

Supplementary Information

Unravelling the catalytic potential of a magnetic CoFe₂O₄/Cu-ABDC MOF composite in the sustainable synthesis of 2*H*-Indazole motifs

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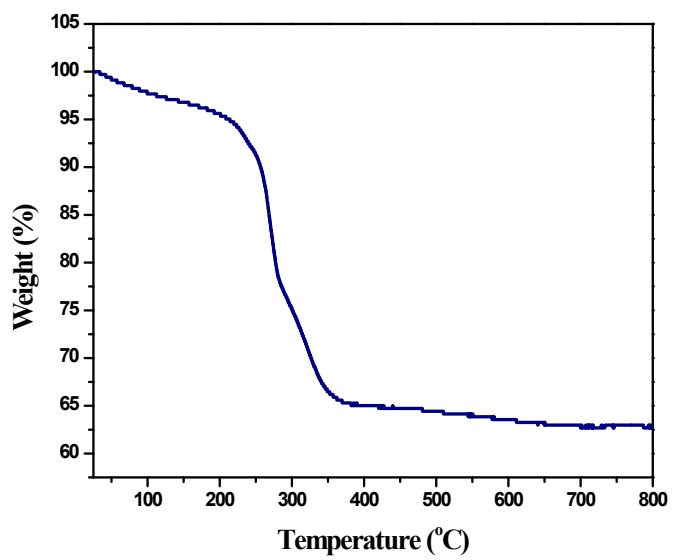


Fig. S1 Thermogravimetric analysis curve of CoFe₂O₄/Cu-ABDC.

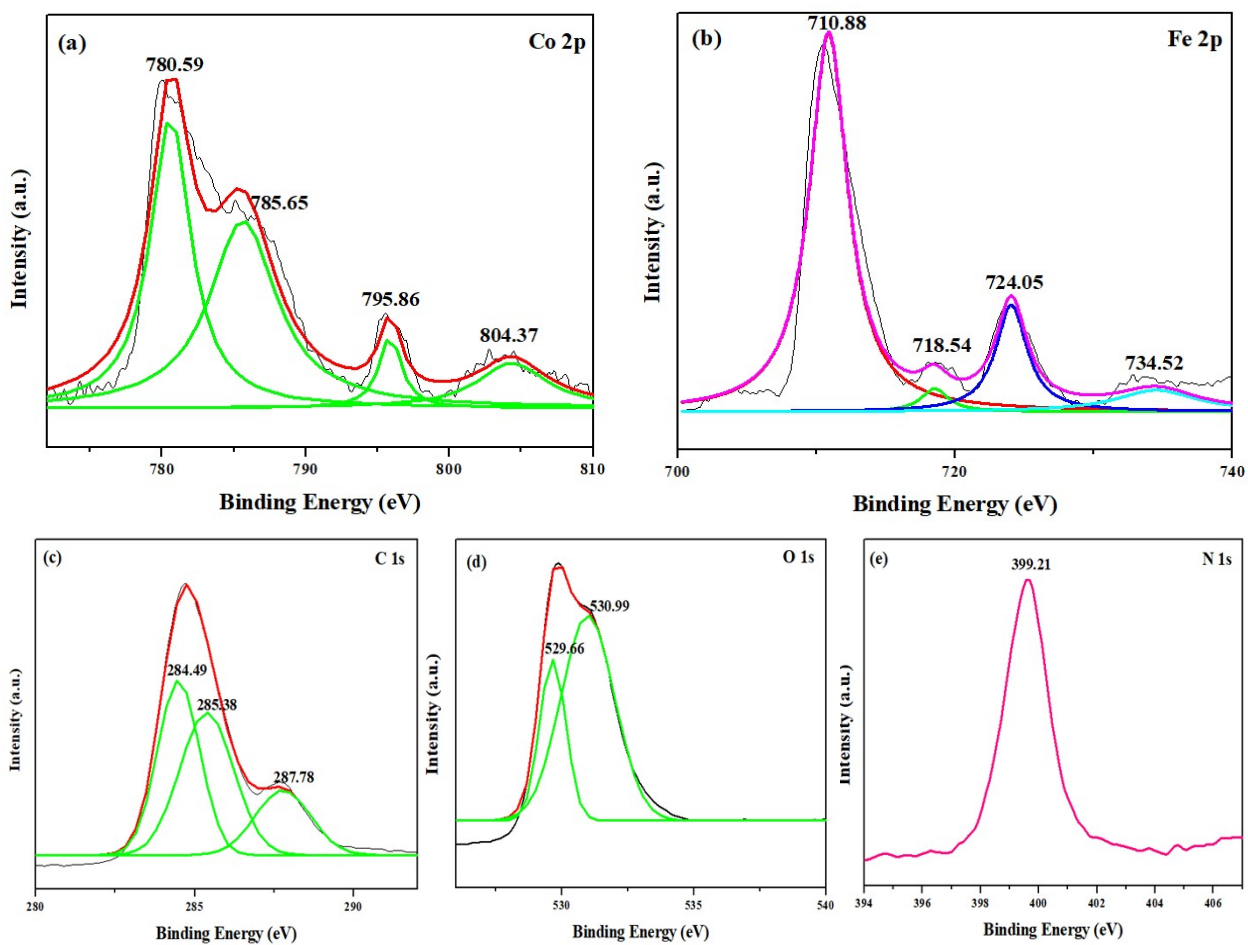


Fig. S2 Core level XPS spectrum of (a) Co, (b) Fe, (c) C, (d) O and (e) N in CoFe₂O₄/Cu-ABDC.

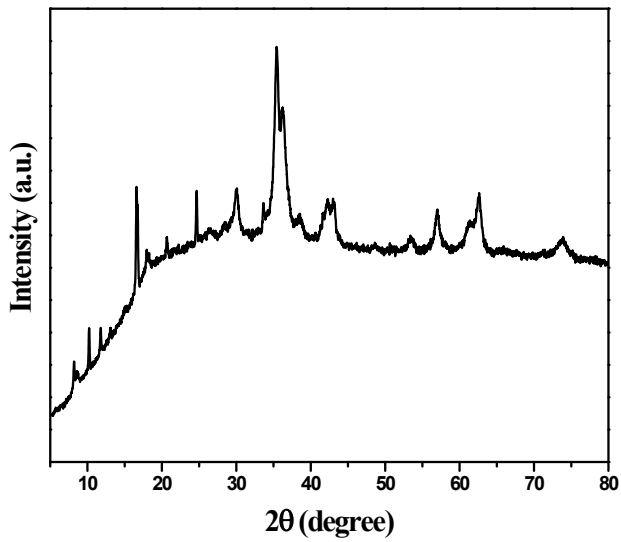


Fig. S3. XRD spectrum of recovered $\text{CoFe}_2\text{O}_4/\text{Cu-ABDC}$.

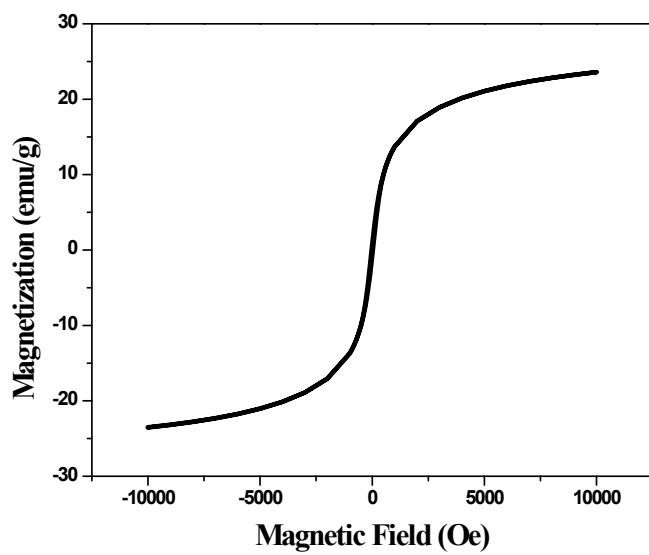
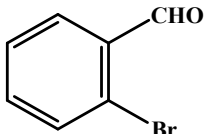
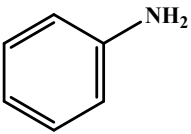
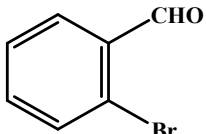
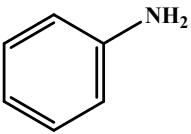
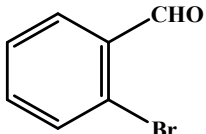
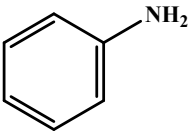
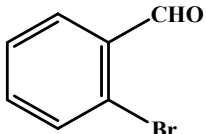
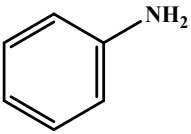
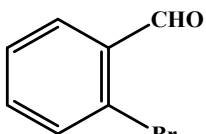
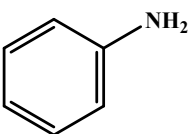
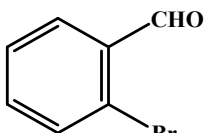
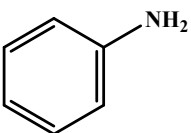
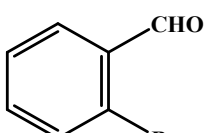
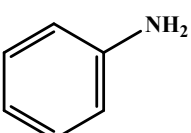
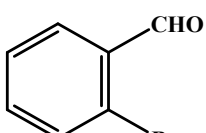
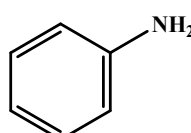


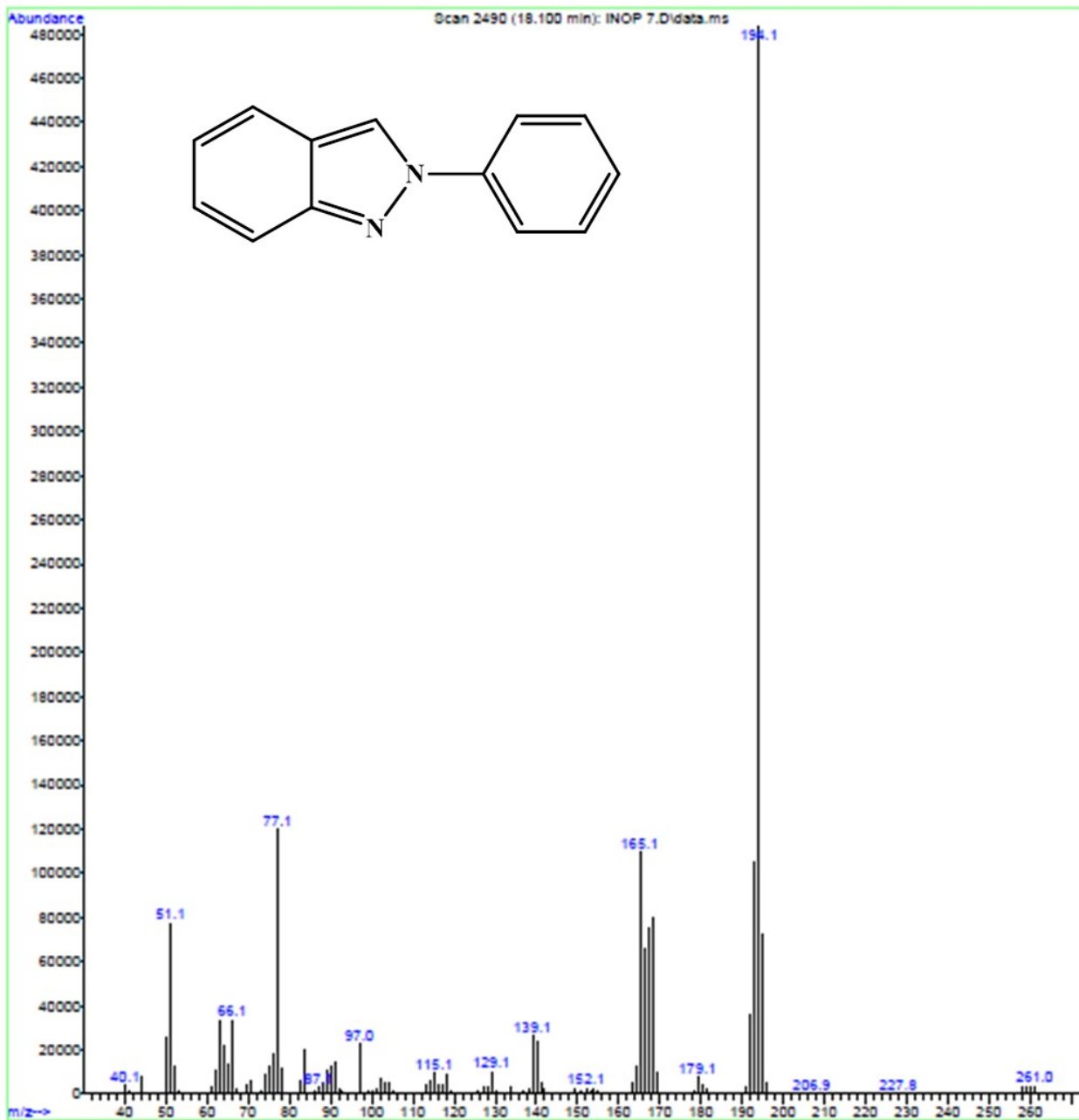
Fig. S4 VSM curve of recovered $\text{CoFe}_2\text{O}_4/\text{Cu-ABDC}$.

Table S1. Comparison of catalytic activity of CoFe₂O₄/Cu-ABDC with other metal based catalyst reported in literature for the one-pot multicomponent coupling between 2-bromobenzaldehyde, aniline and sodium azide.

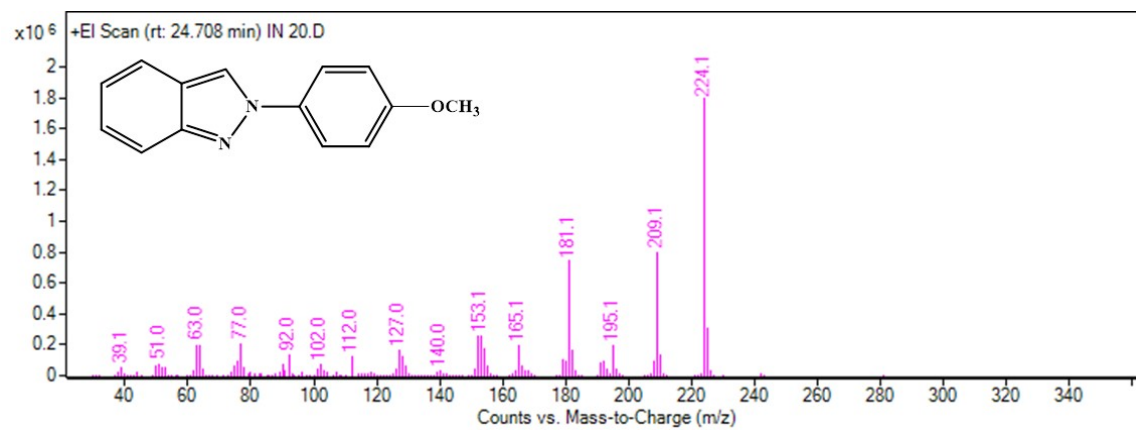
S. No.	2-bromo benzaldehydes	1° aromatic amines	Catalytic conditions	Yield (%)	Ref.
1.			CuI/TMEDA, NaN ₃ , DMSO, 120 °C, 12 h	98	51
2.			Cu ^{II} -hydrotalcite, NaN ₃ , DMSO, 120 °C, 6 h	91	52
3.			CuO Nps, NaN ₃ , Cs ₂ CO ₃ , DMSO, 120 °C, 5 h	84	53
4.			Cu ₂ O nano rhombic dodecahedra, NaN ₃ , 1,10-phenanthroline DMSO, 80 °C, 4 h	95	54
5.			Cu ₂ O Np, NaN ₃ , PEG, 120 °C, 6 h	90	55
6.			Amine functionalized Silica/Starch composite-Cu(acac) ₂ , NaN ₃ , DMSO, 100 °C, 6 h	85	56
7.			Cu Np-Peptide nanofiber, NaN ₃ , PEG, 130 °C, 3.5 h	88	57
8.			CoFe ₂ O ₄ /Cu-ABDC, NaN ₃ , Water, 100 °C, 8 h	98	Present work

GC-MS Spectra of all the products

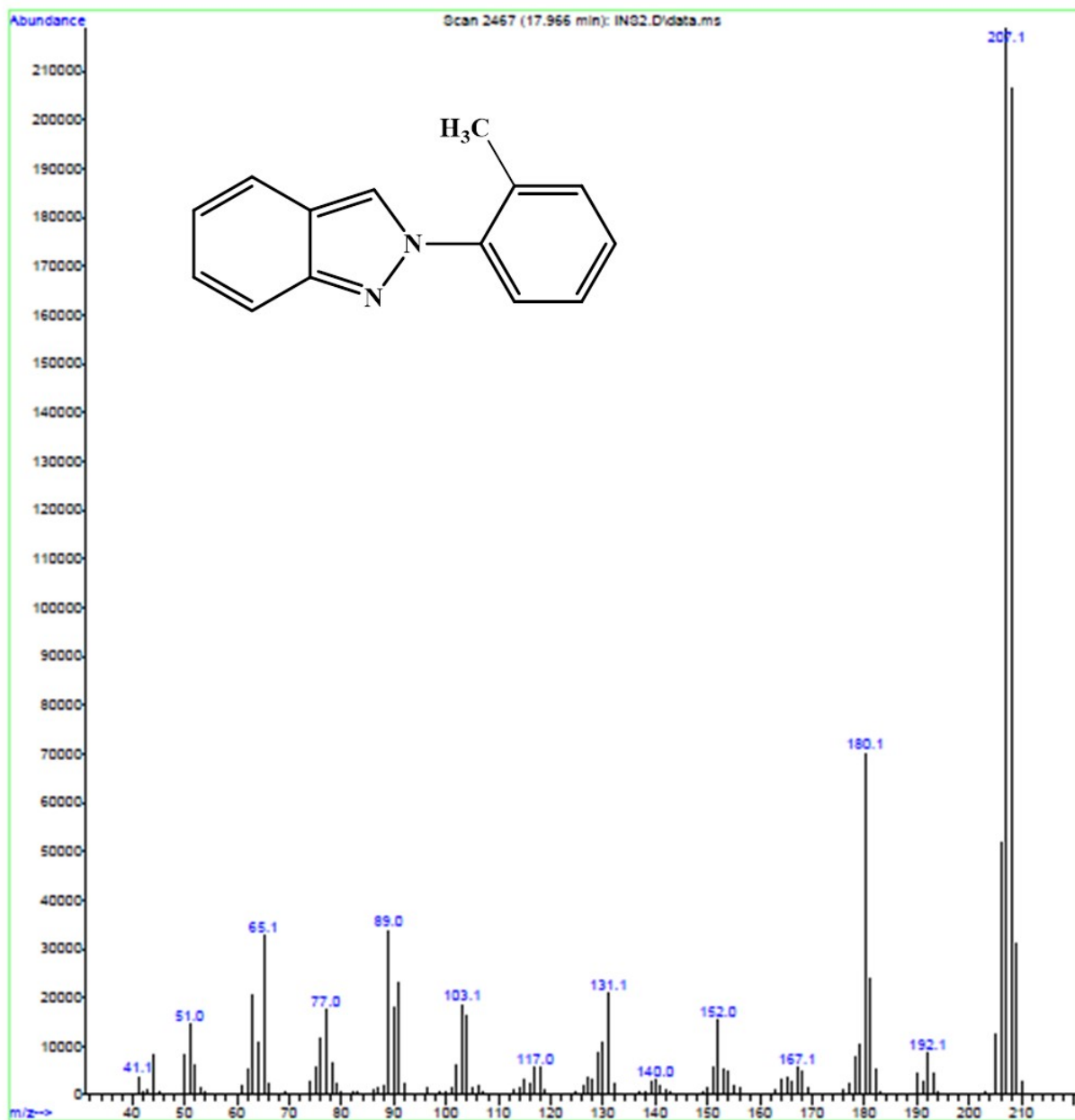
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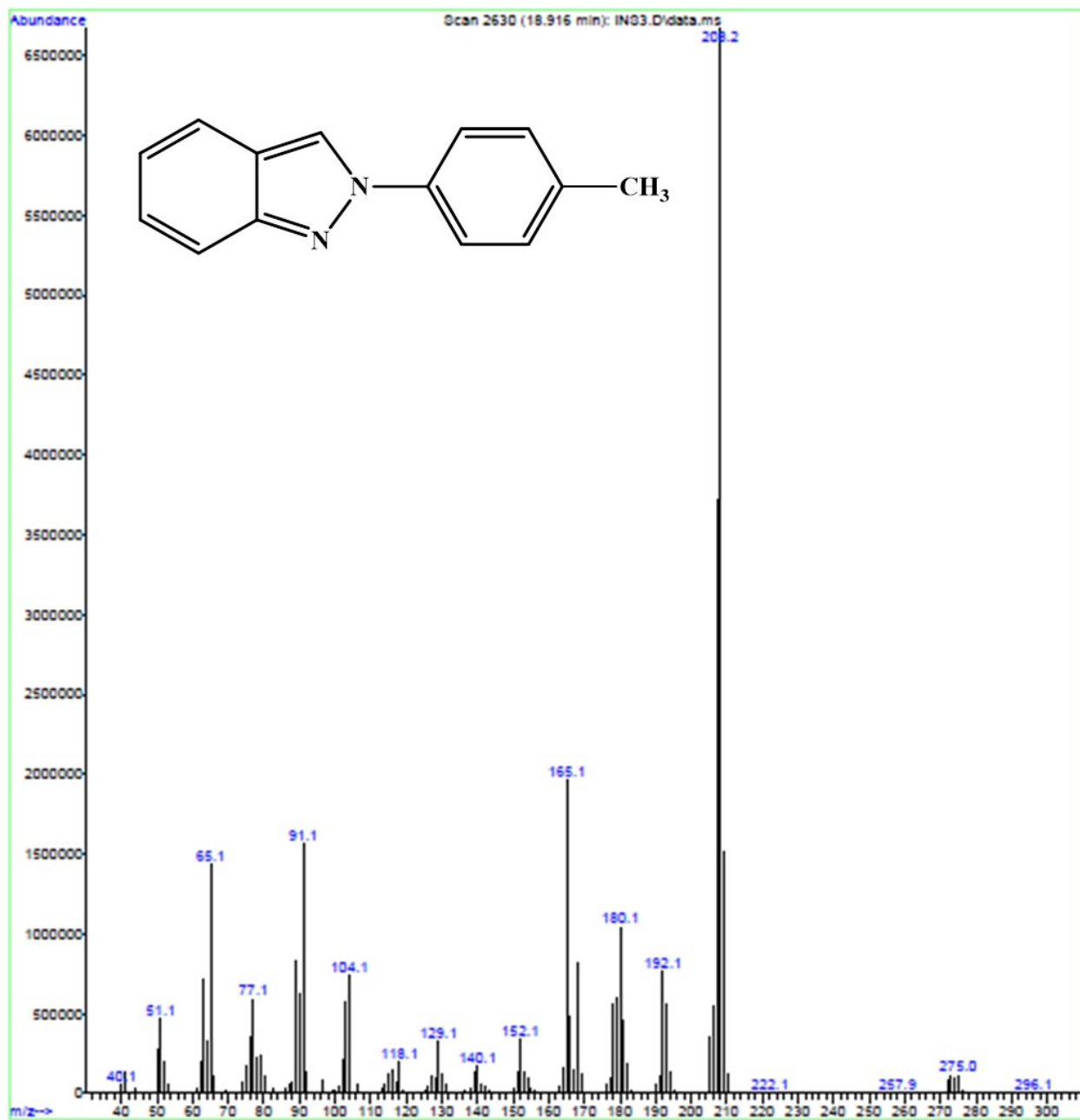
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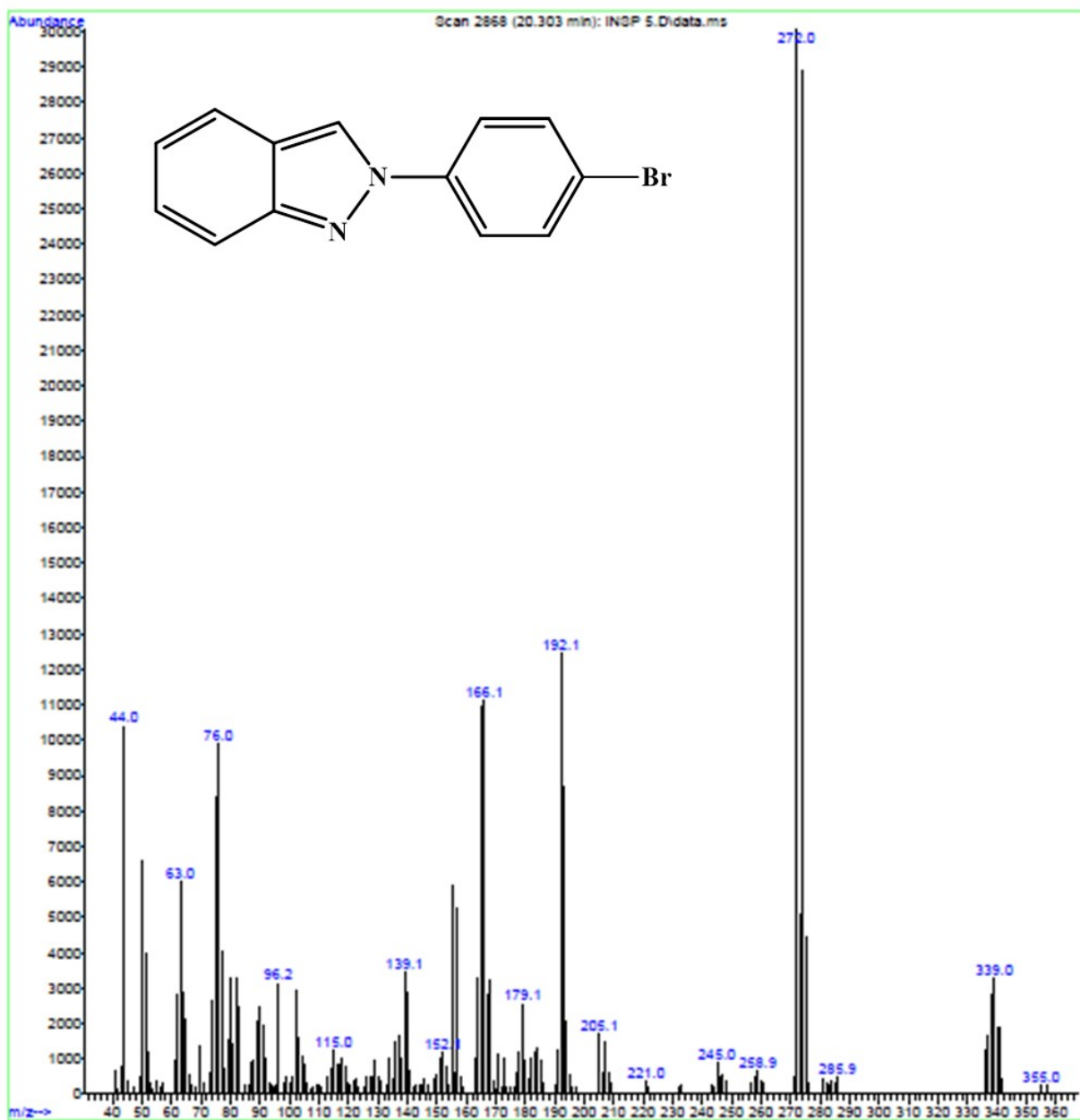
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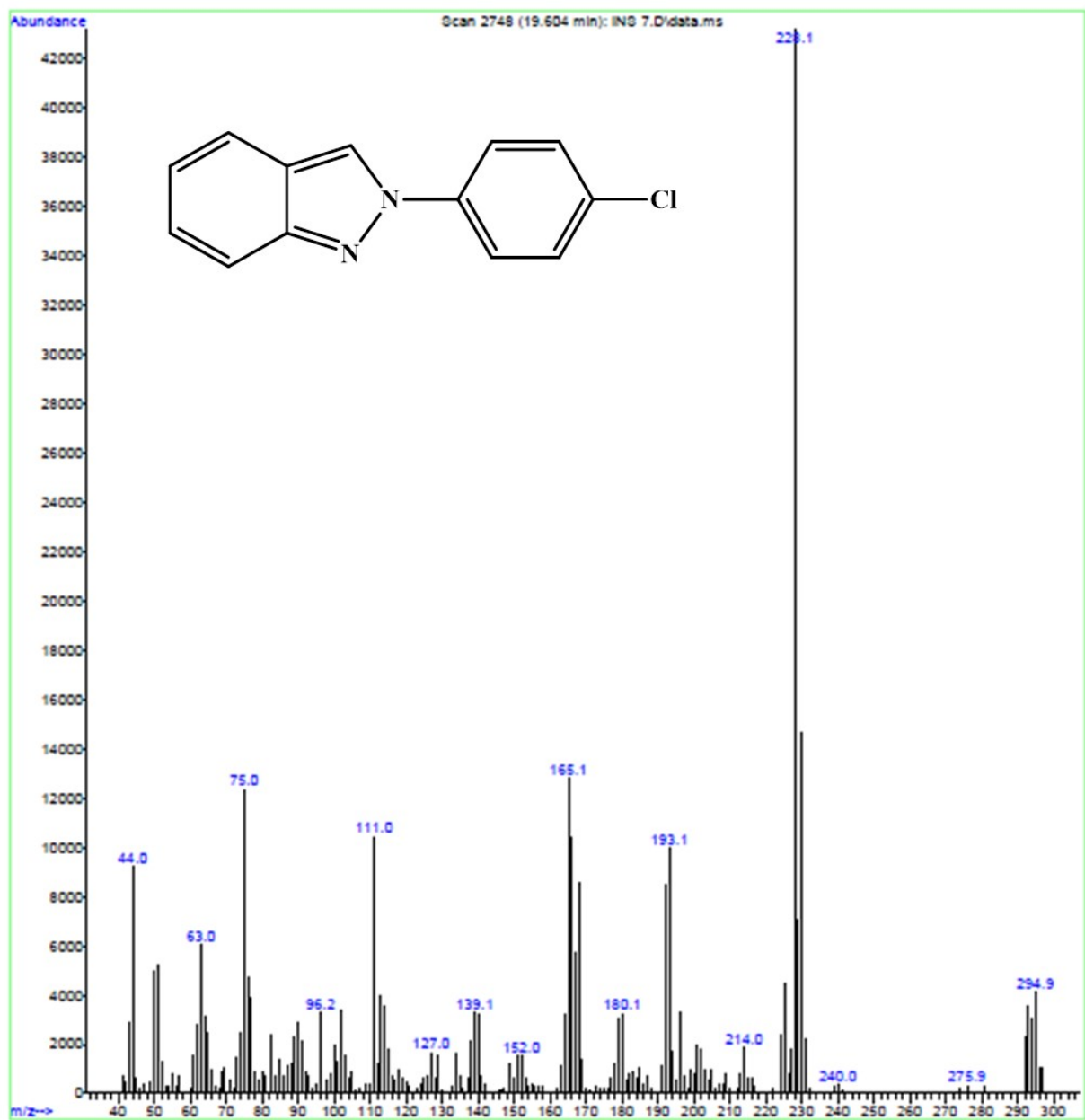
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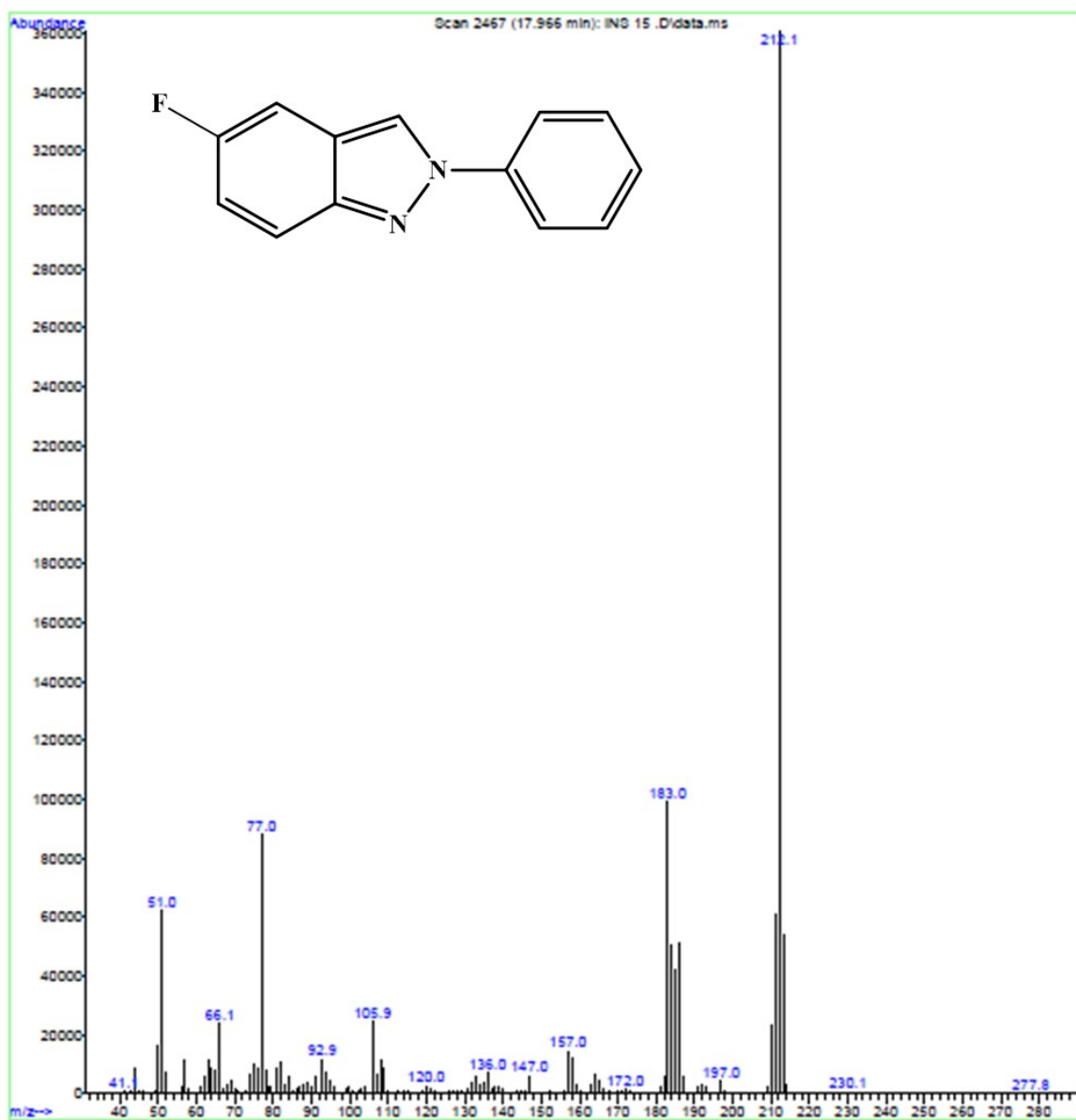
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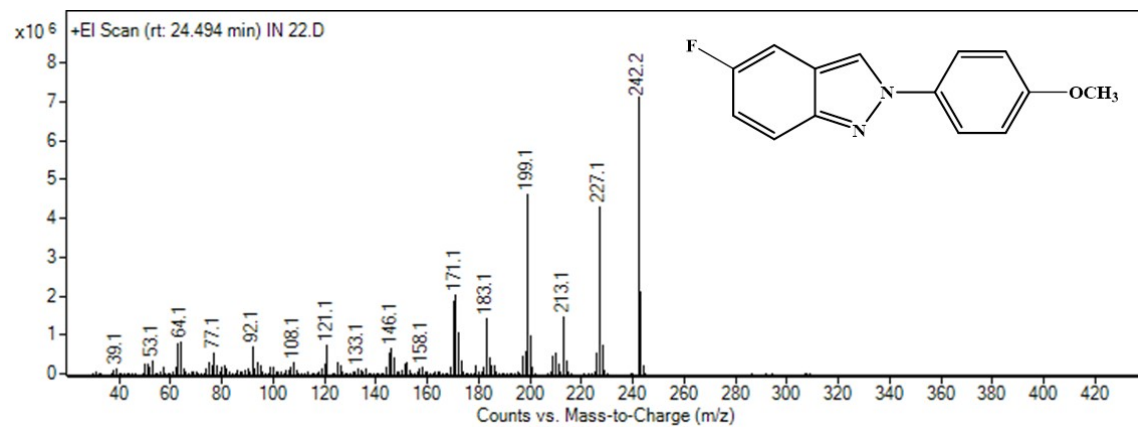
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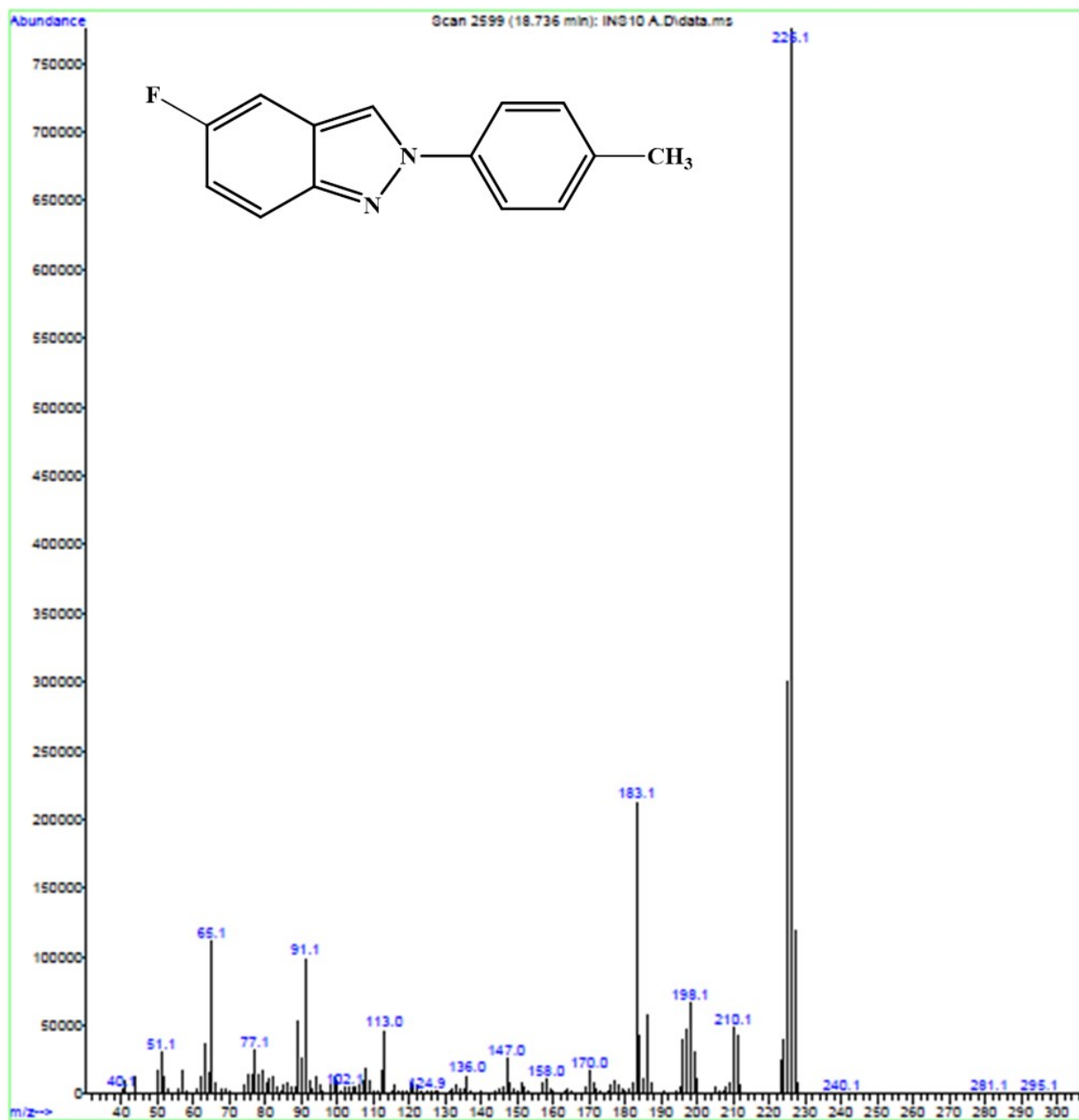
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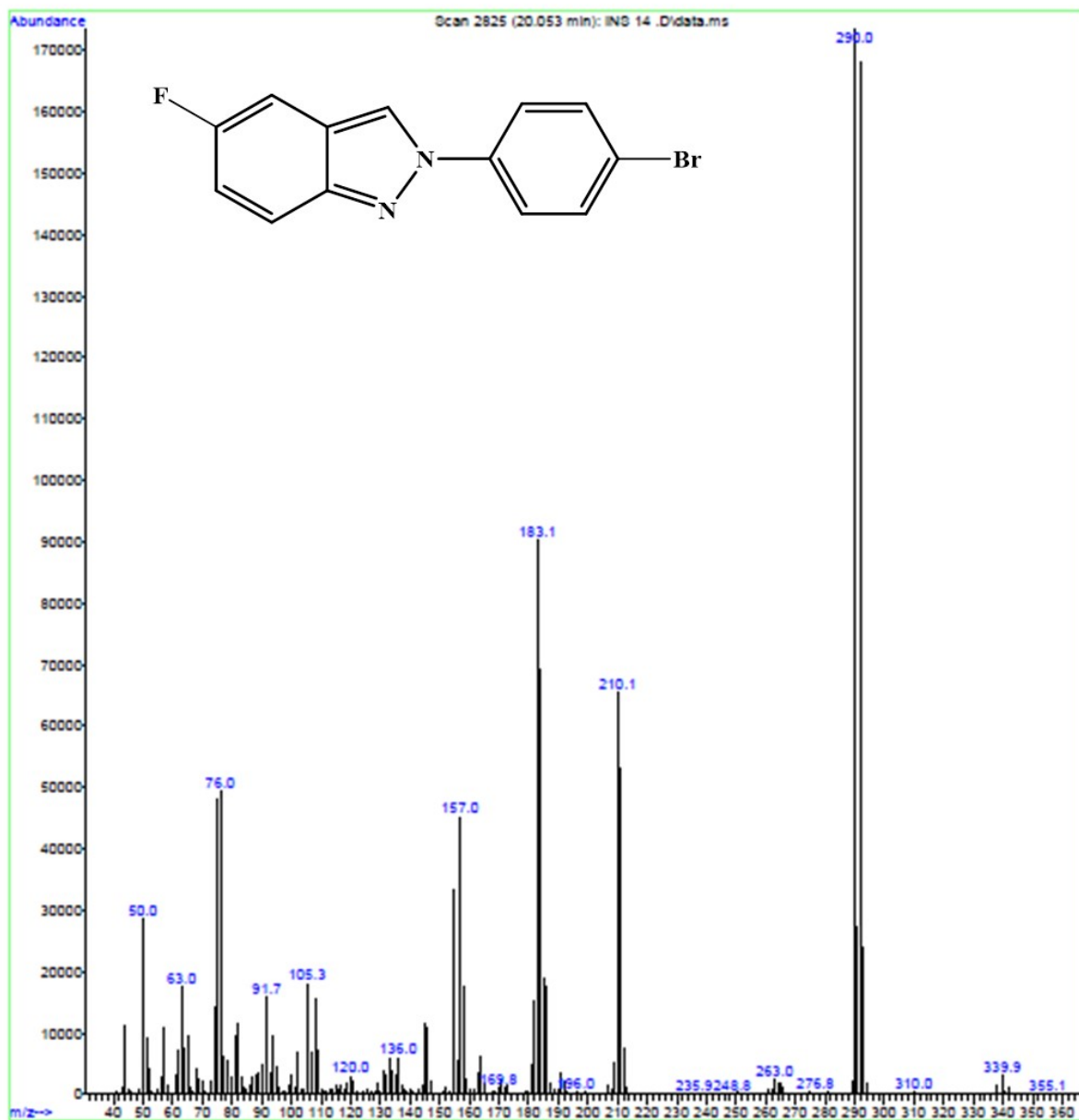
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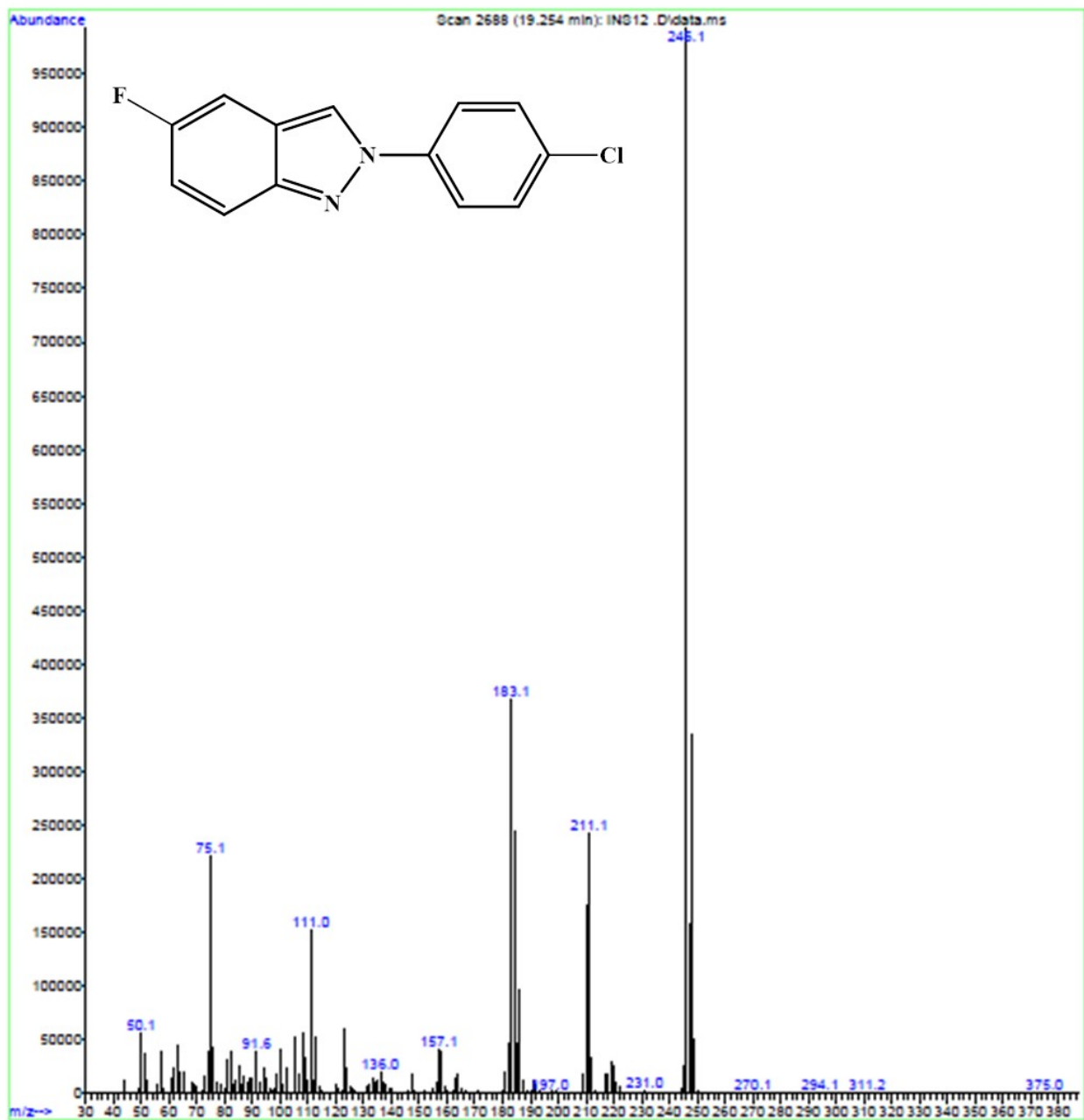
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Entry 10

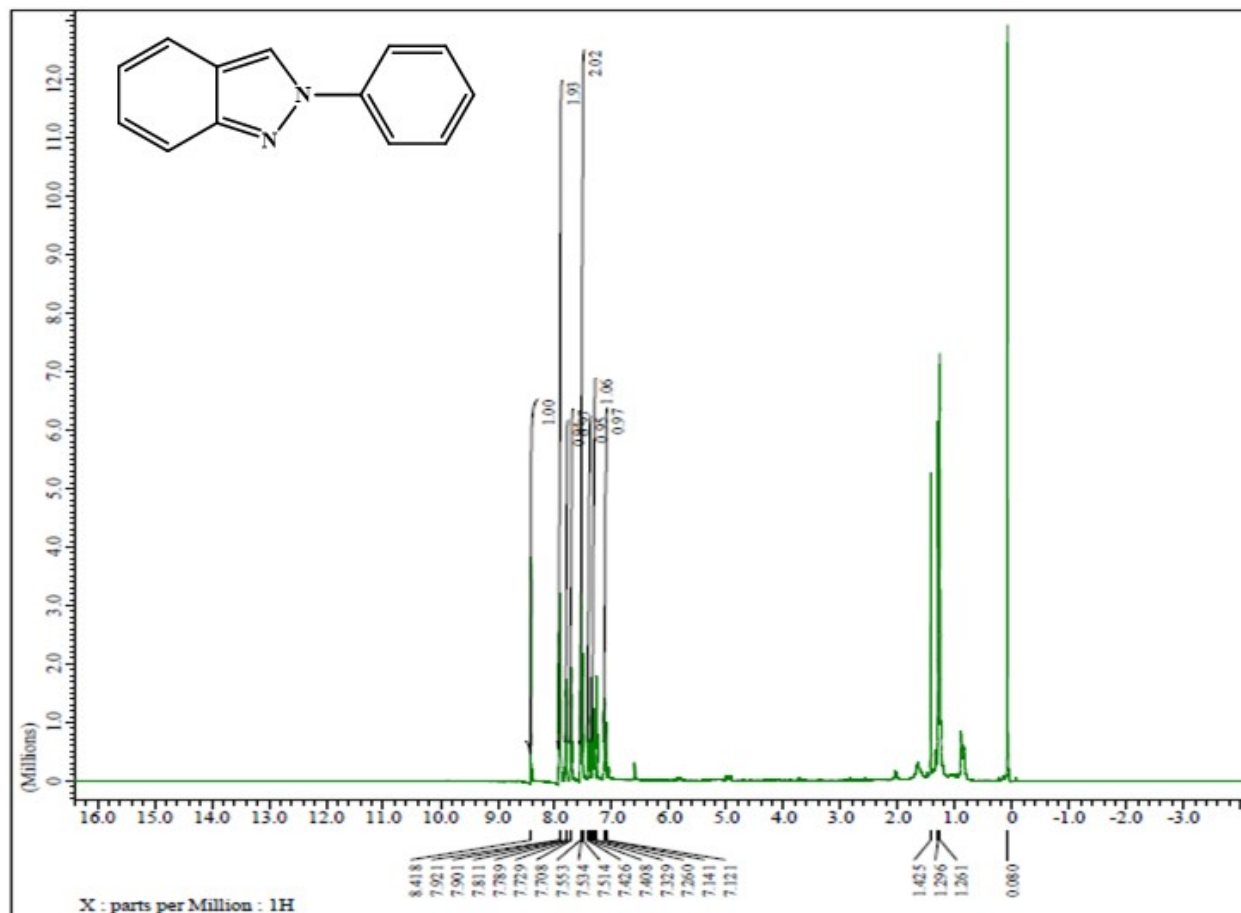


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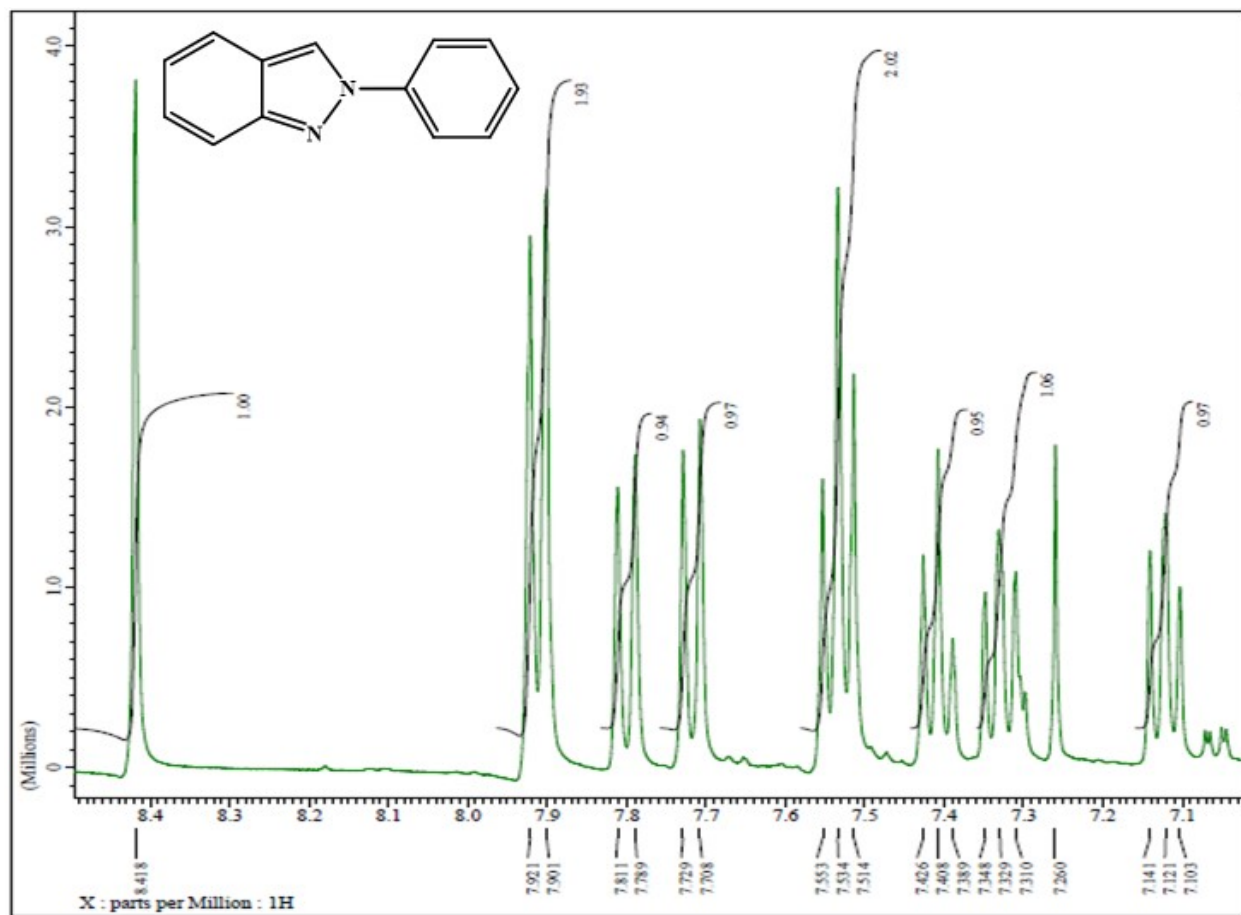


NMR Spectra of the synthesized products

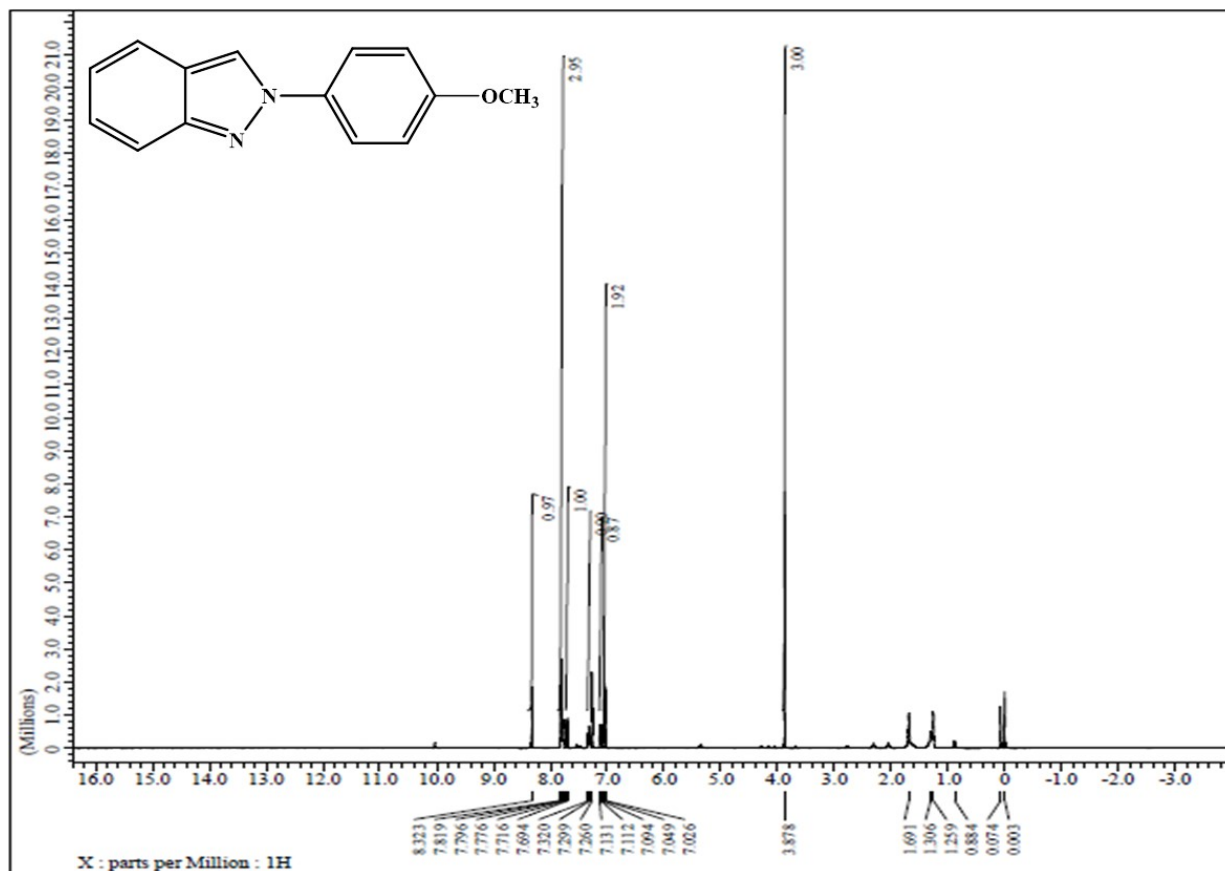
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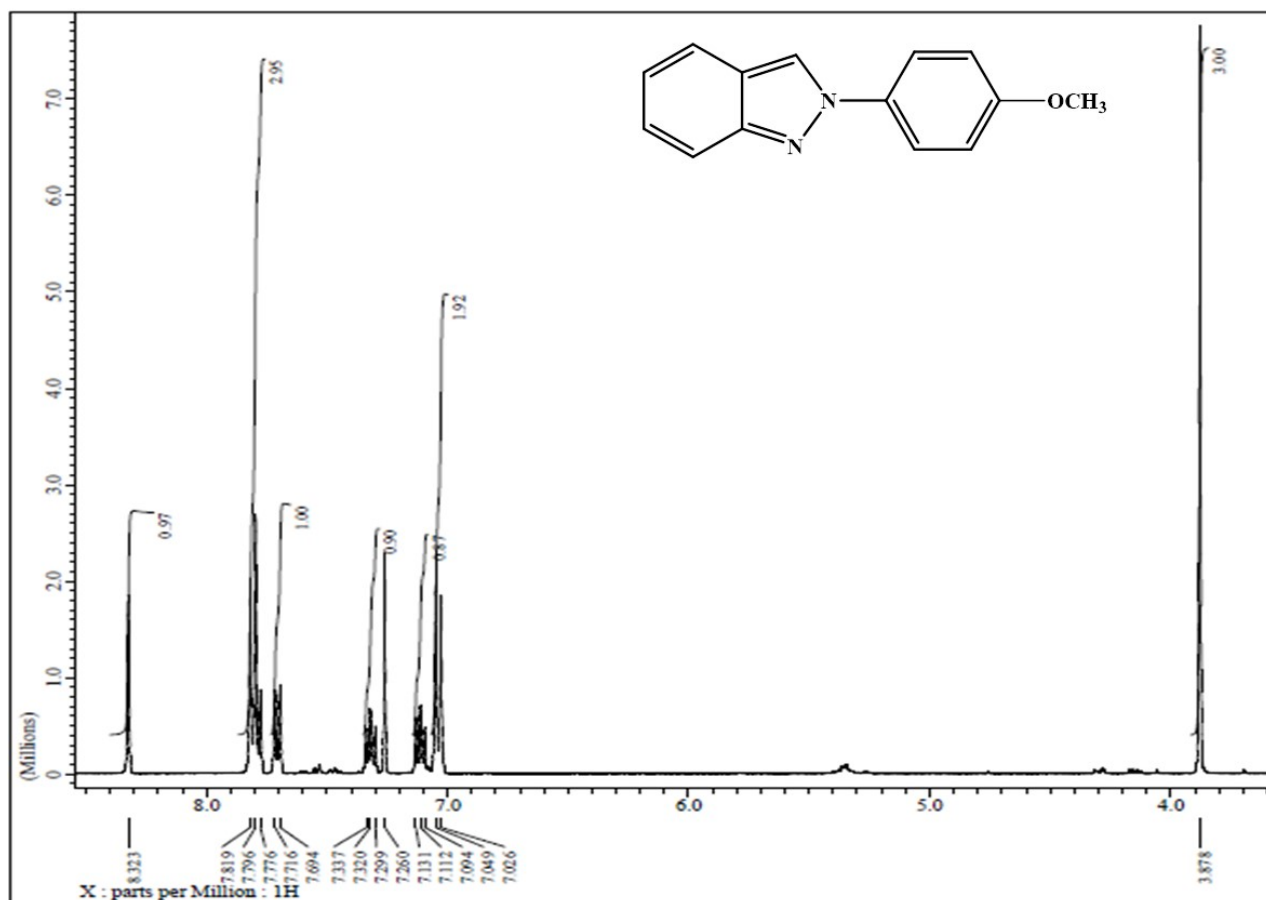
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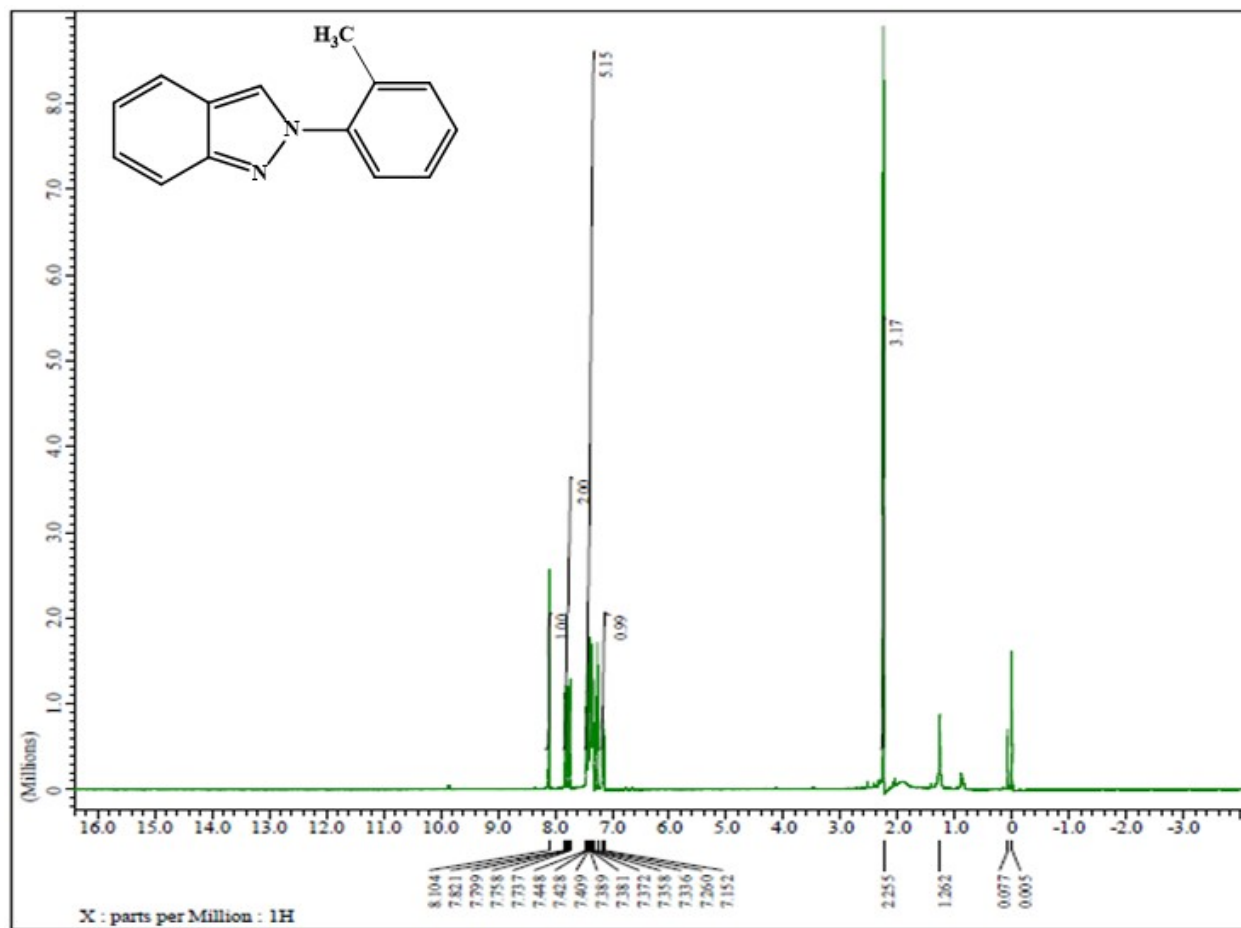
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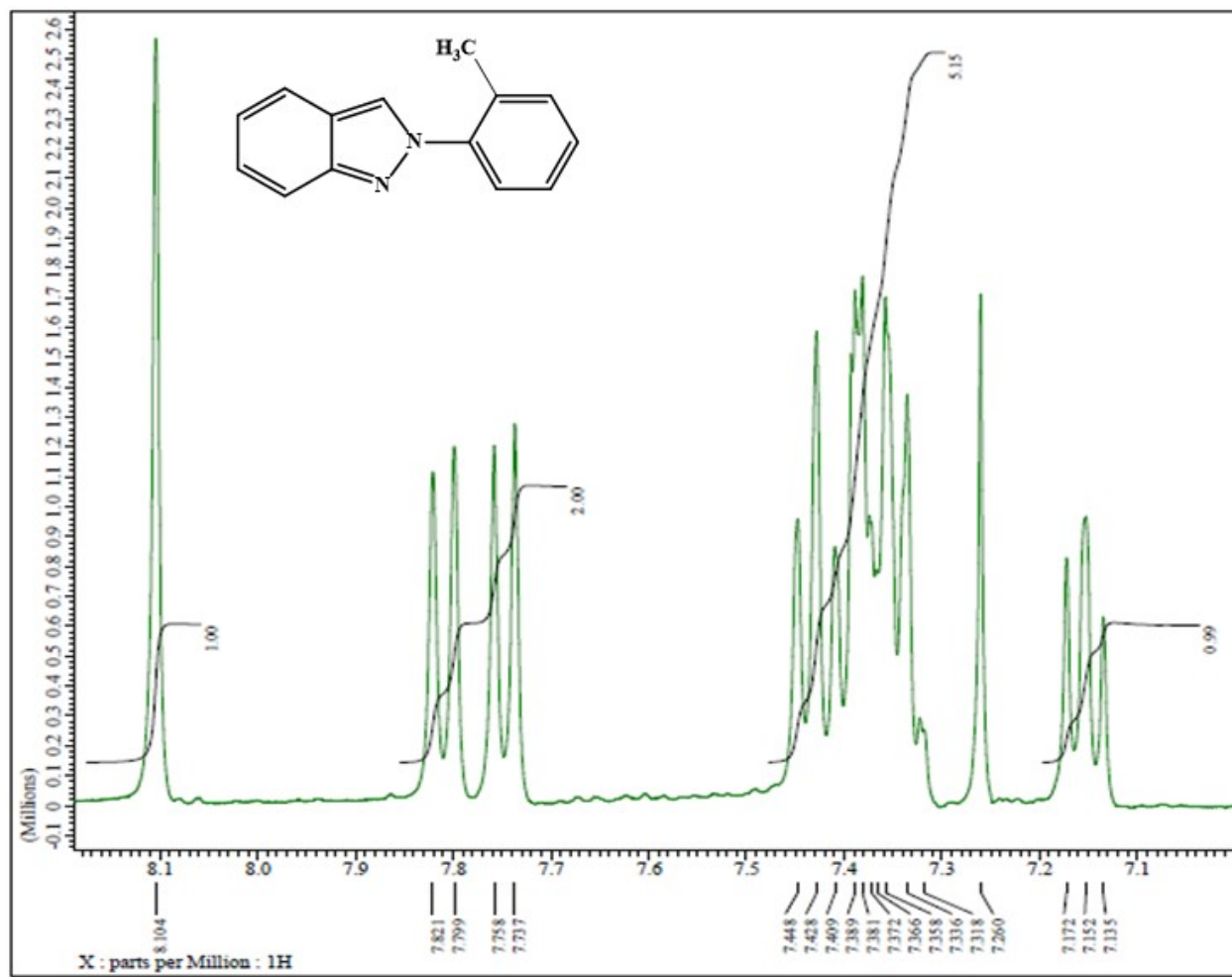
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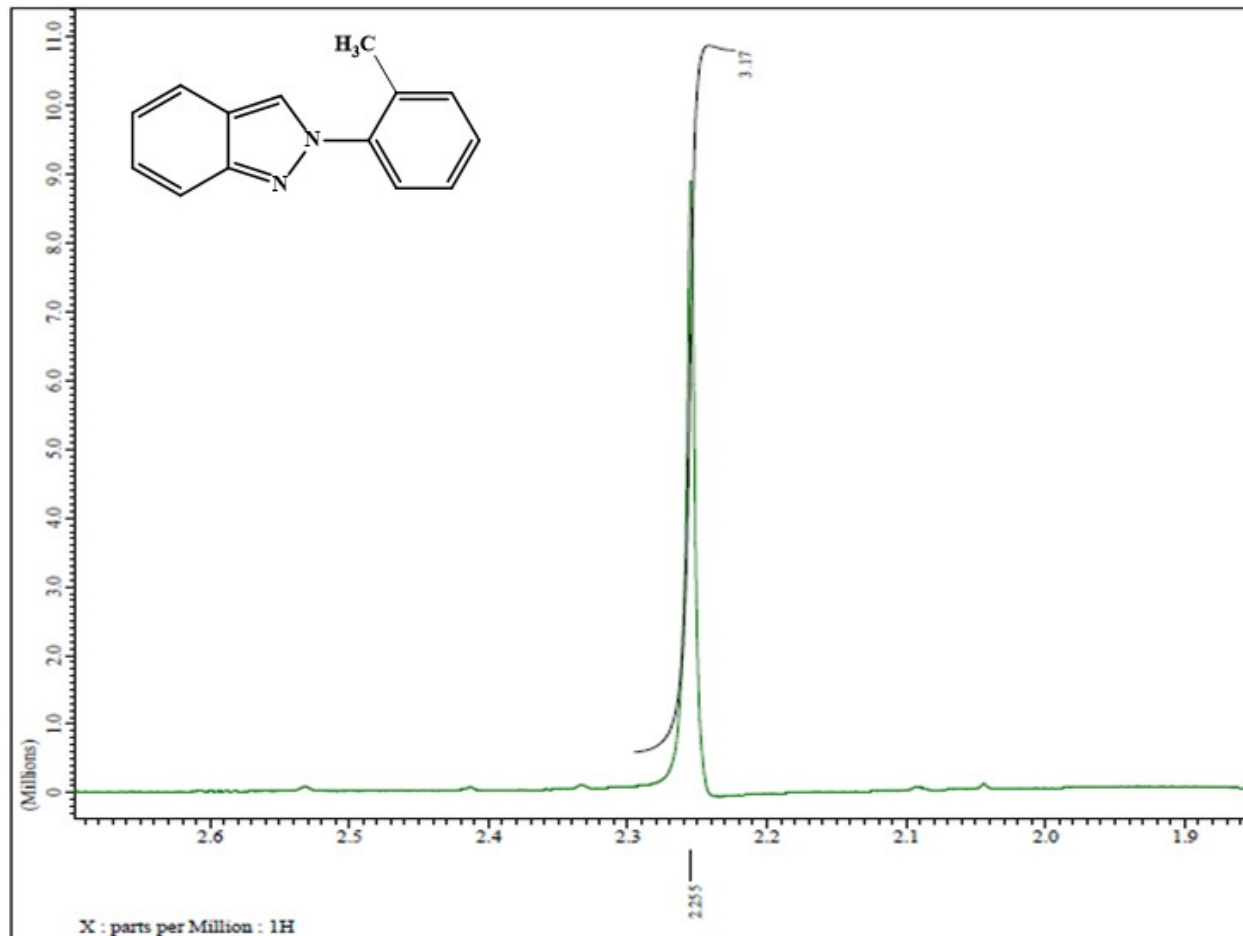
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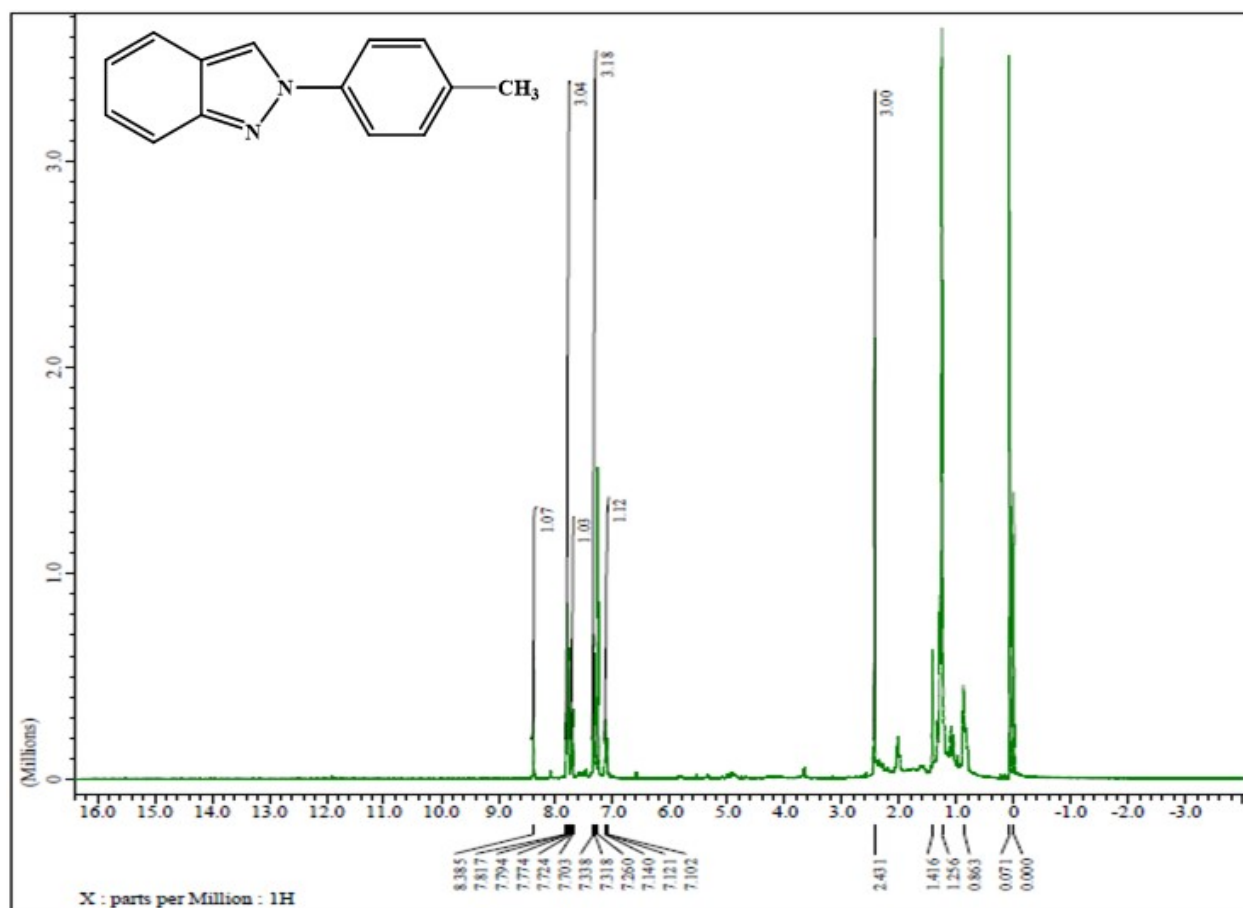
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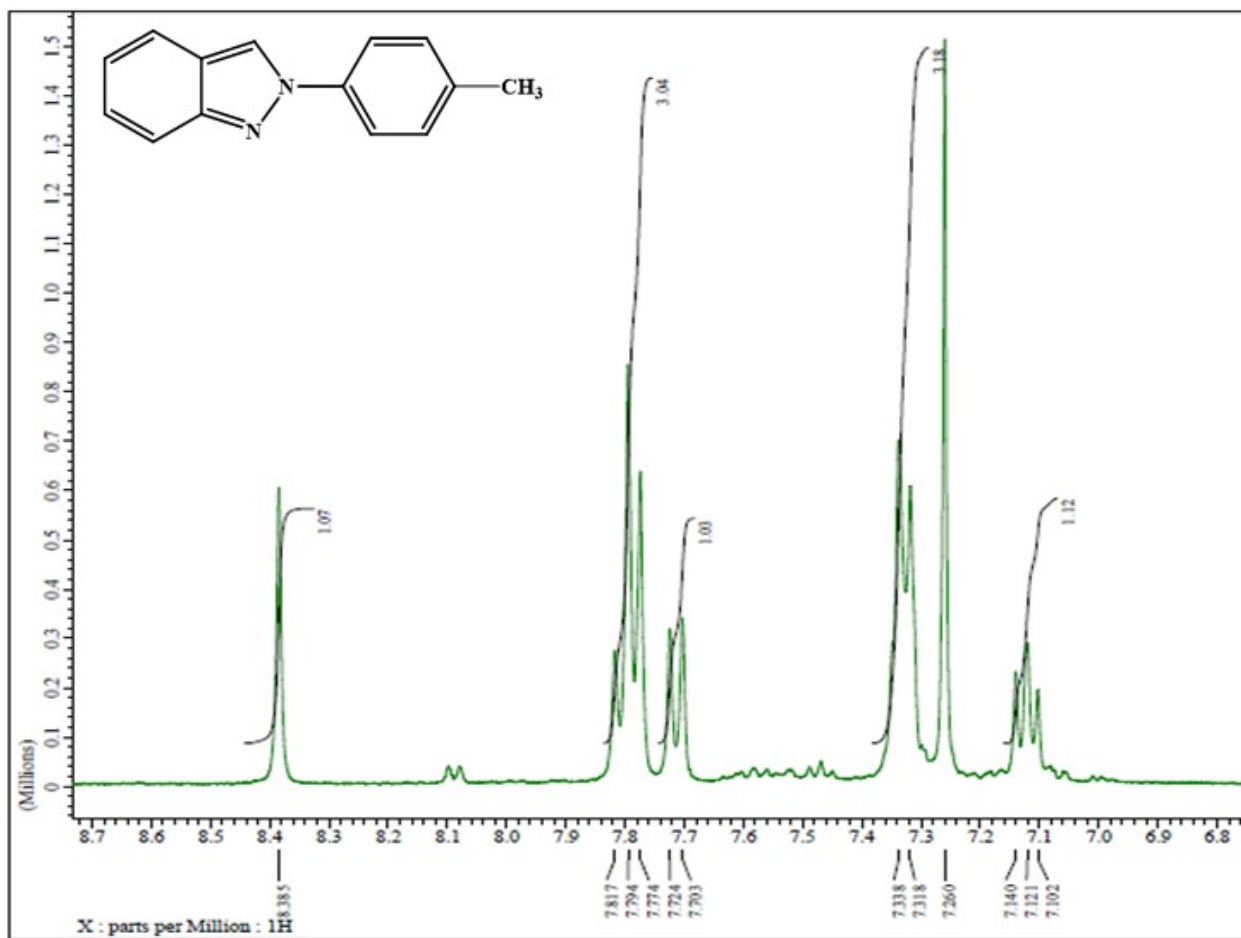
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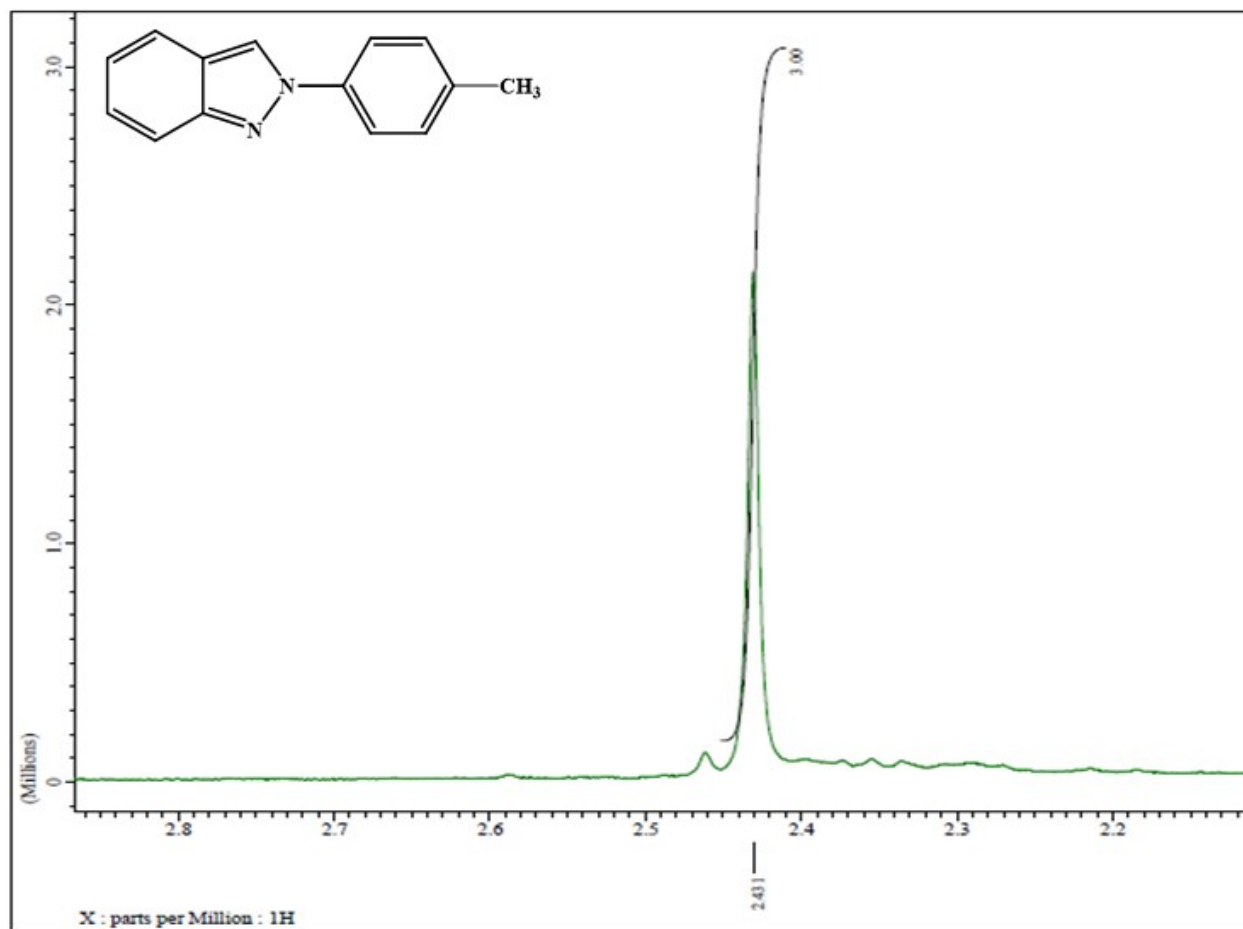
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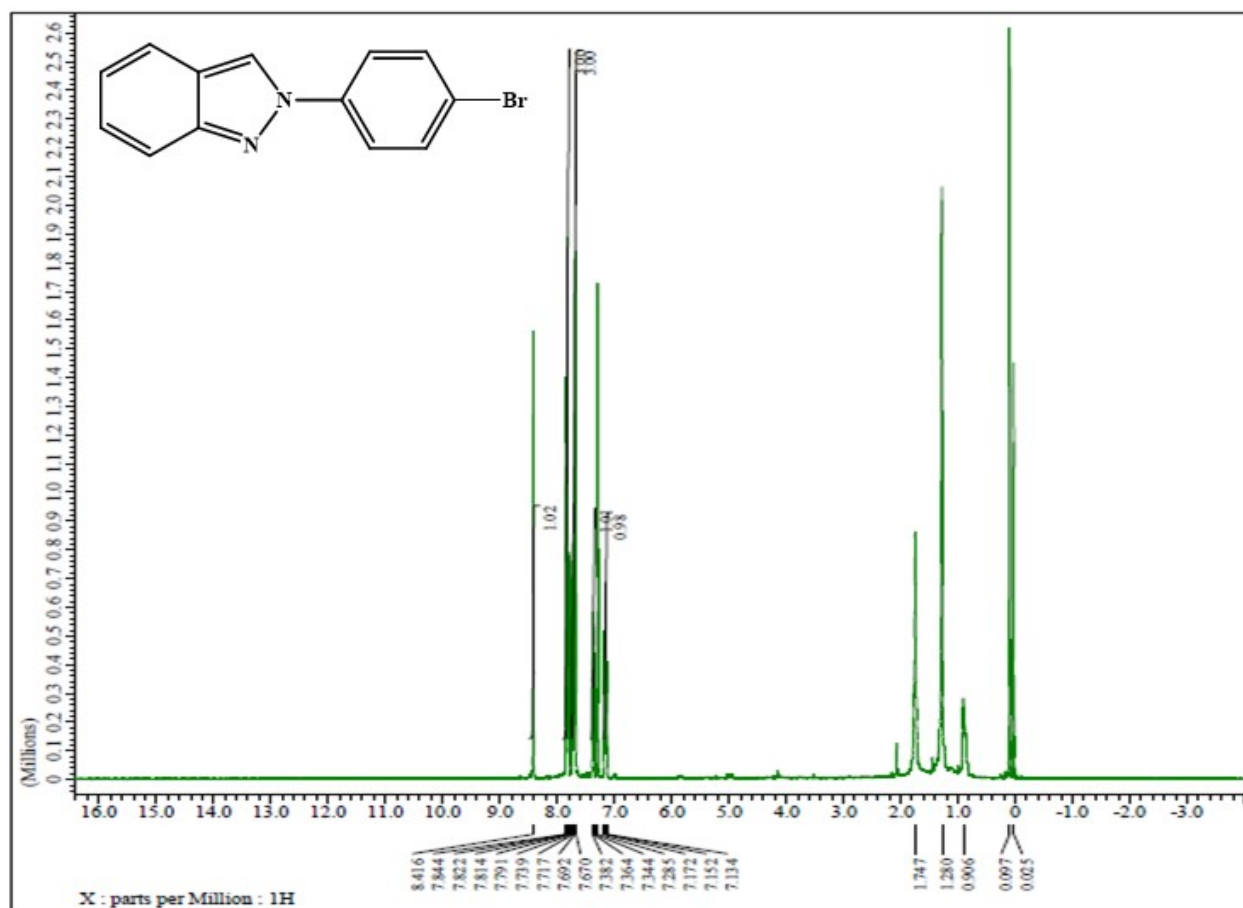
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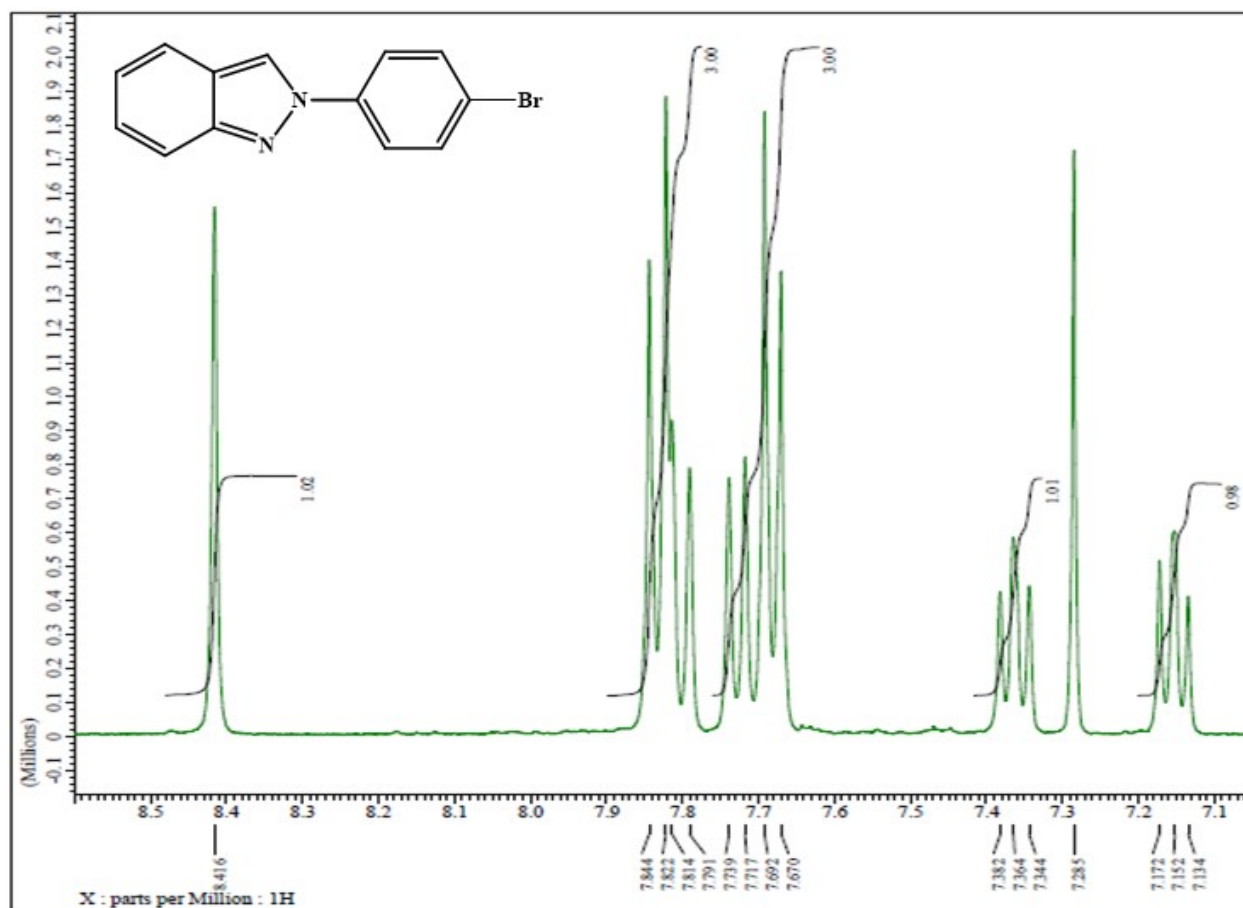
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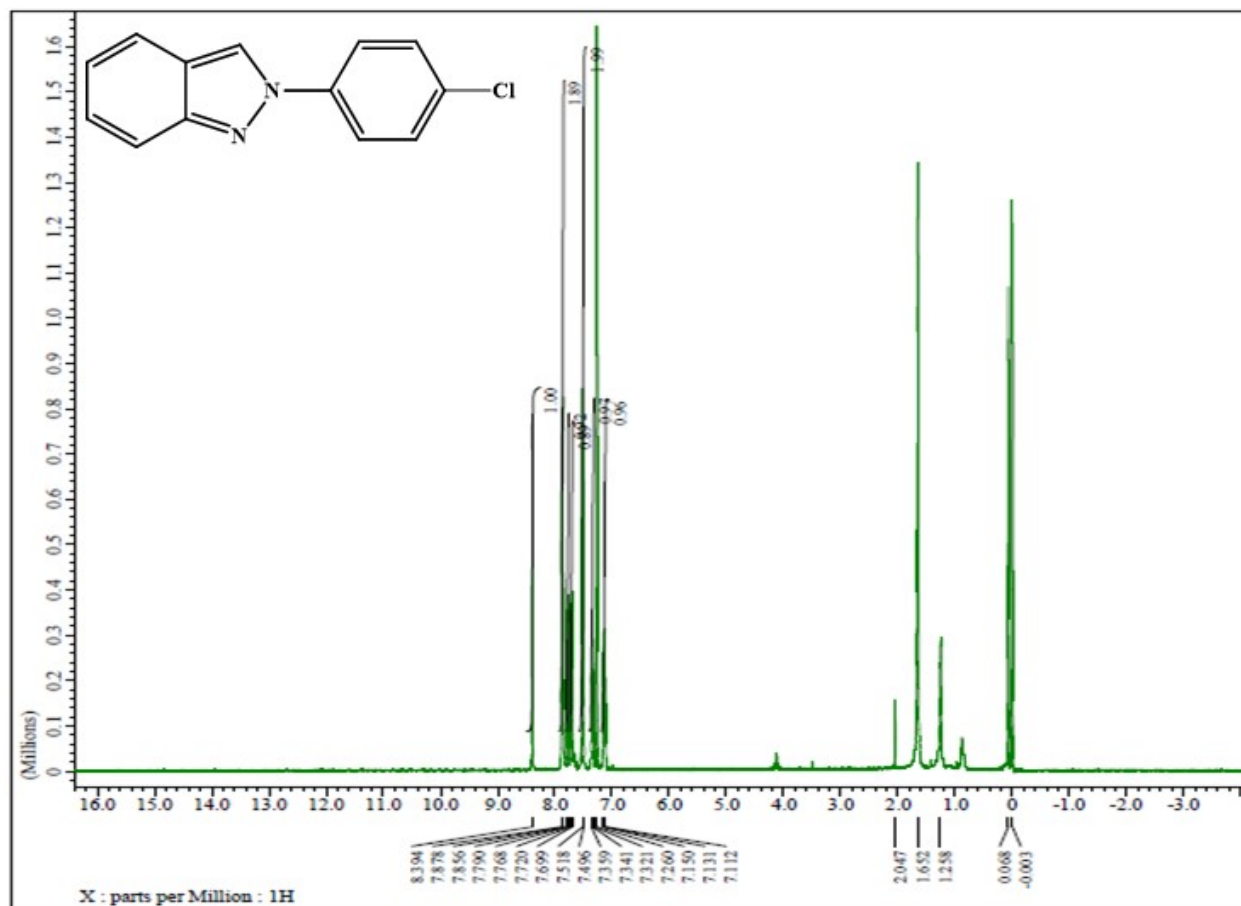
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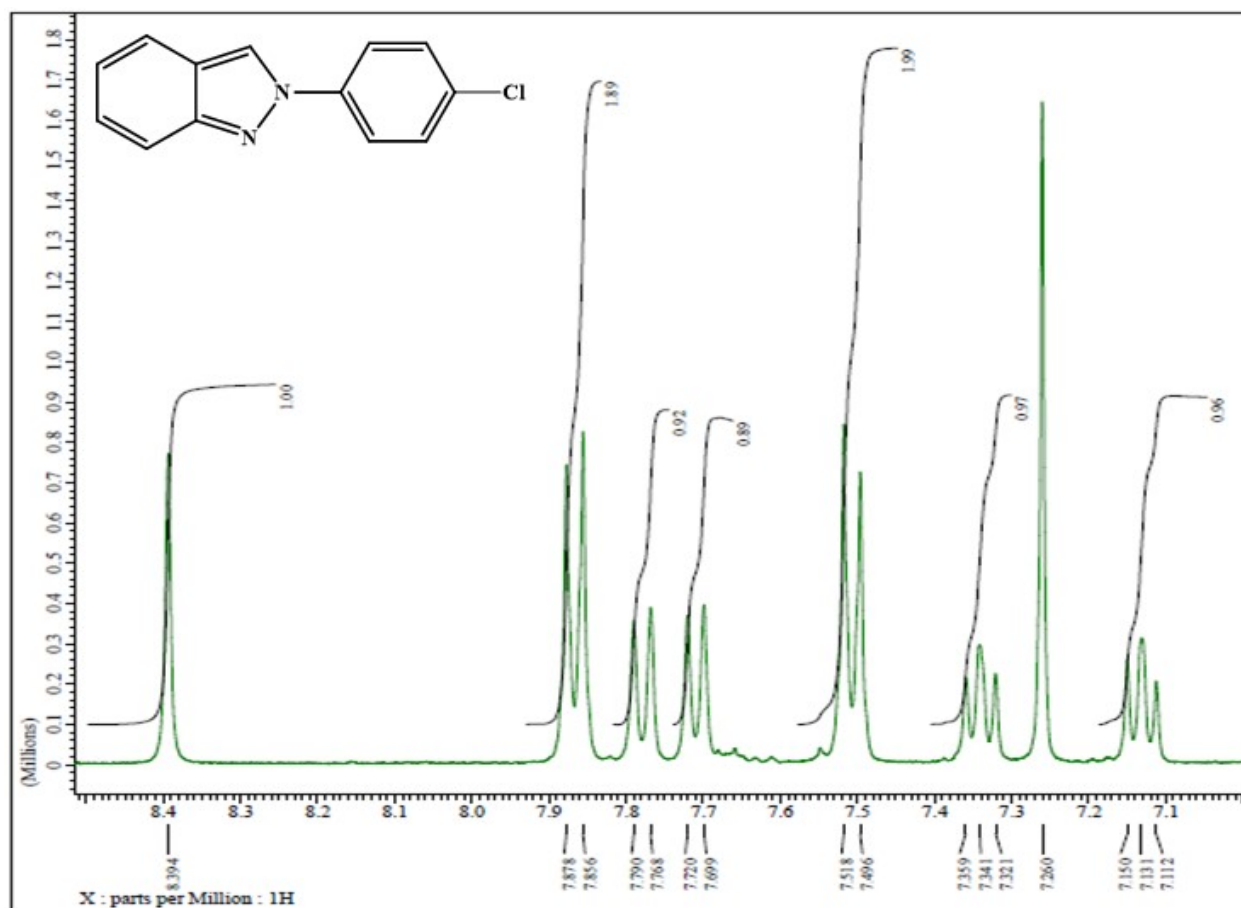
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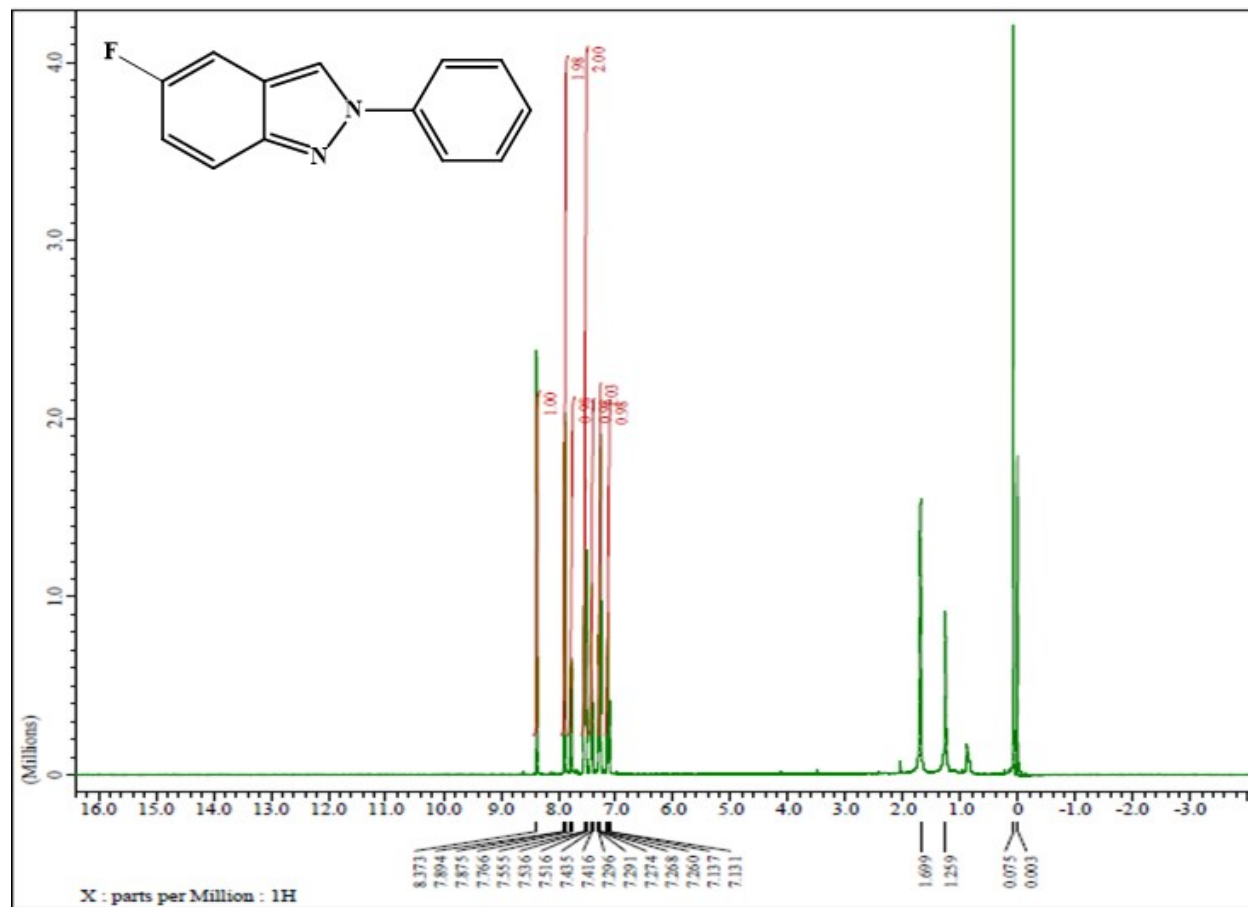
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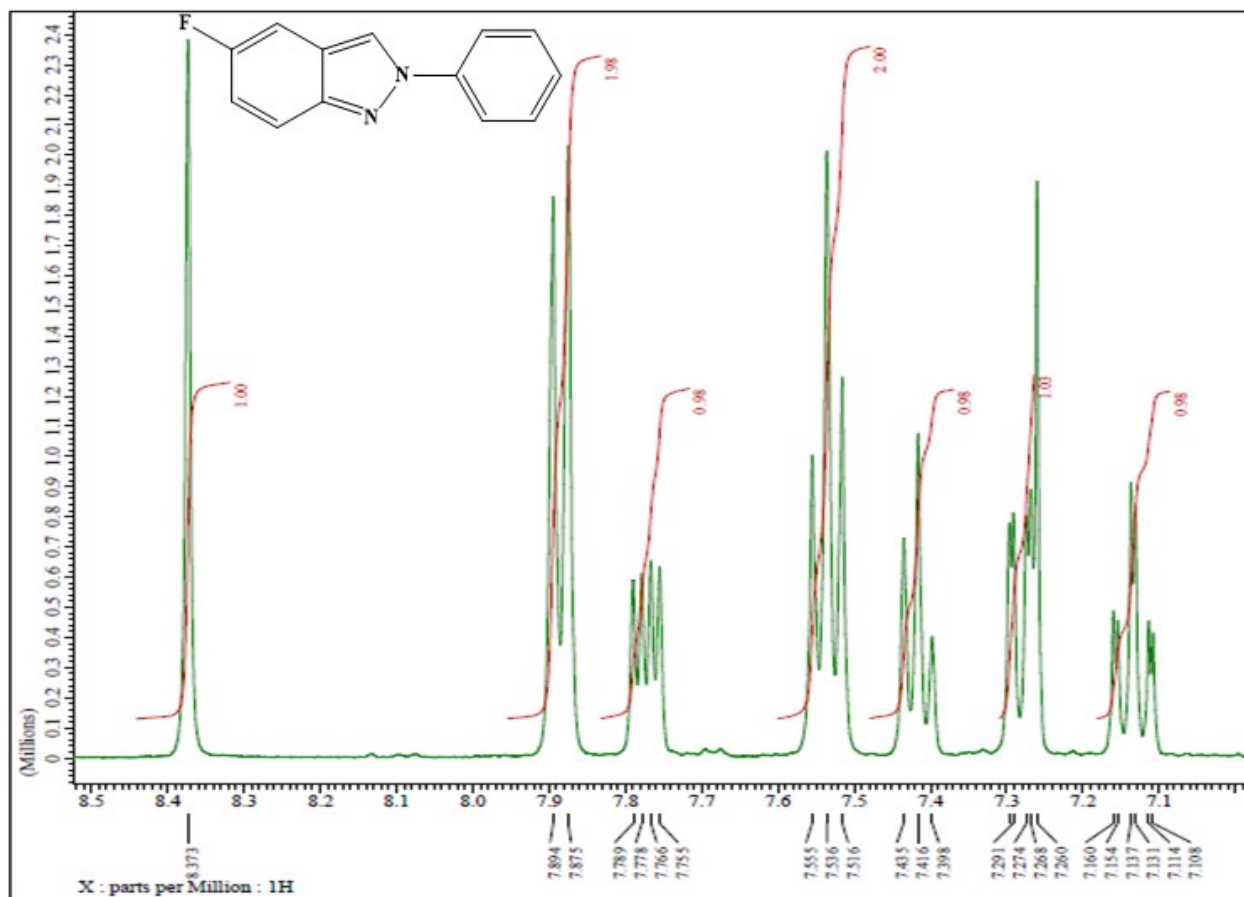
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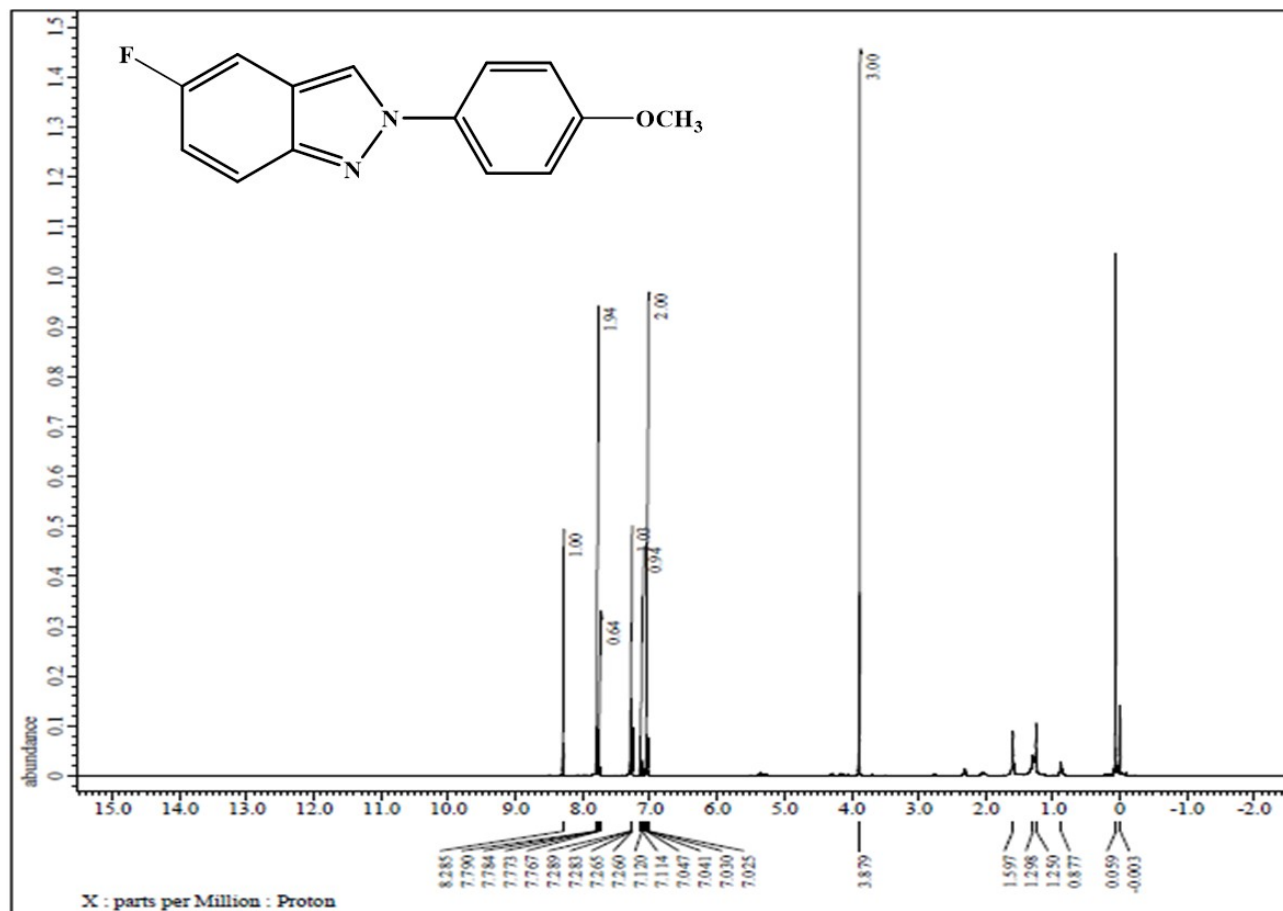
Entry 7 ¹H NMR spectrum of 5-fluoro-2-phenyl-2H-indazole (CDCl₃) Full



Entry 7 ¹H NMR spectrum of 5-fluoro-2-phenyl-2H-indazole (CDCl₃) Expansion

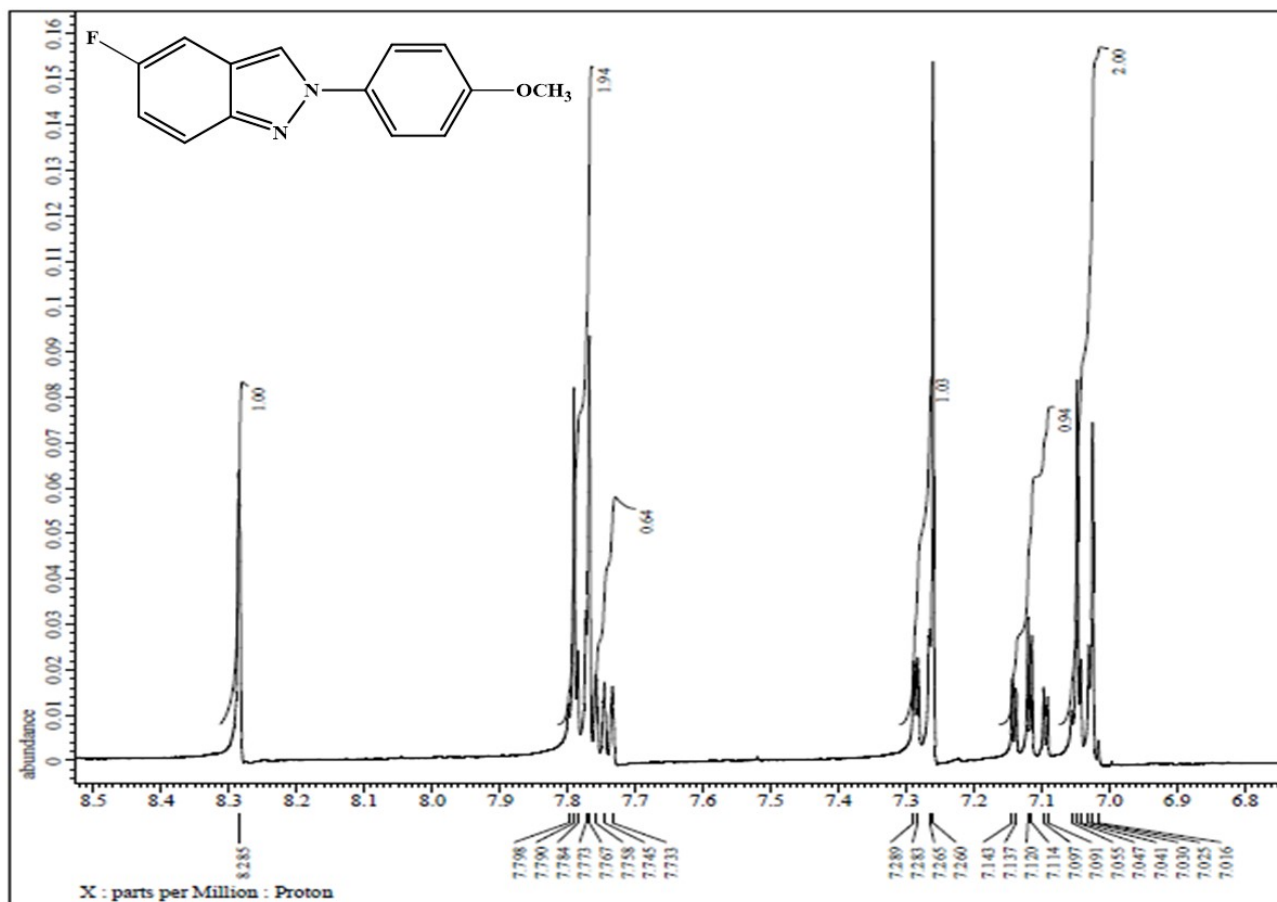


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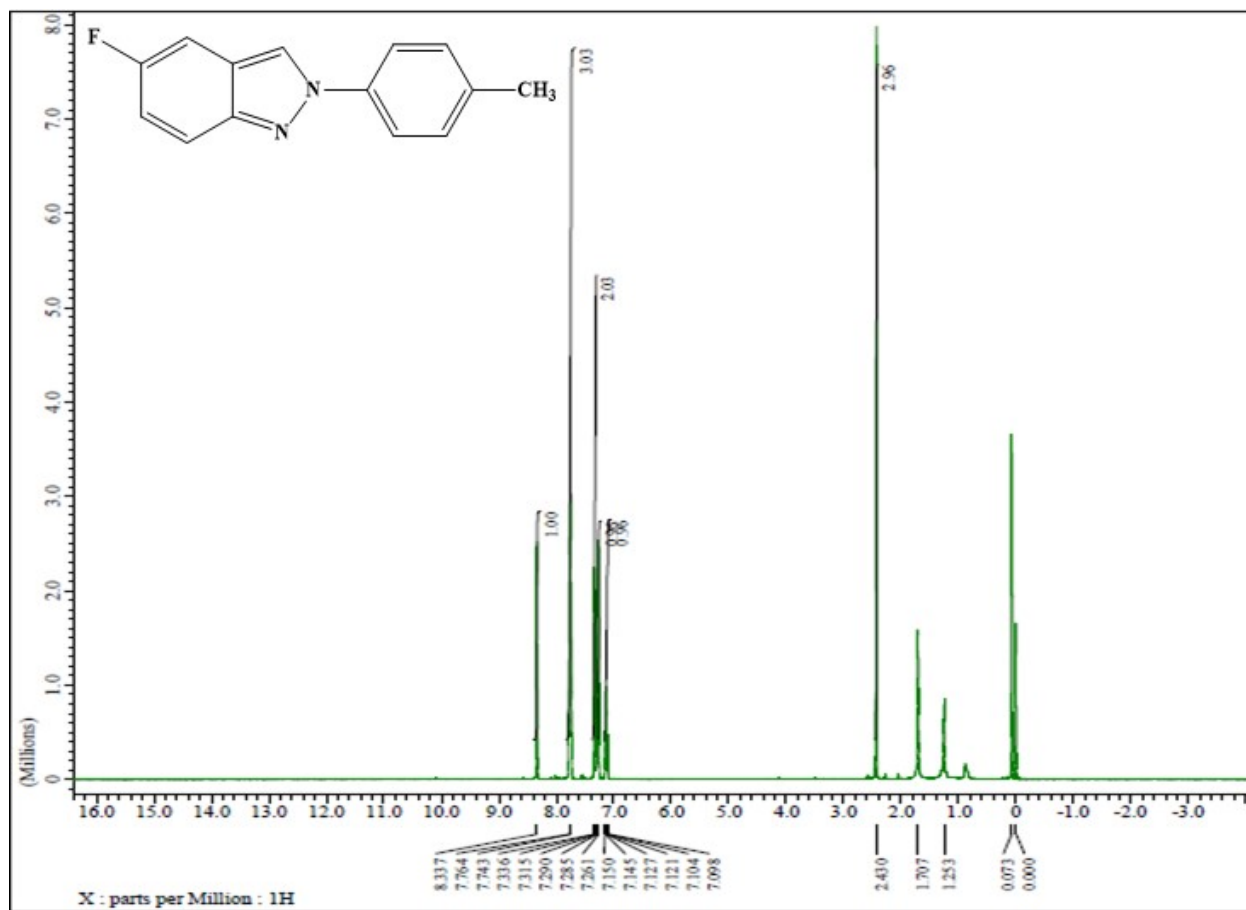


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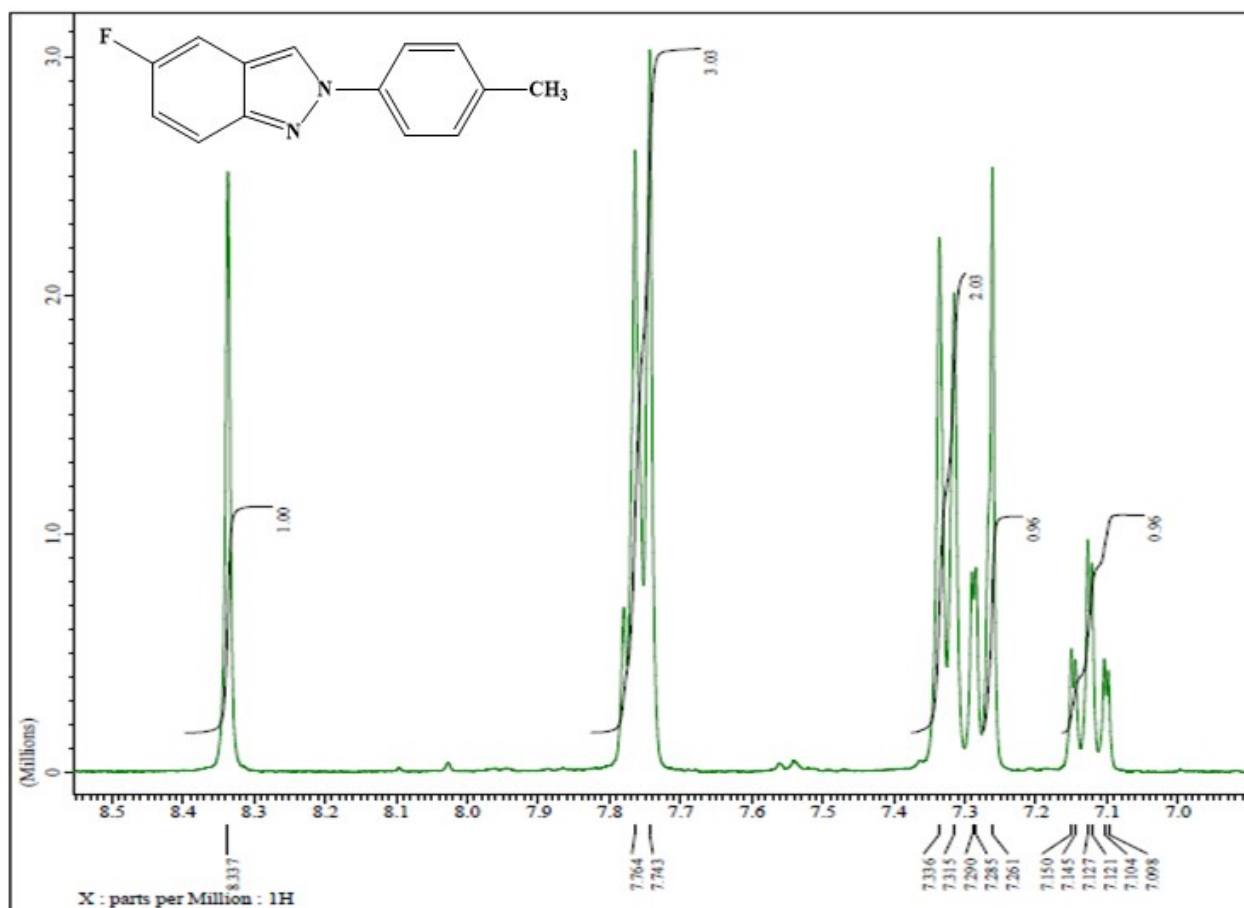
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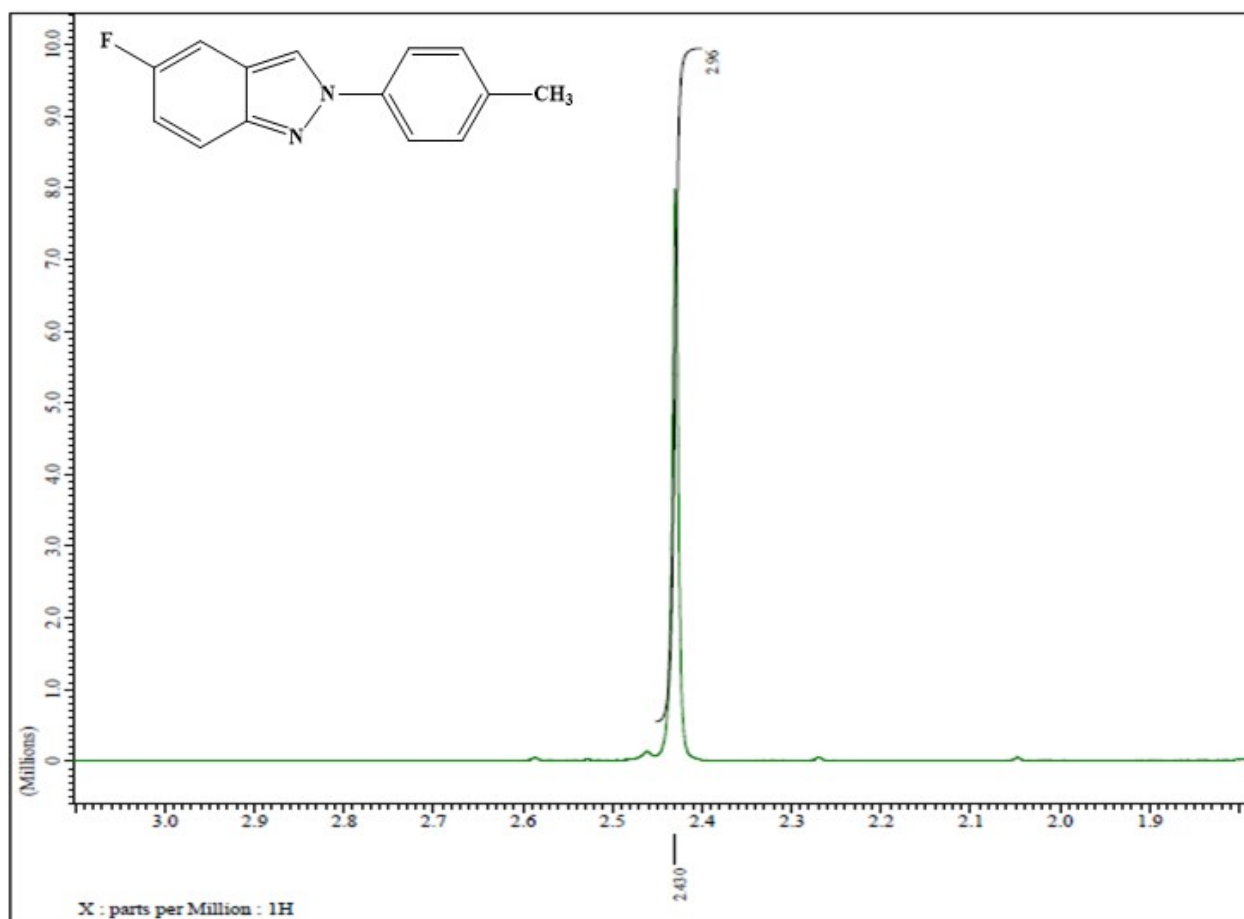
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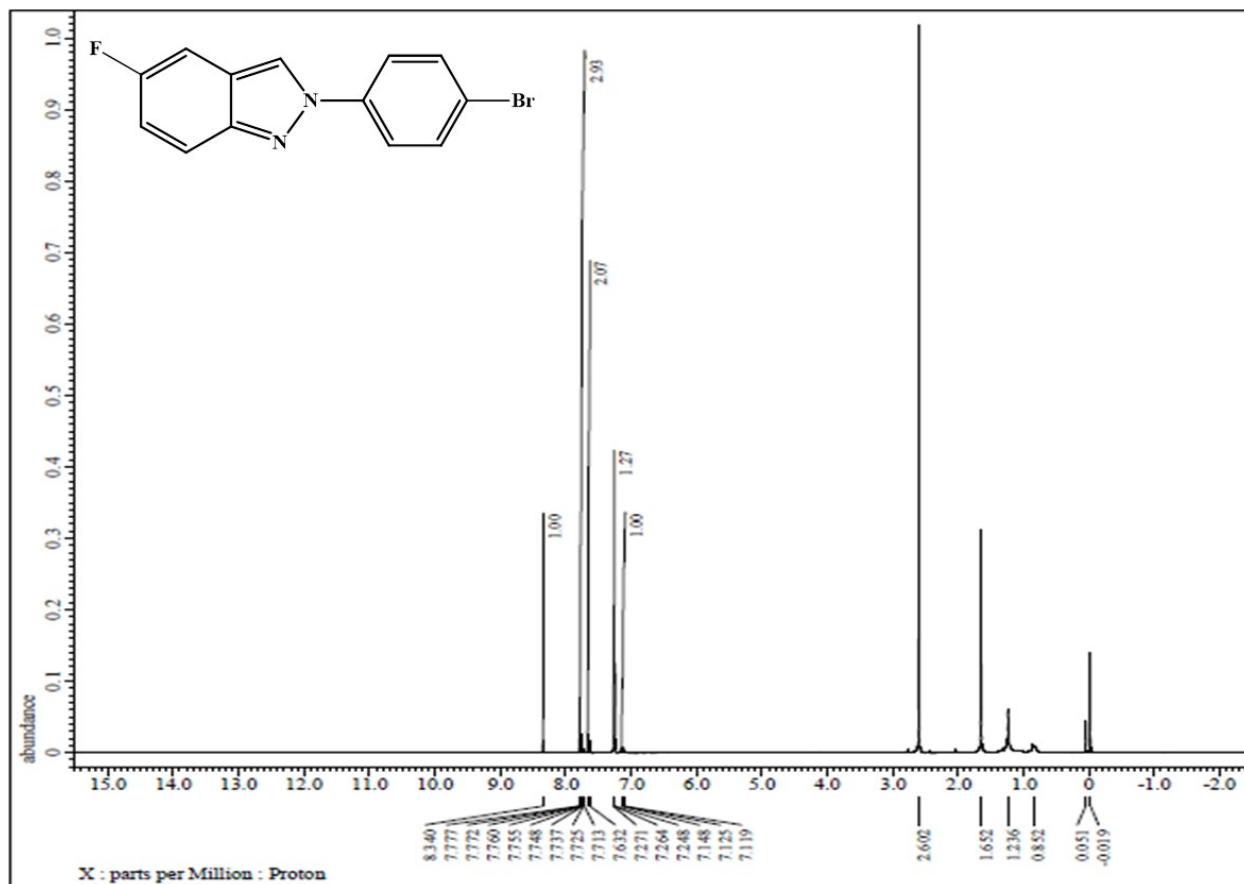
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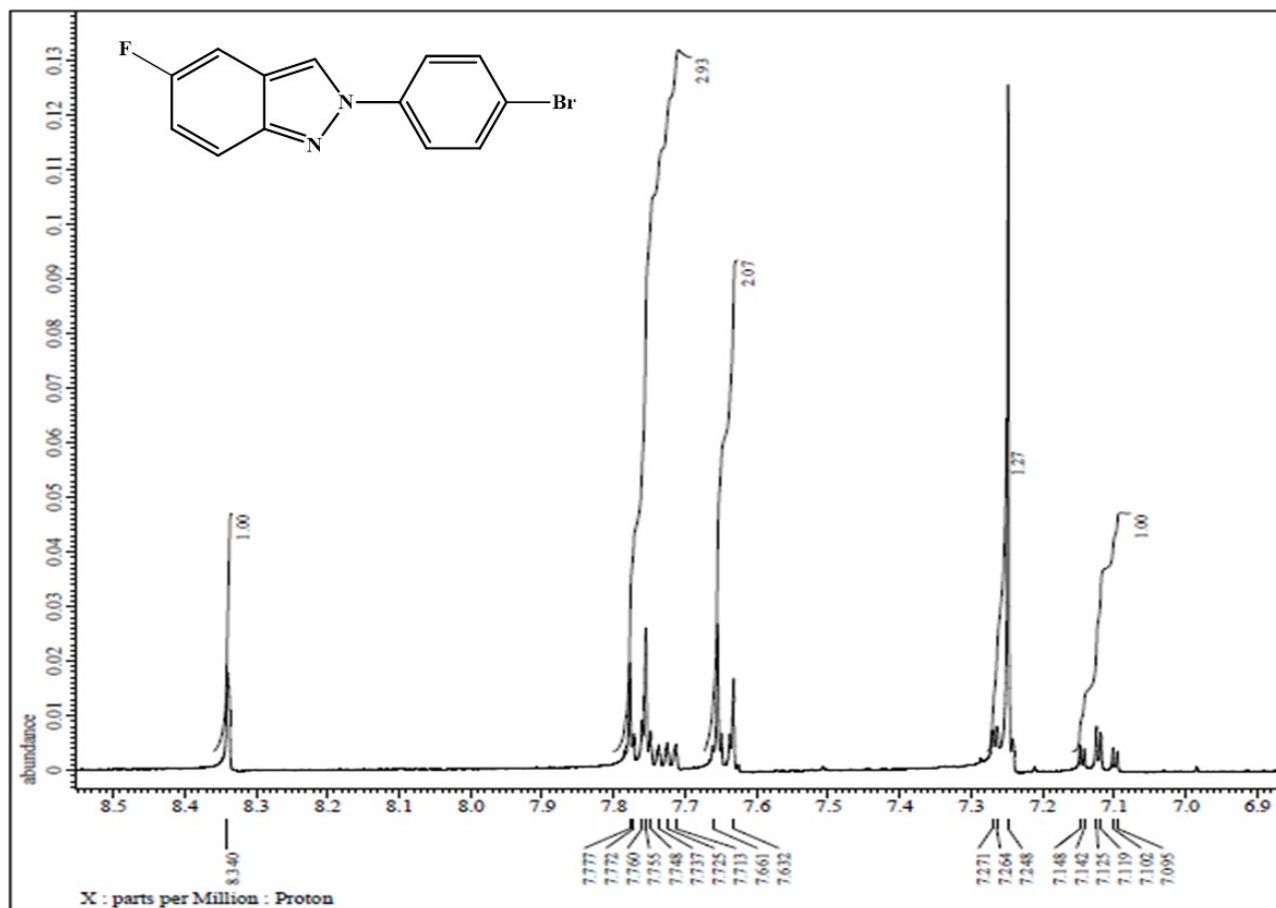


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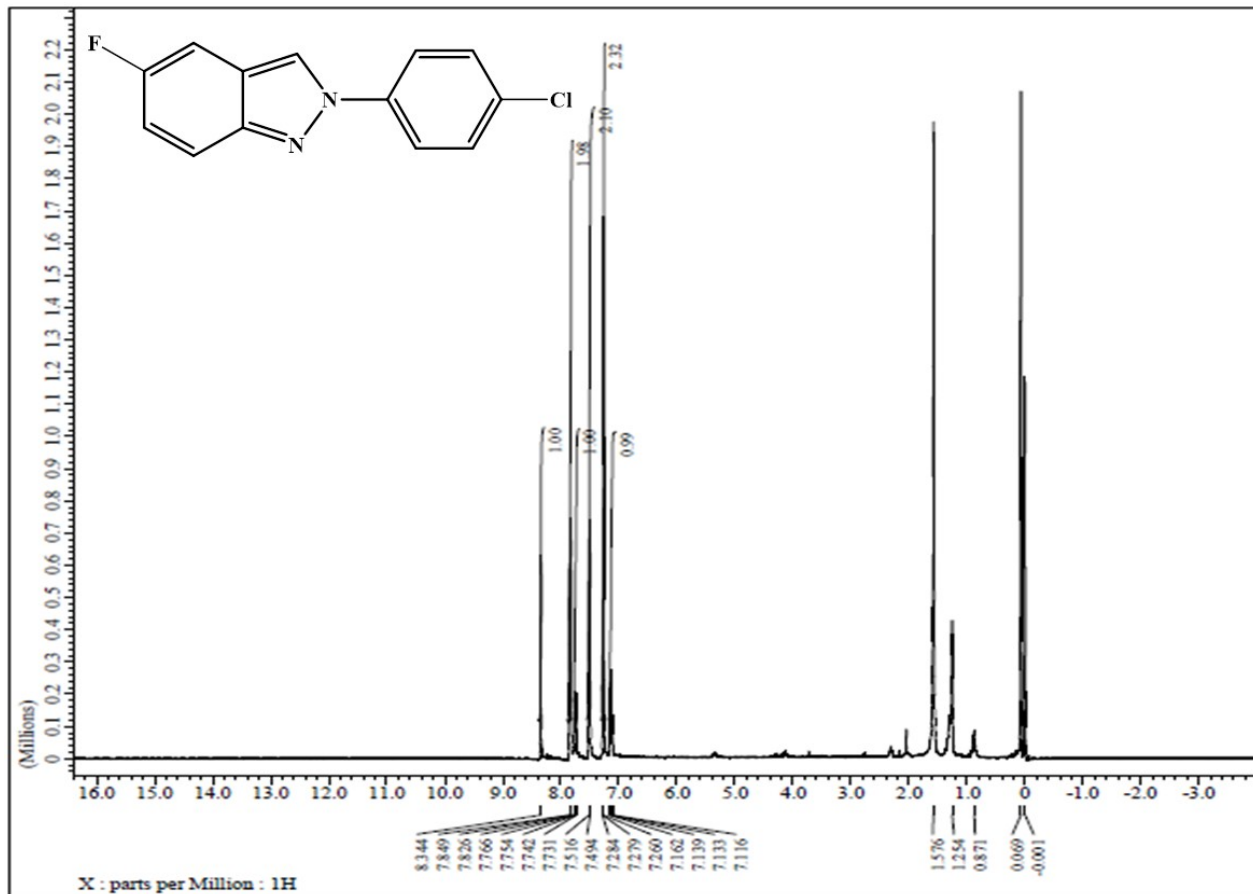


Entry 10 ^1H NMR spectrum of 2-(4-bromophenyl)-5-fluoro-2H-indazole (CDCl_3)

Expansion



Entry 11 ¹H NMR spectrum of 2-(4-chlorophenyl)-5-fluoro-2H-indazole (CDCl₃) Full



Entry 11 ¹H NMR spectrum of 2-(4-chlorophenyl)-5-fluoro-2H-indazole (CDCl₃) Expansion

