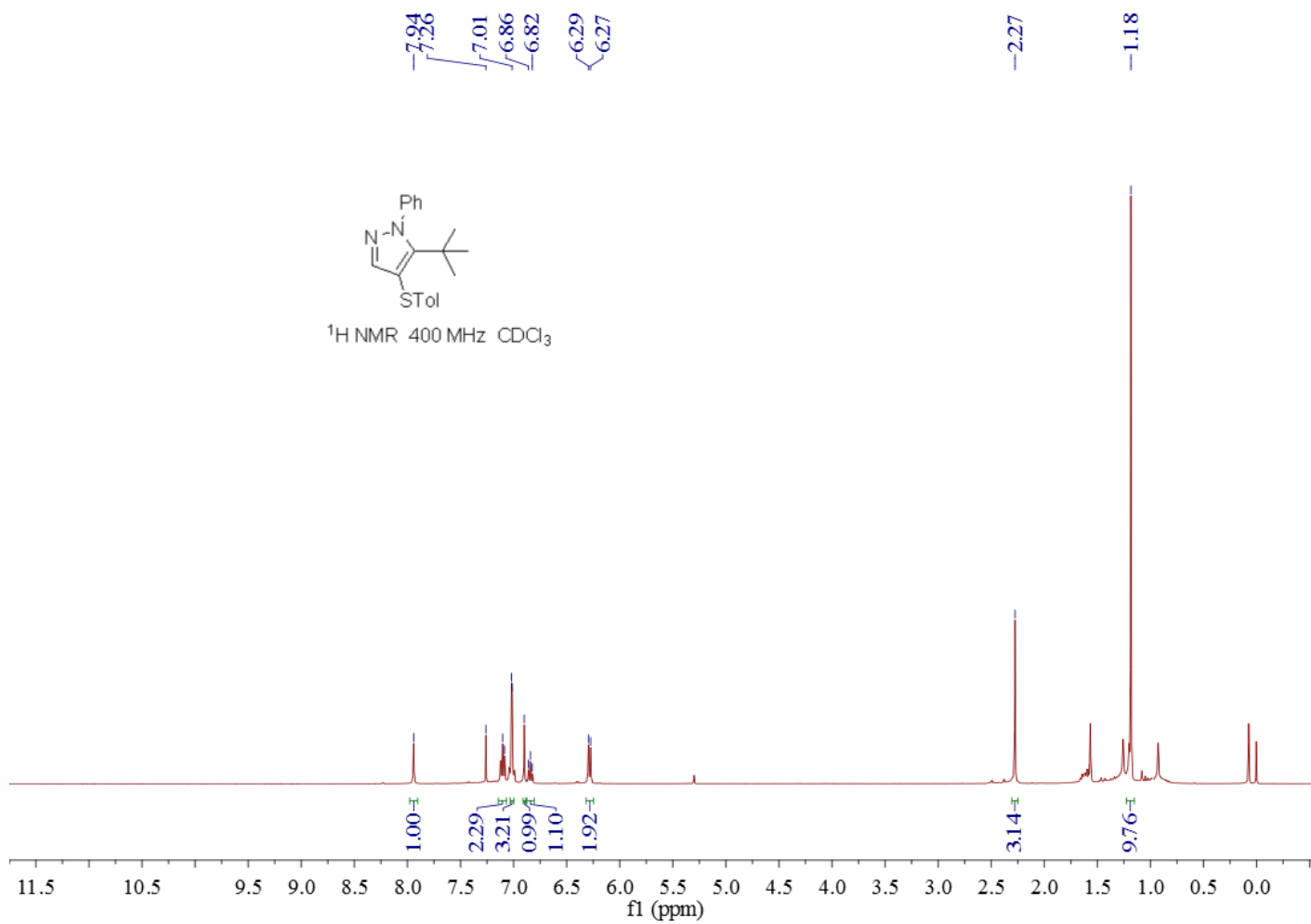


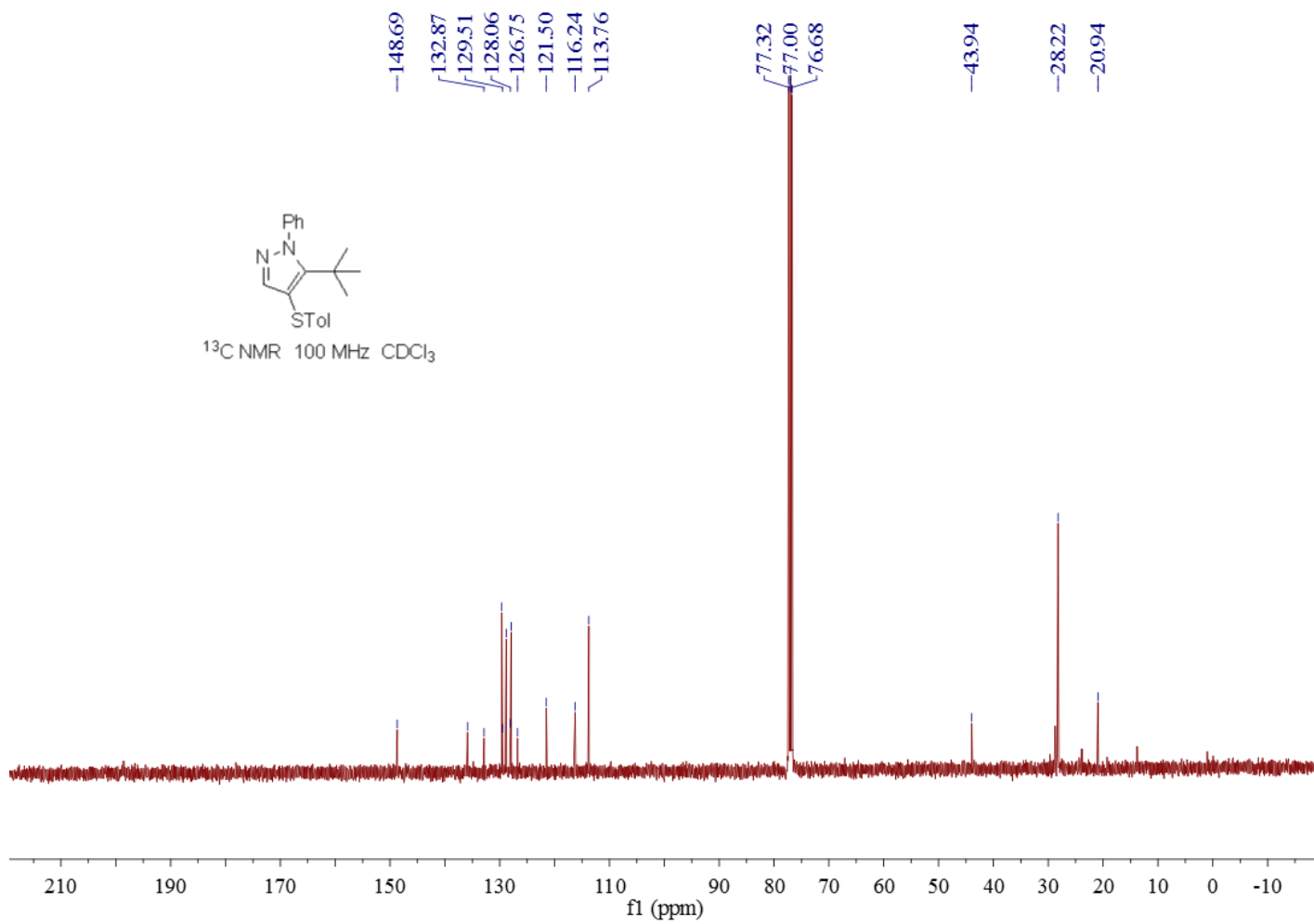
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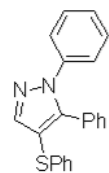


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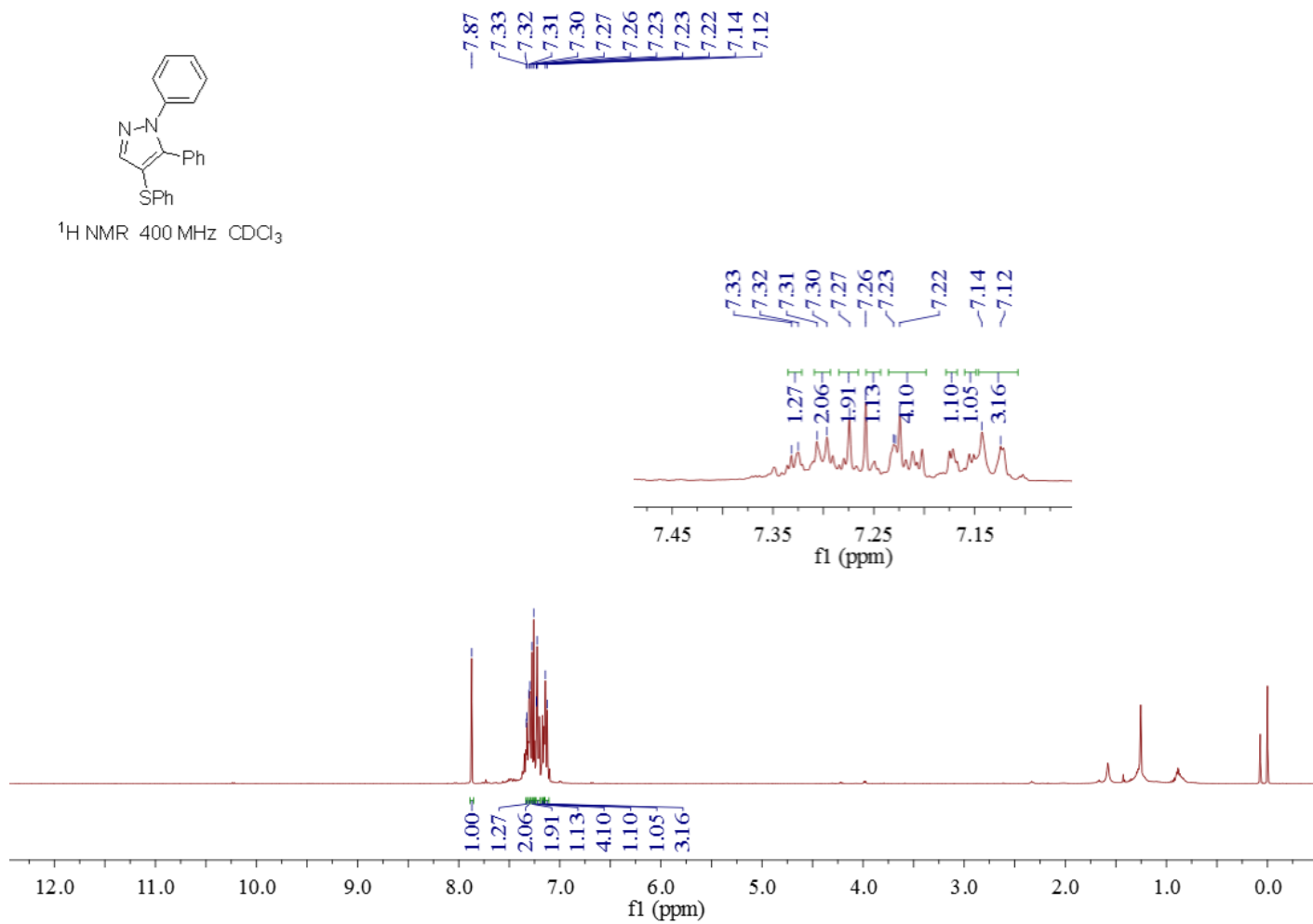


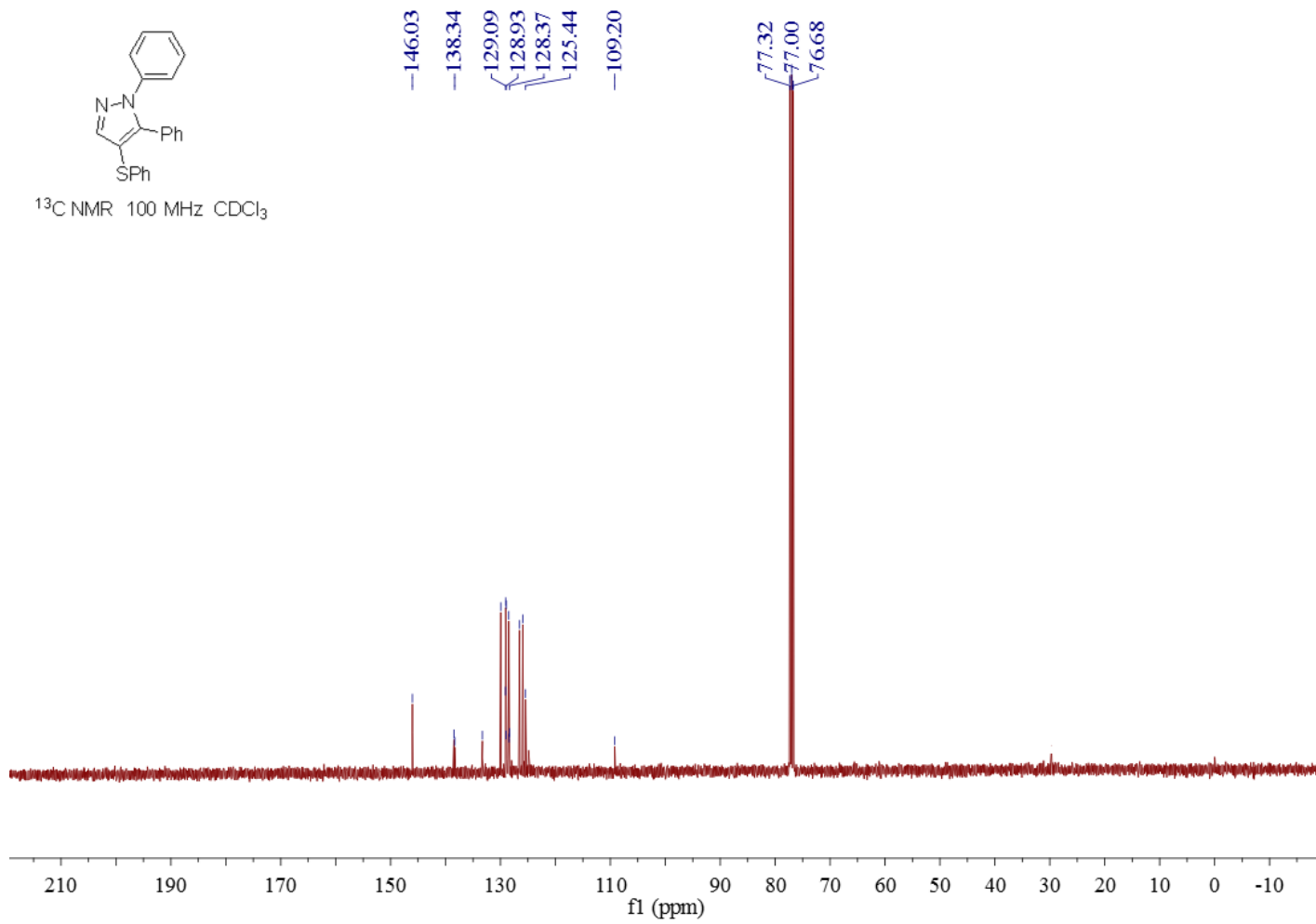
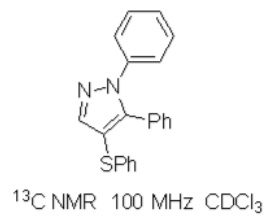


3f

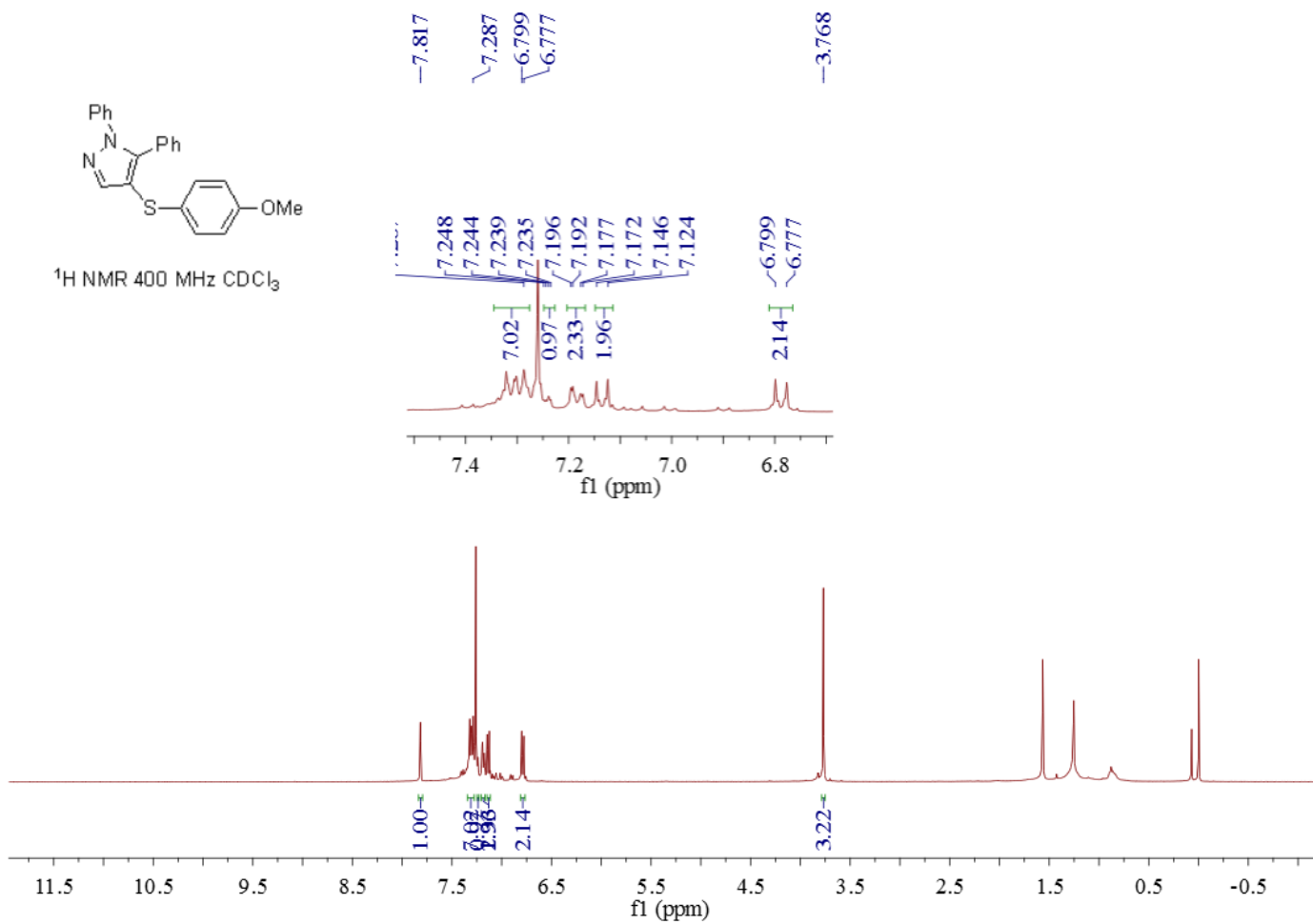


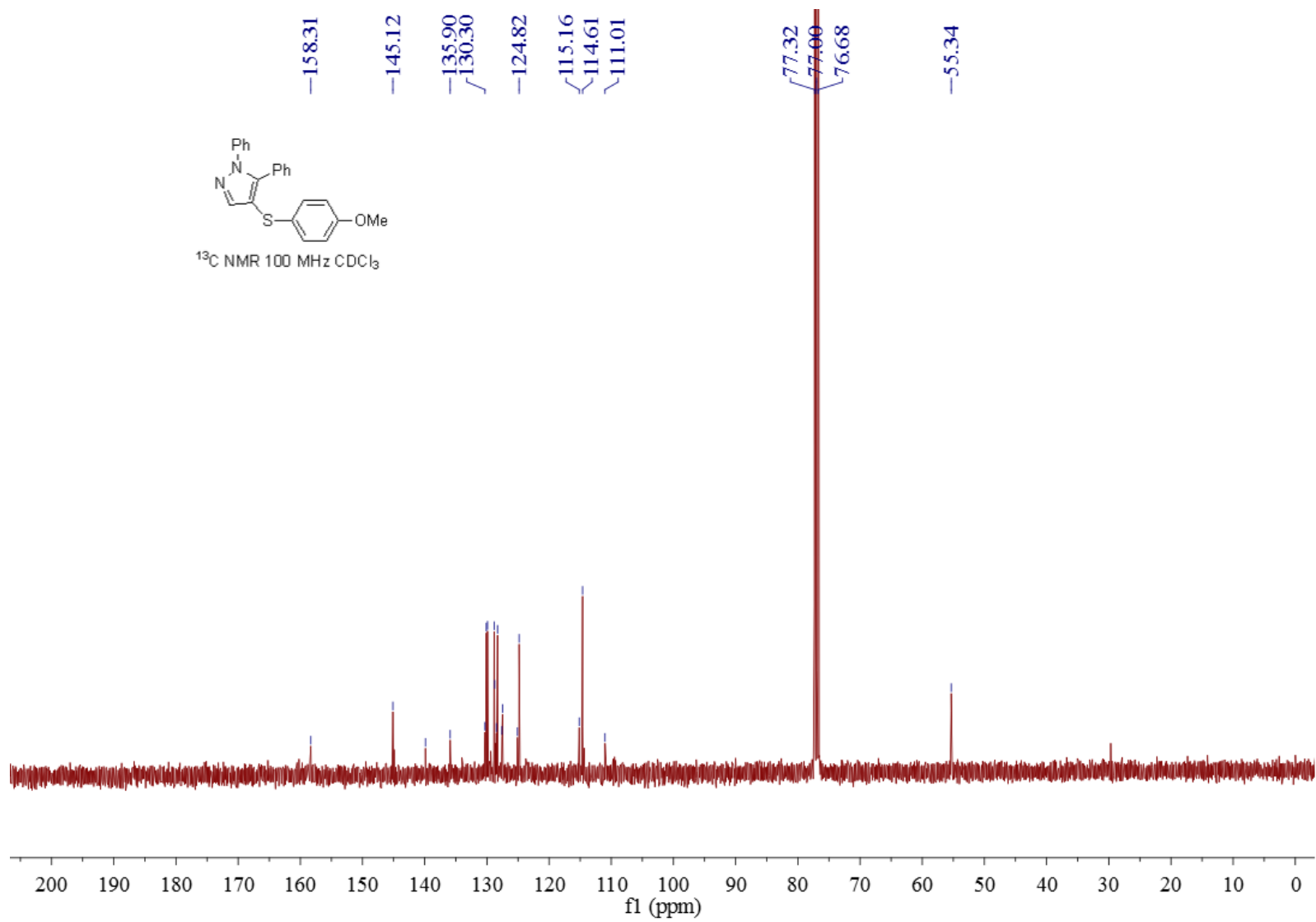
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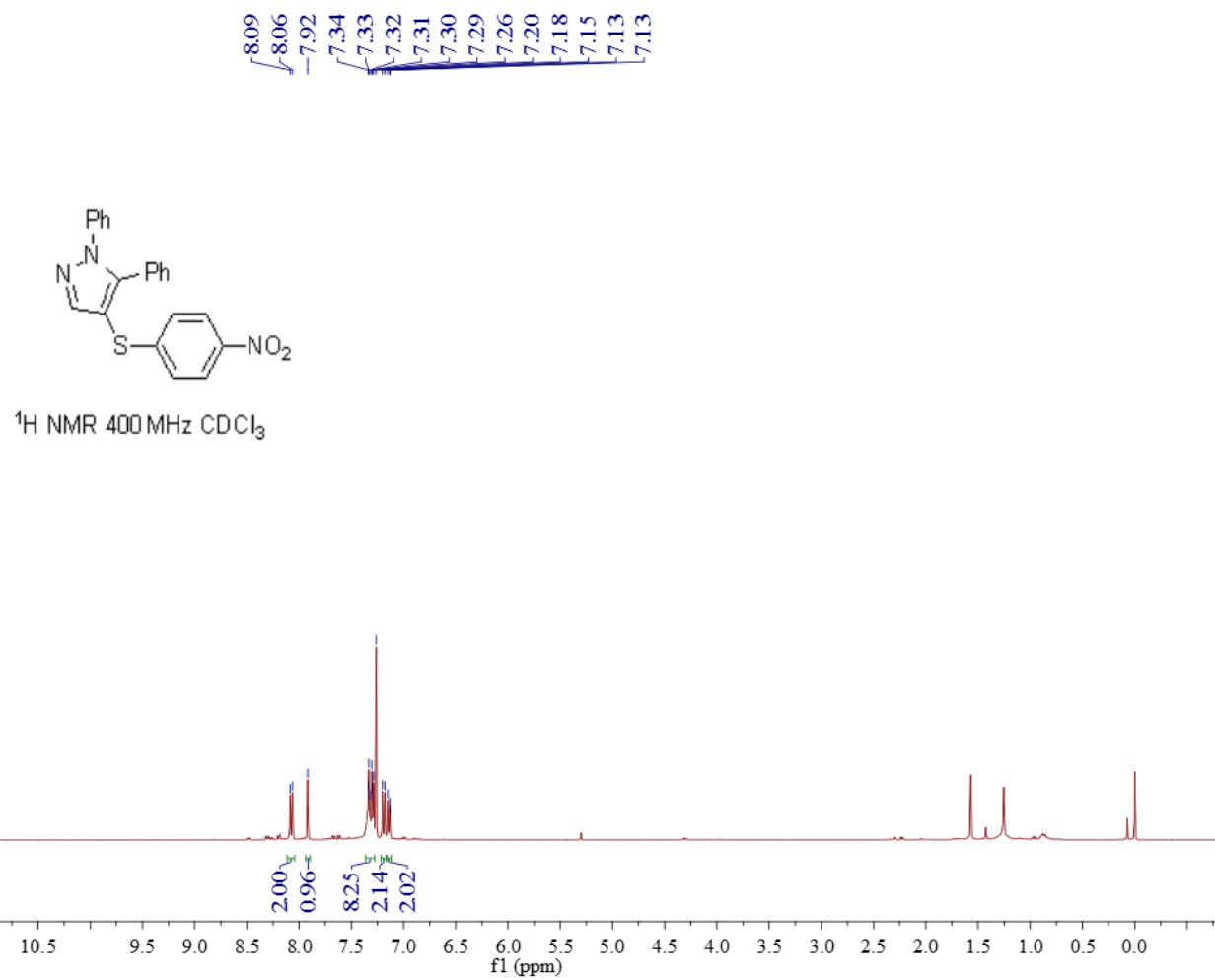


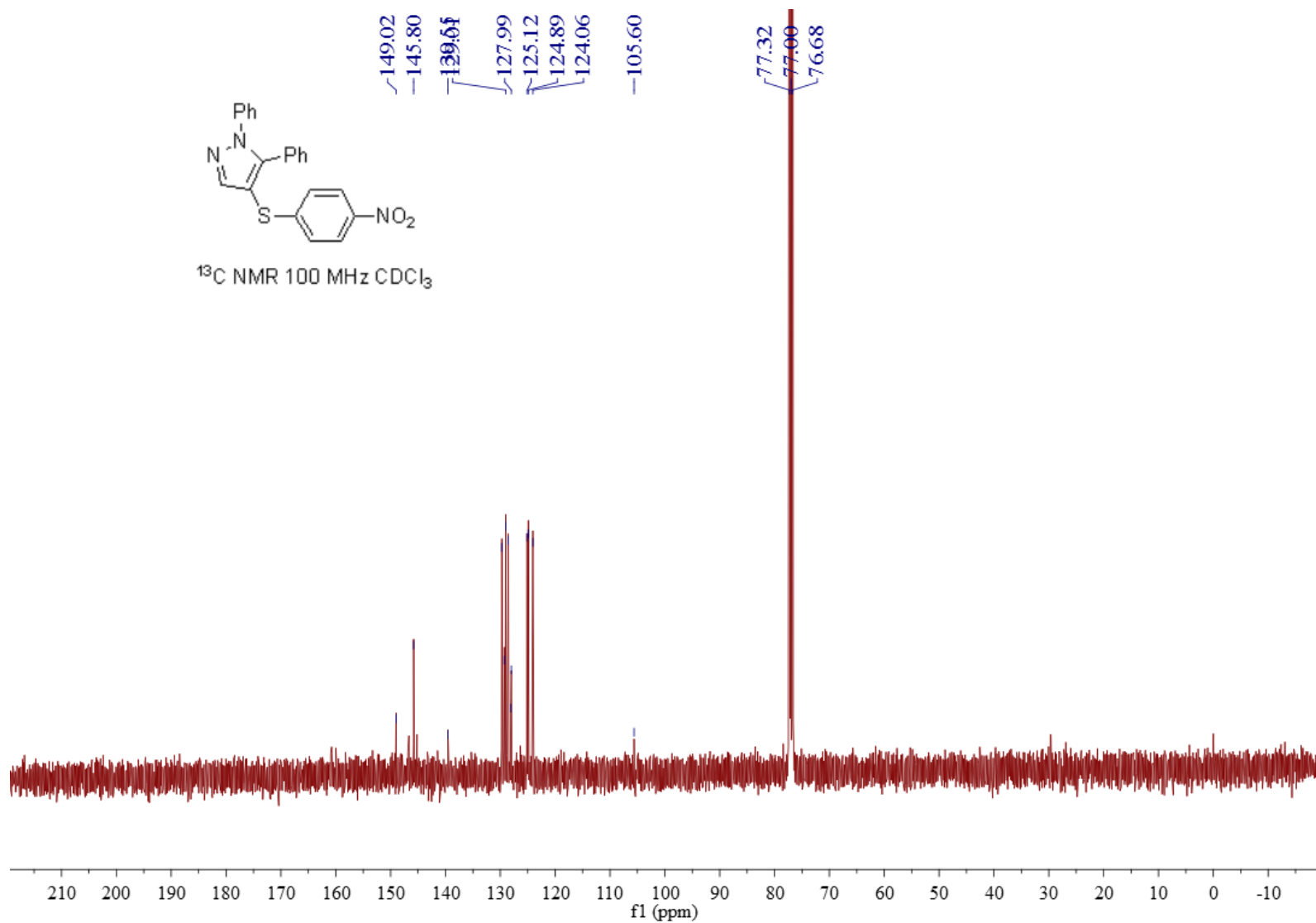
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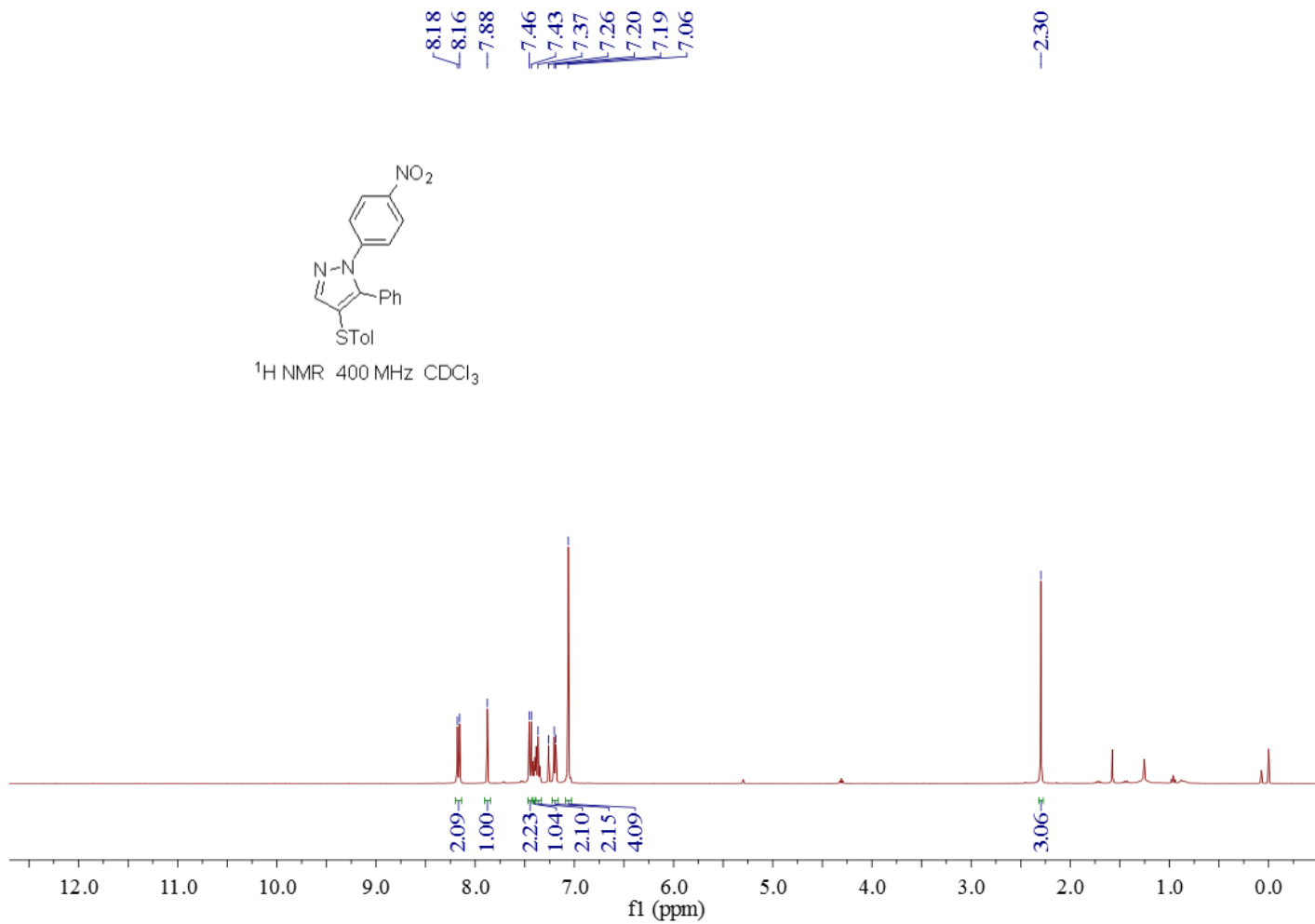


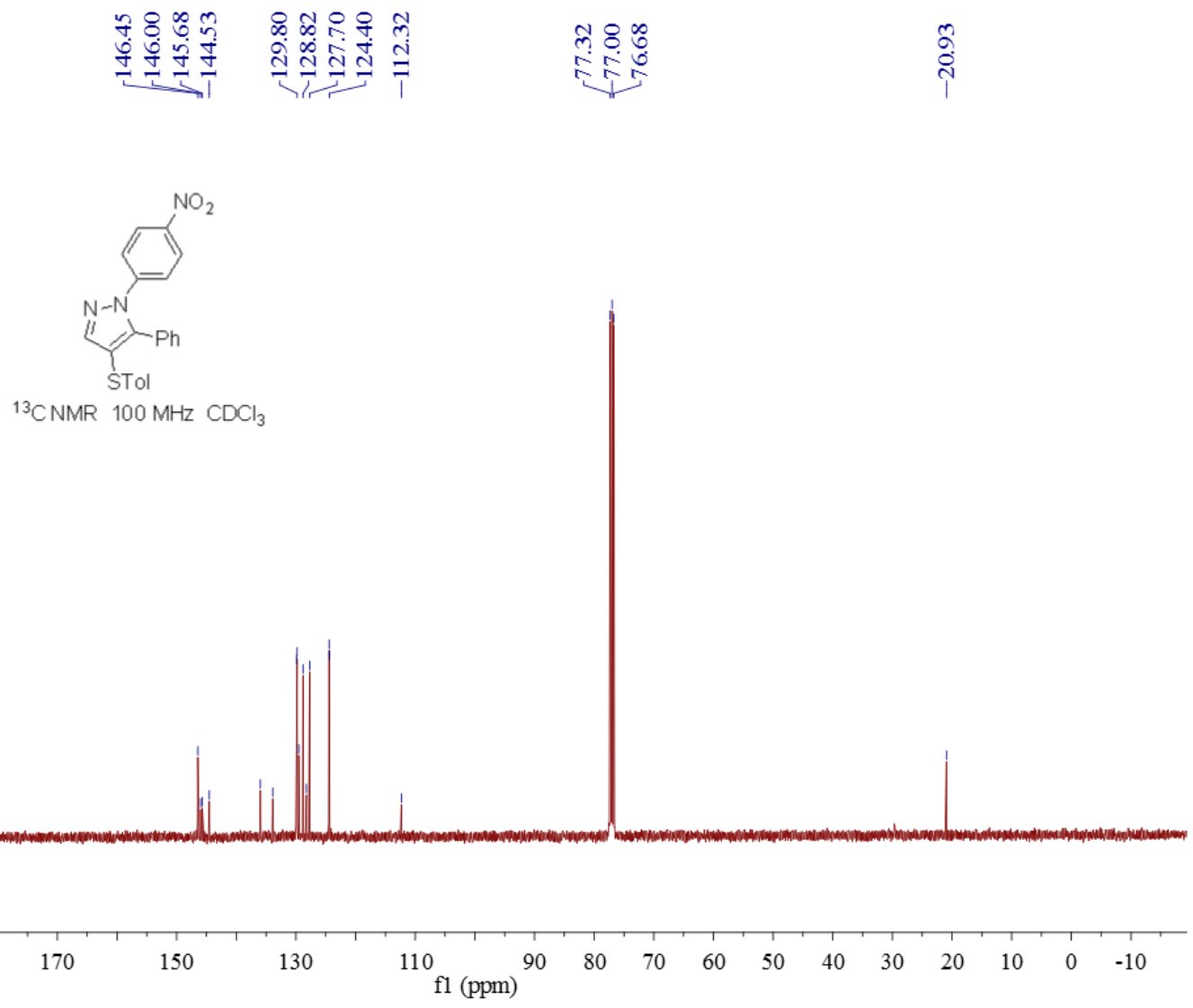
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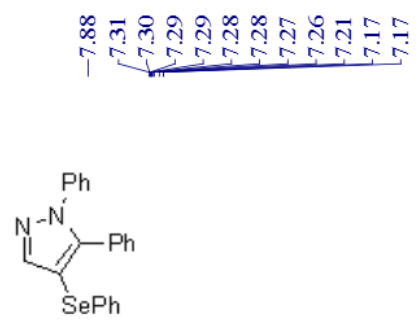


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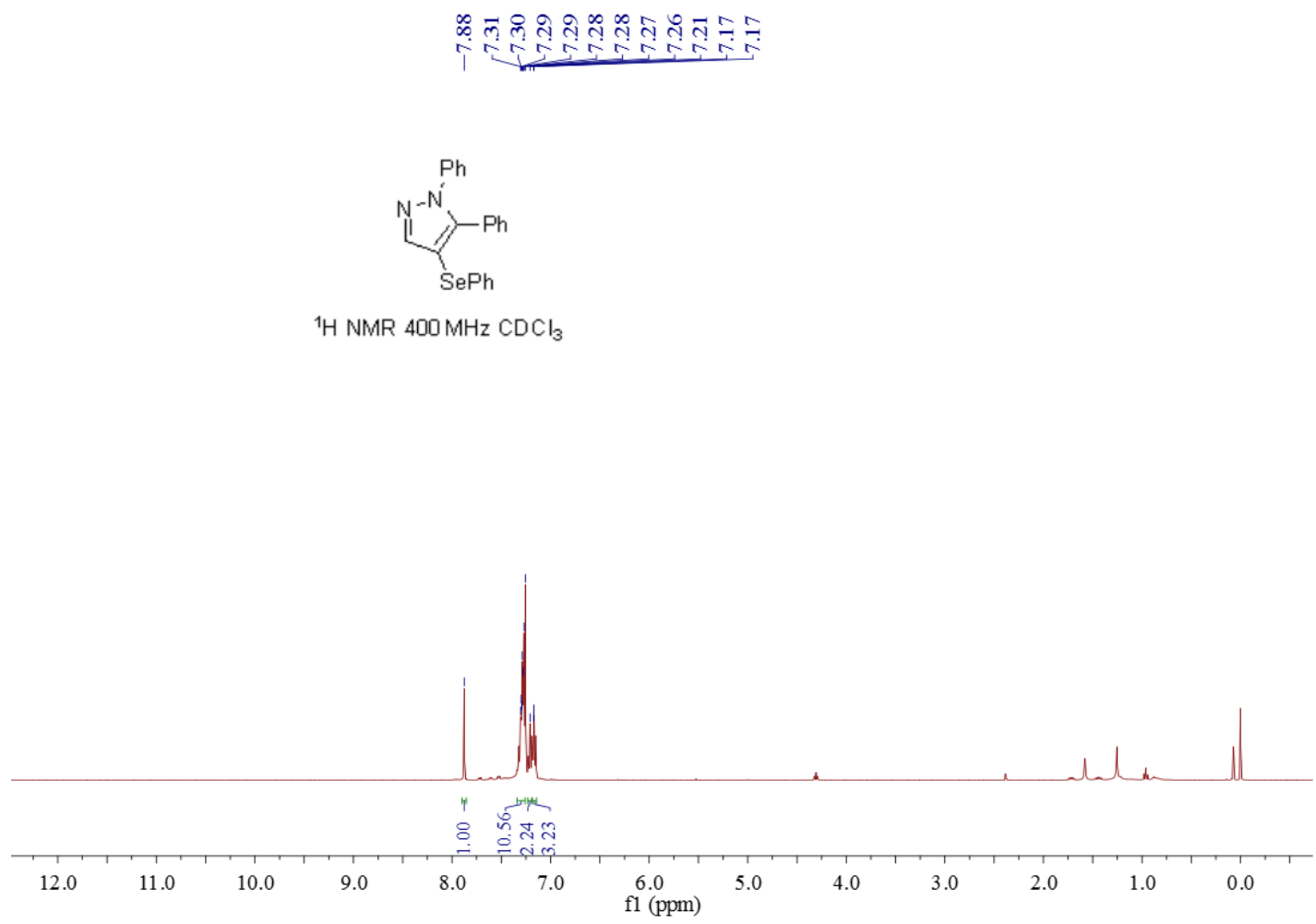


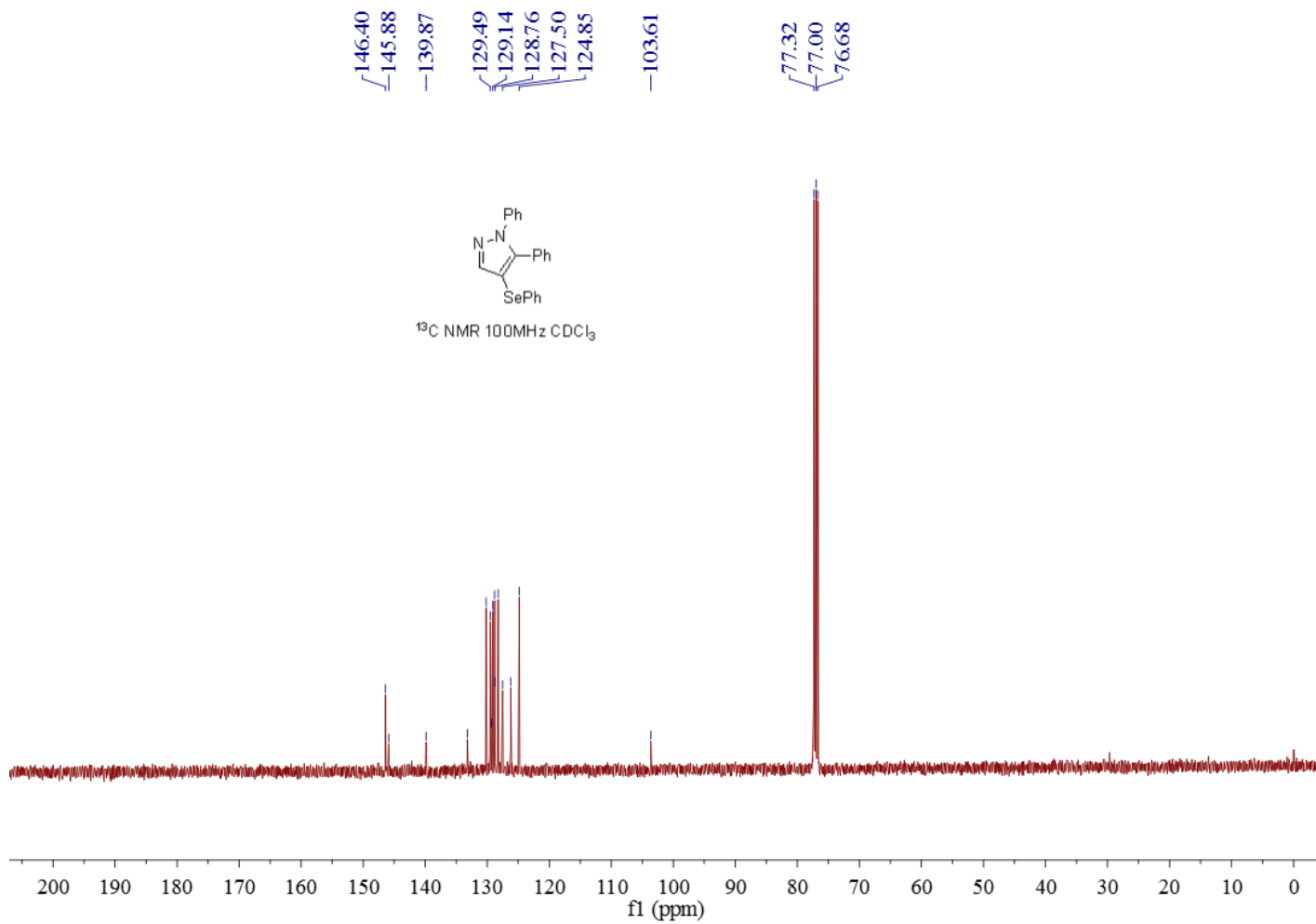


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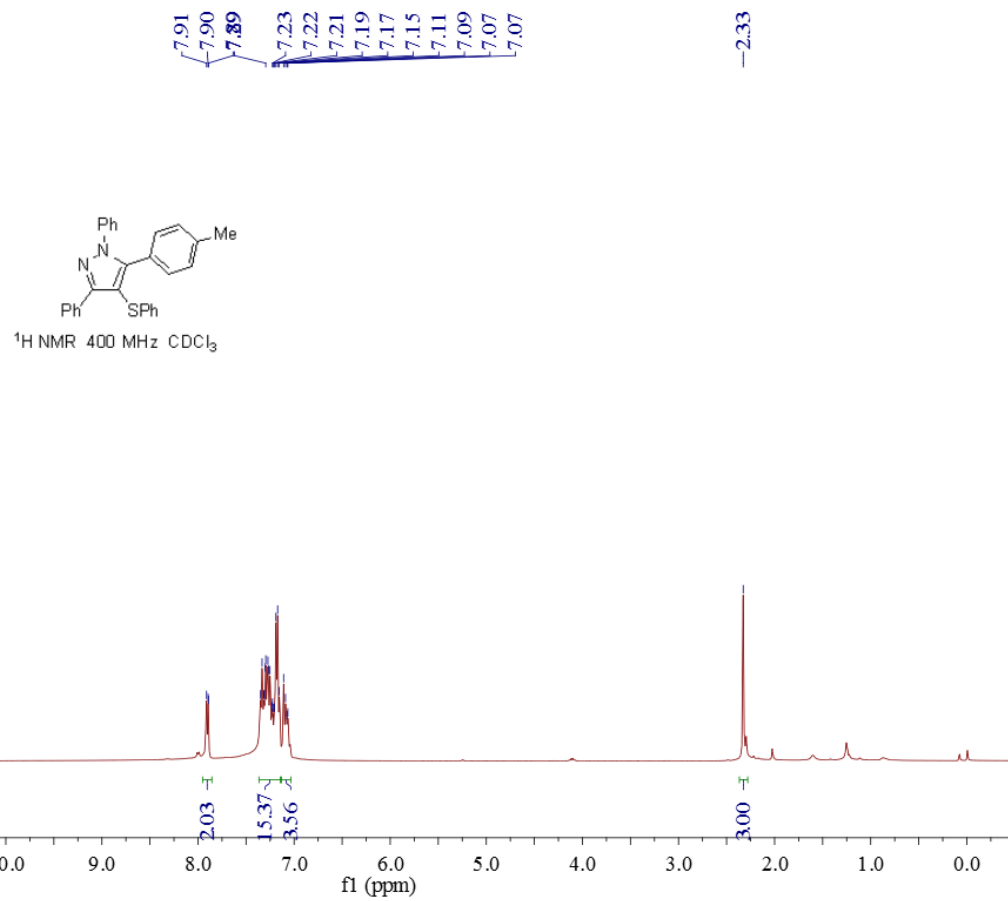


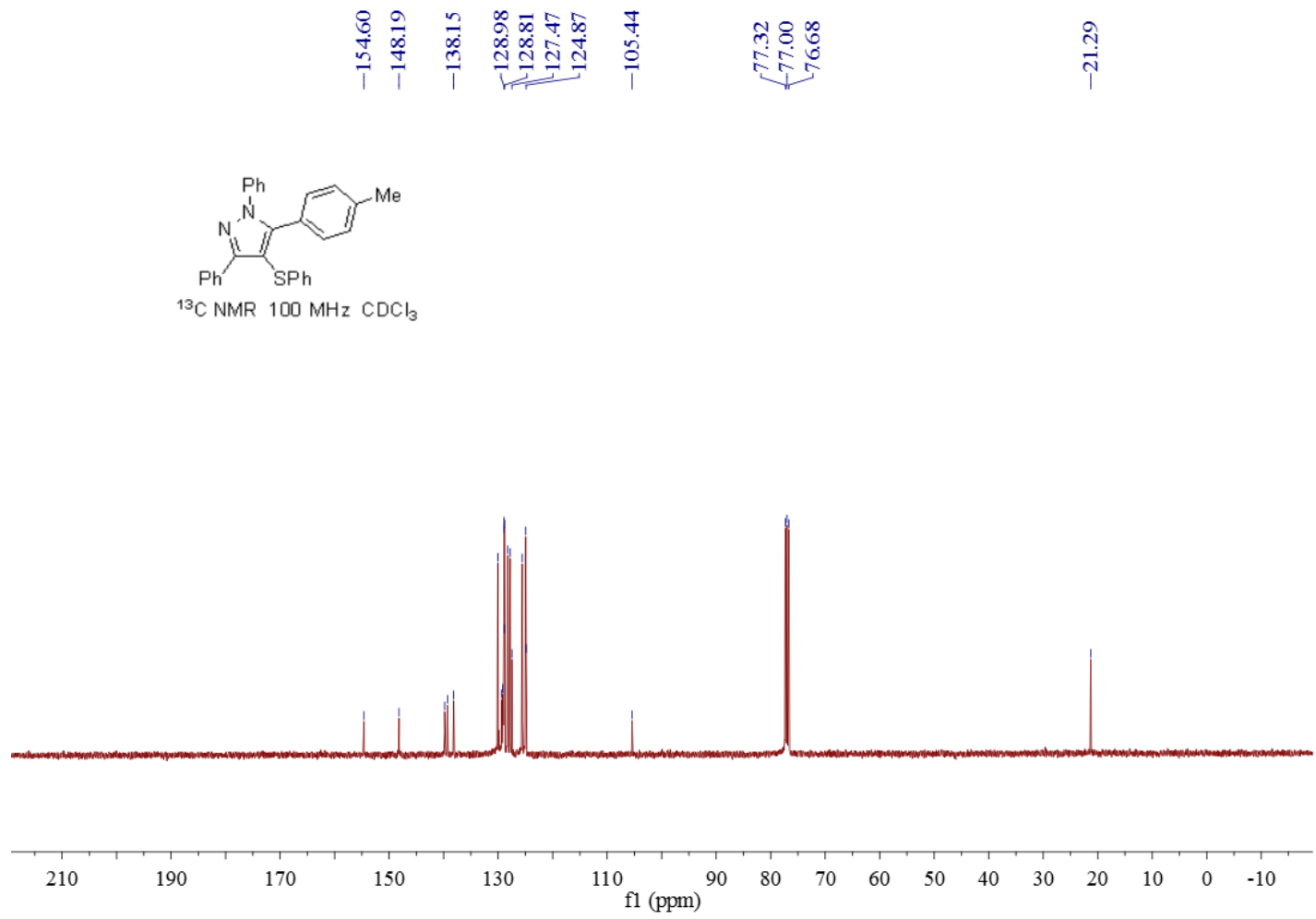
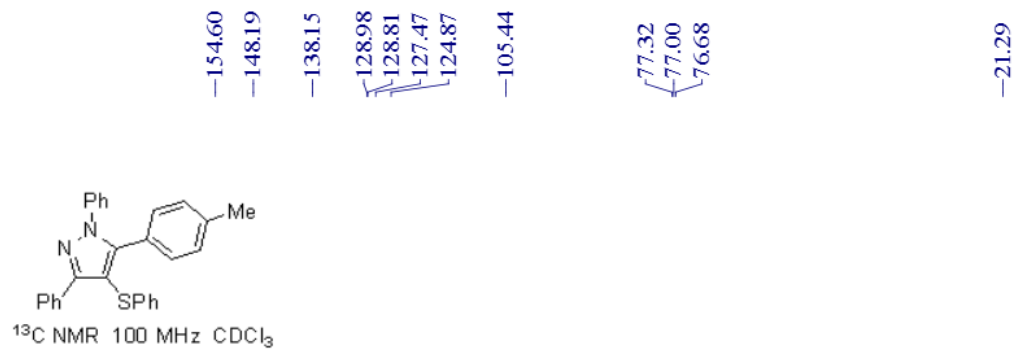
¹H NMR 400 MHz CDCl₃



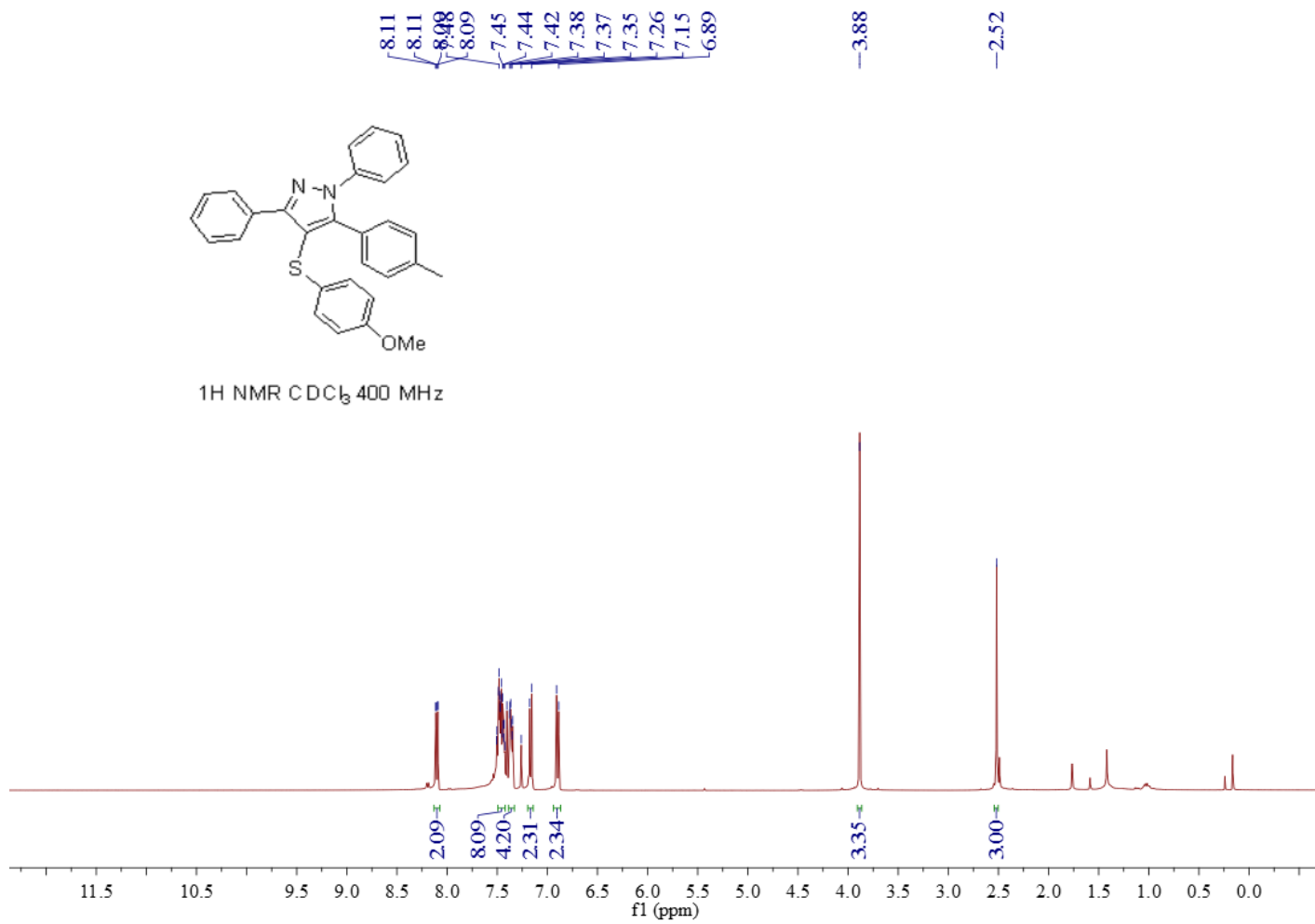


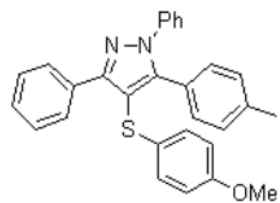
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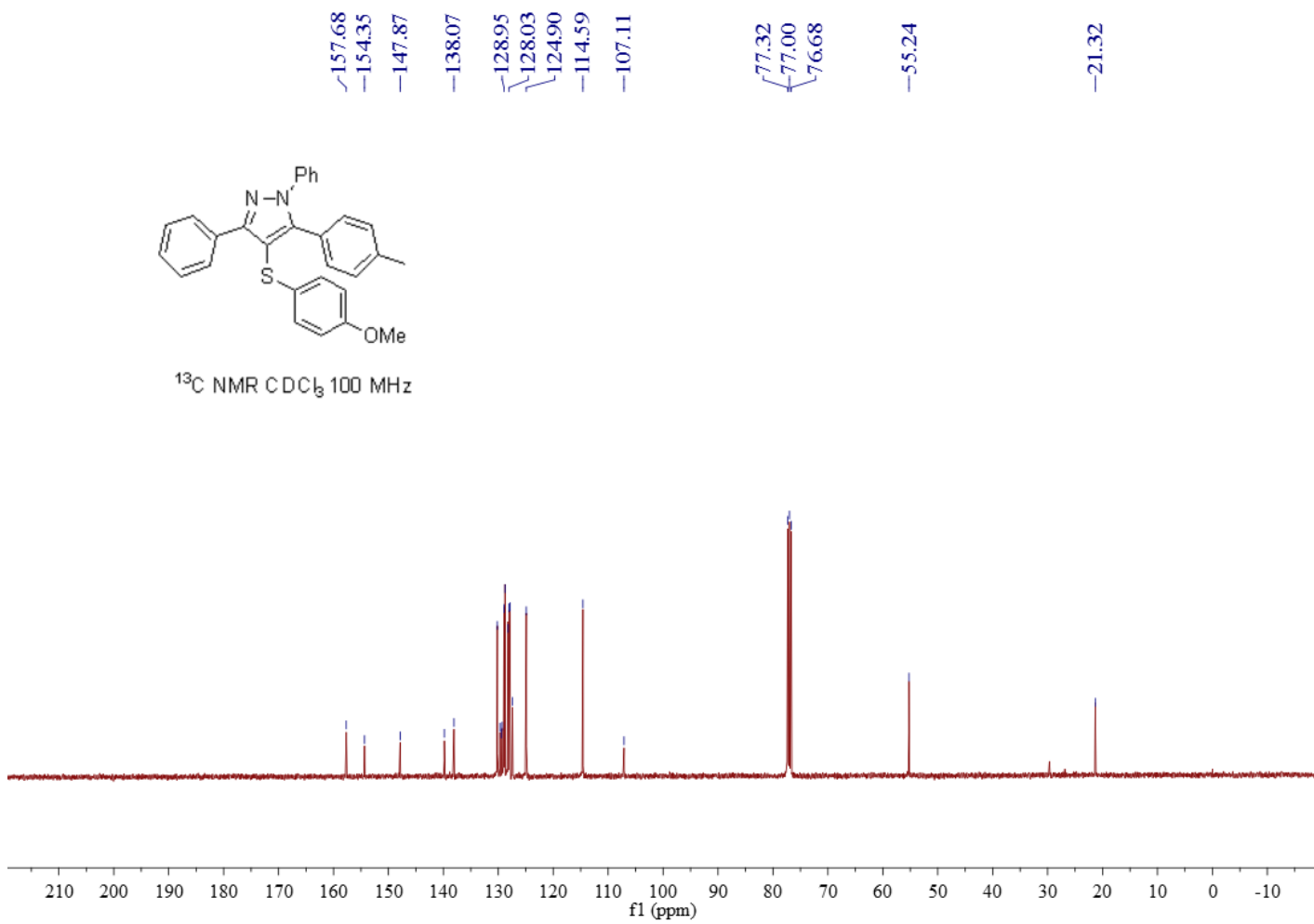


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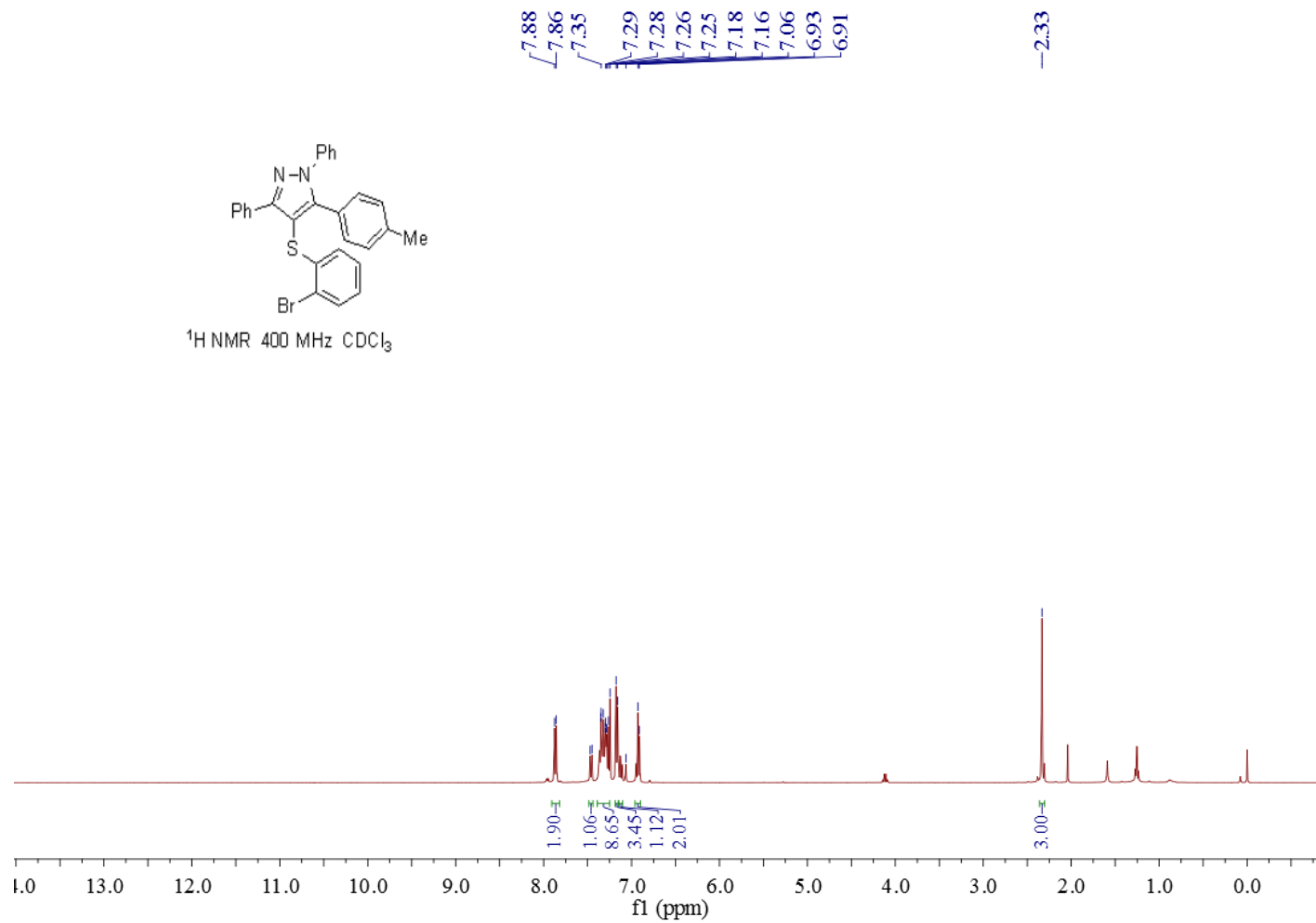
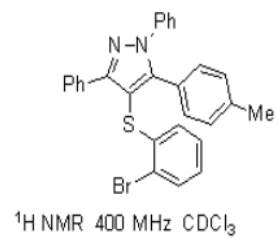


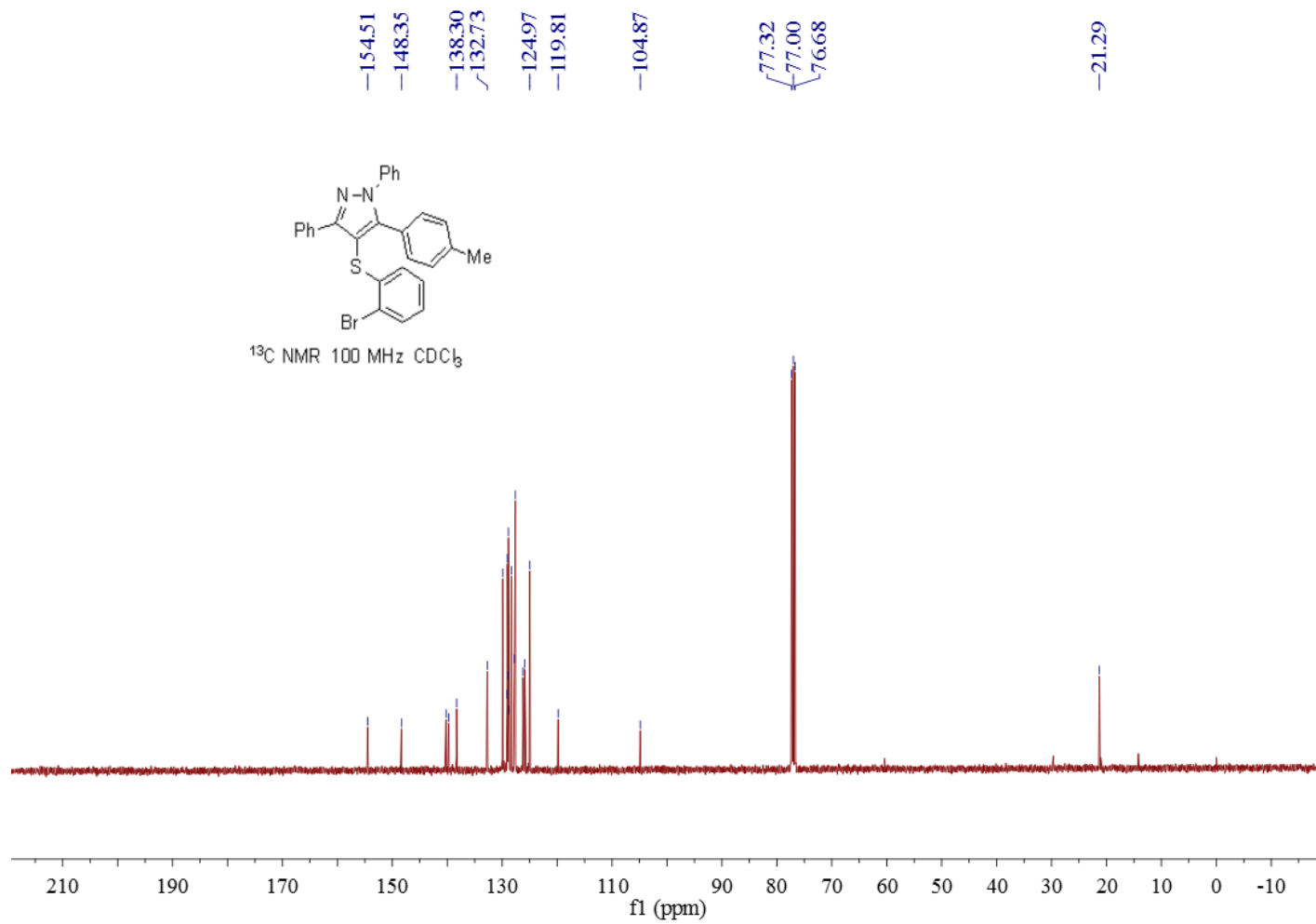


^{13}C NMR CDCl_3 100 MHz

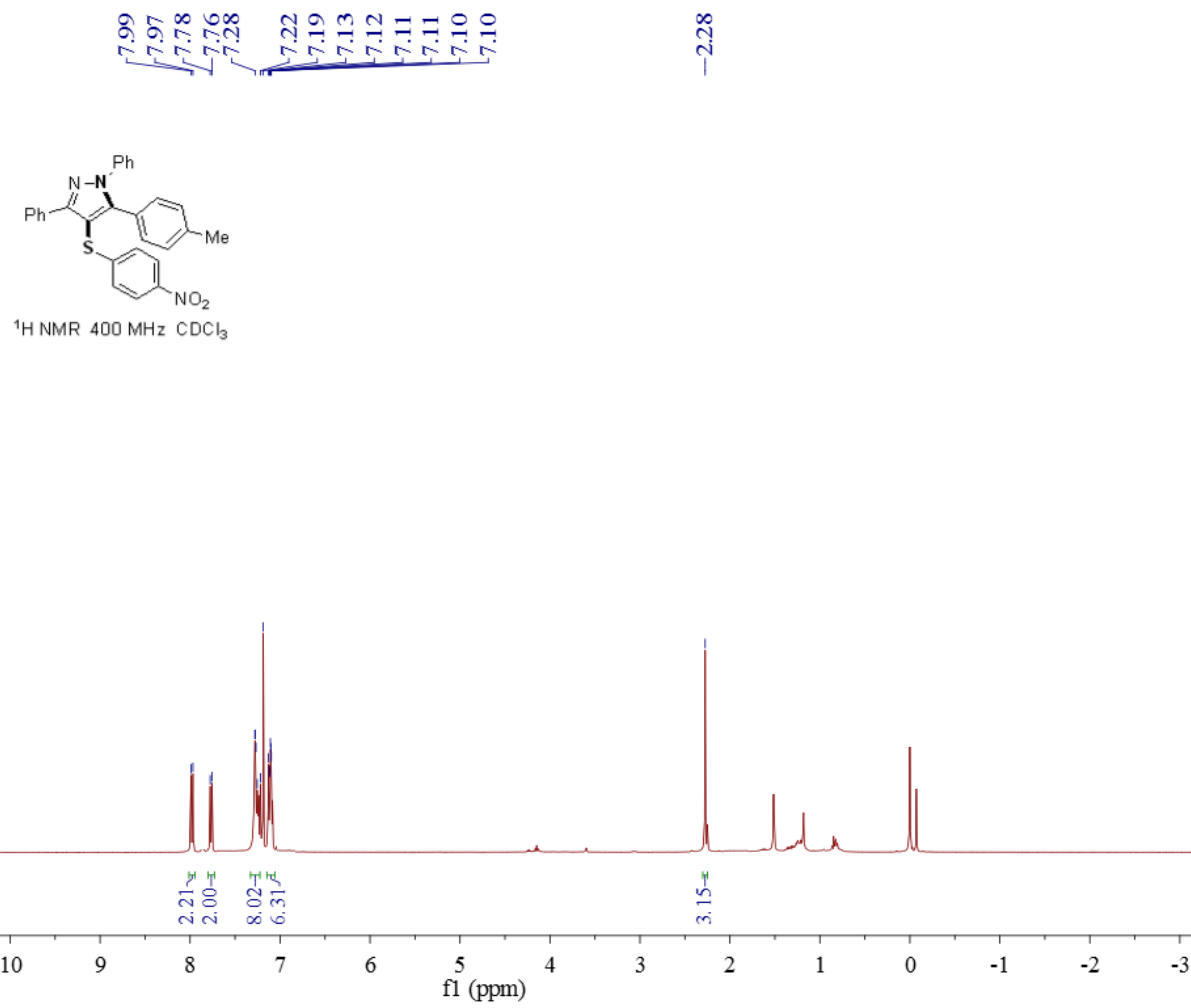


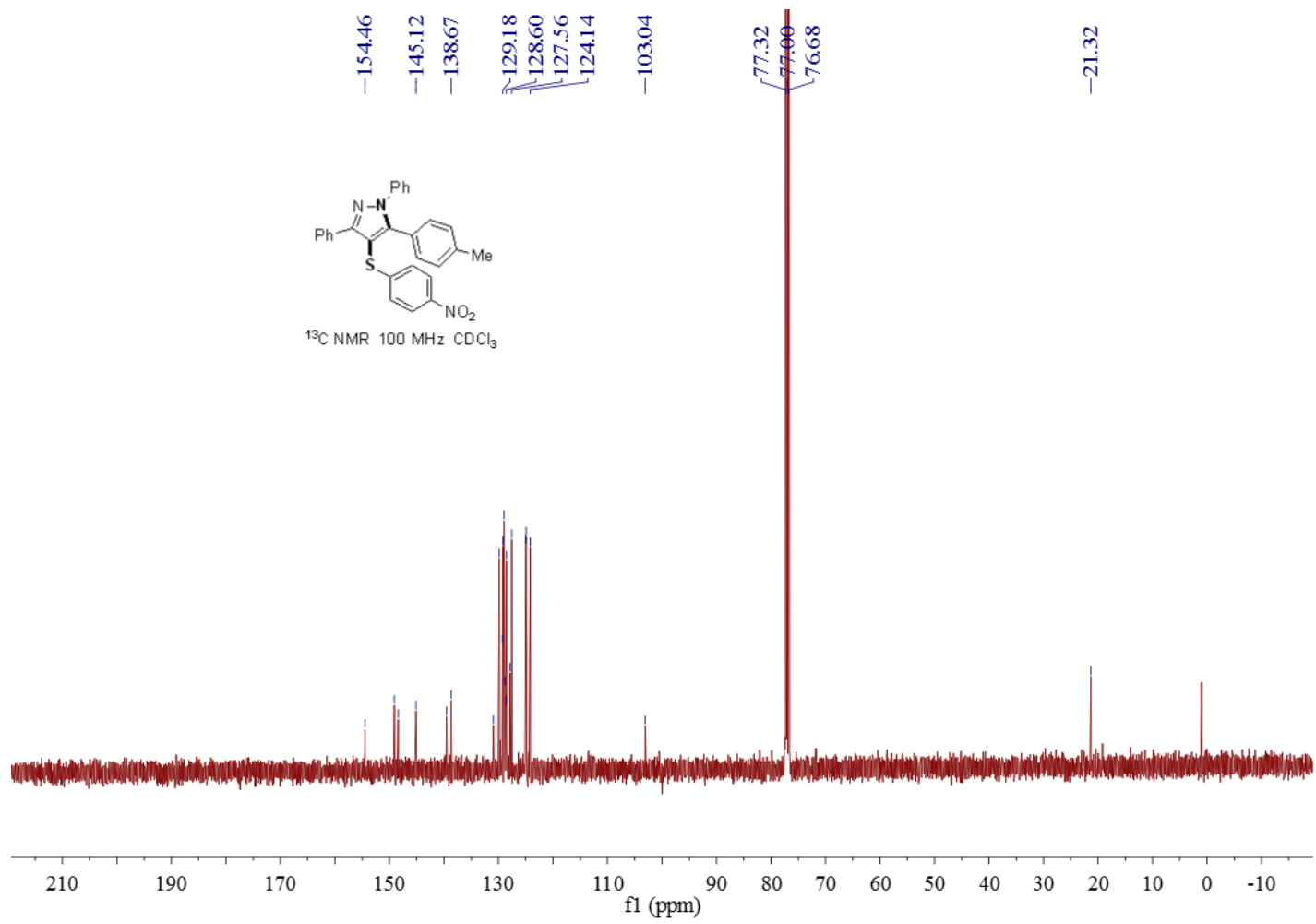
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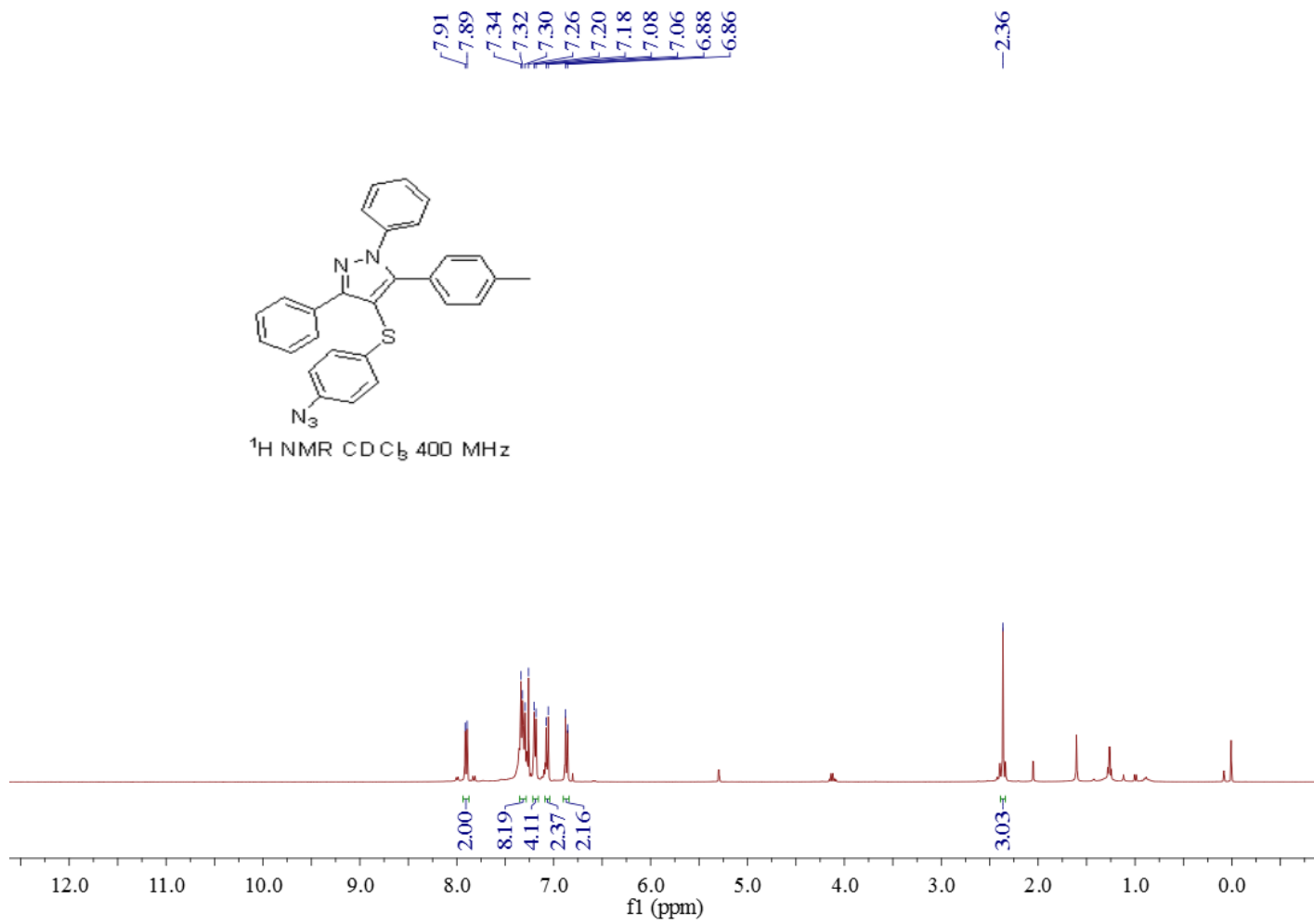


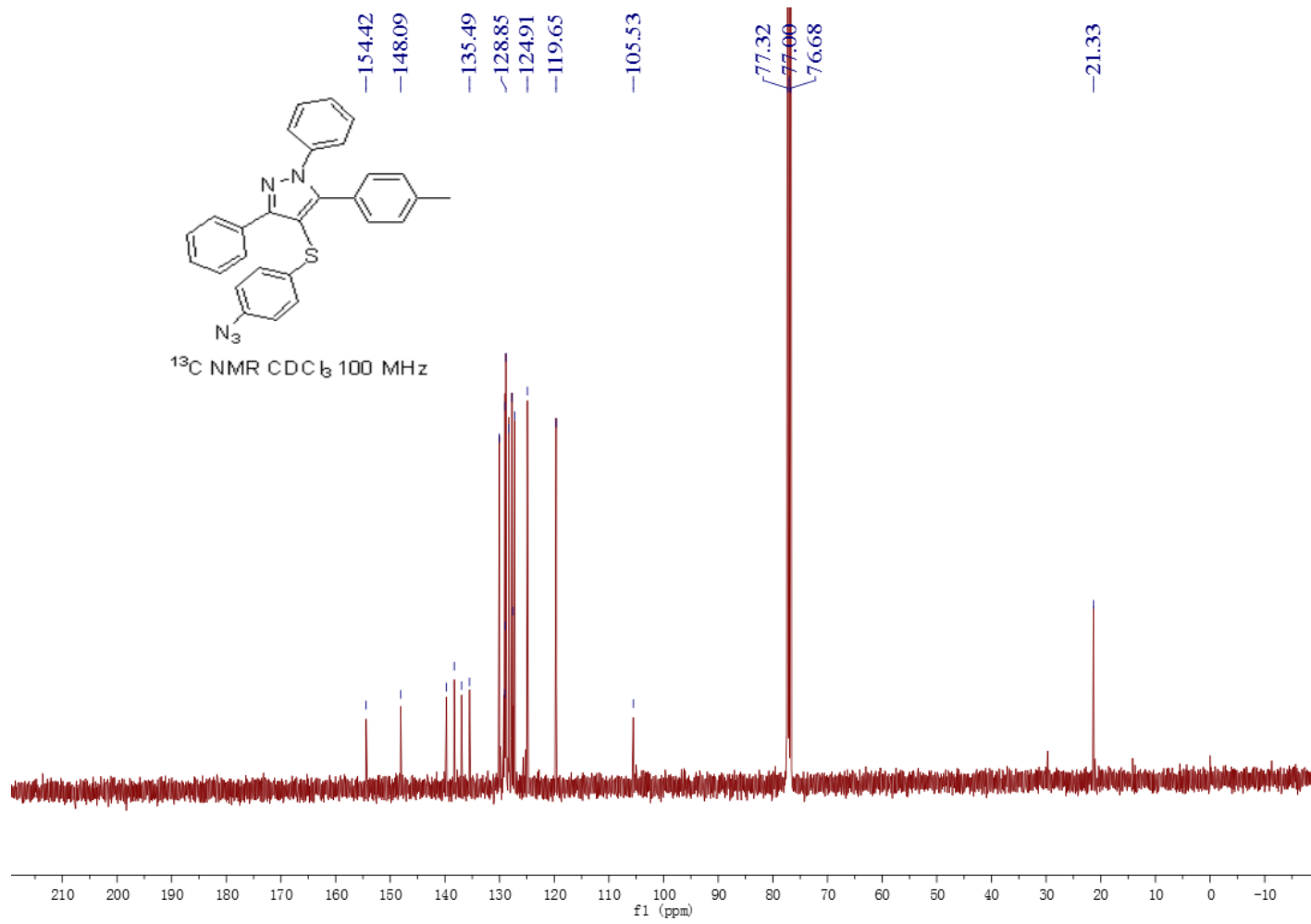
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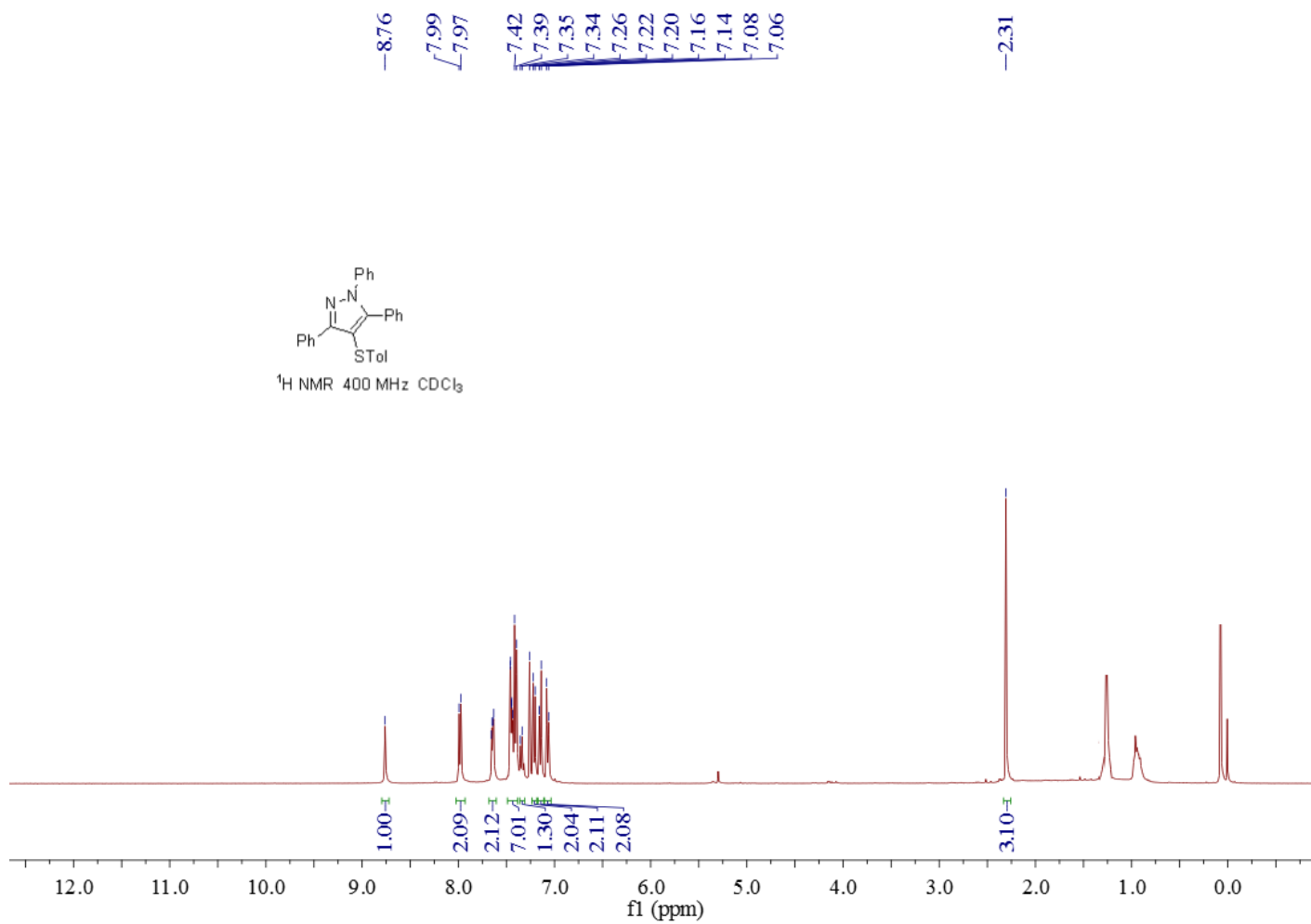


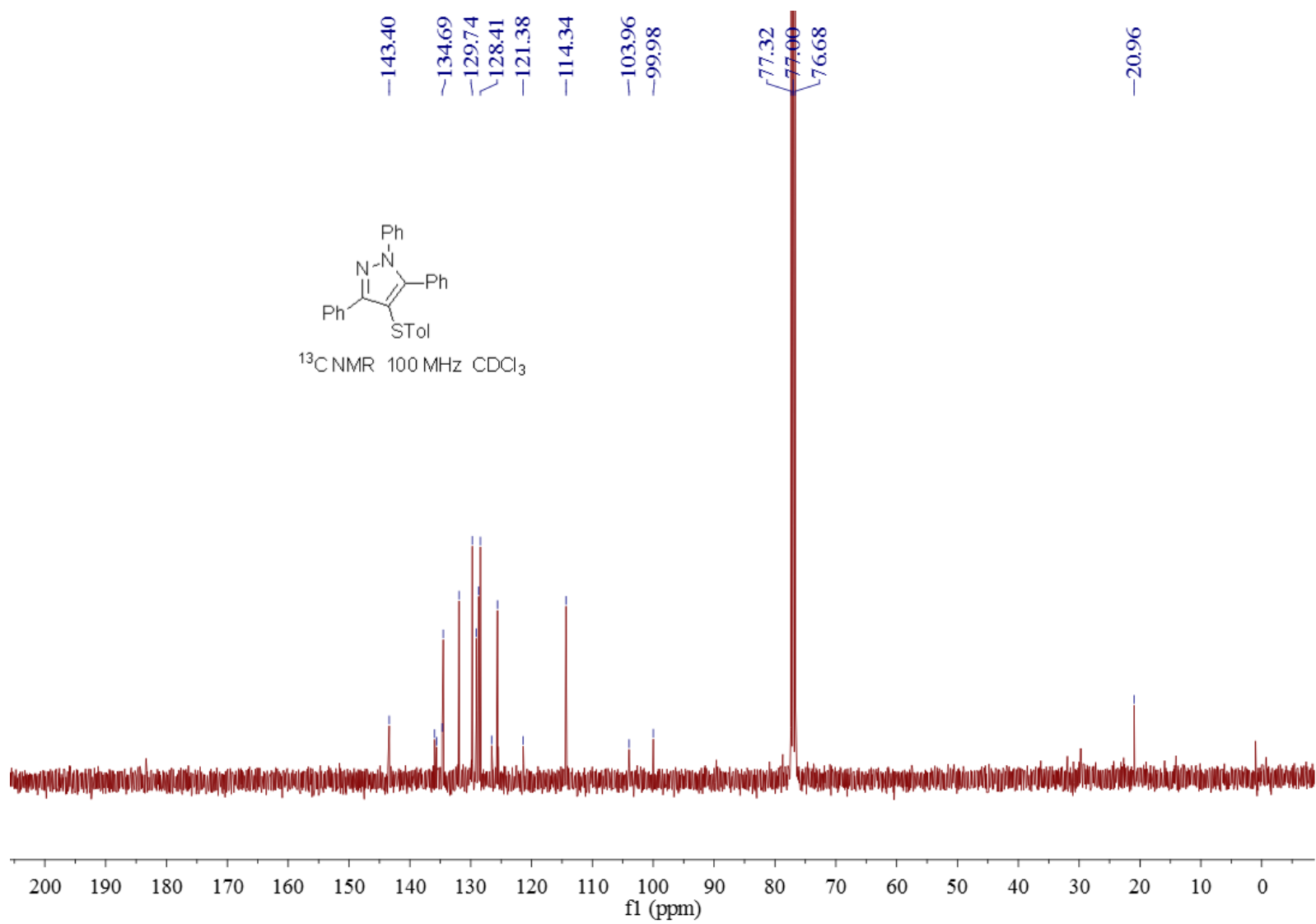
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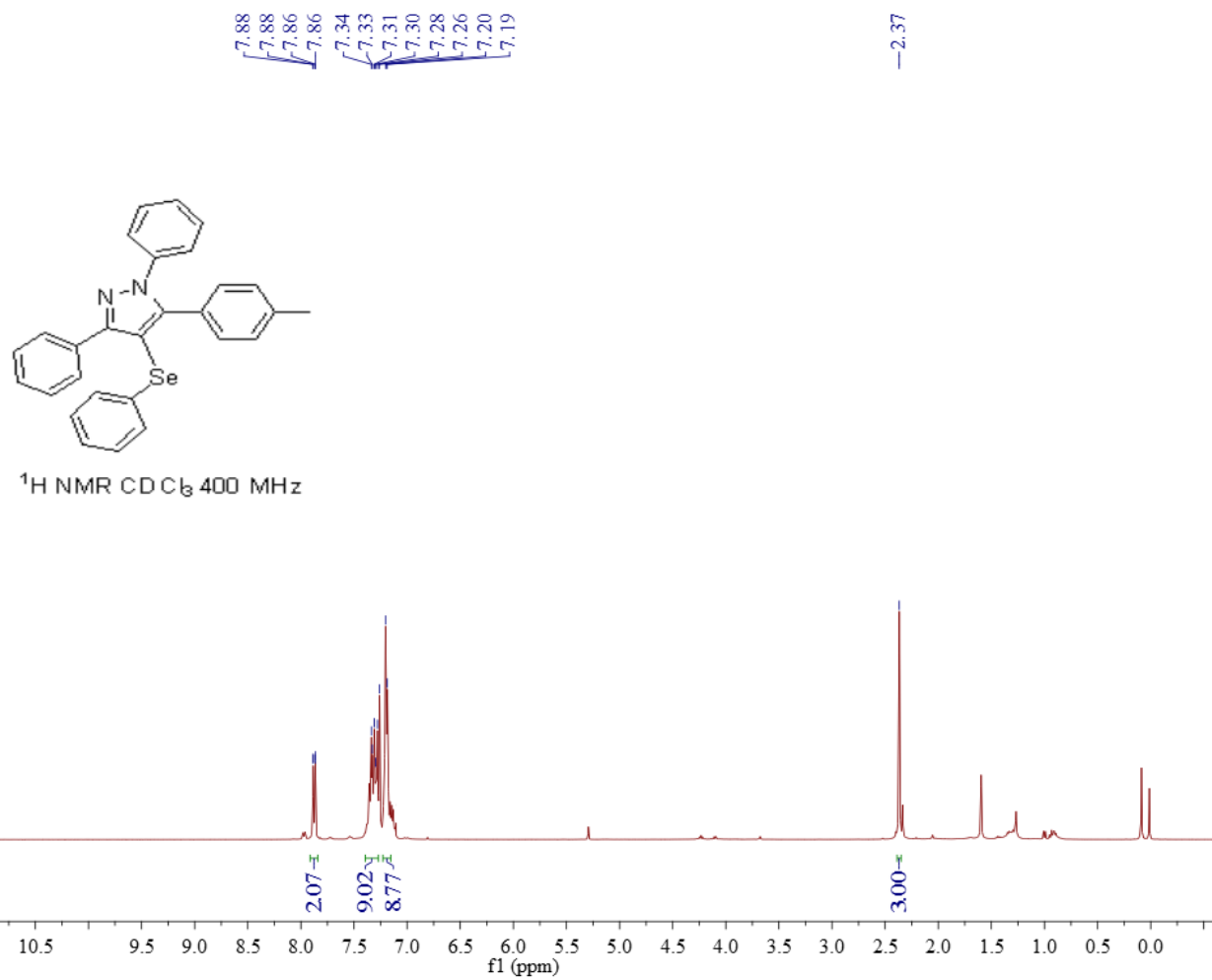


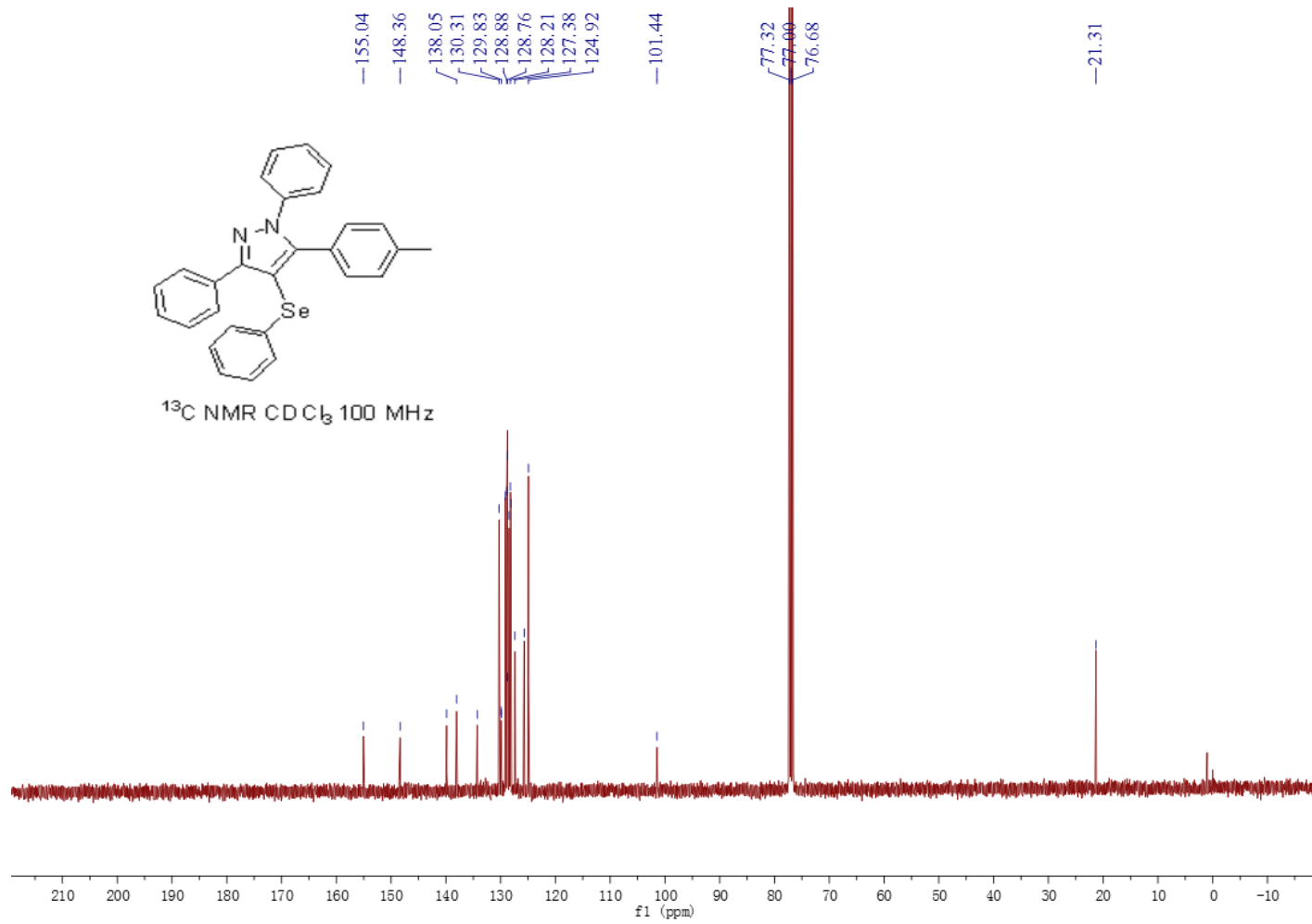
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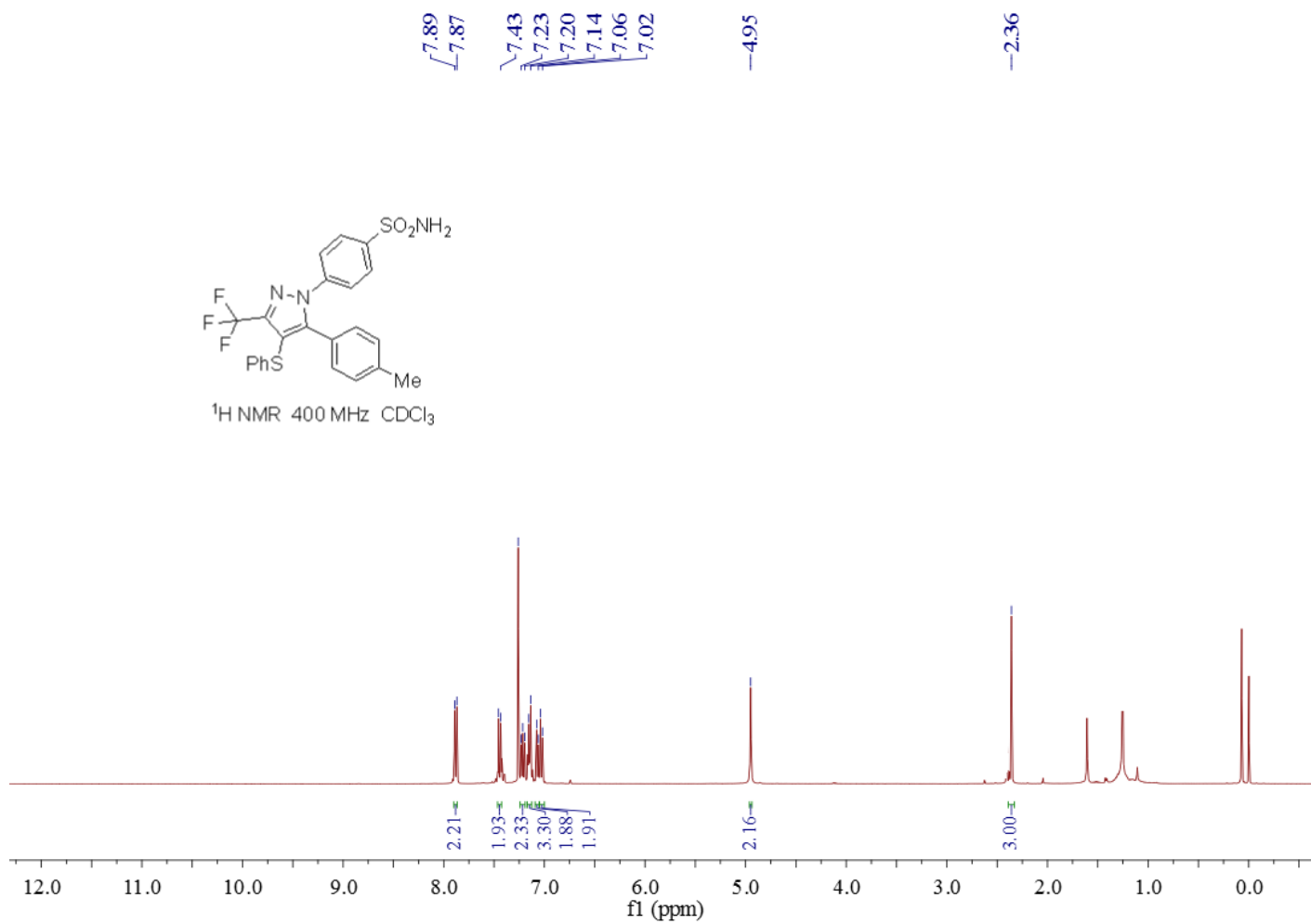


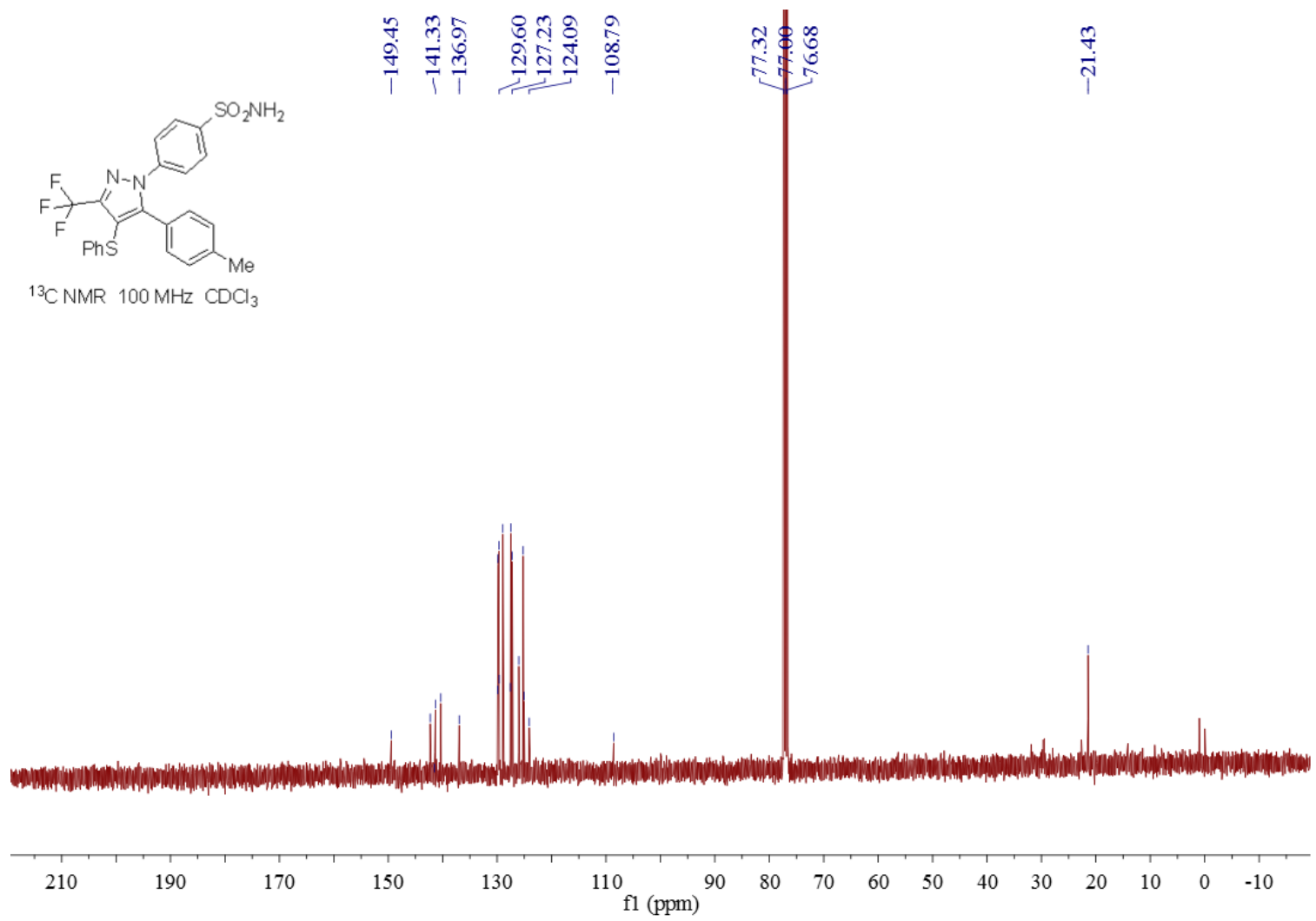
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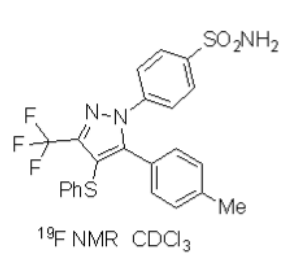




9







--61.95

