# Supporting Information

## Facile Synthesis of Rh Anchored Uniform Spherical COF for One-Pot Tandem Reductive Amination of Aldehydes to Secondary Imines

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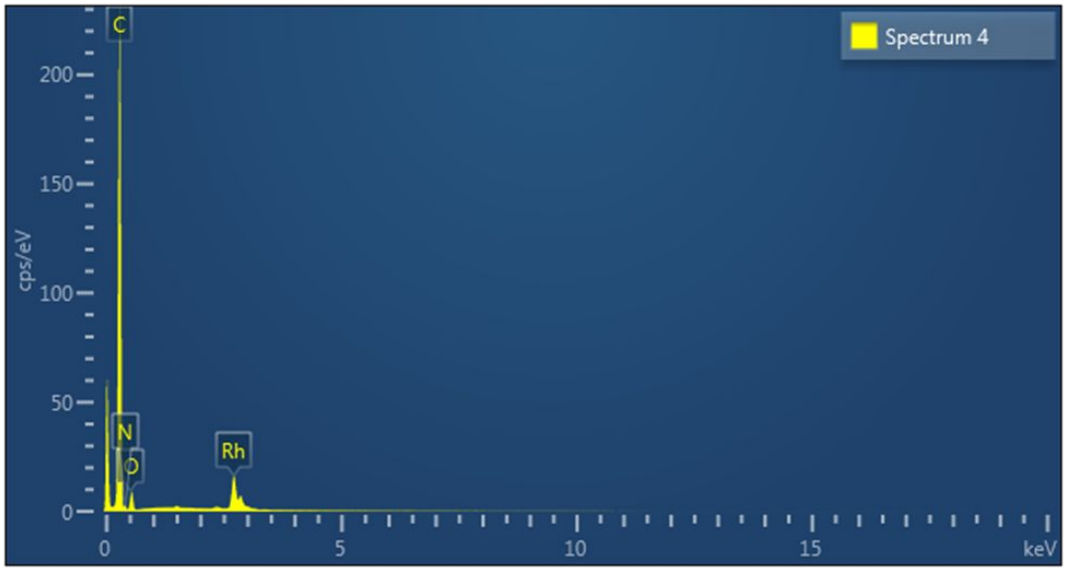


Figure S1. Elemental analysis of Rh/COF1

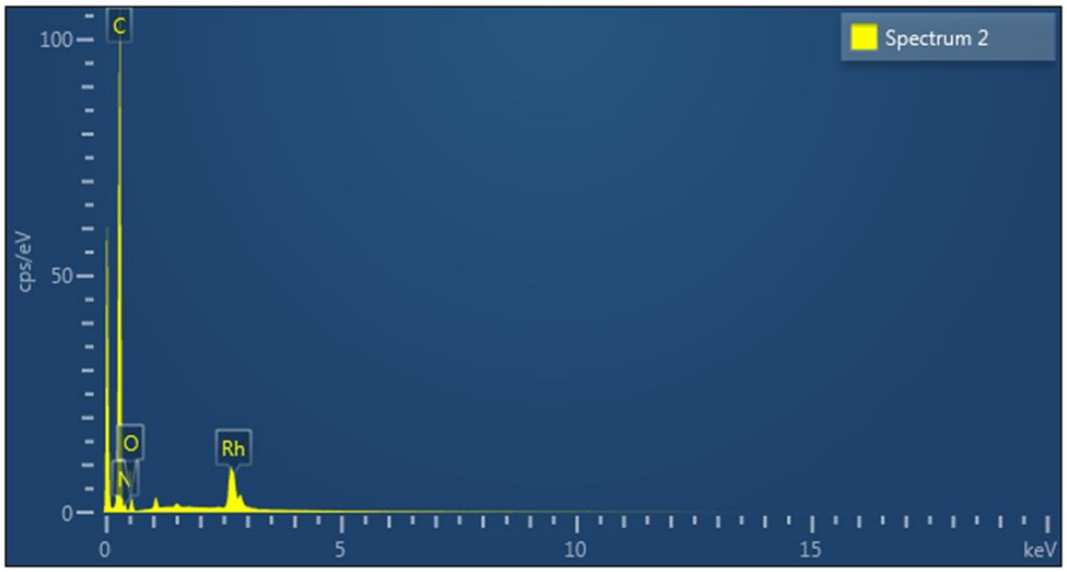


Figure S2. Elemental analysis of Rh/COF2

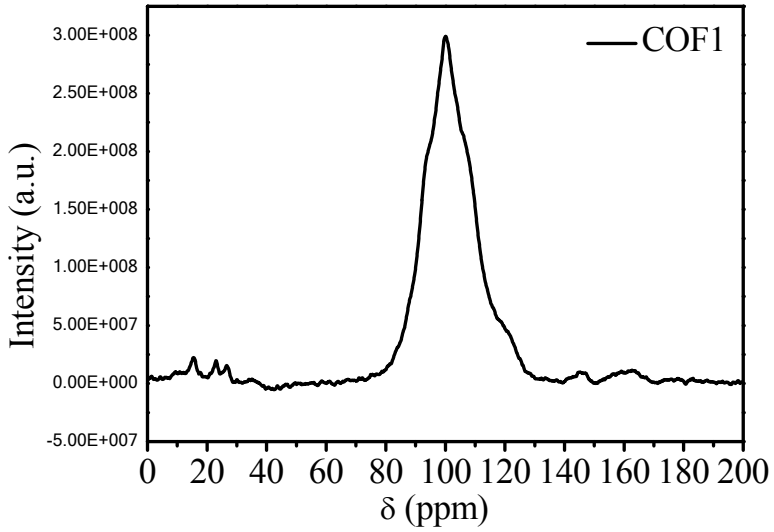


Figure S3. $^{3}$C CP-MAS solid state NMR spectrum of COF1

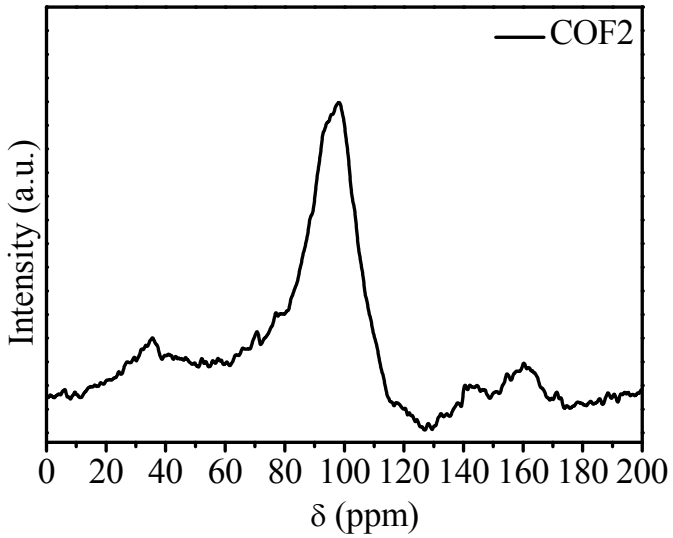


Figure S4. $^{13}$C CP-MAS solid state NMR spectrum of COF2

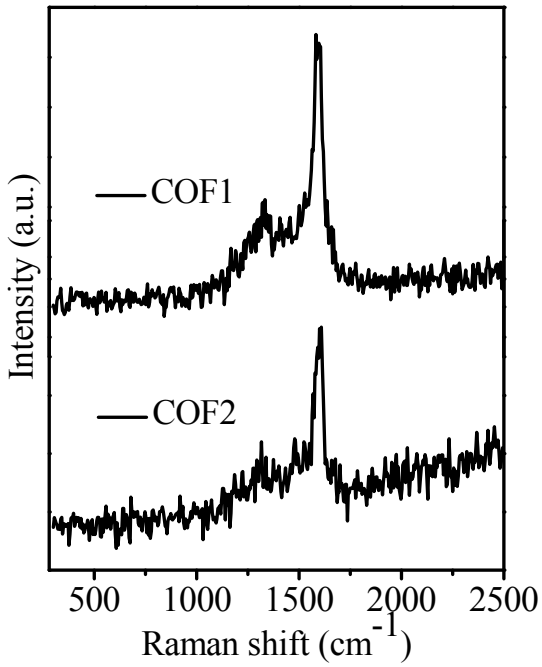


Figure S5. Raman spectra of the COF1 and COF2

Table S1.The element contents of the as-prepared catalysts determined by SEM-EDS spectrum.

| | C (wt%) | N (wt%) | O (wt%) | Rh (wt%) | Rh[a] (wt%) |
|---|---|---|---|---|---|
| Rh/COF1 | 79.52 | 4.48 | 10.18 | 5.82 | 4.07 |
| Rh/COF2 | 79.06 | 9.76 | 7.85 | 3.31 | 3.27 |

[a] determined by ICP-OES

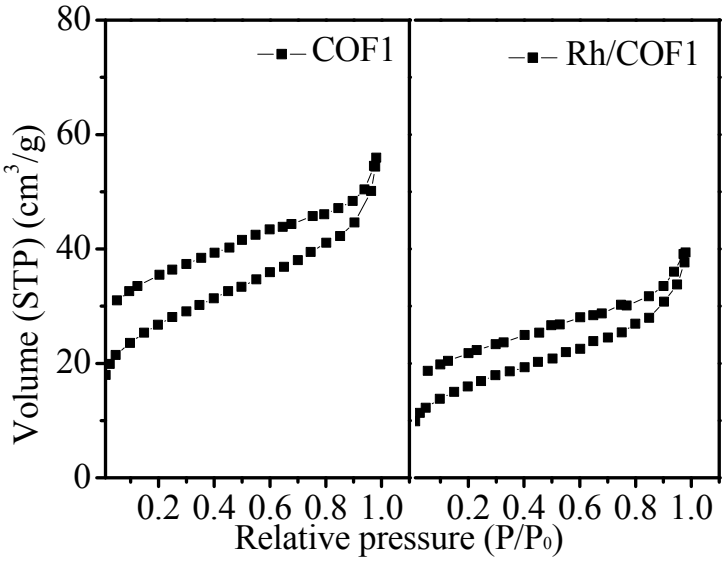


Figure S6. Nitrogen adsorption-desorption isotherms of COF1 and Rh/COF1.

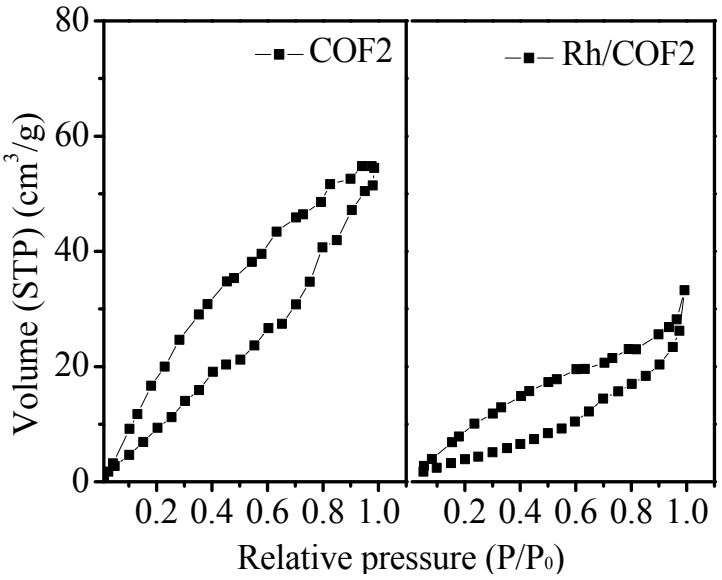


Figure S7. Nitrogen adsorption-desorption isotherms of COF2 and Rh/COF2.

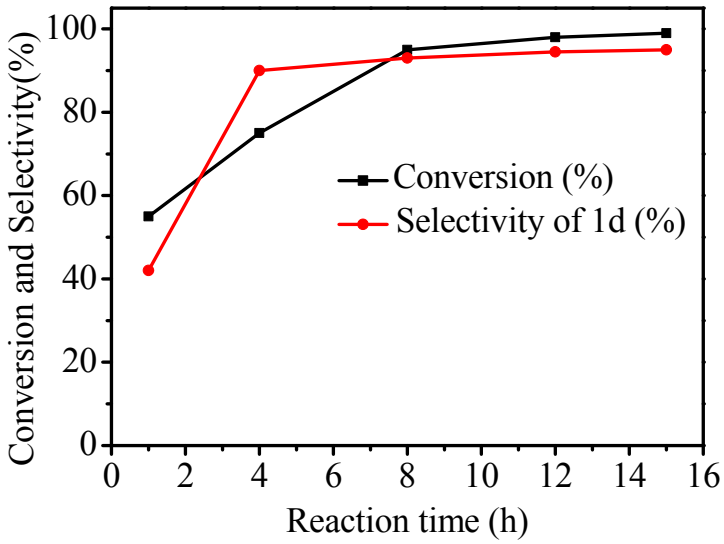


Figure S8. The catalytic performances as a function of reaction in one-pot tandem reductive amination of benzaldehyde to secondary imines over Rh/COF2 catalyst.(reaction condition, 5mg Rh/COF2, 20bar $H_2$, 90°C)

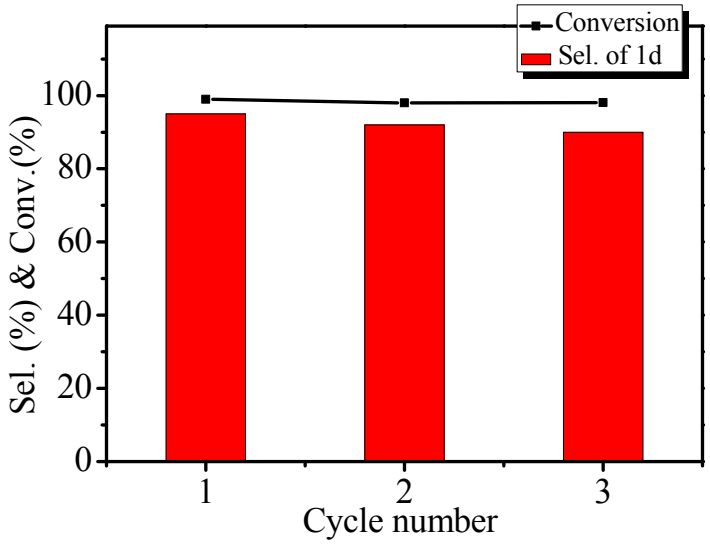


Figure S9. Durability test for one-pot tandem reductive amination of benzaldehyde to secondary imines over Rh/COF2 catalyst.

Table S2. Specific surface area, pore volume, pore diameter and yield of COF and Rh/COF.

| catalyst | Pore size(nm) | Surface area($m^2$/g) | Total volume (cc/g) |
|---|---|---|---|
| COF1 | 3.65 | 97.75 | $8.652*10^{-2}$ |
| Rh/COF1 | 4.37 | 55.7 | $6.09*10^{-2}$ |
| COF2 | 8.75 | 38.51 | $8.427*10^{-2}$ |

| | | | |
|---|---|---|---|
| Rh/COF2 | 9.08 | 22.63 | $5.139*10^{-2}$ |

Table S3. Comparison with other reported catalysts in the synthesis of secondary imines.

| catalyst | Yield (%) | Ref |
|---|---|---|
| $[Ir(COE)_2Cl]_2$ | 99 | [11] |
| Au-Pd/$TiO_2$ | 87 | [12] |
| (iPrPNP)Fe(H)Br(CO) | 96 | [13] |
| Rh/COF2 | 94% | This work |

## 1H NMR spectra

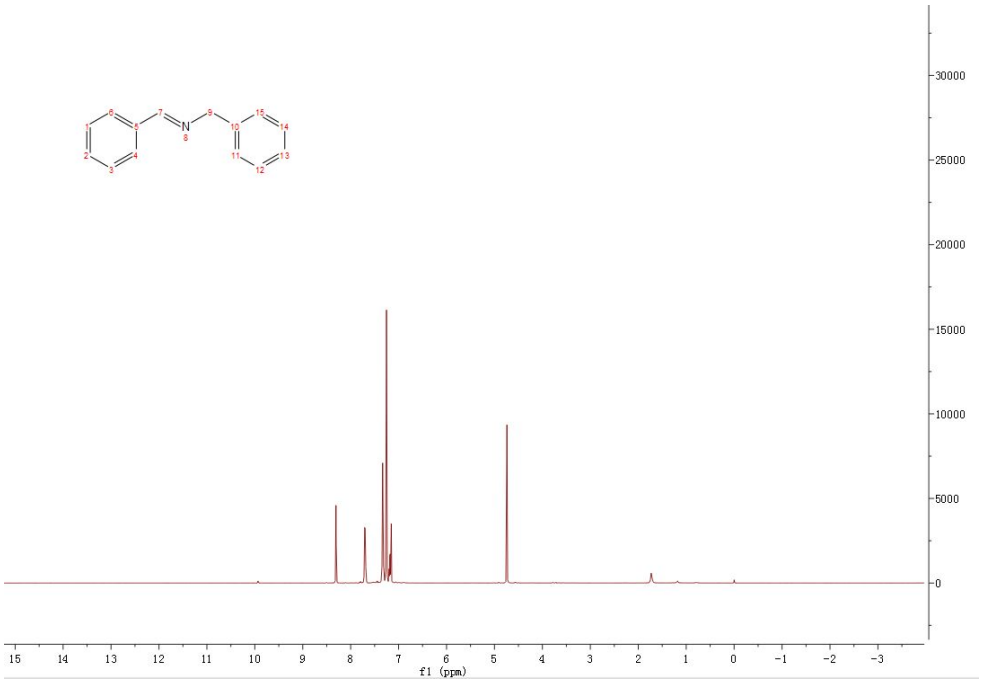


Figure S10. H NMR spectras of benzenemethanamine

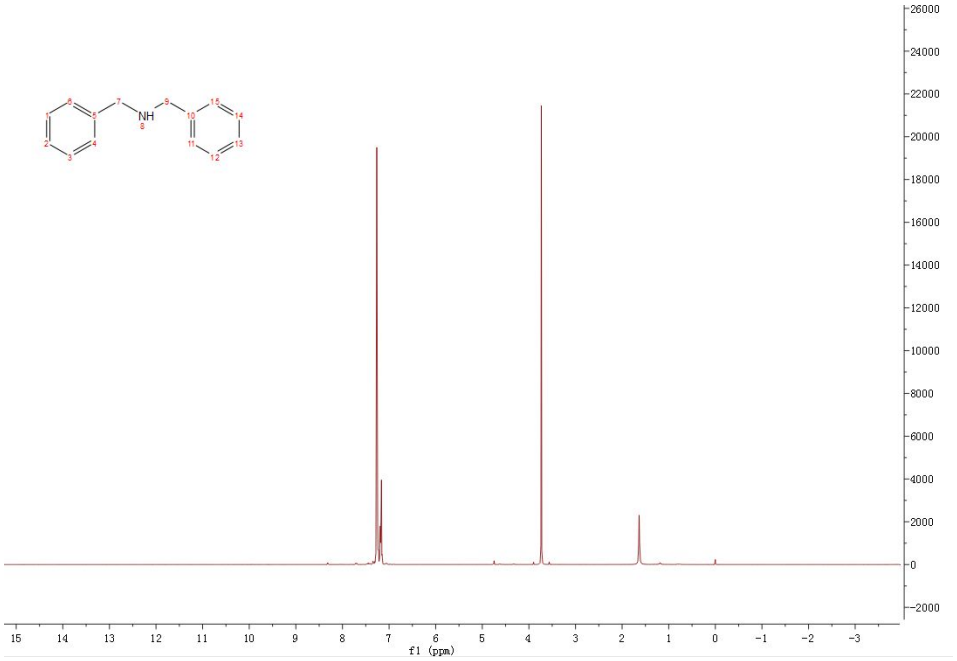


Figure S11. H NMR spectras of dibenzylamine

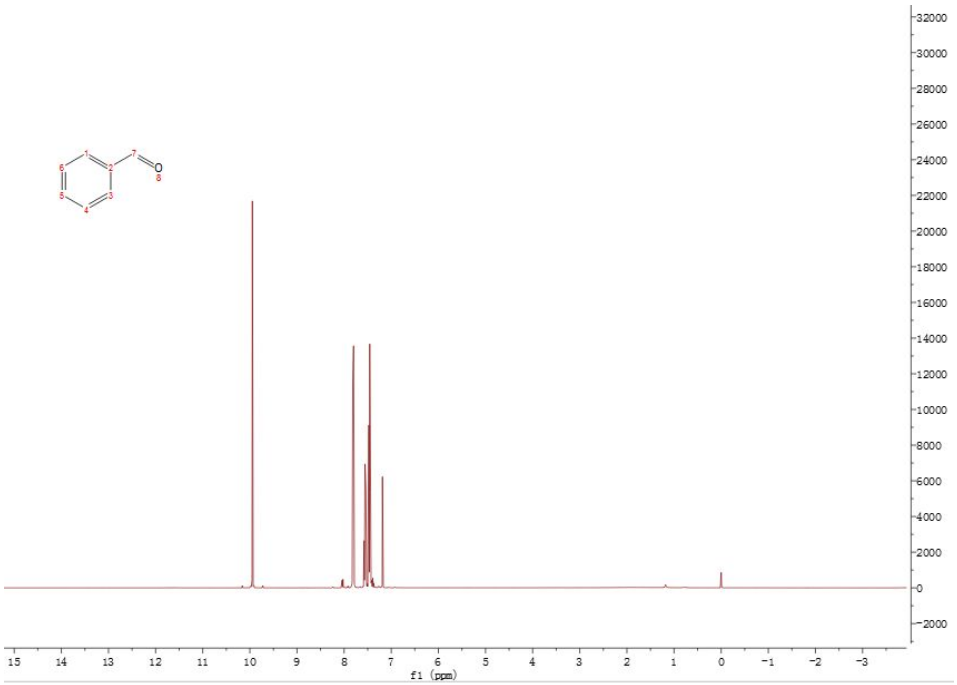


Figure S12. H NMR spectras of benzaldehyde

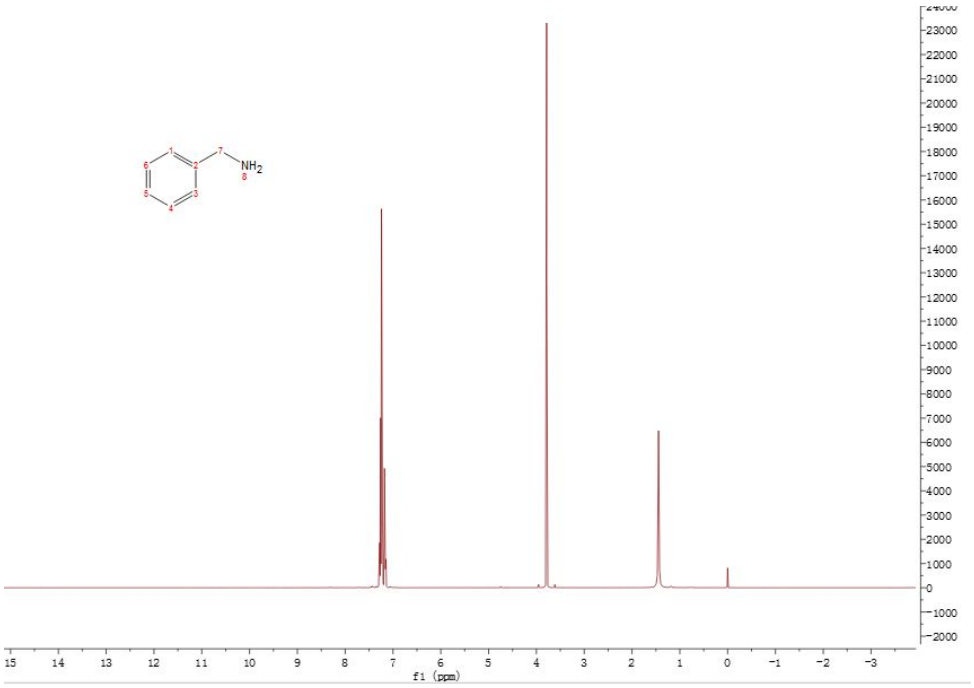


Figure S13. H NMR spectras of benzylamine

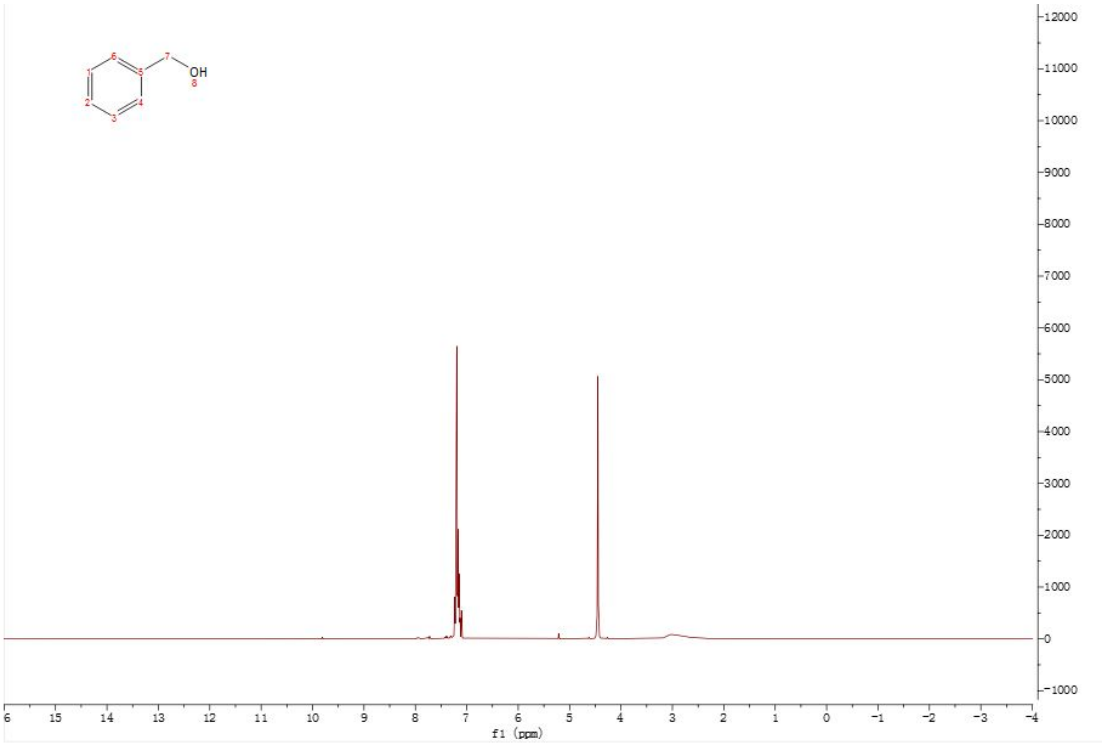


Figure S14. H NMR spectras of phenethyl alcohol

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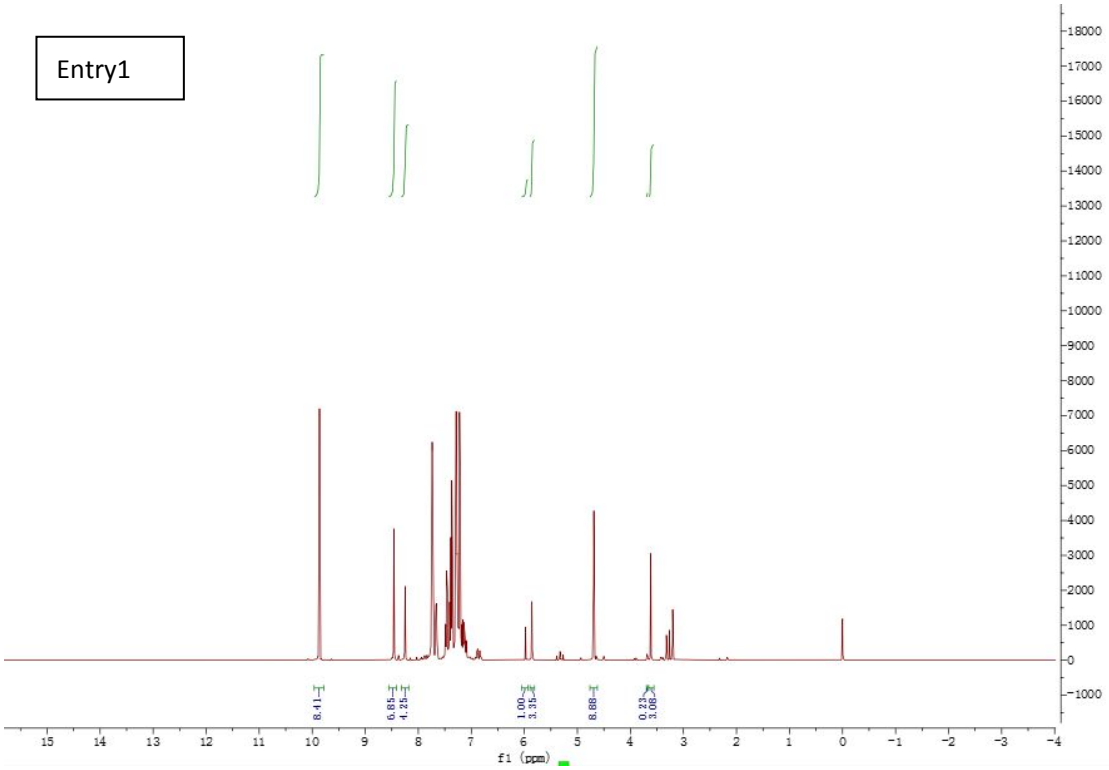


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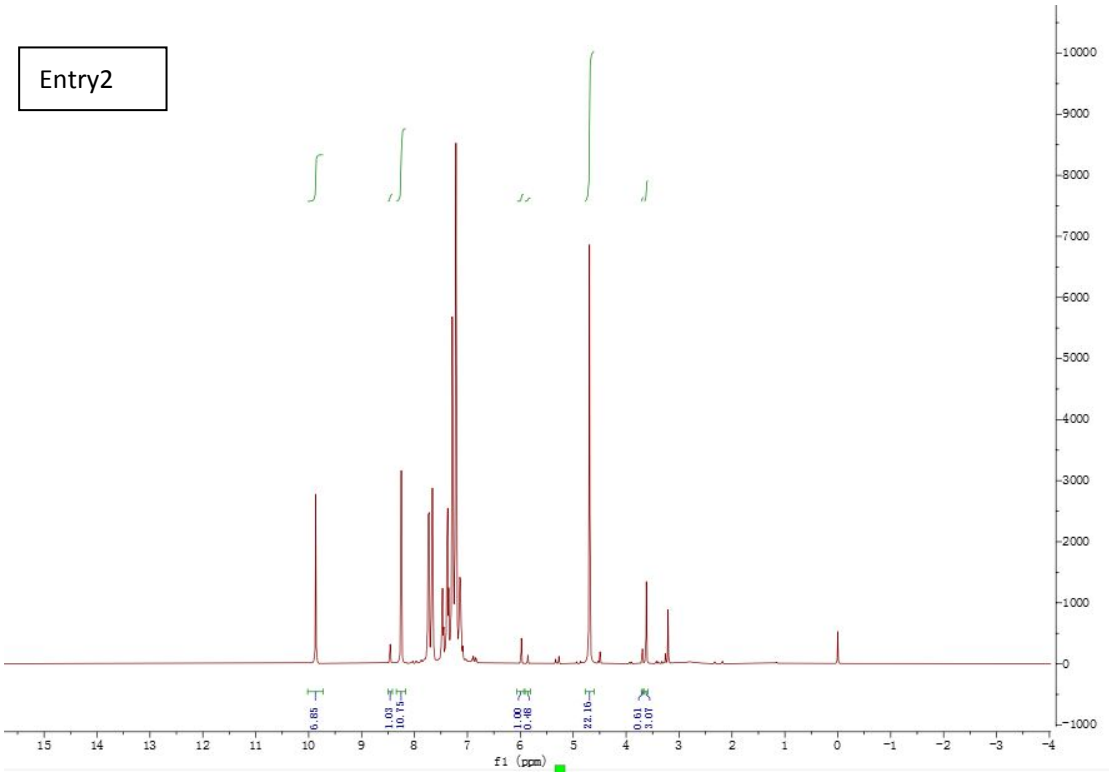

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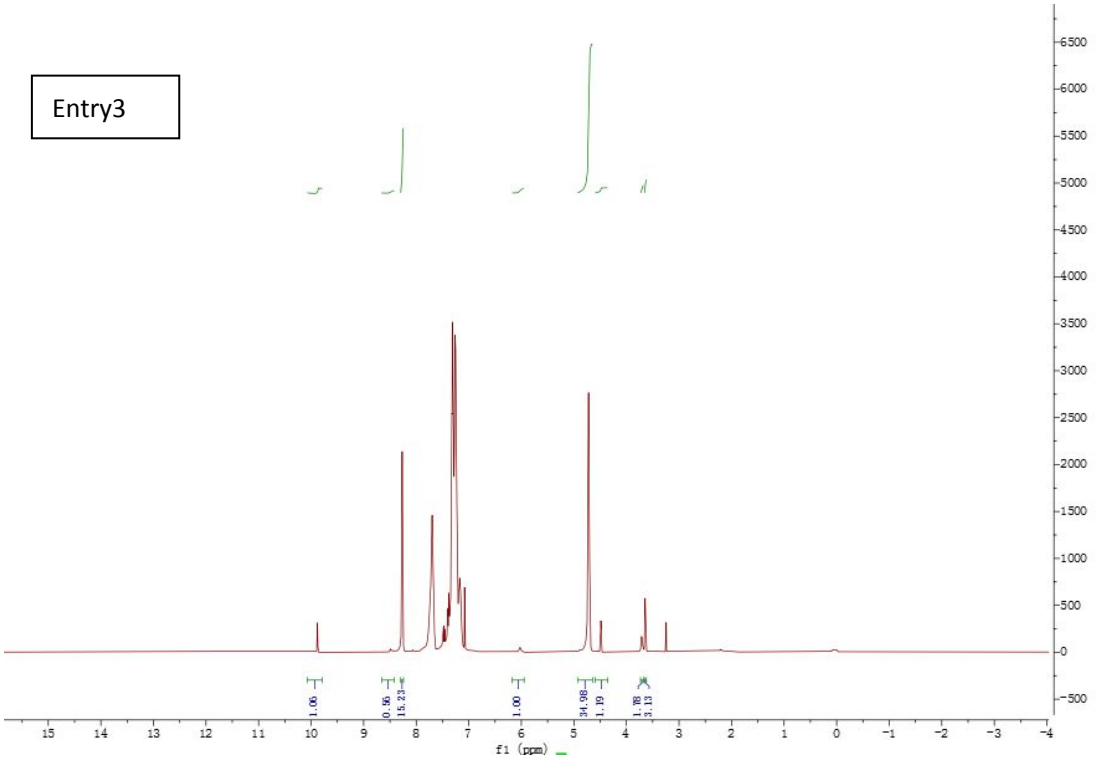


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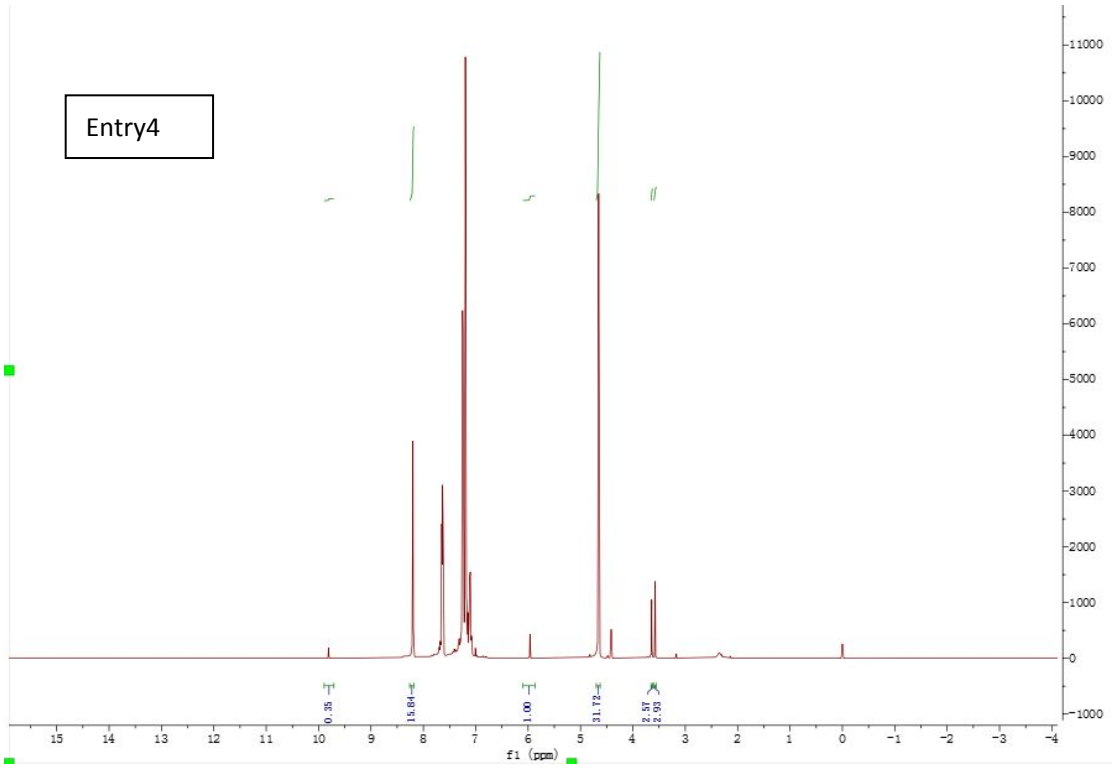

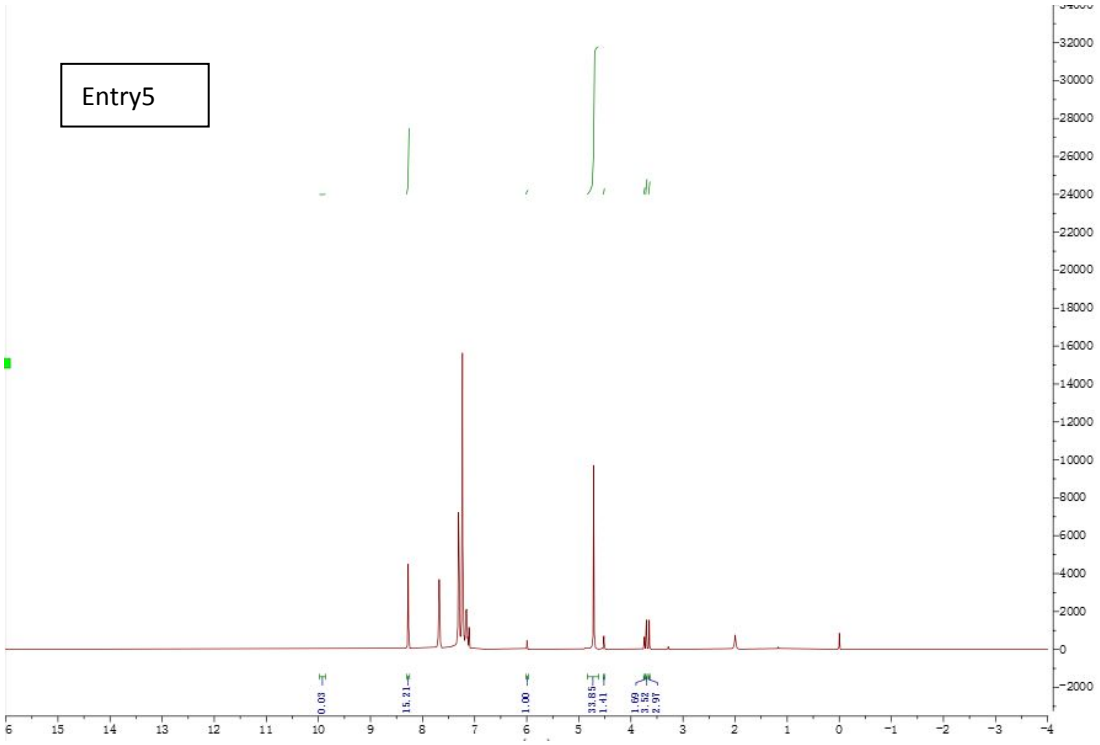
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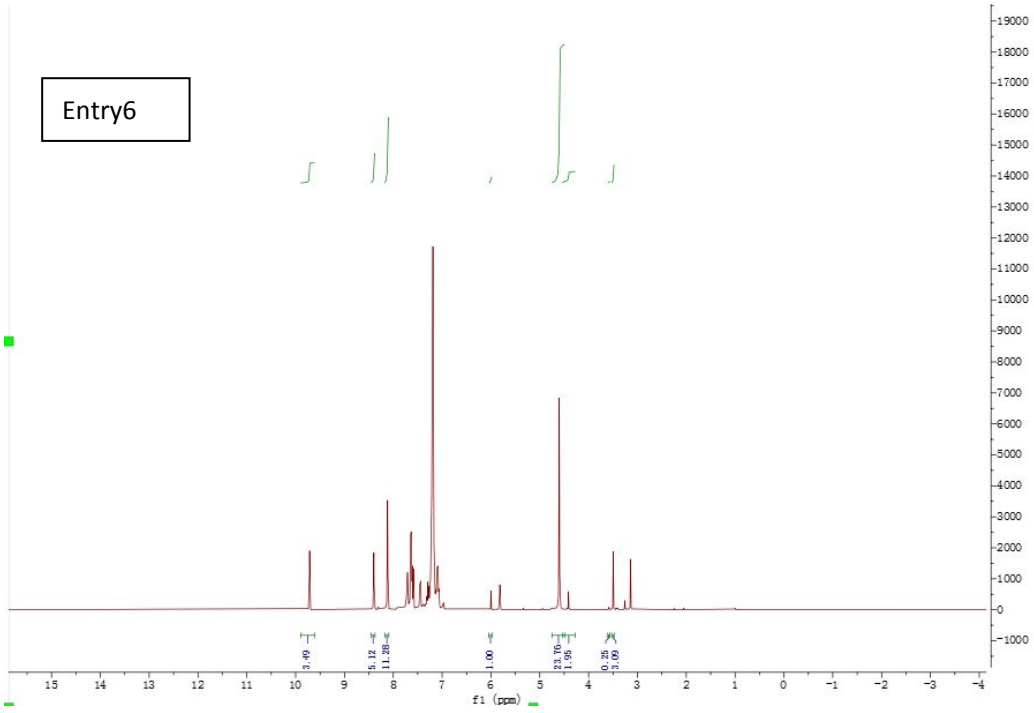
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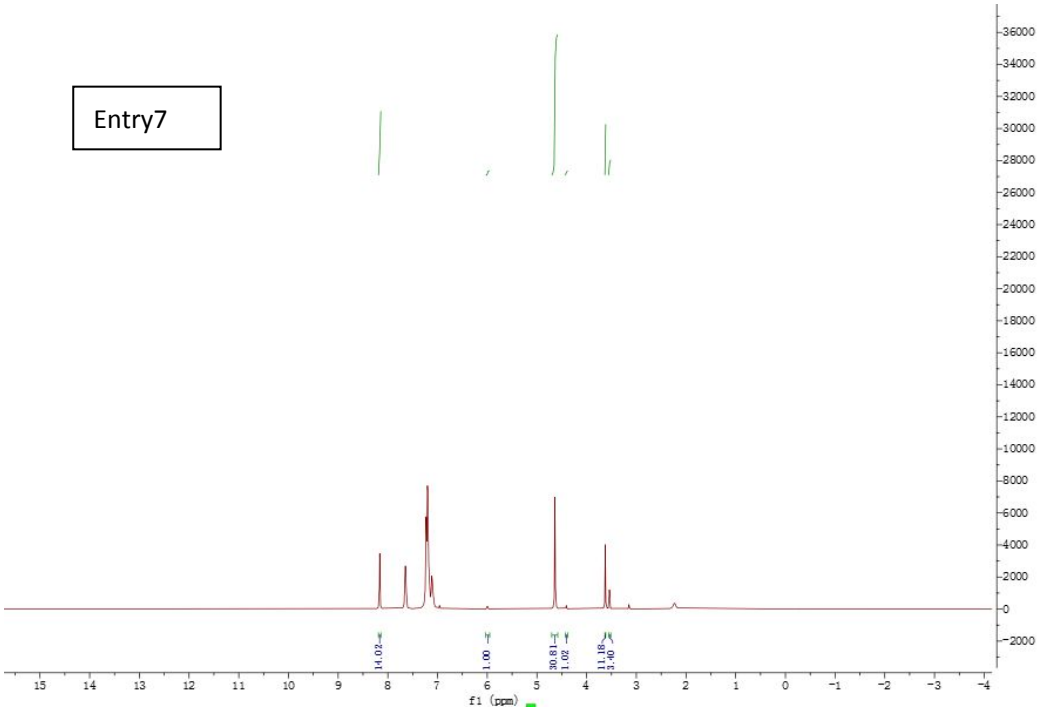


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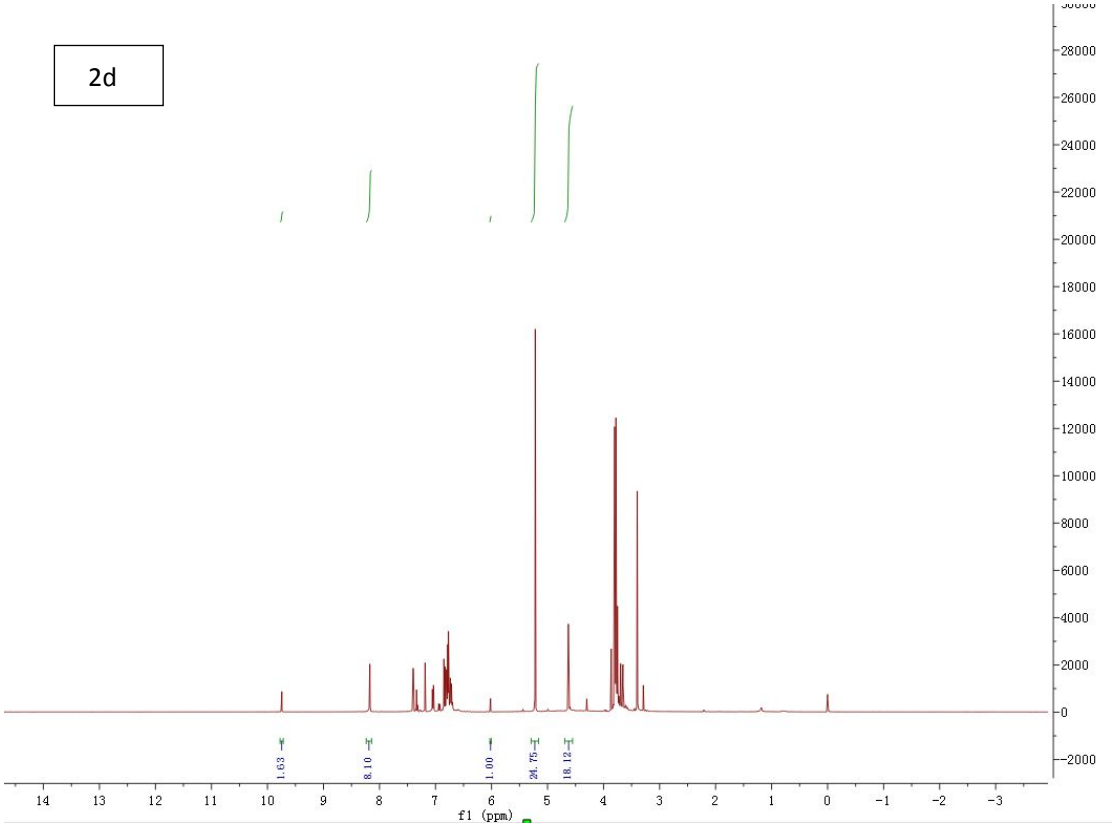

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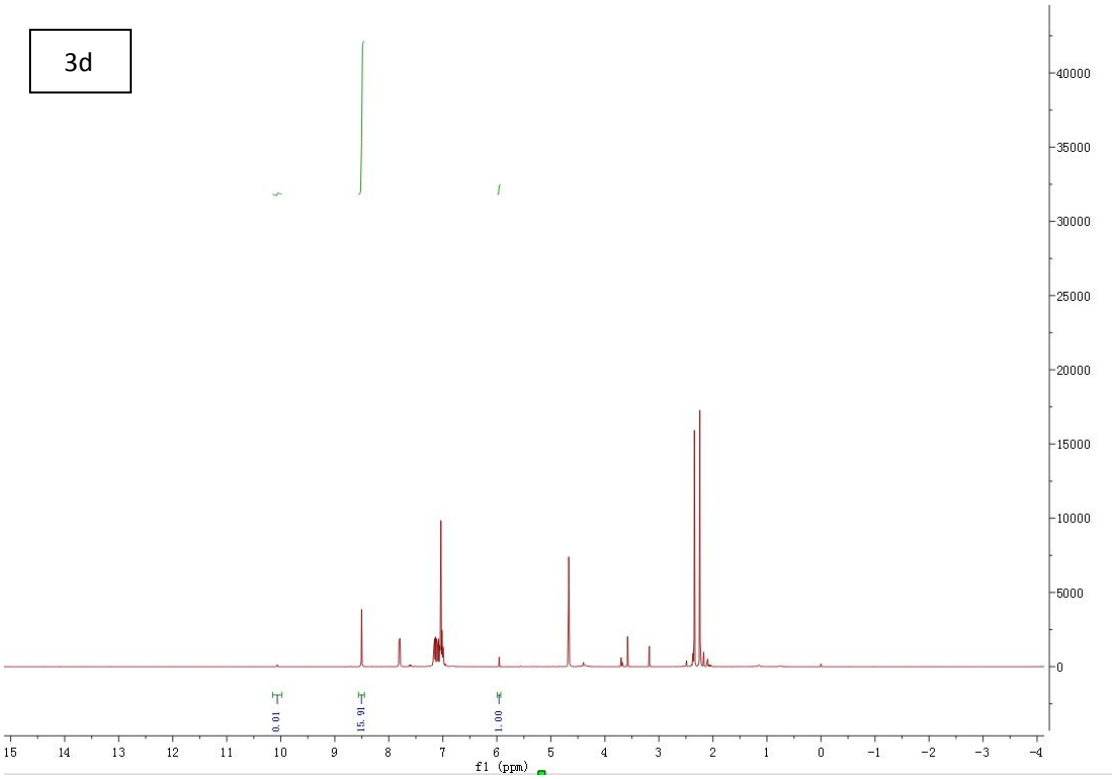
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f1 (ppm)

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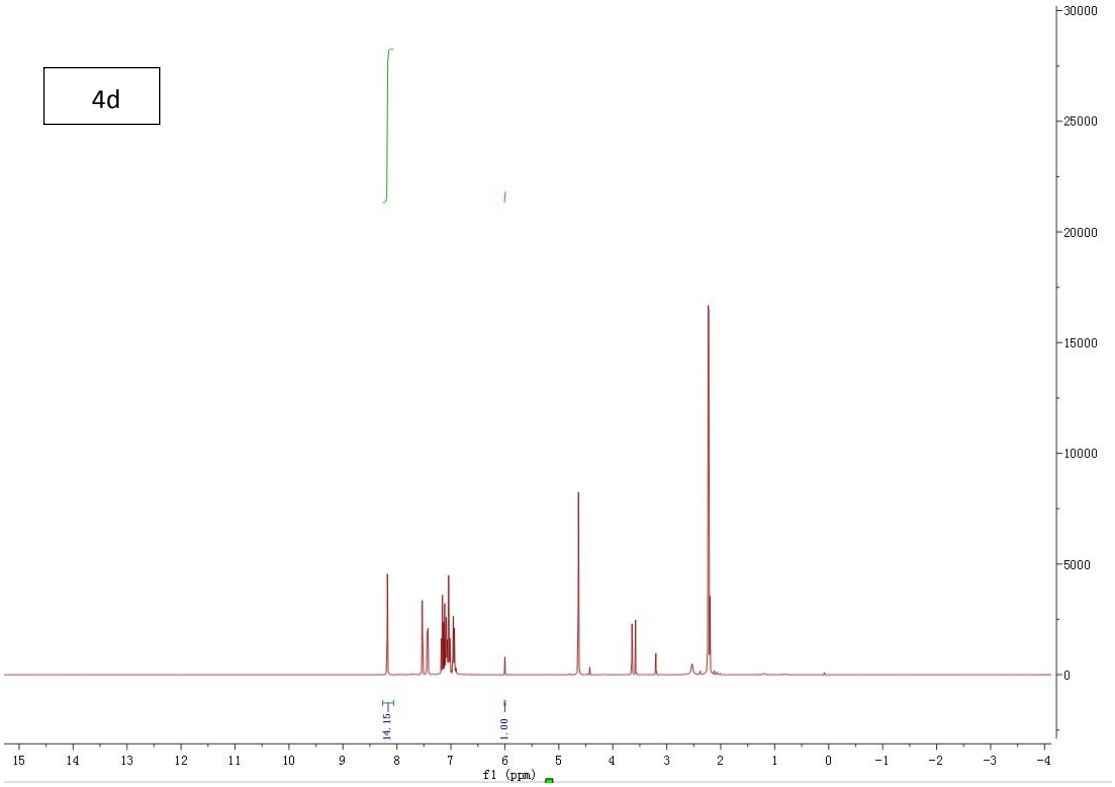
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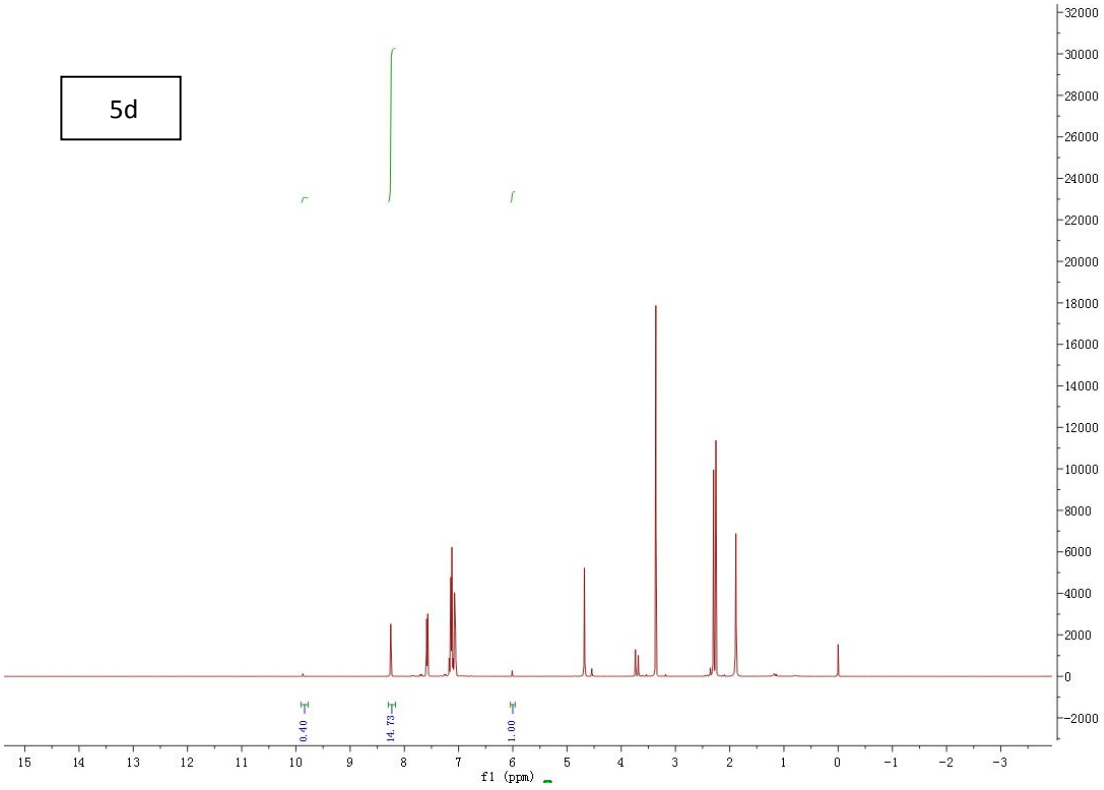


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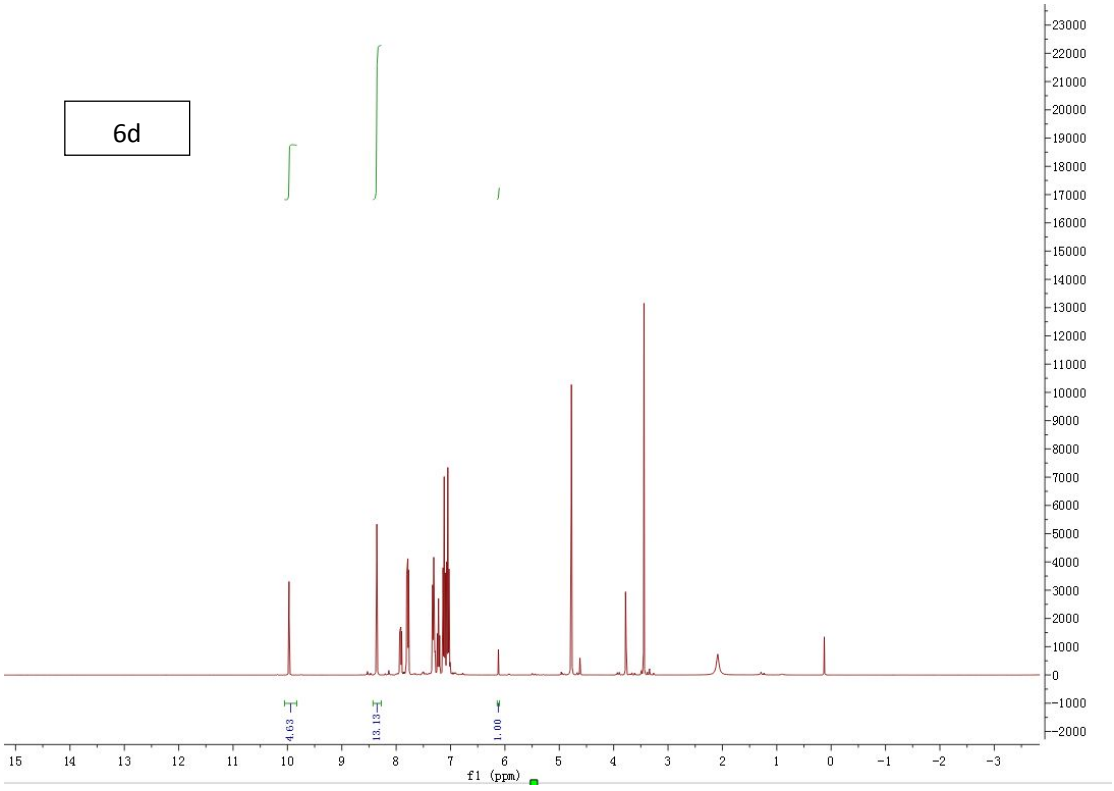

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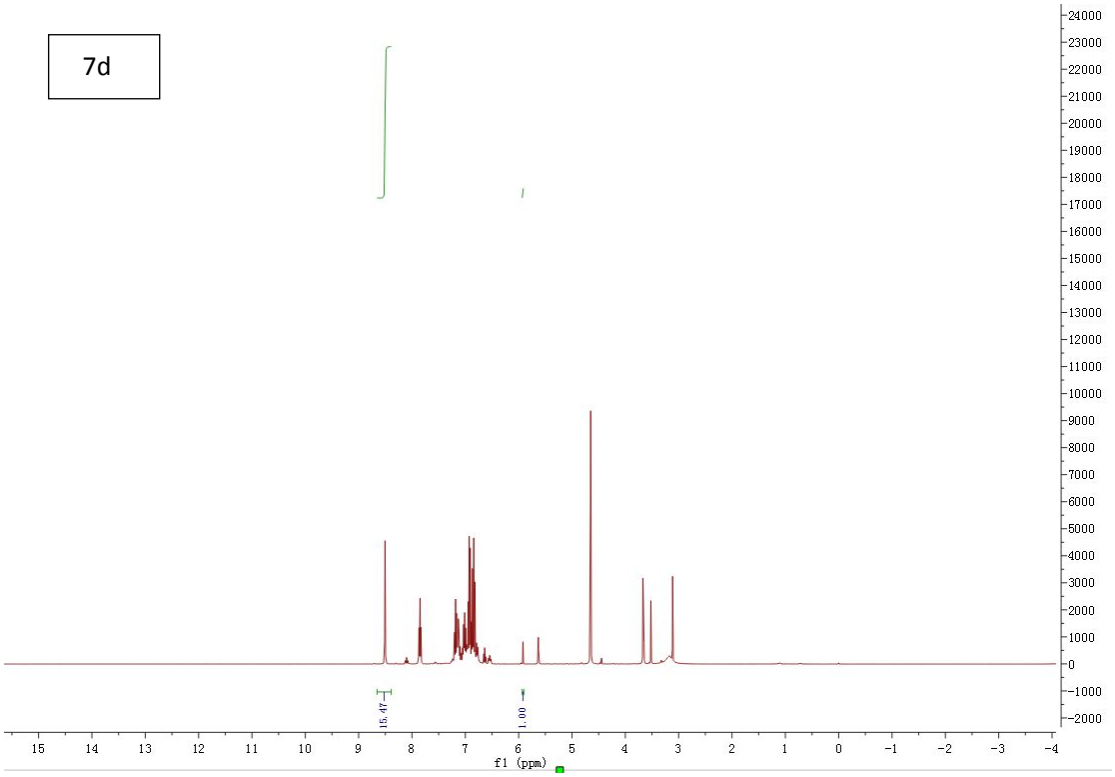


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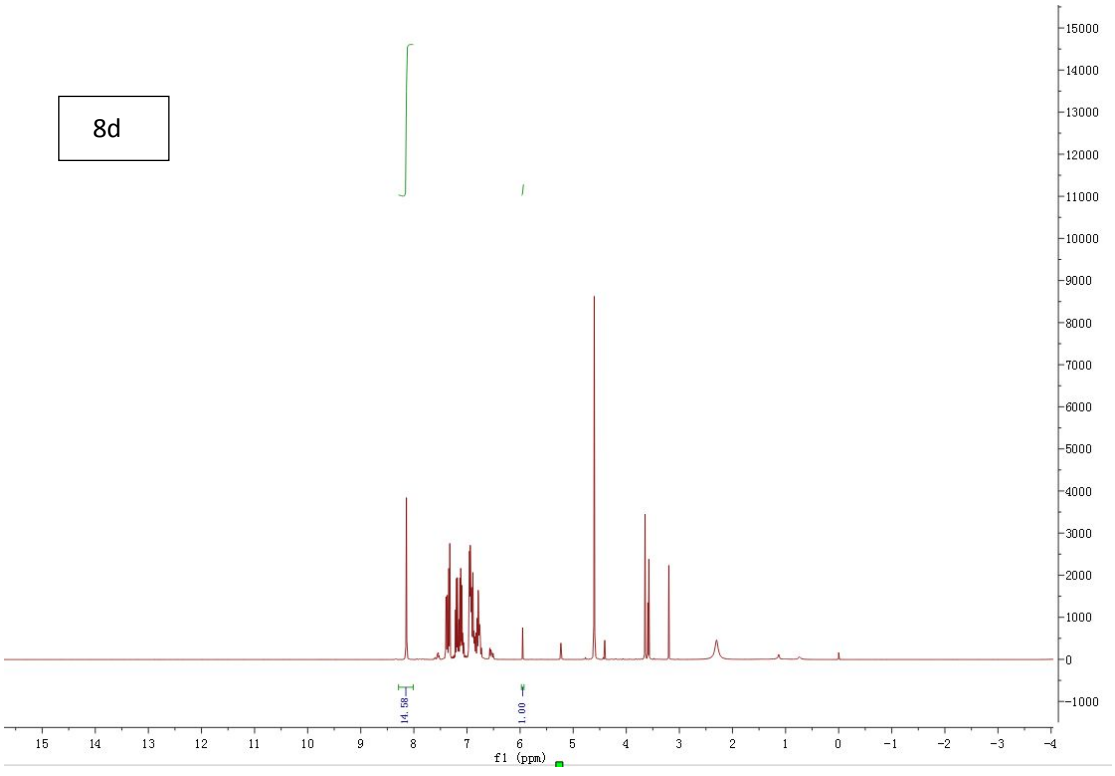

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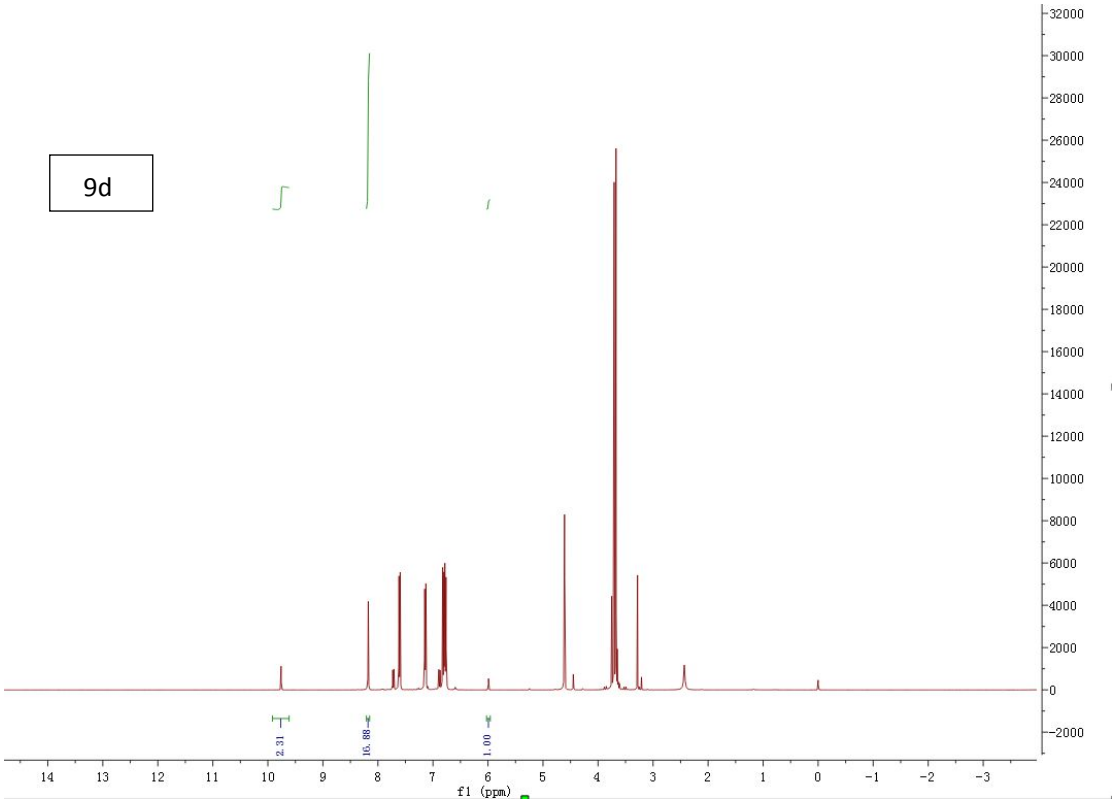


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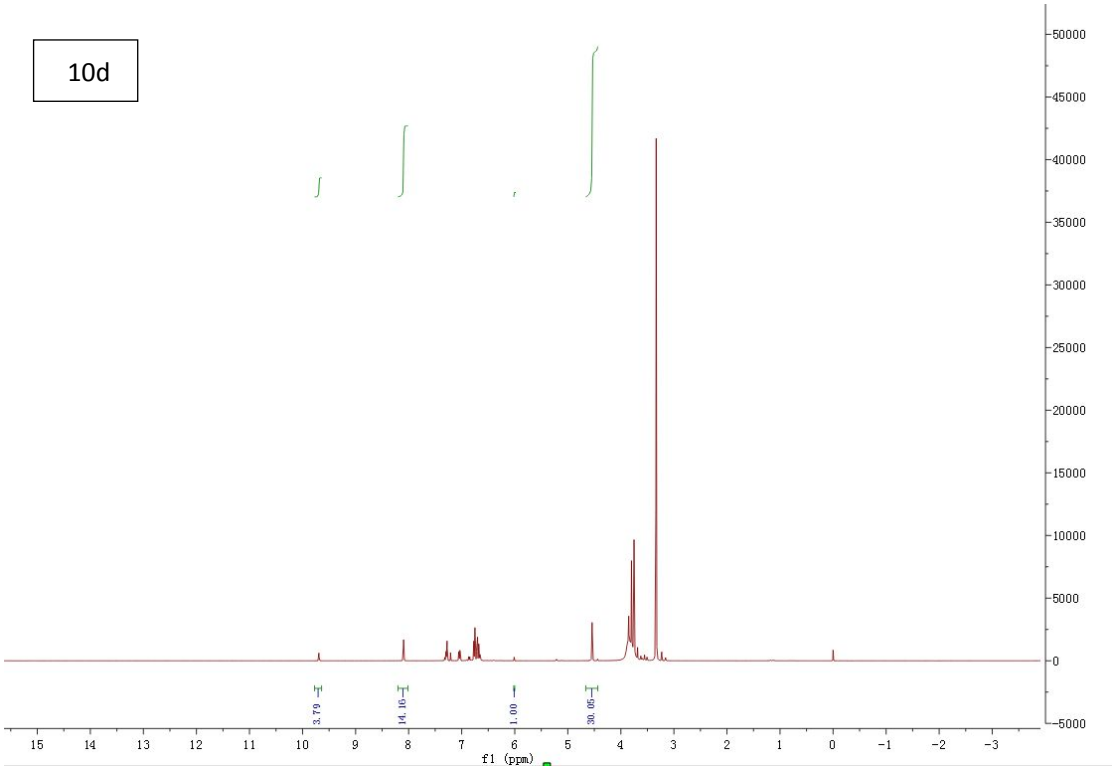

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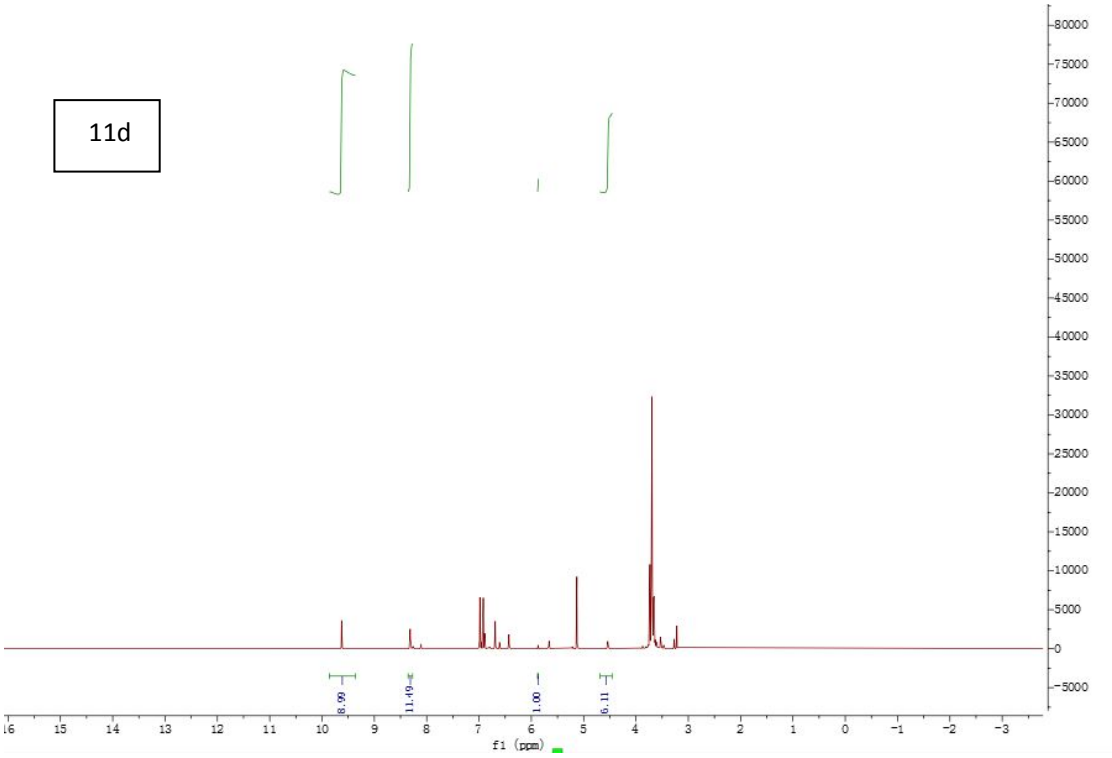


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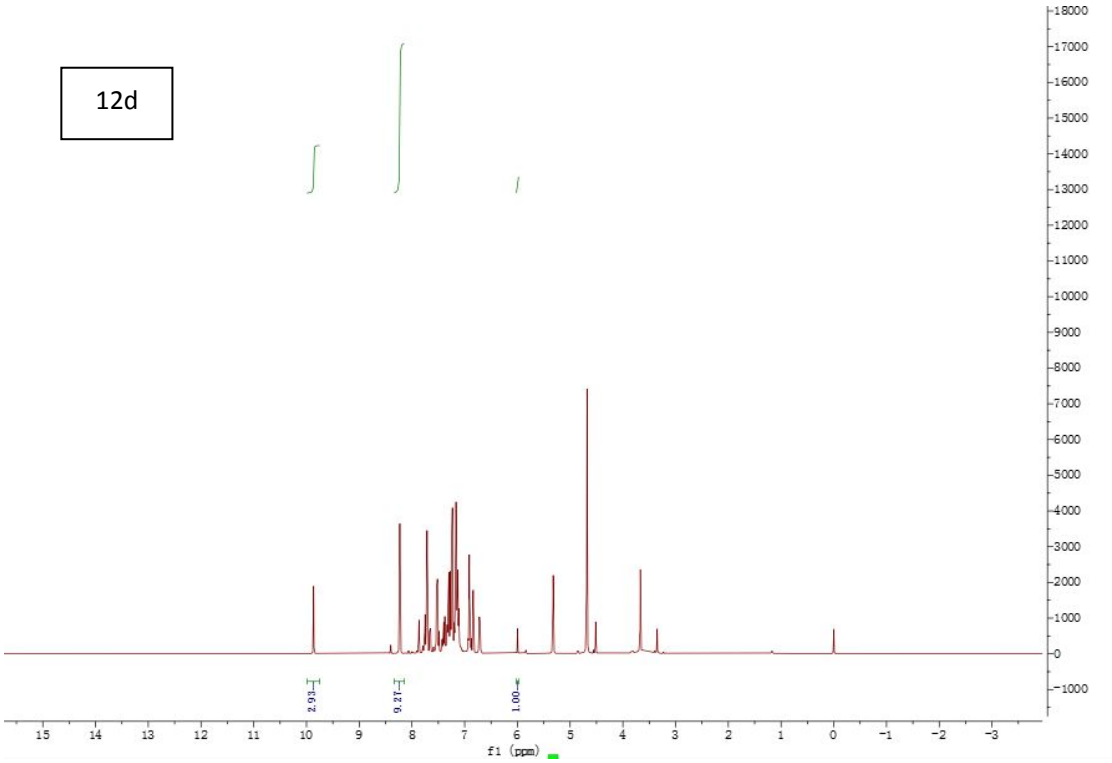

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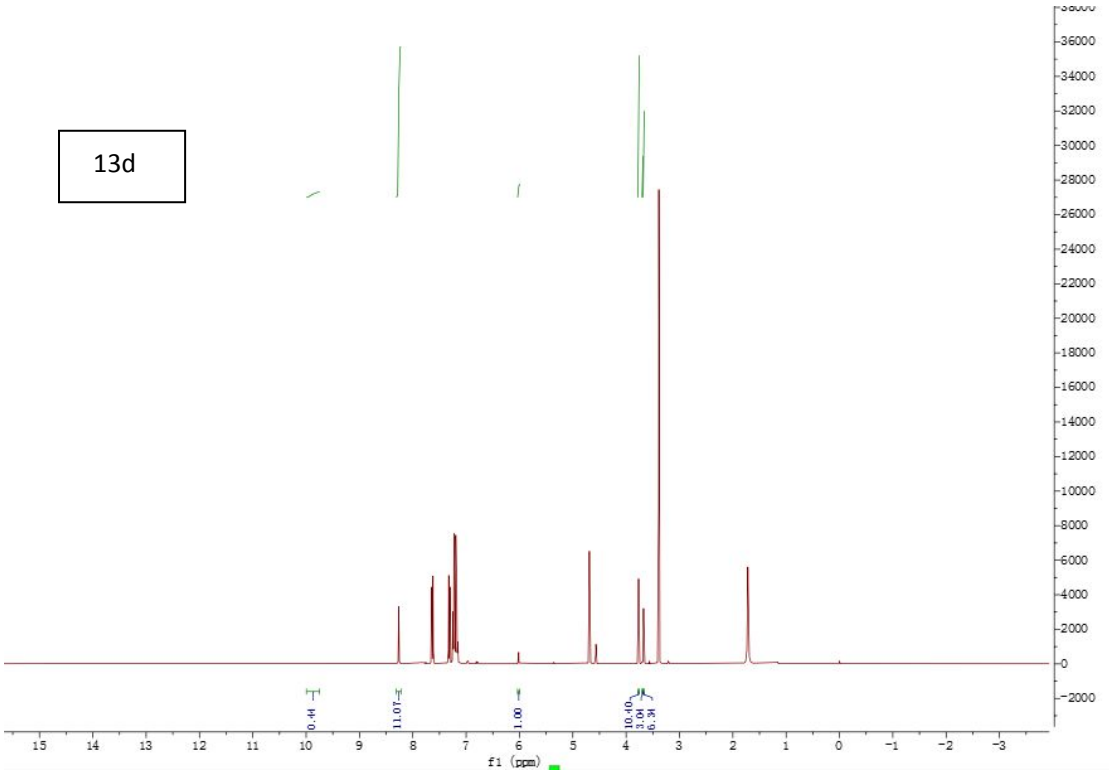


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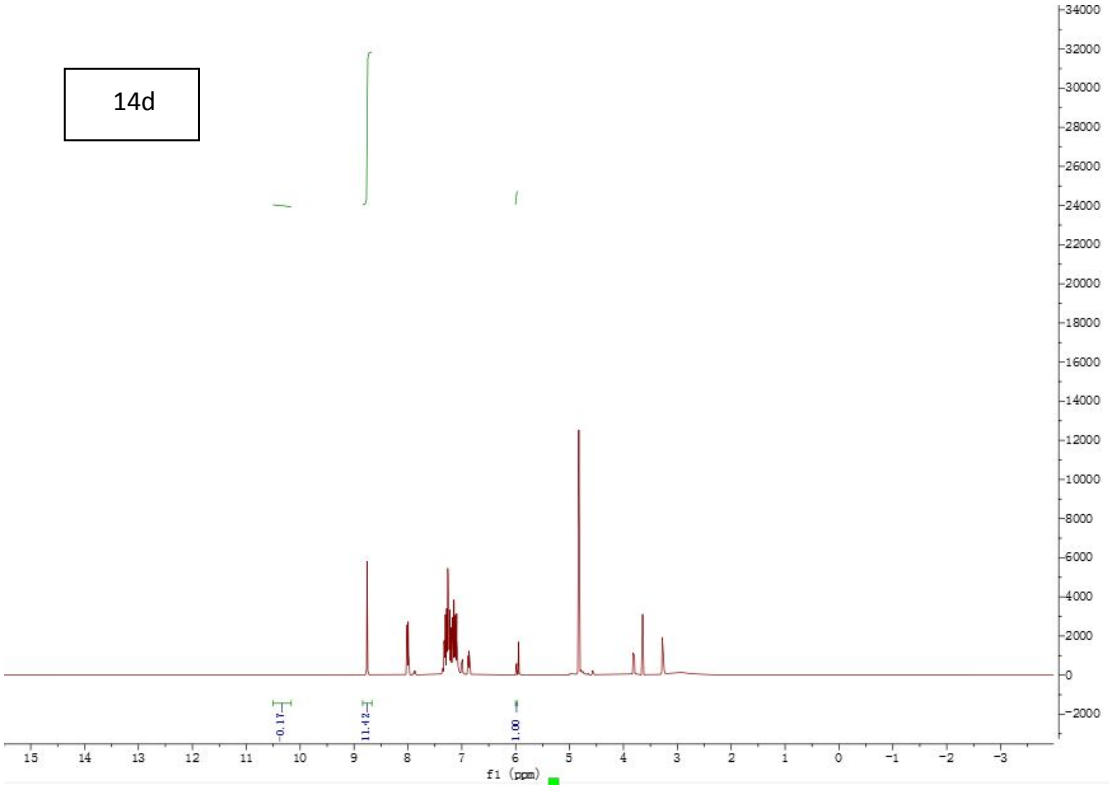

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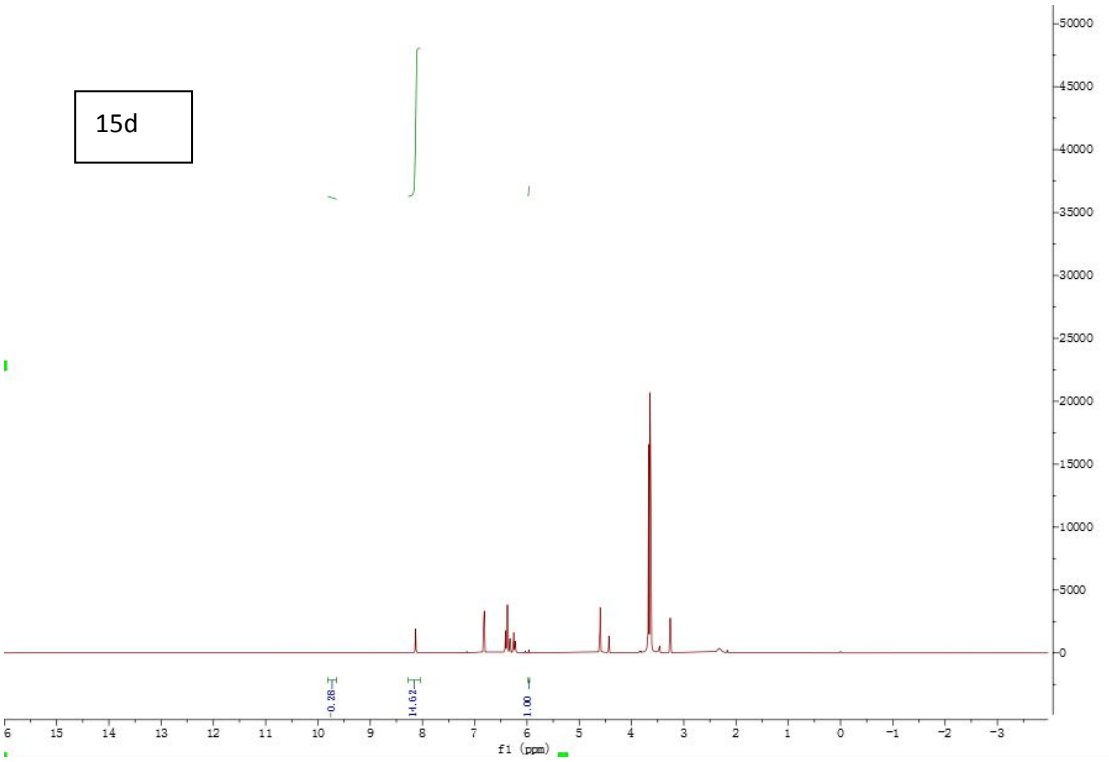
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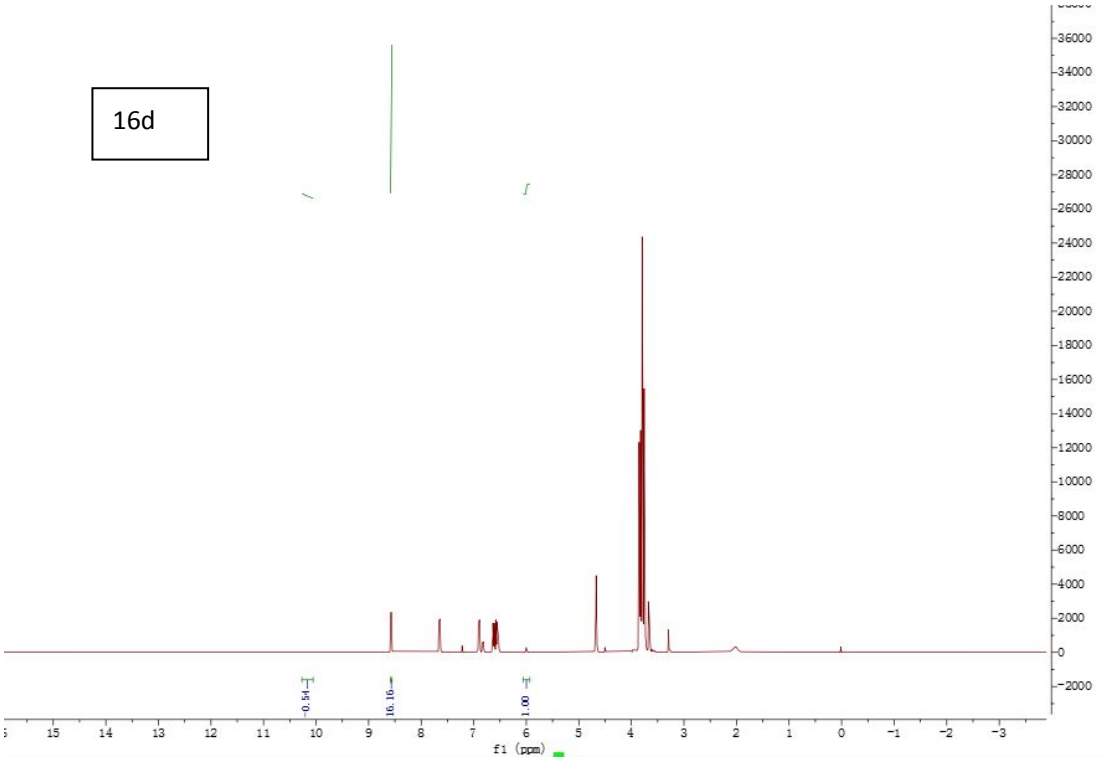
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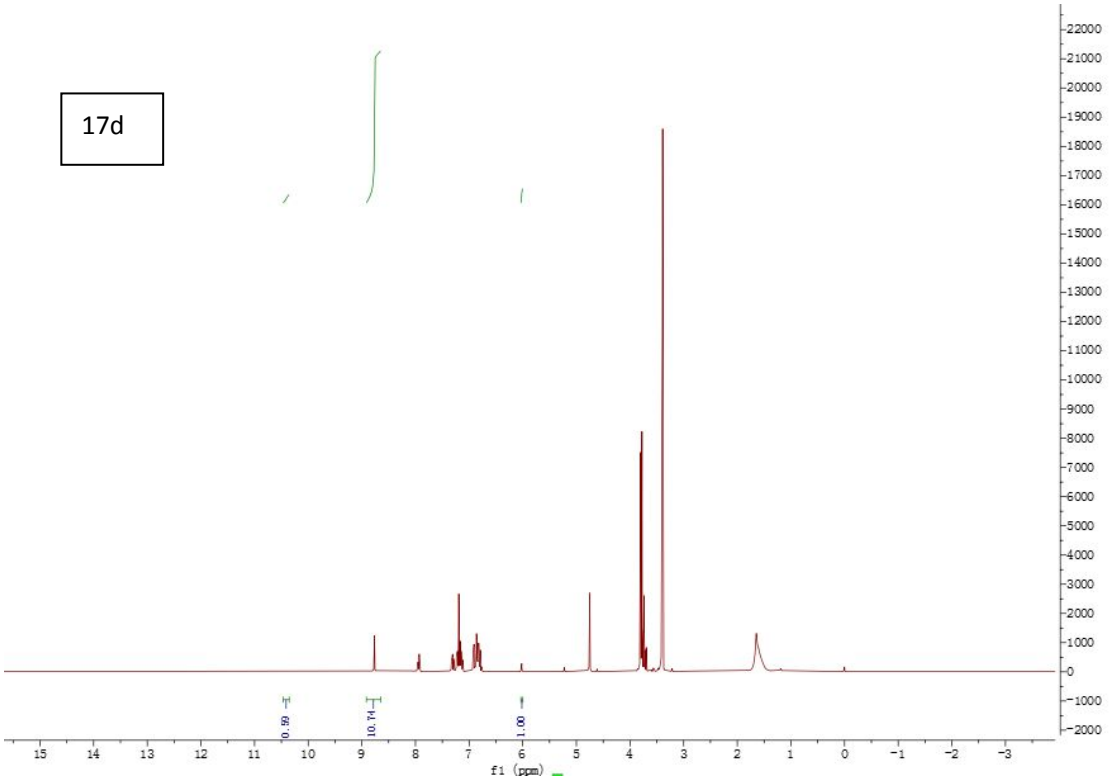


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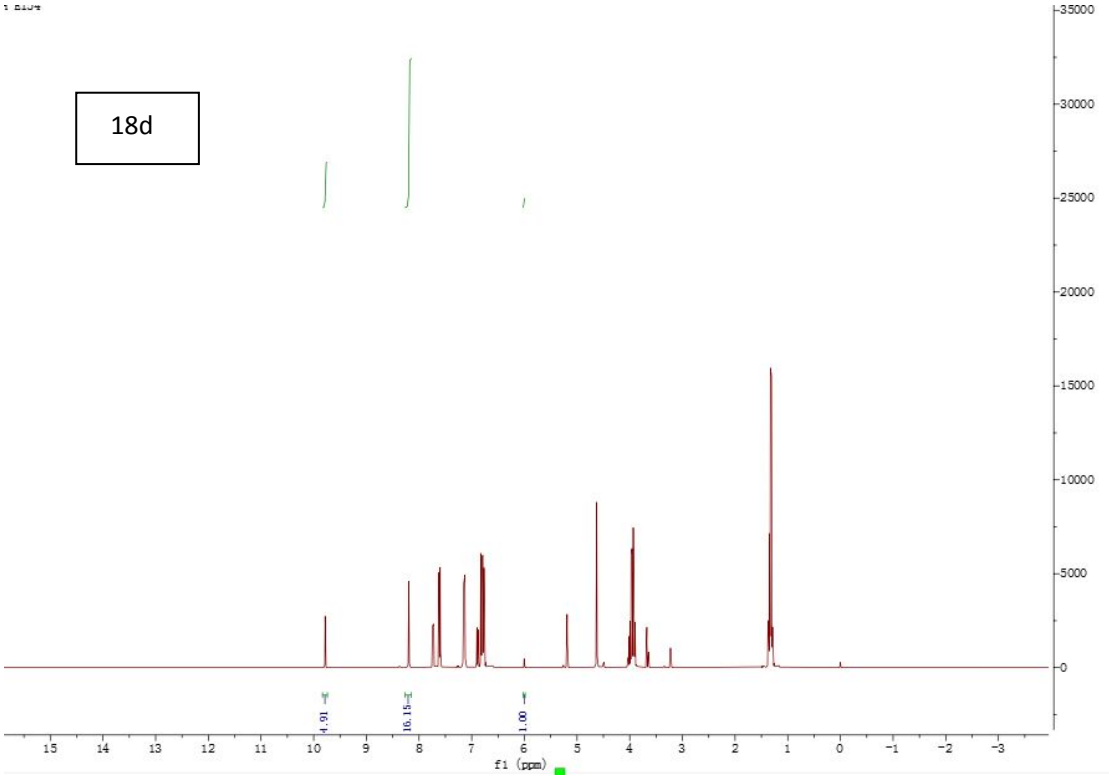

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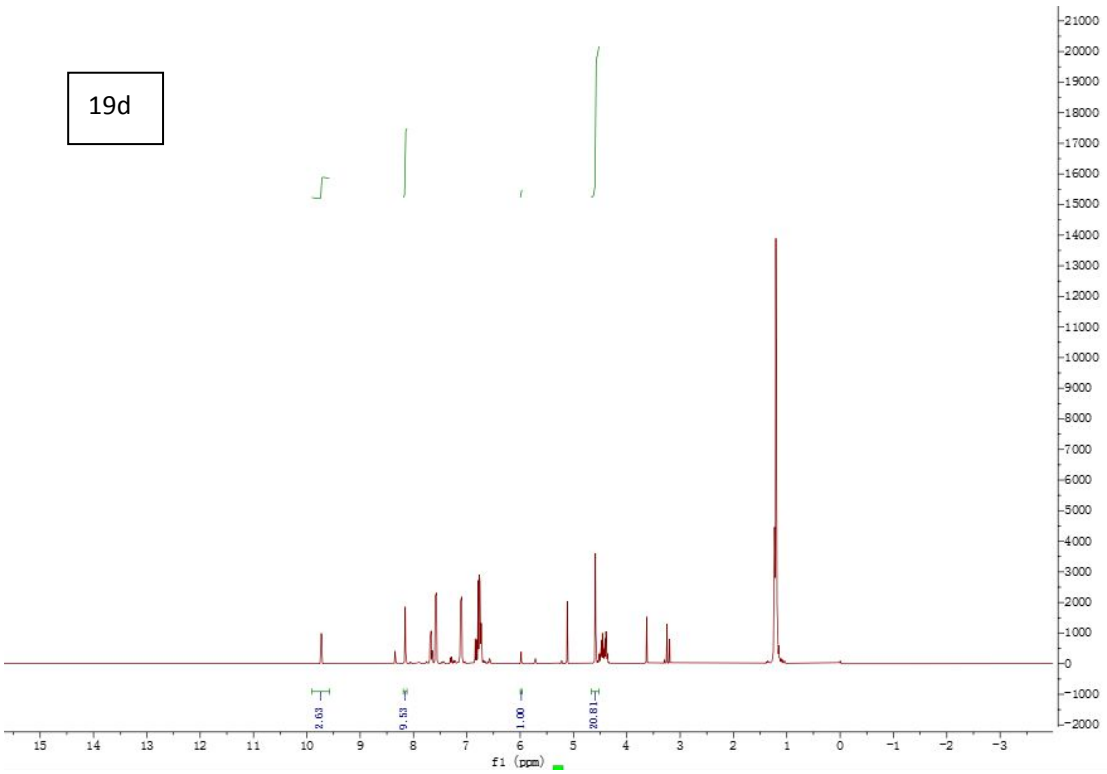


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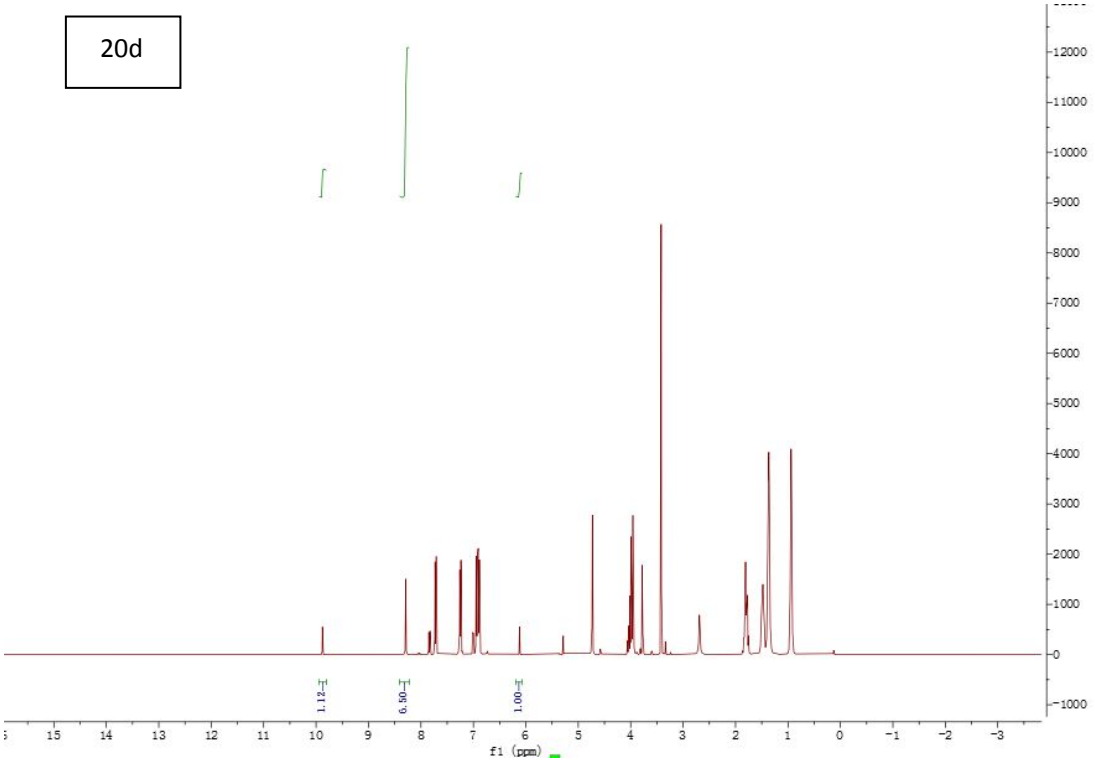

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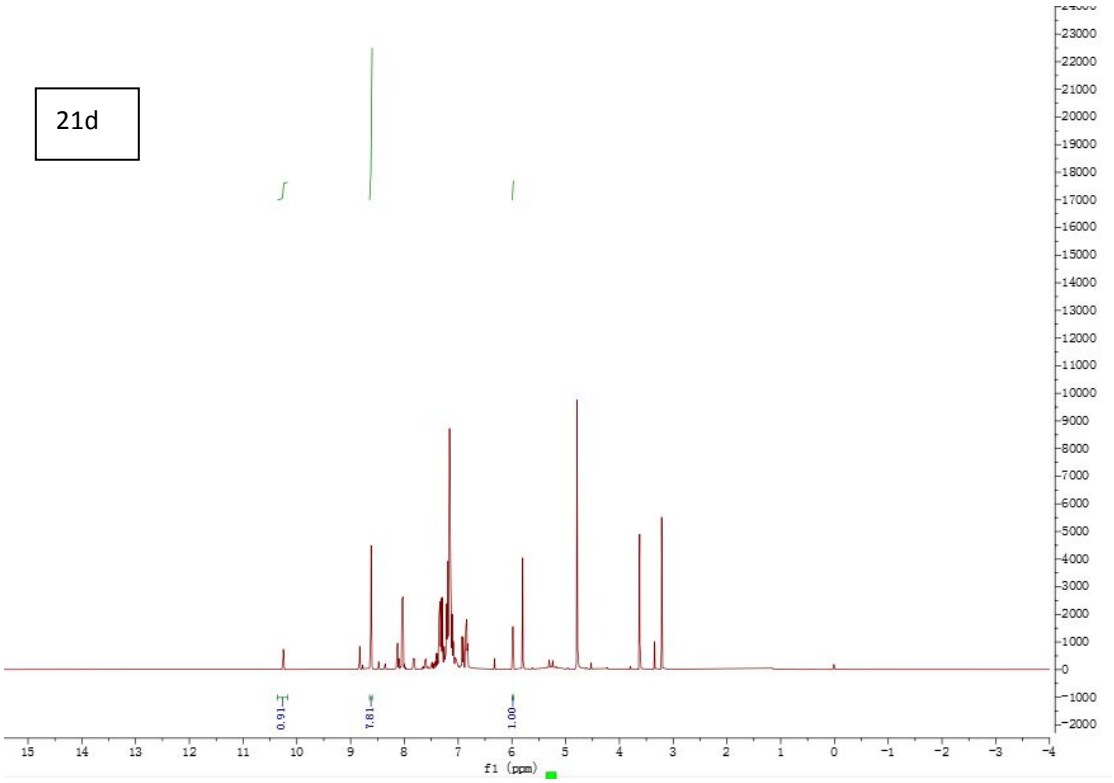


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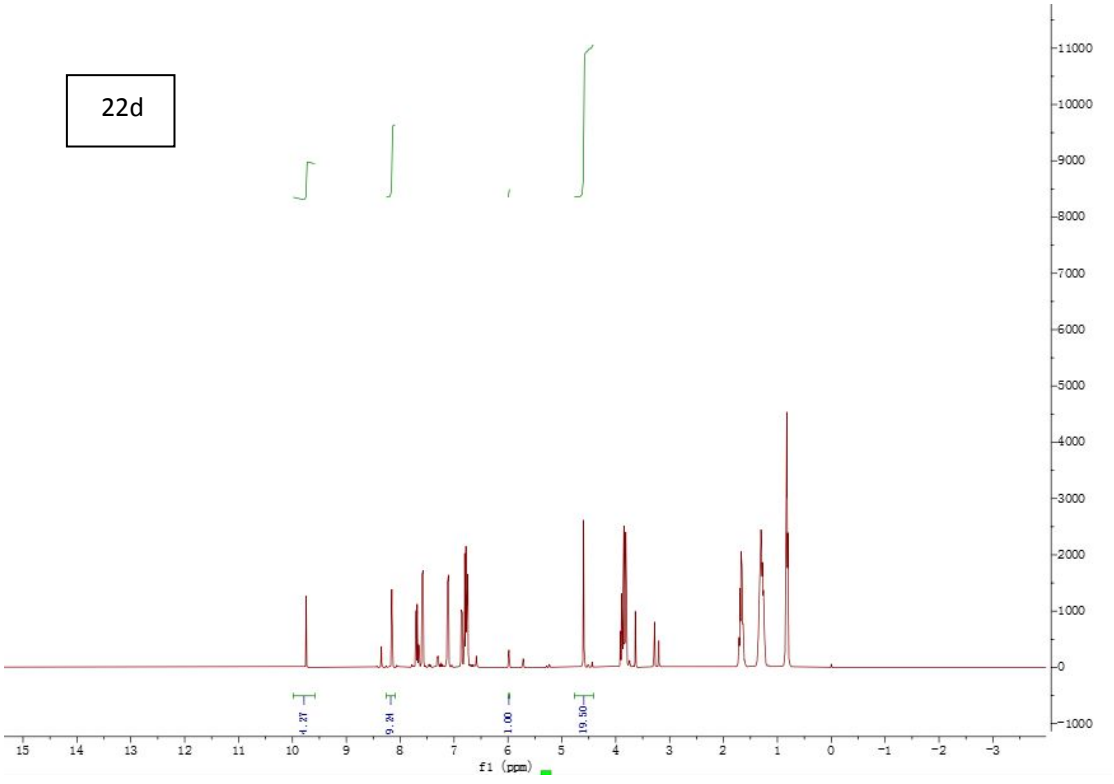

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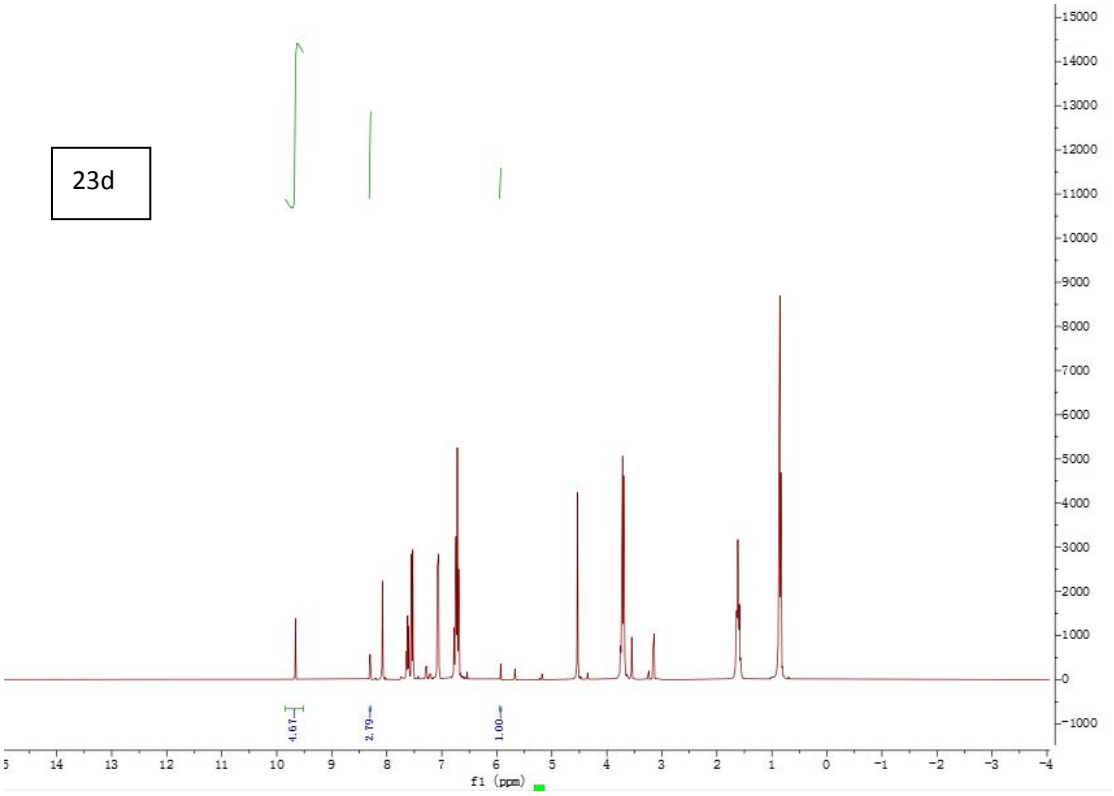


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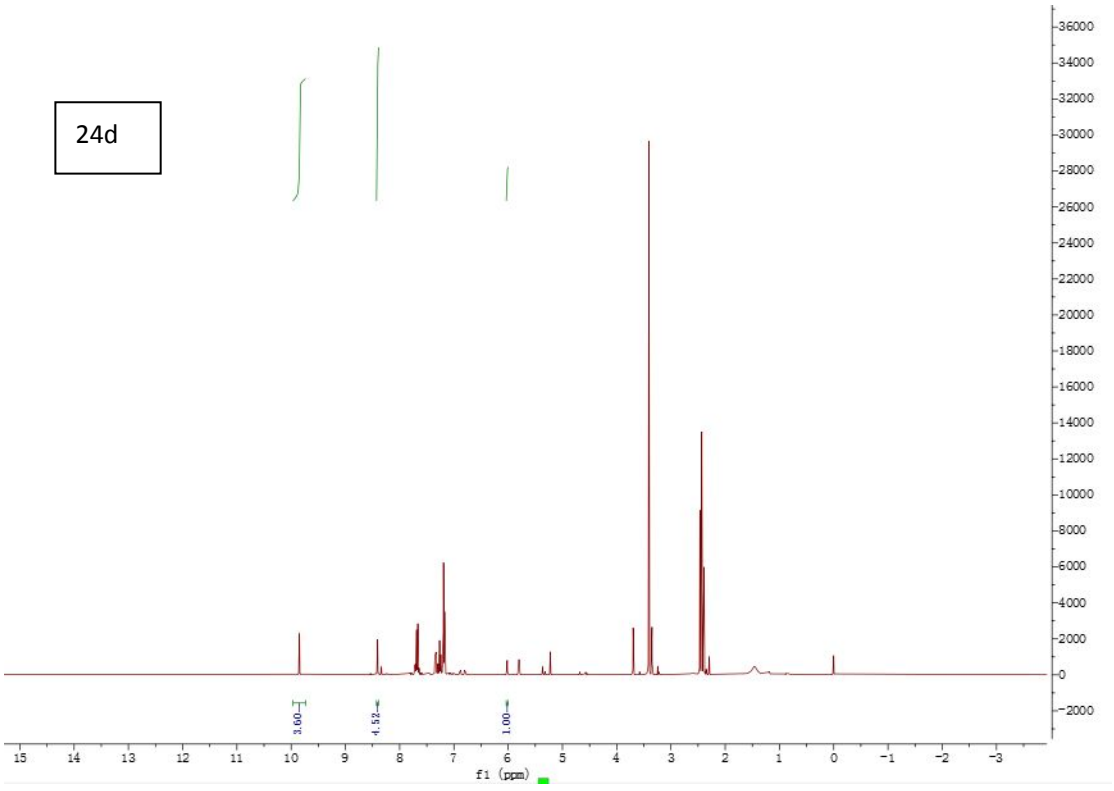

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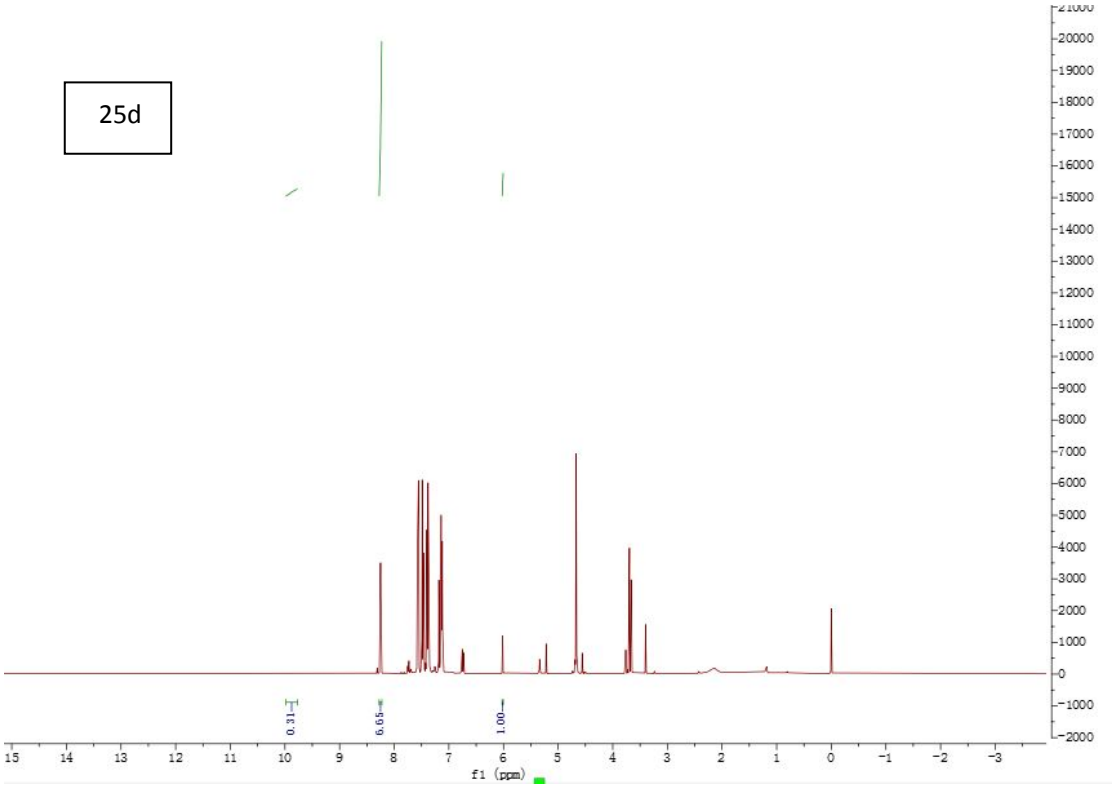


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