

Supplementary Material

Synthesis of novel scaffolds based on bis-thiazole linked to piperazine core as new hybrid molecules

Huda Kamel Mahmoud,^a Ahmed H. M. Elwahy,^{*a} Ismail A. Abdelhamid^{*a} and Mostafa E. Salem^b

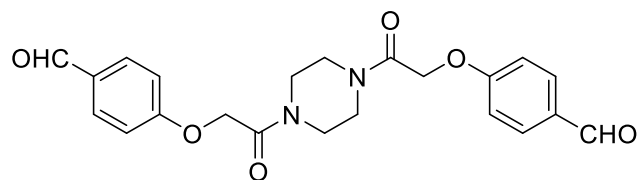
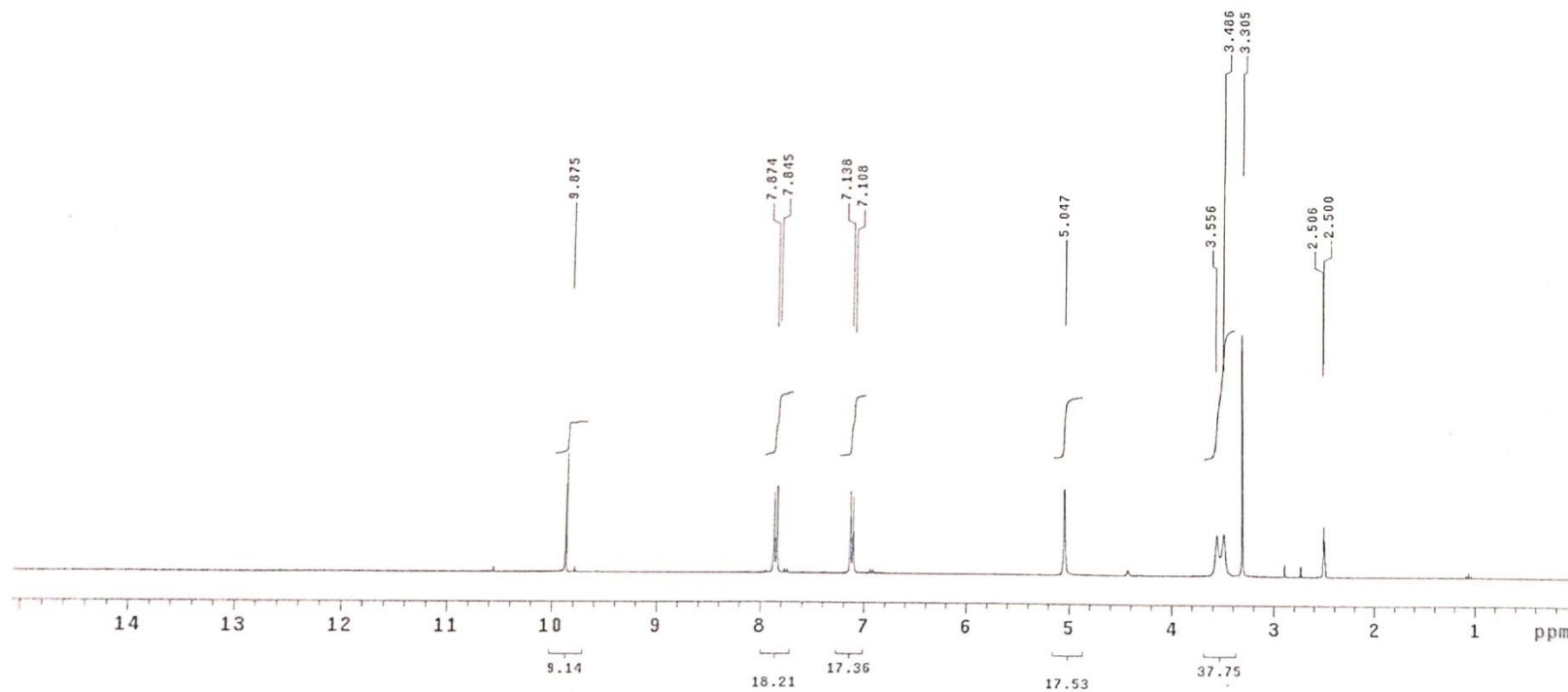
^a*Department of Chemistry, Faculty of Science, Cairo University, Giza 12613, Egypt*

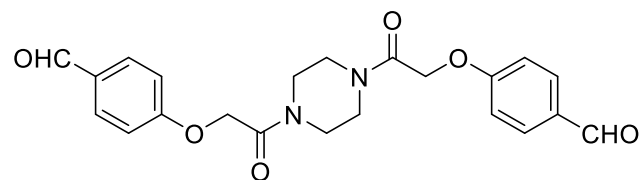
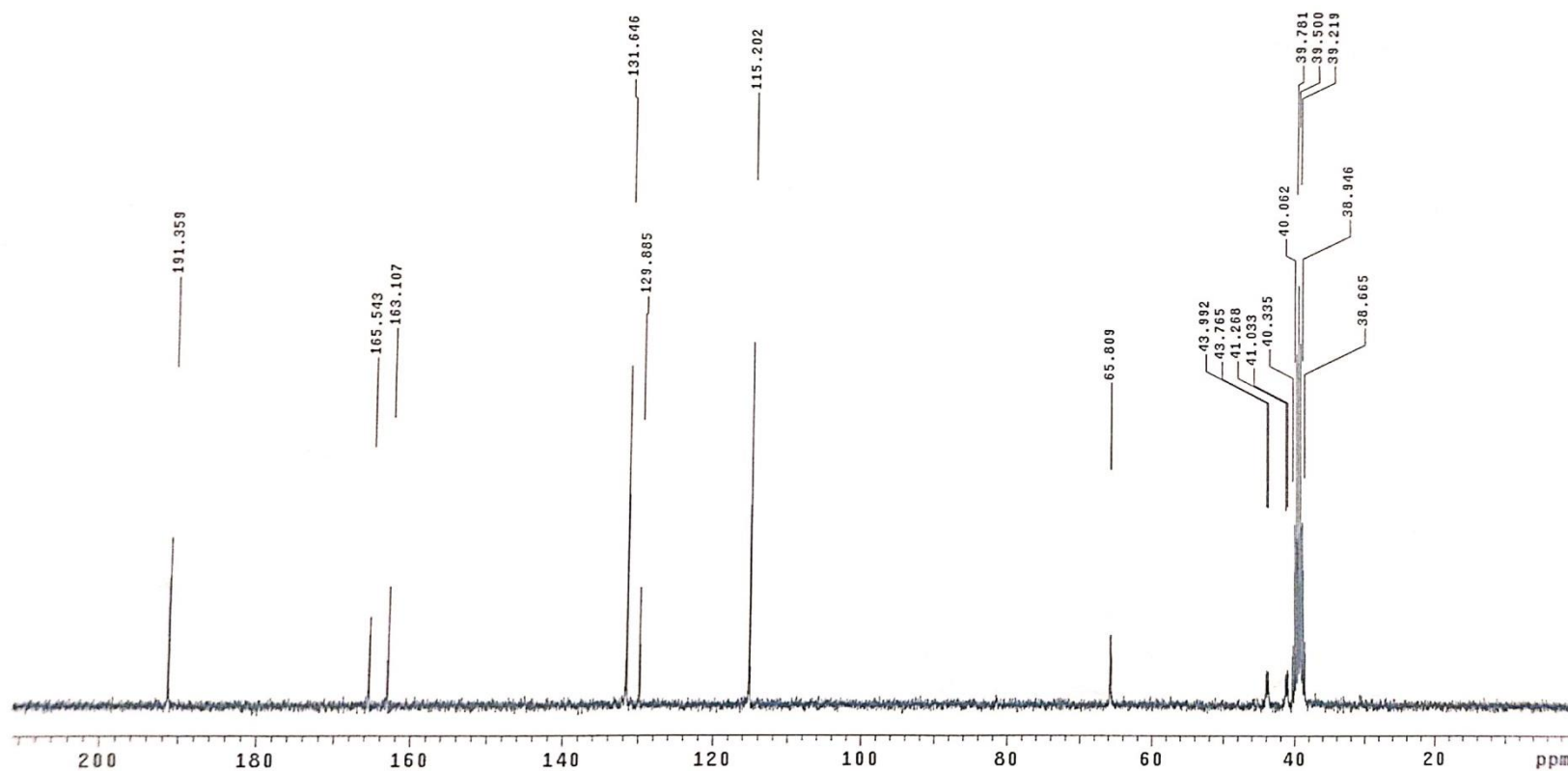
^b*Department of Chemistry, College of Science, Imam Mohammad Ibn Saud Islamic University (IMSIU), P.O. Box, 90950, Riyadh 11623, Saudi Arabia*

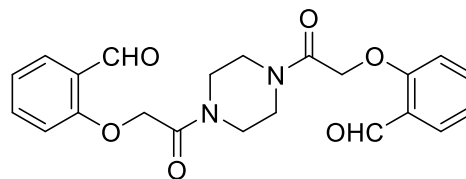
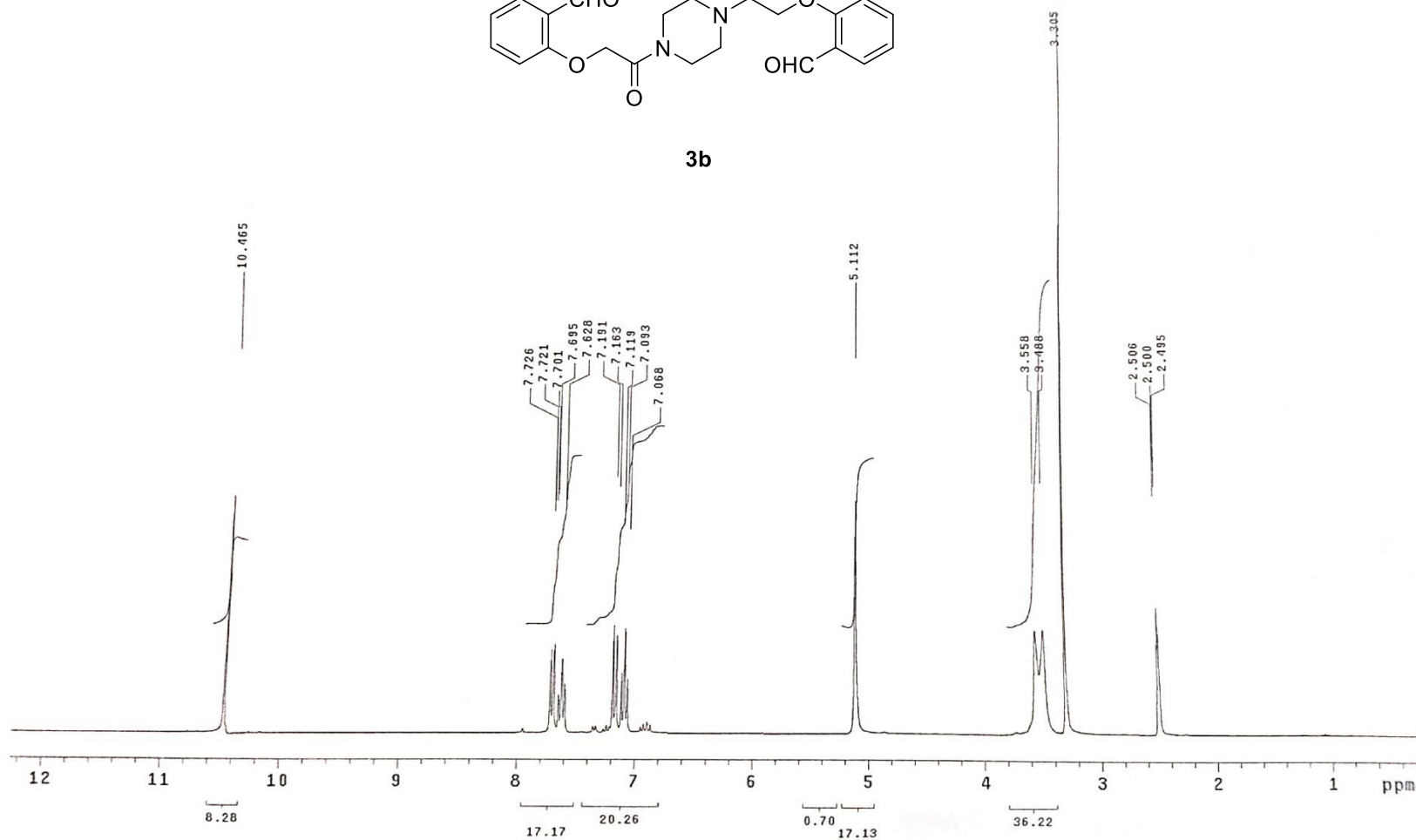
Email: ismail_shafy@yahoo.com; ismail_shafy@cu.edu.eg; aelwahy@hotmail.com; aelwahy@cu.edu.eg

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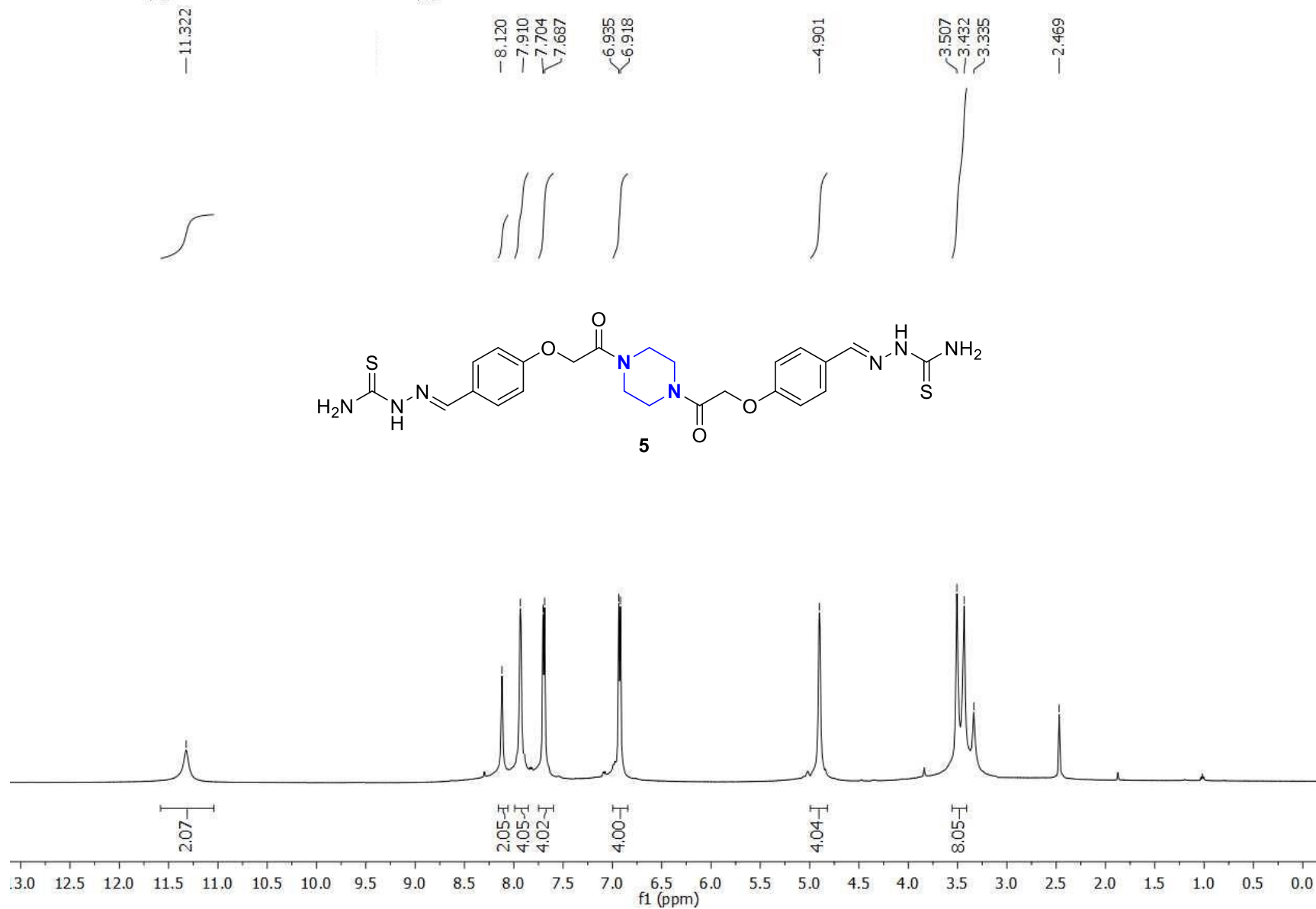
¹ H and ¹³ C NMR spectra of compounds.....	S2
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**3a**

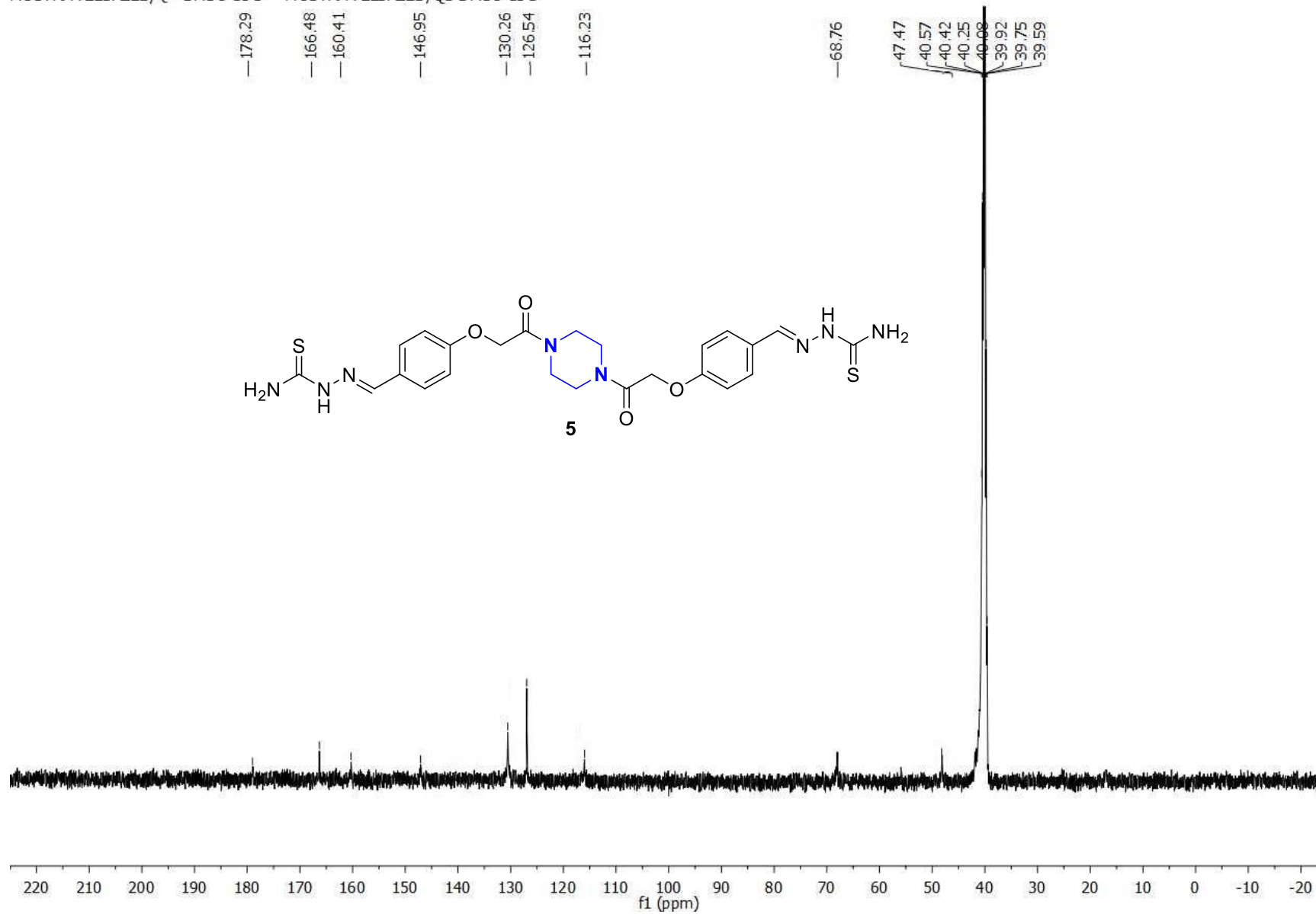
**3a**

**3b**

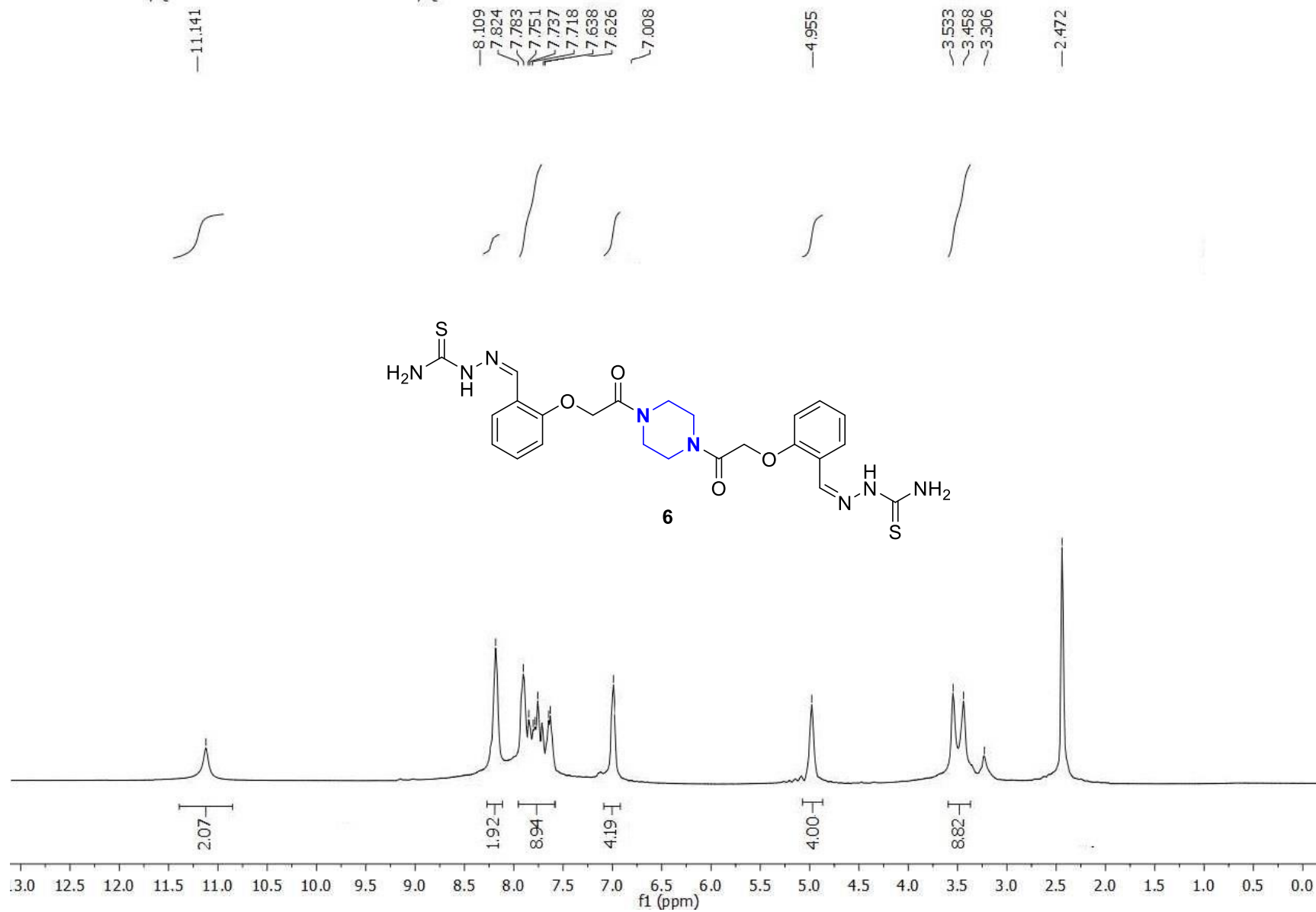
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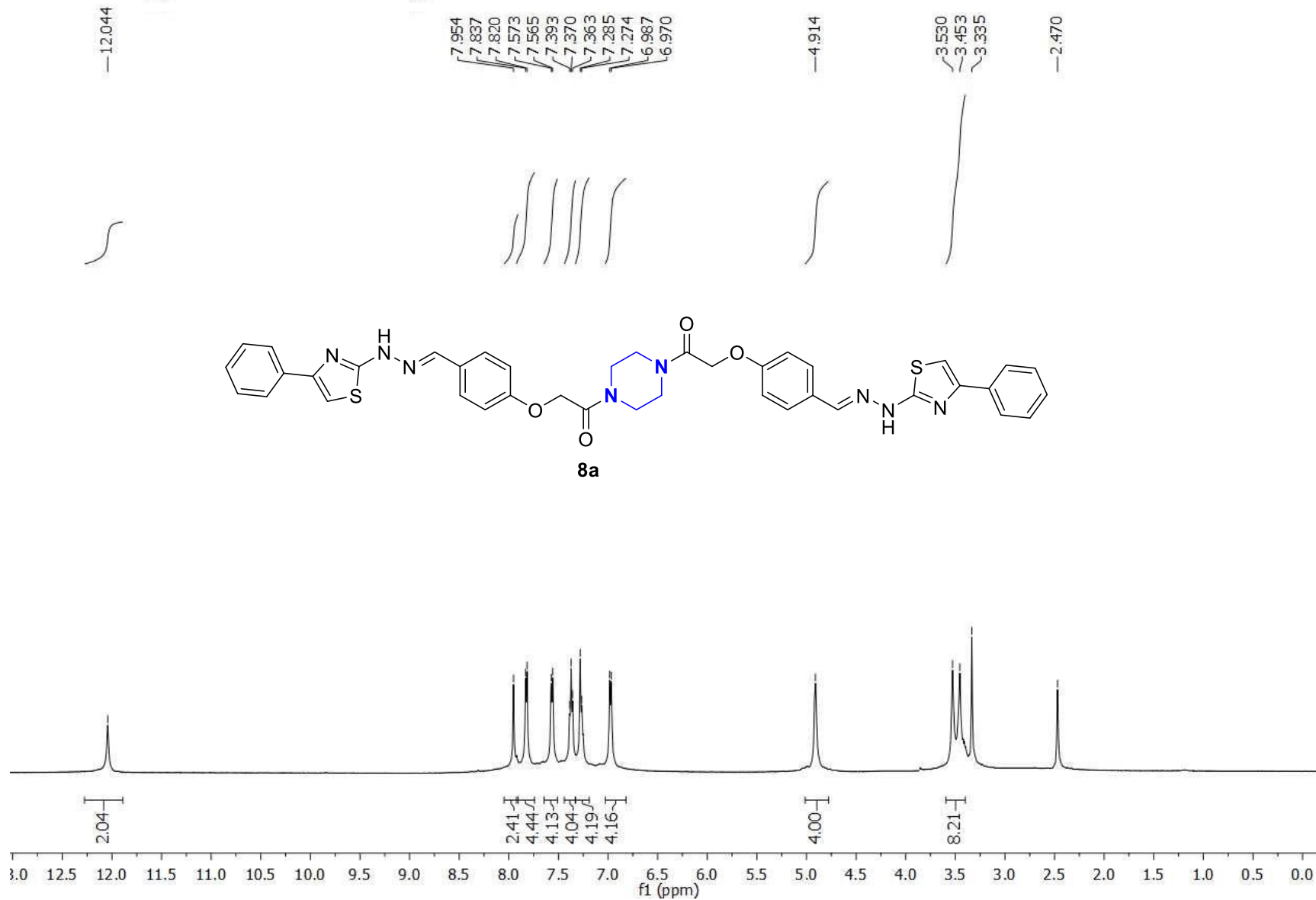
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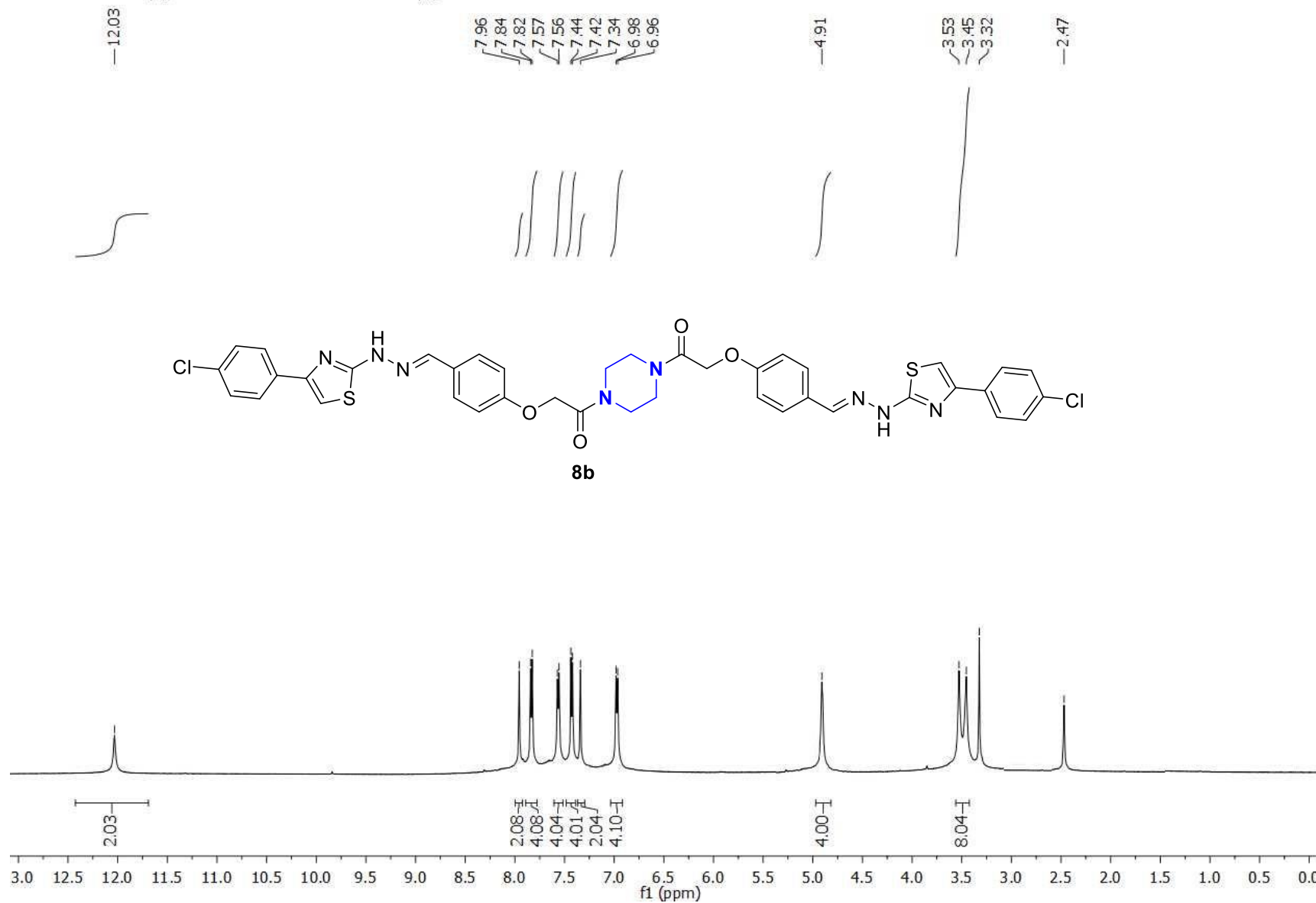
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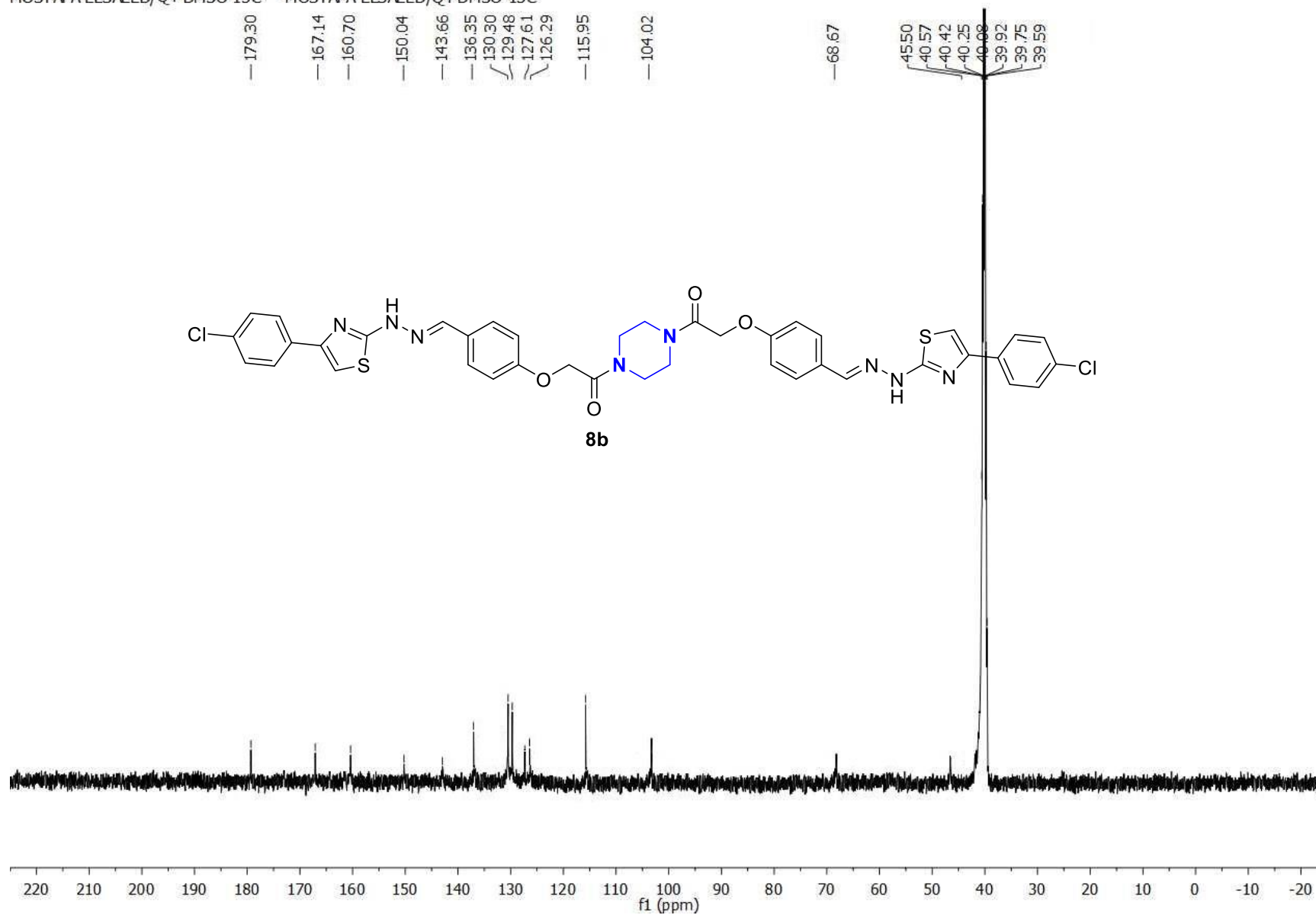
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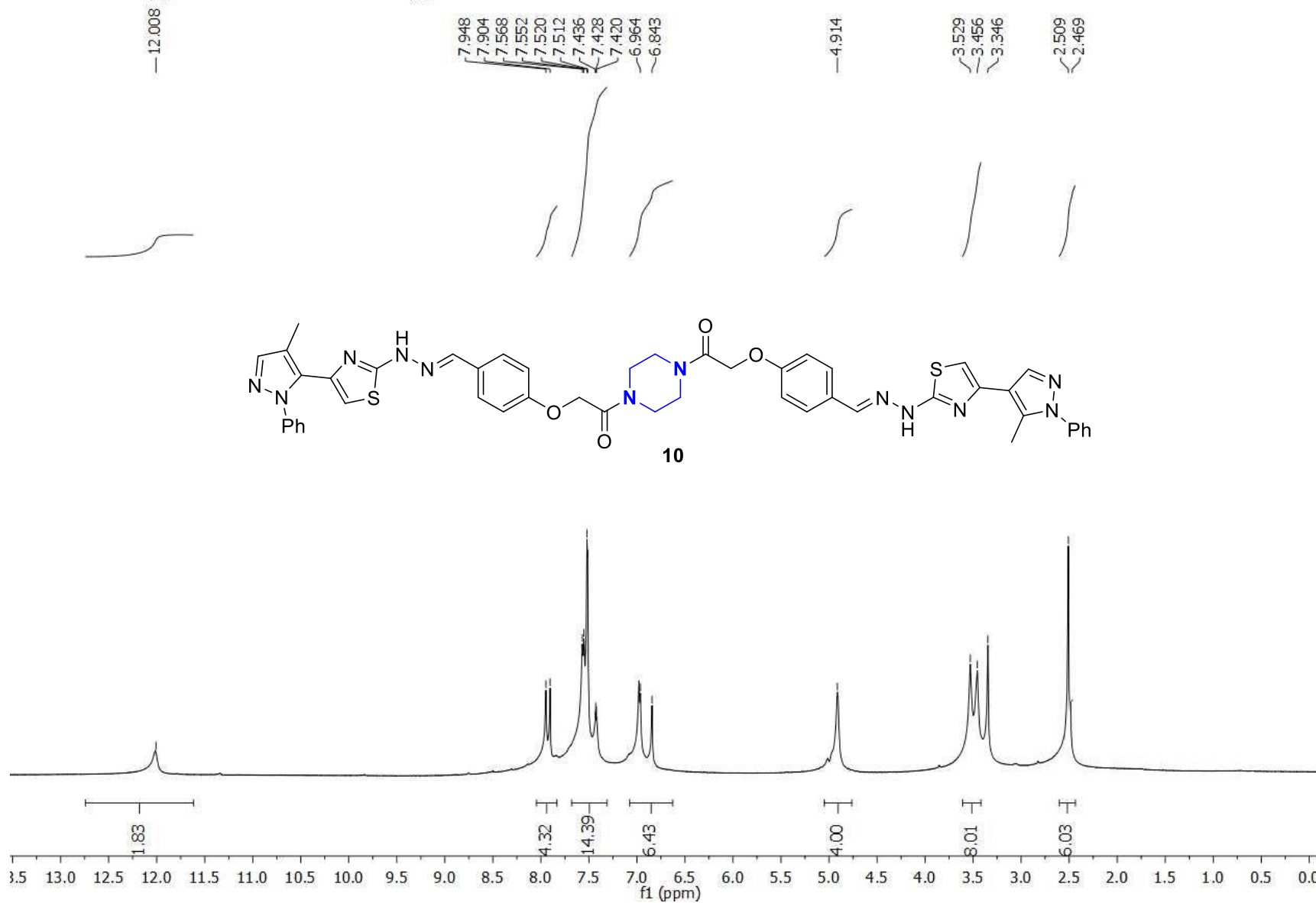
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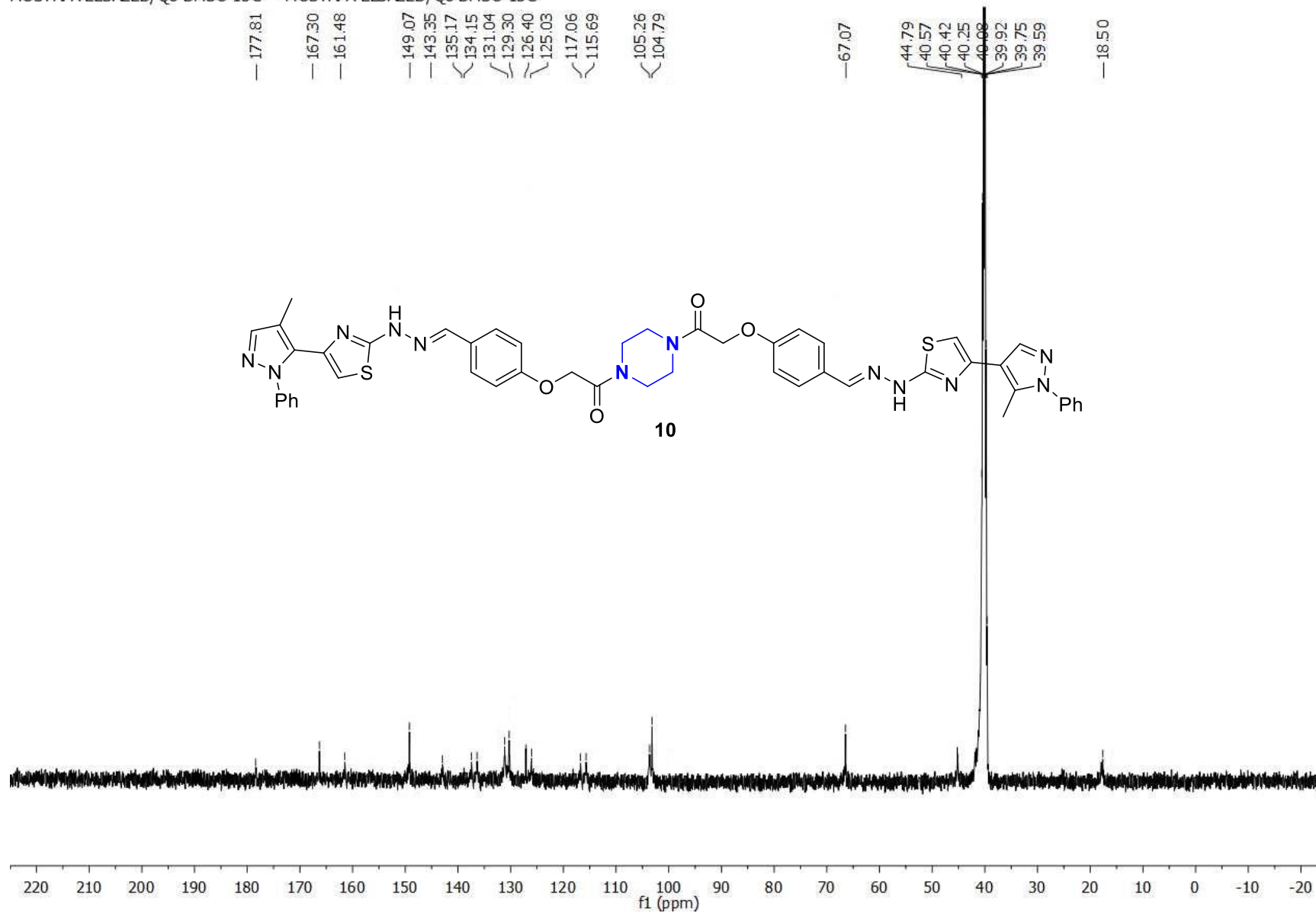
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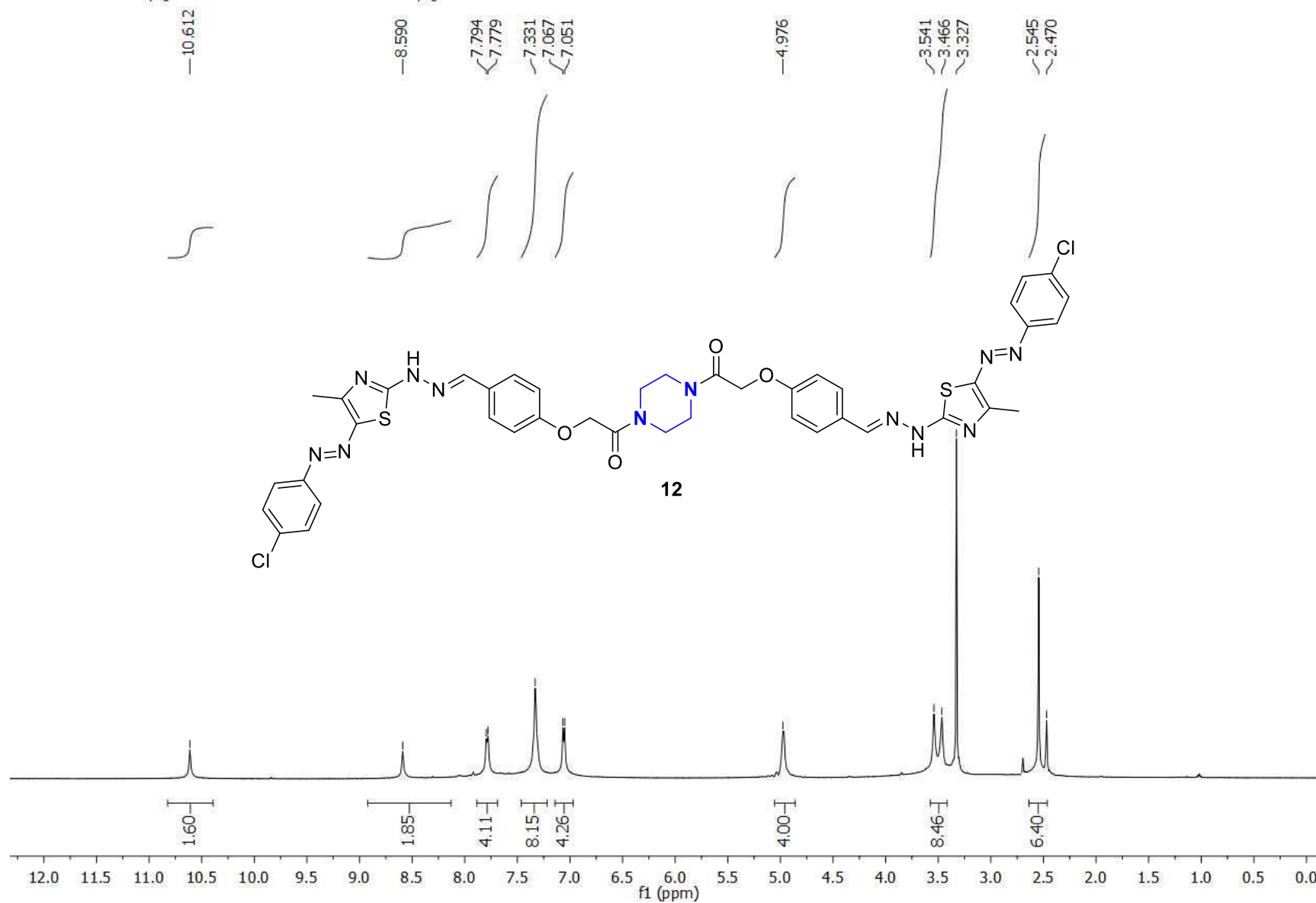
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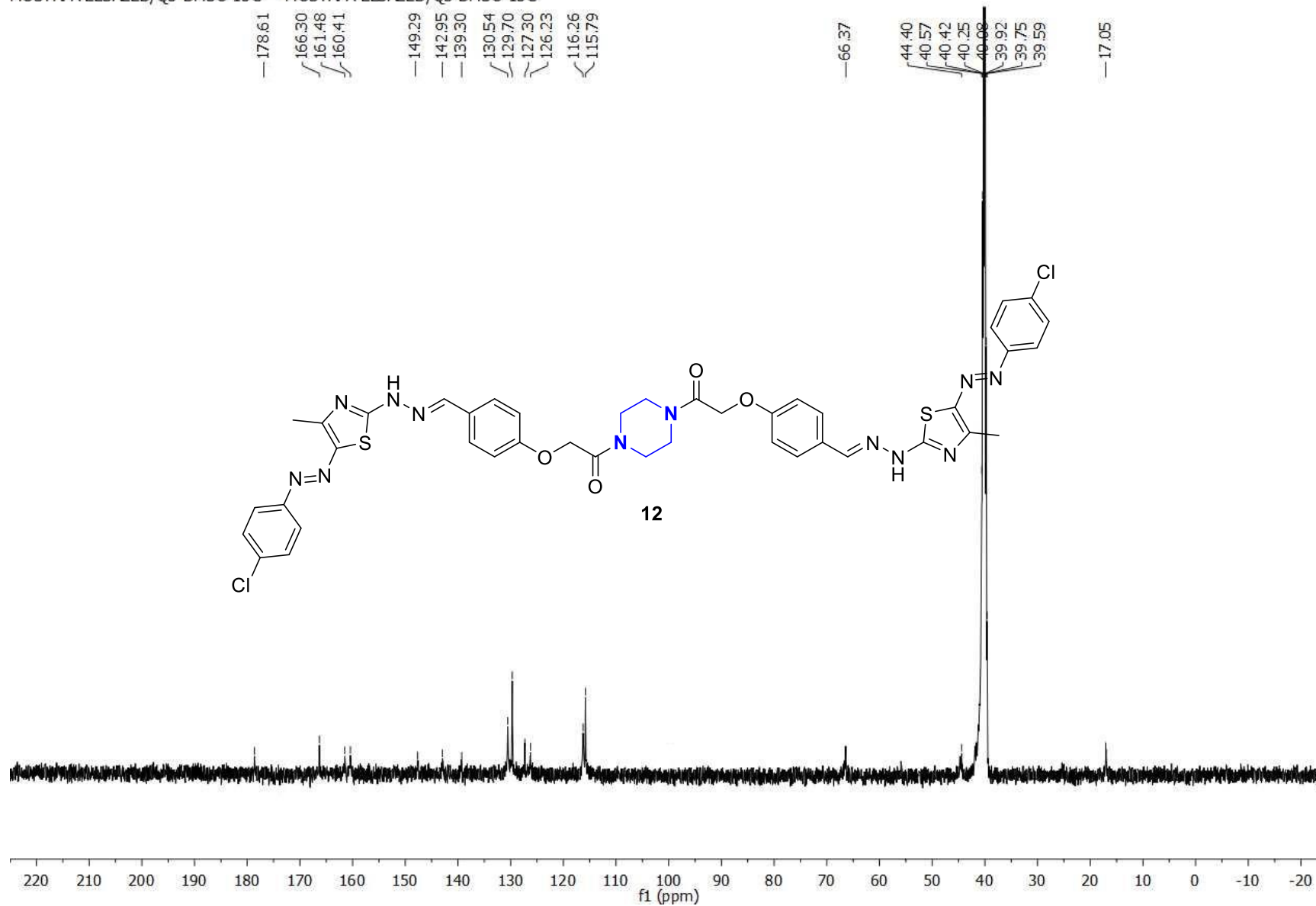
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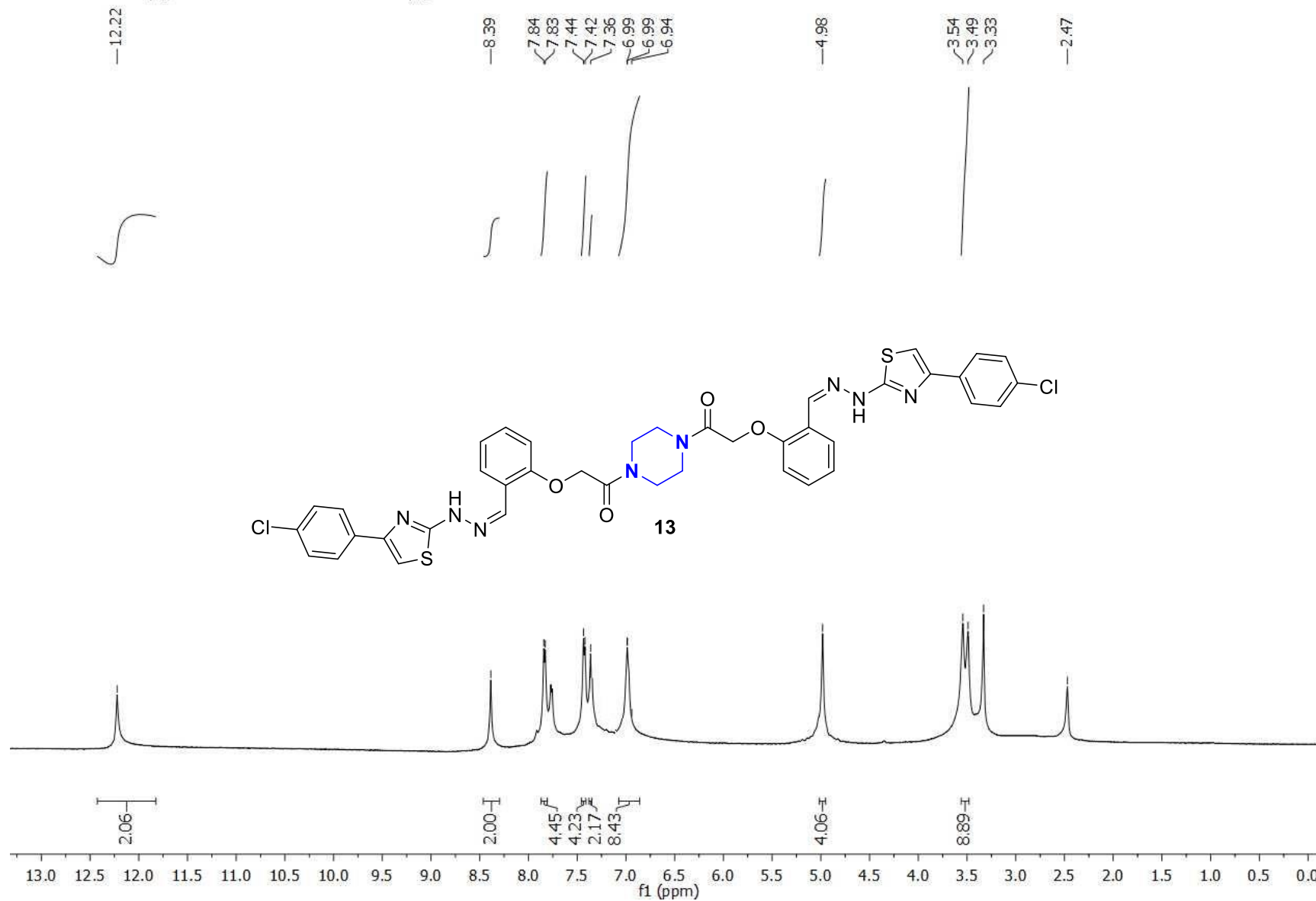
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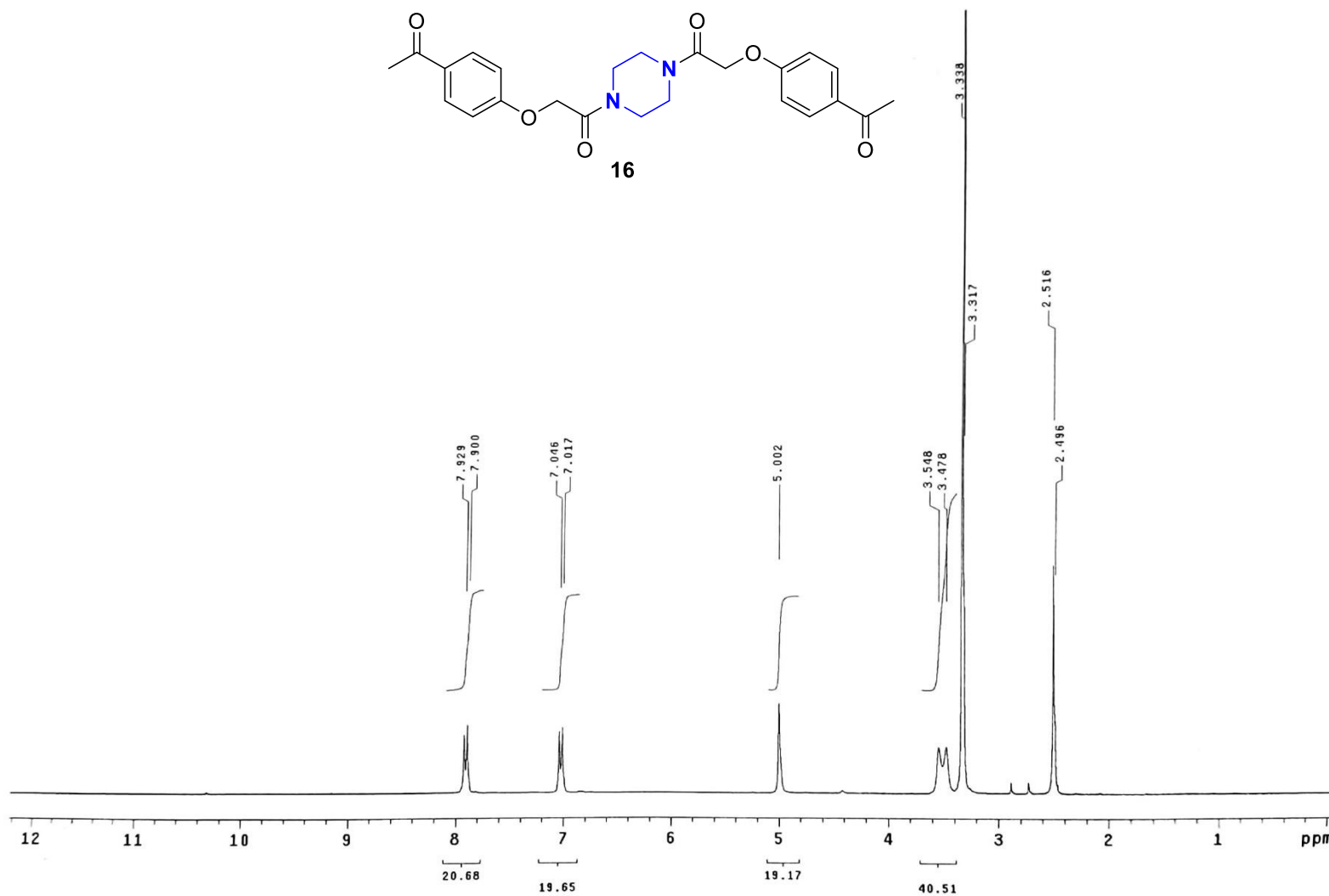


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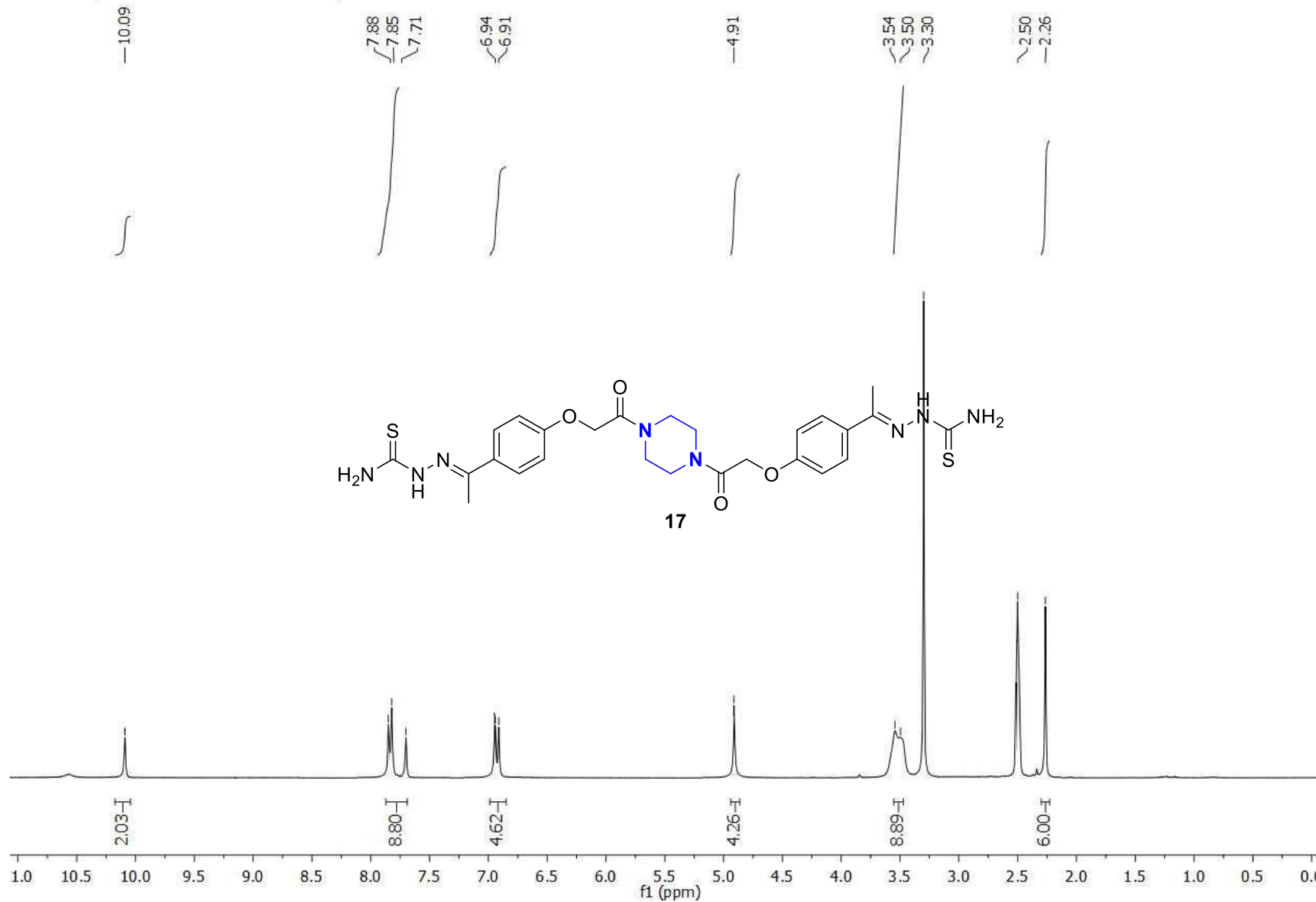


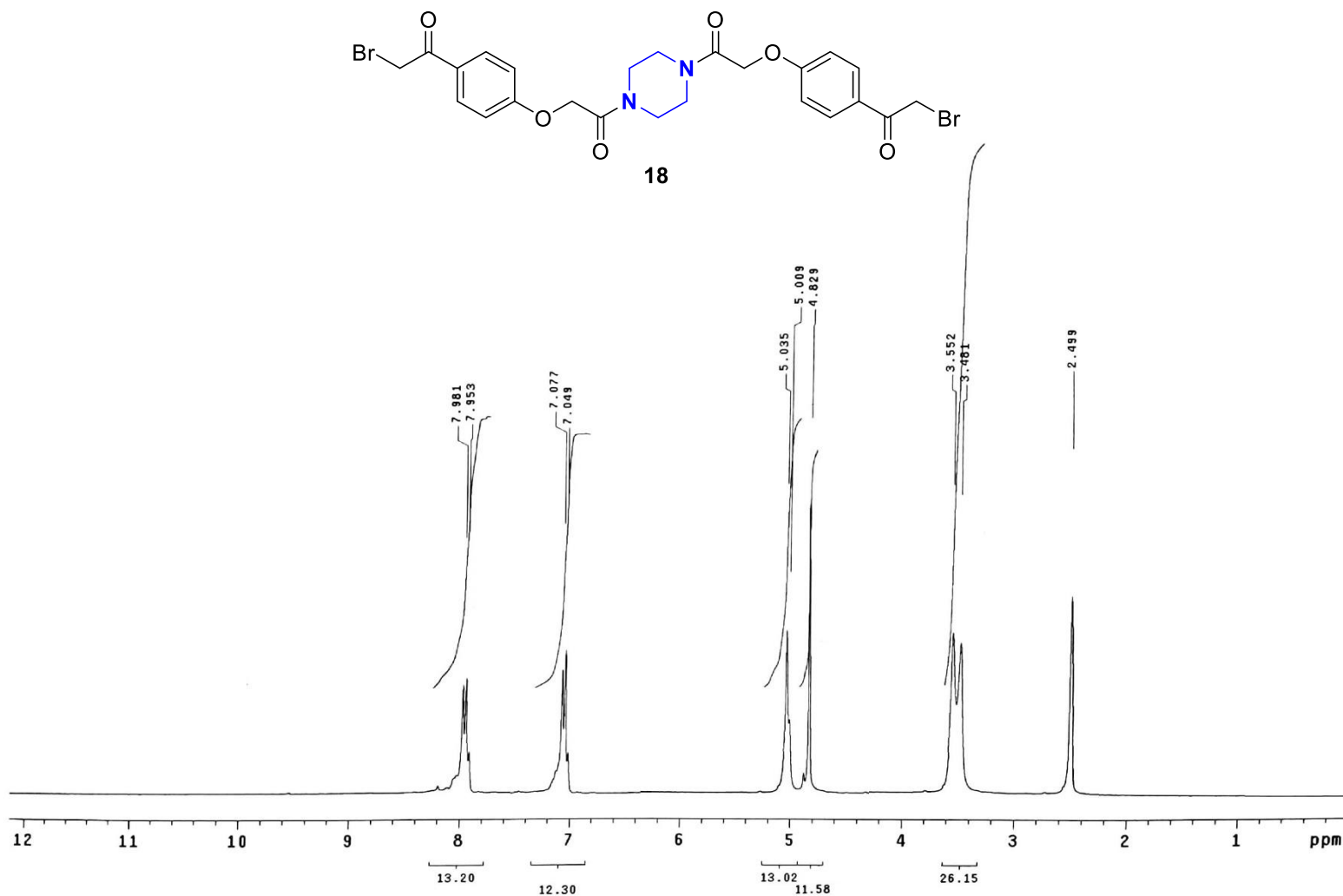
Chemical structure of compound **14** is shown above the spectrum. The structure is a symmetrical molecule featuring a central piperazine ring connected via carbonyl groups to two 4-(4-chlorophenyl)-1H-thiazol-2-ylmethyl groups. The spectrum displays the following peak data:

Chemical Shift (ppm)	Integration
11.492	2.31
8.409, 8.156, 8.083, 8.068, 7.965, 7.916, 7.345, 7.320, 7.290, 6.948, 6.933	2.13, 2.22, 2.21, 4.05
4.941	4.01, 4.40
3.520, 3.471, 3.328	8.54
2.559, 2.469	6.06

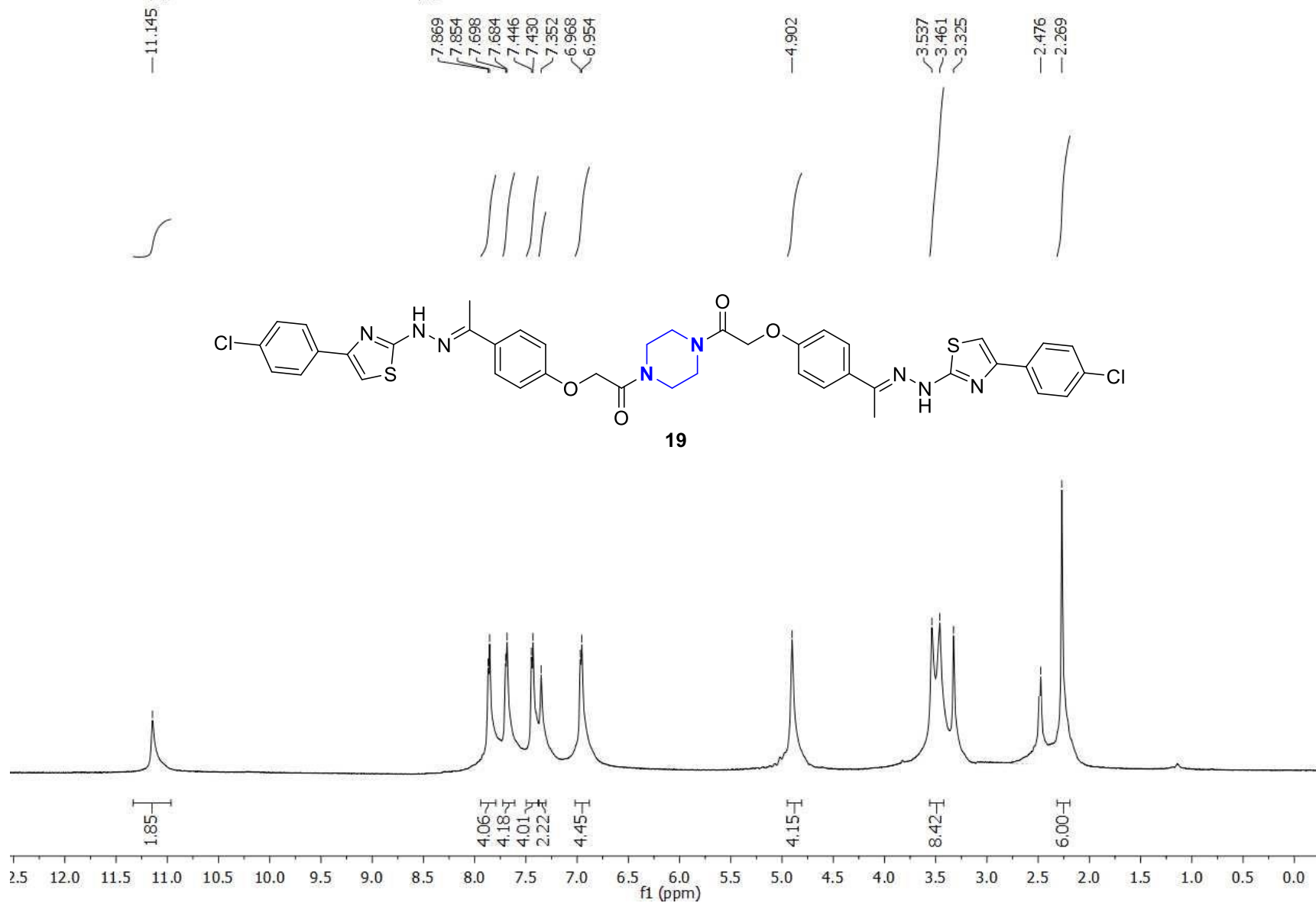


MustafaAlSayed-H1-DMSO-H1 — MustafaAlSayed-H1-DMSO-H1 —

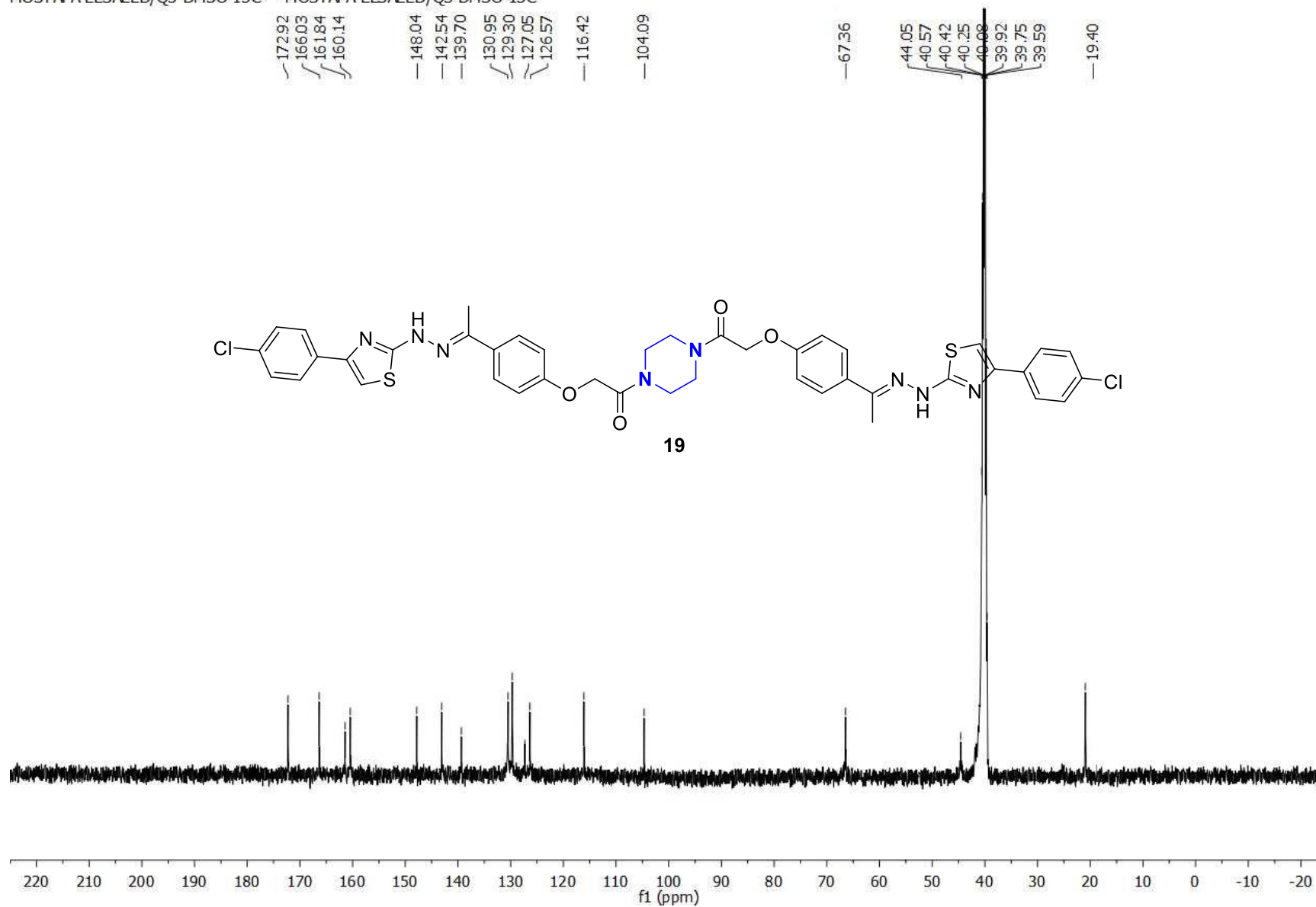




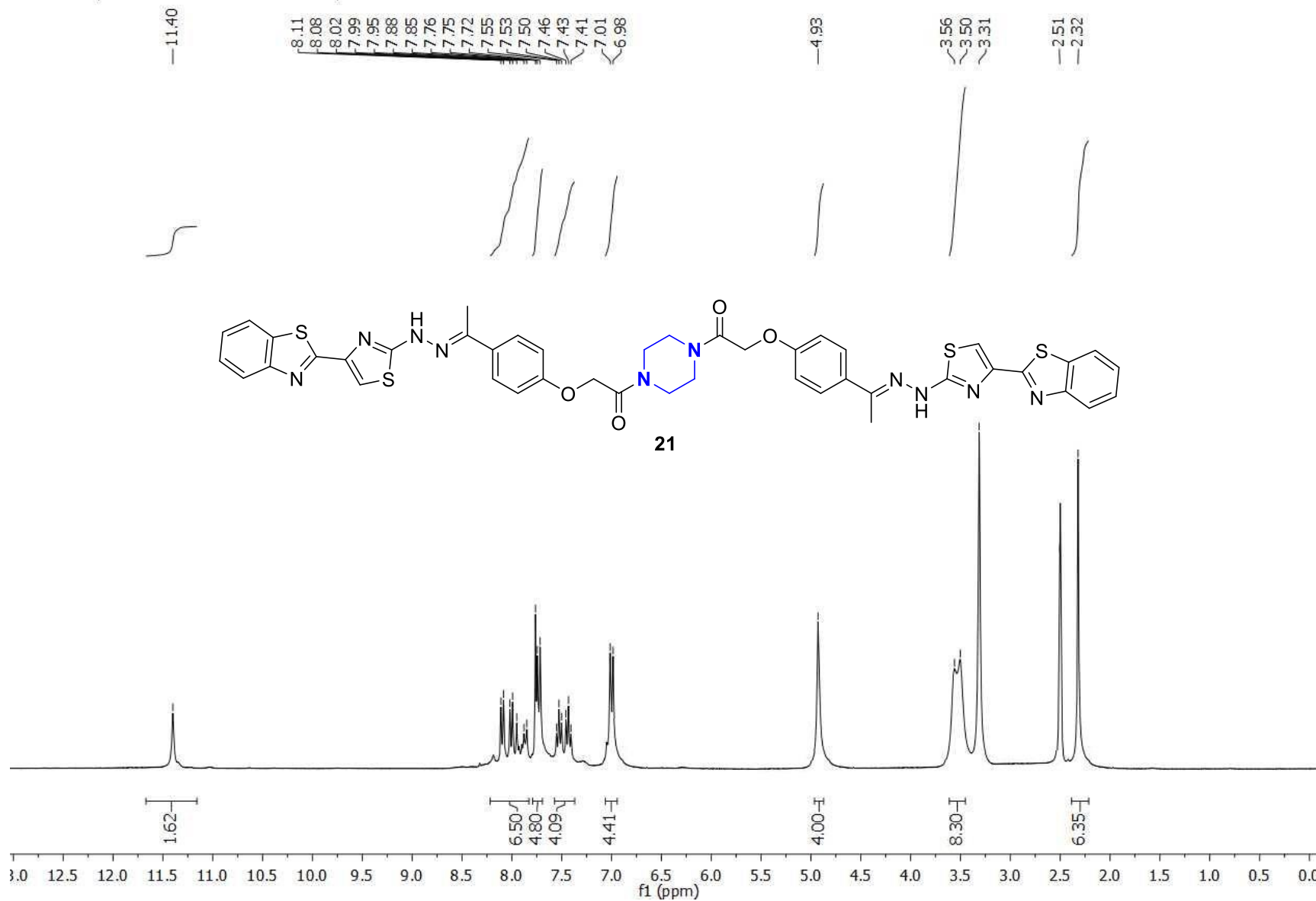
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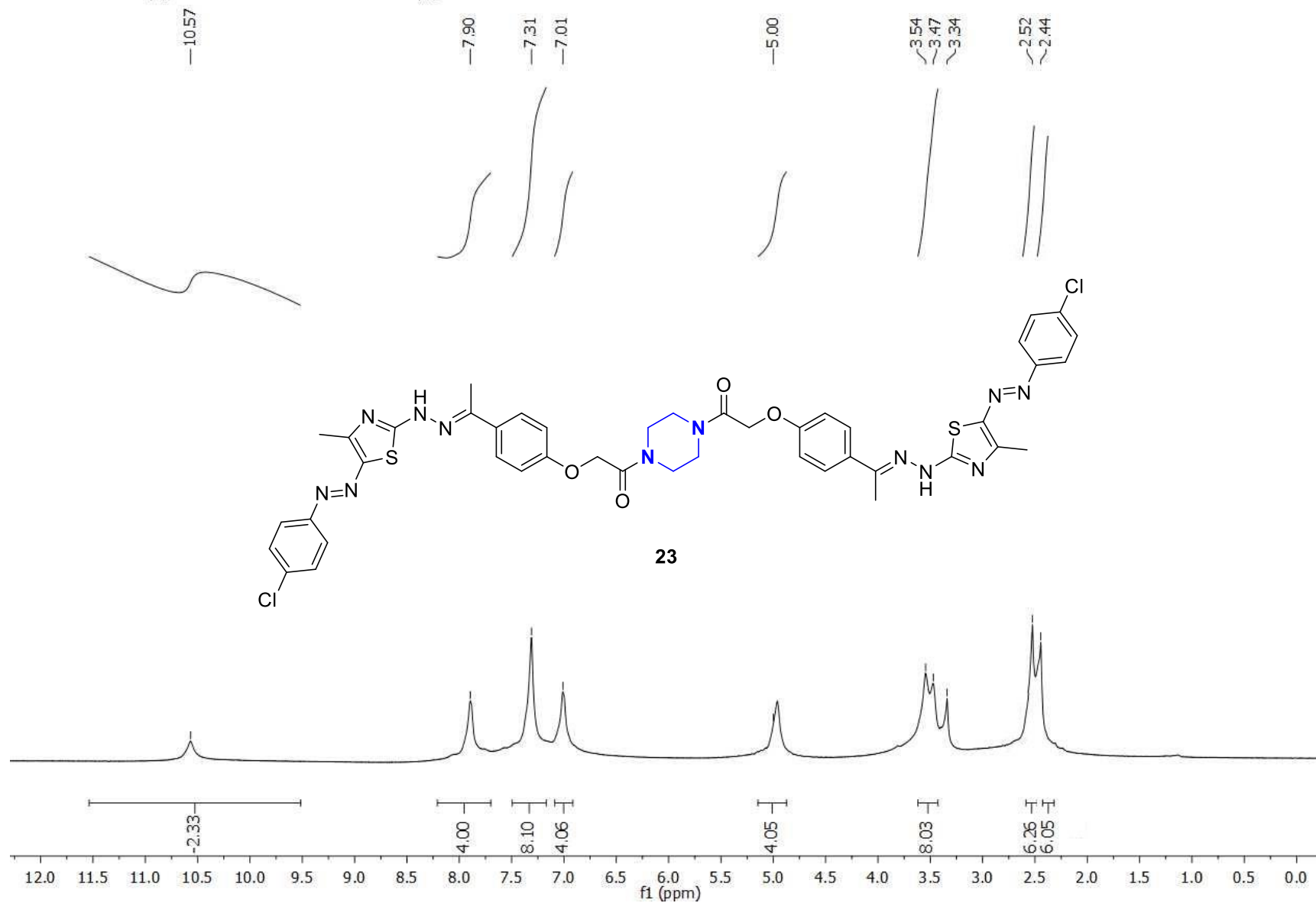
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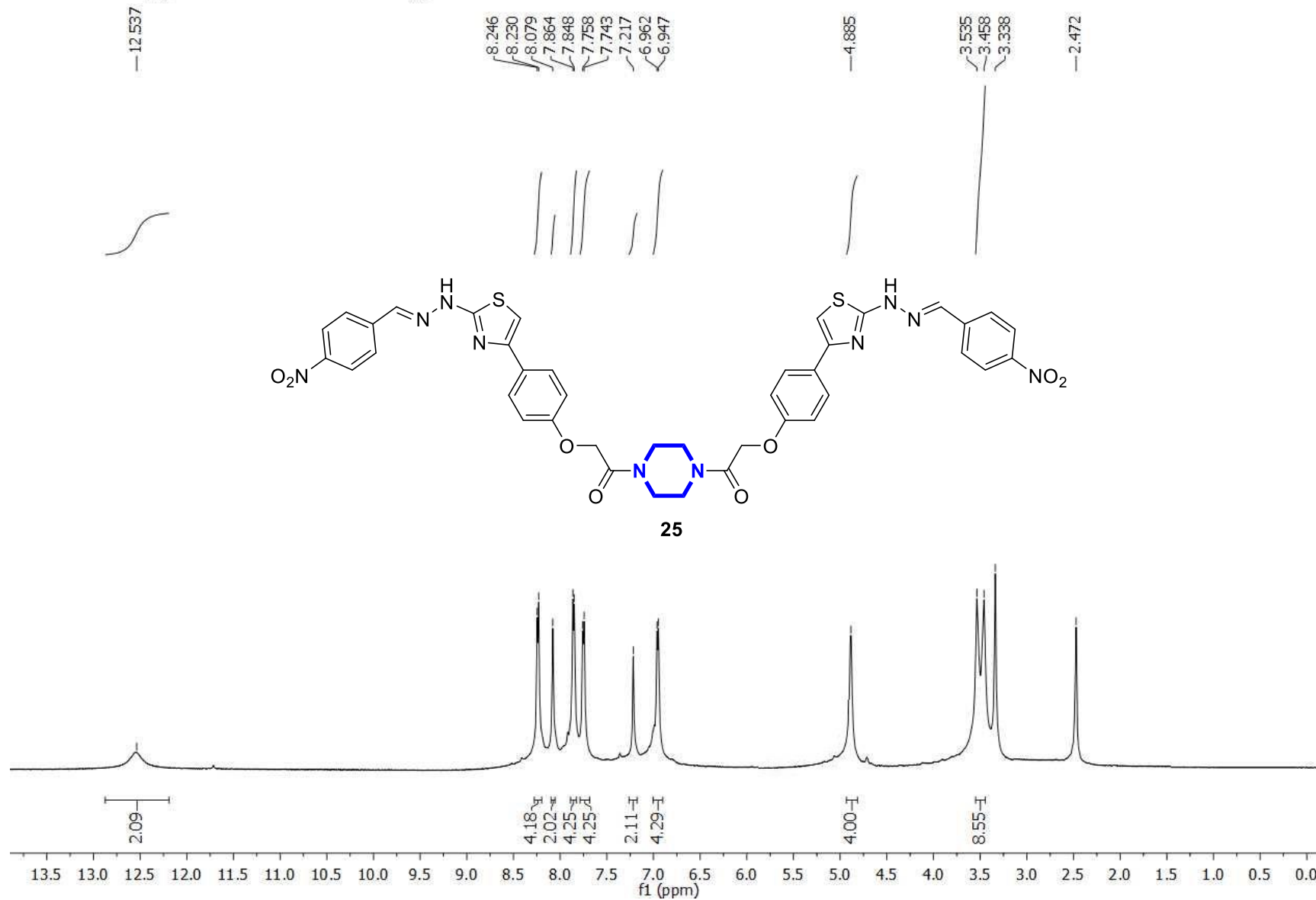
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MOSTAFA ELSAEED/Q9-DMSO-H — MOSTAFA ELSAEED/Q9-DMSO-H



MOSTAFA ELSAEED/Q9-DMSO-13C — MOSTAFA ELSAEED/Q9-DMSO-13C

