

## Supporting Information for

### Dual gold-catalyzed regioselective synthesis of benzofulvenes *via 5-endo dig cyclization* †

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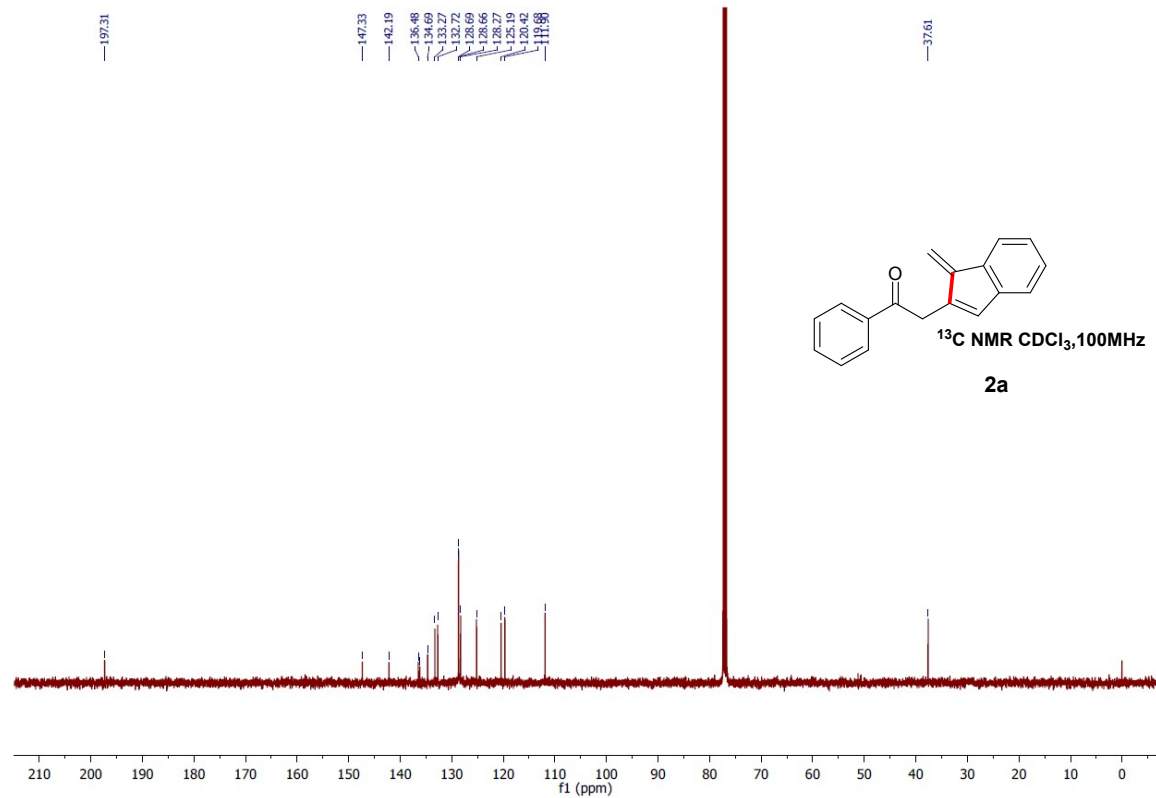
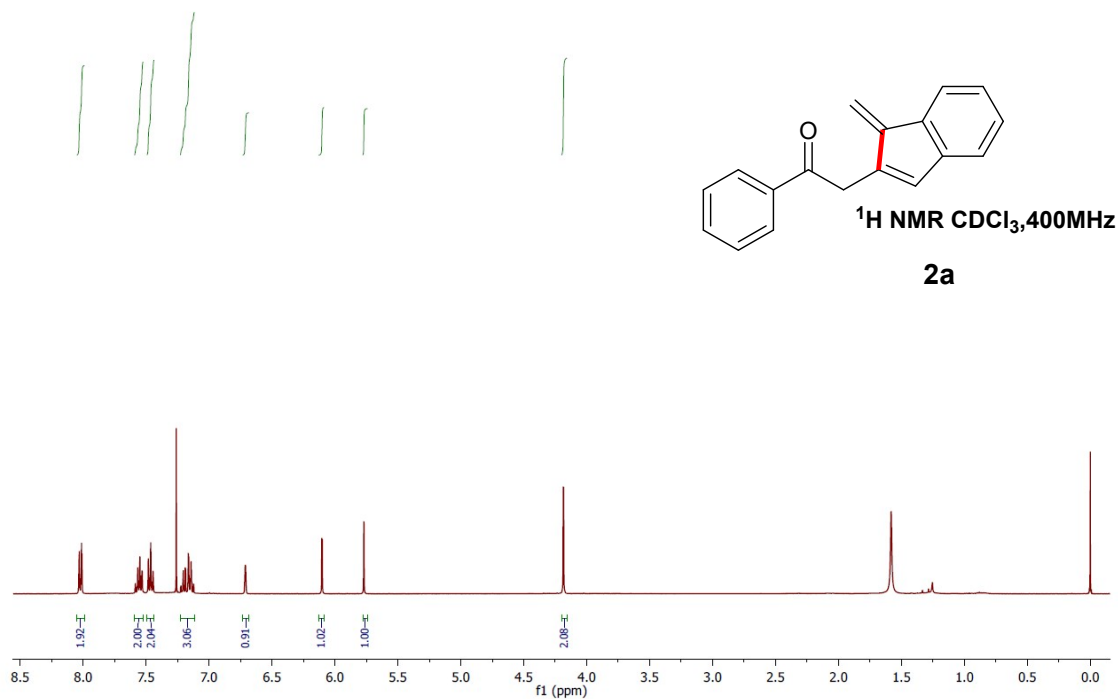
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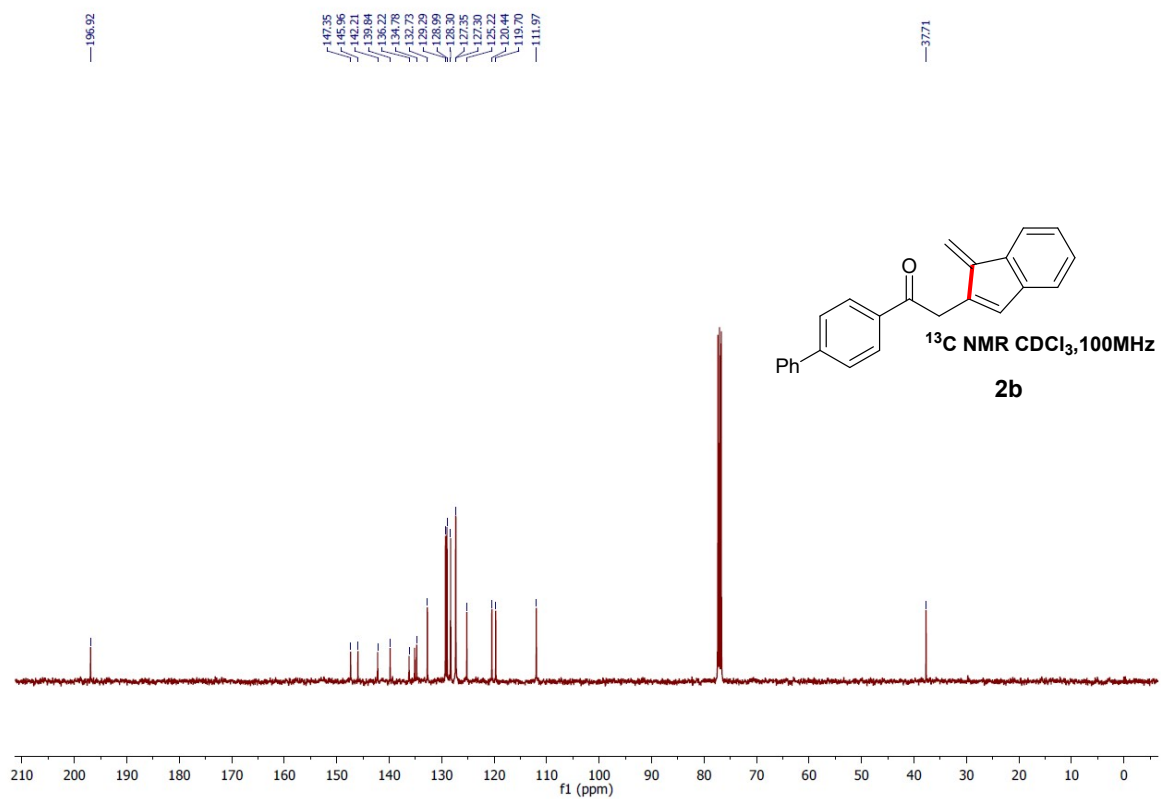
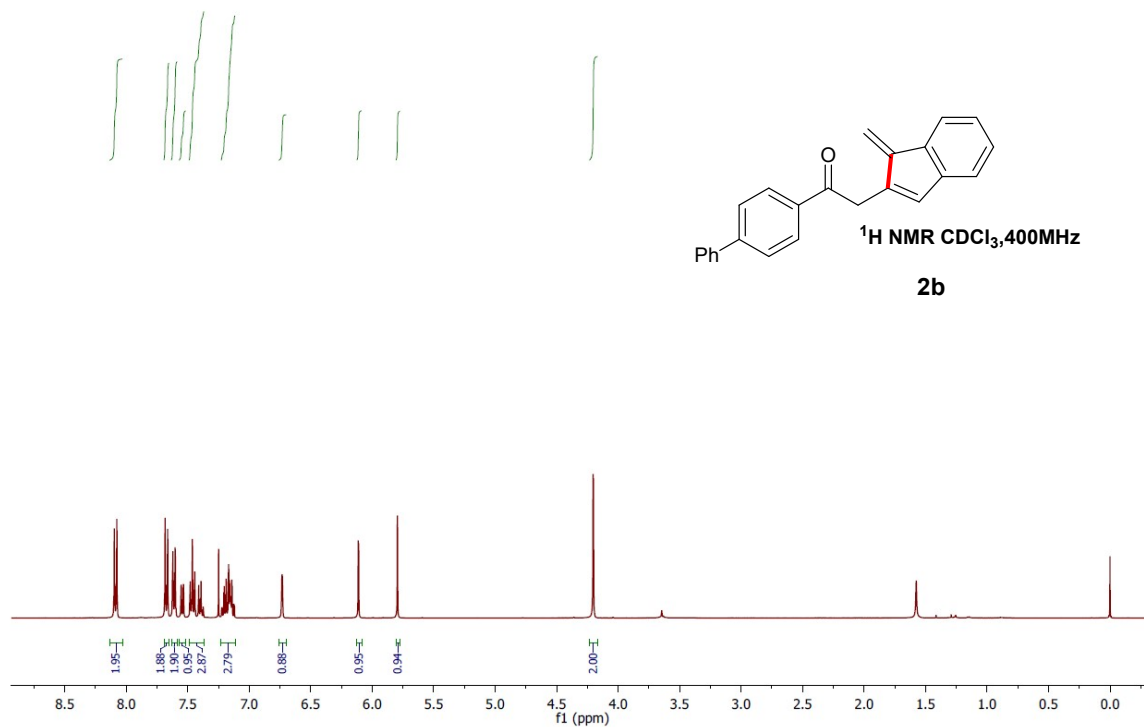
Electronic Supplementary Material (ESI) for Chemical Communications

# 1. Copies of $^1\text{H}$ and $^{13}\text{C}$ NMR spectra (2a-2v)

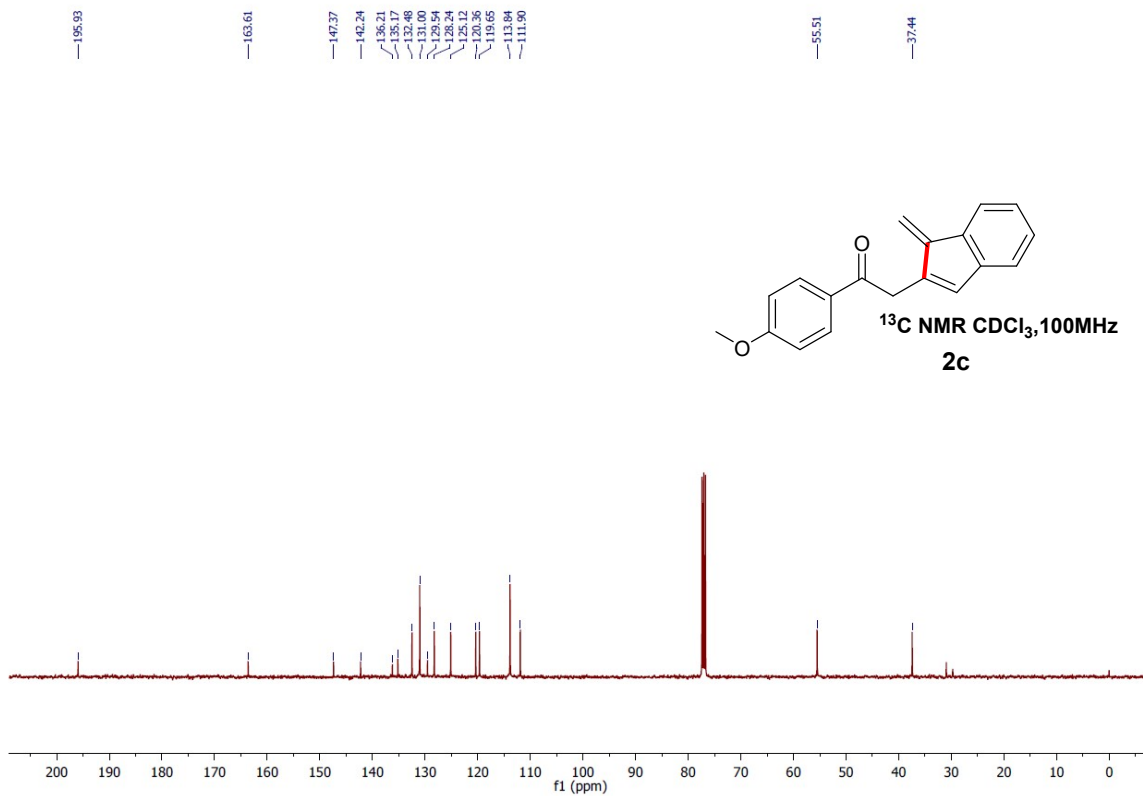
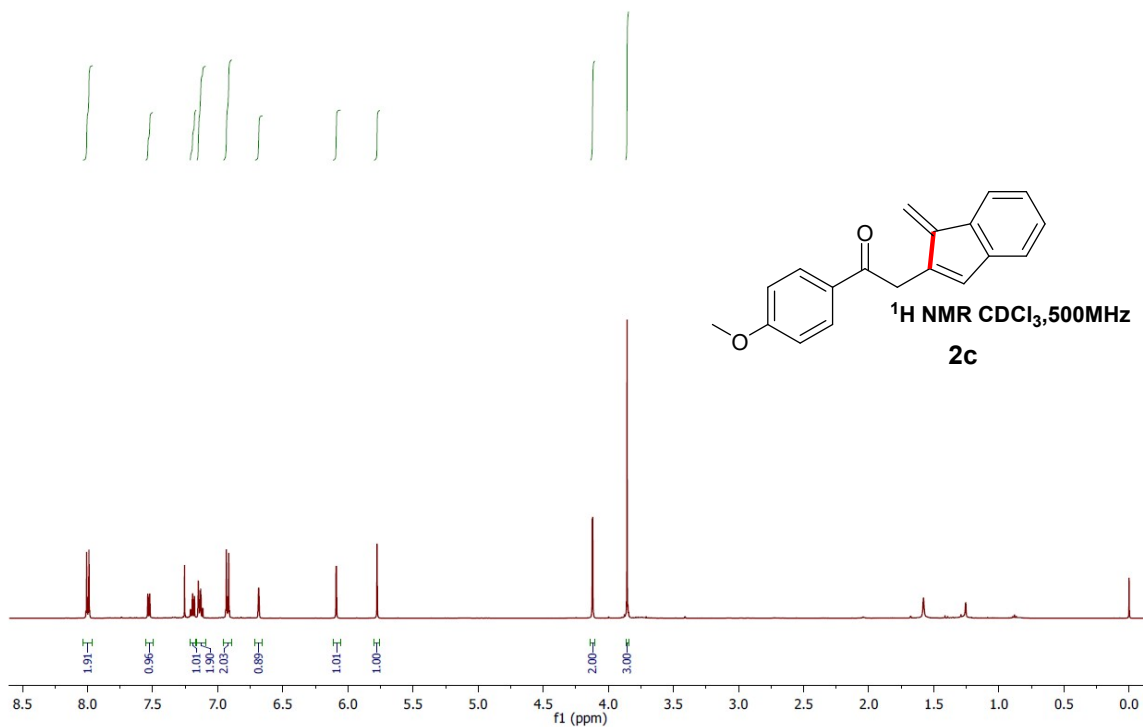
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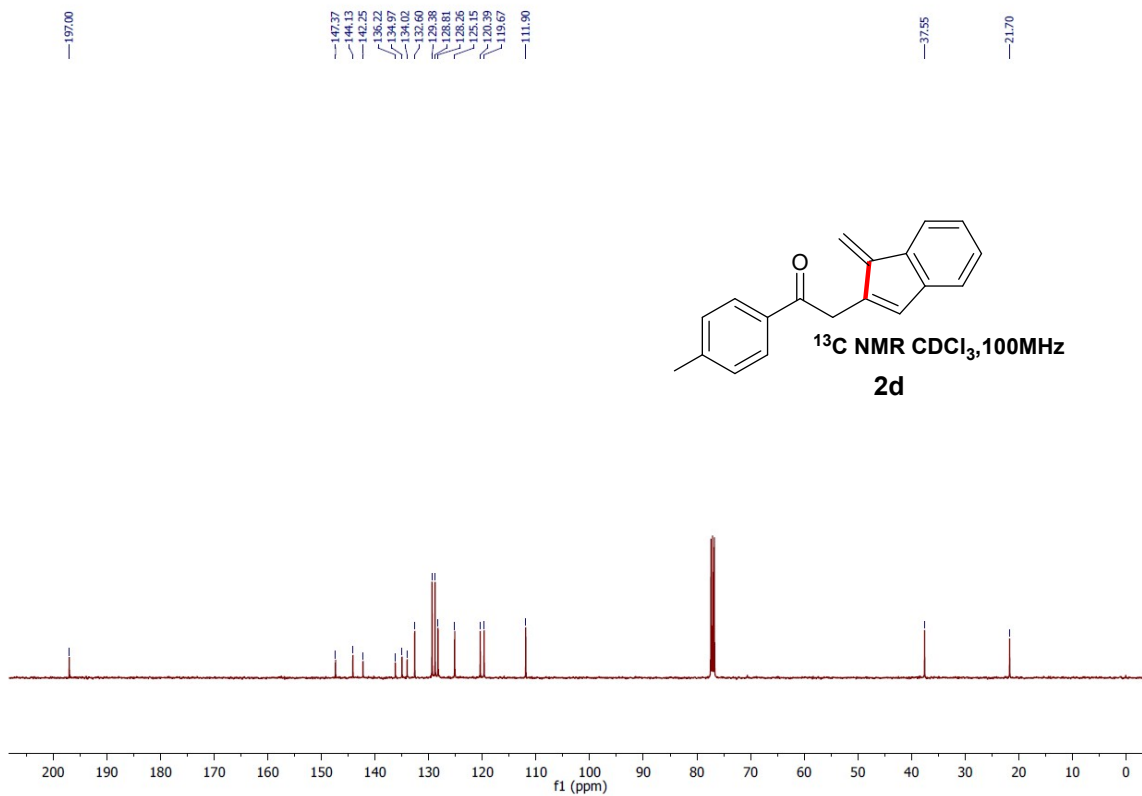
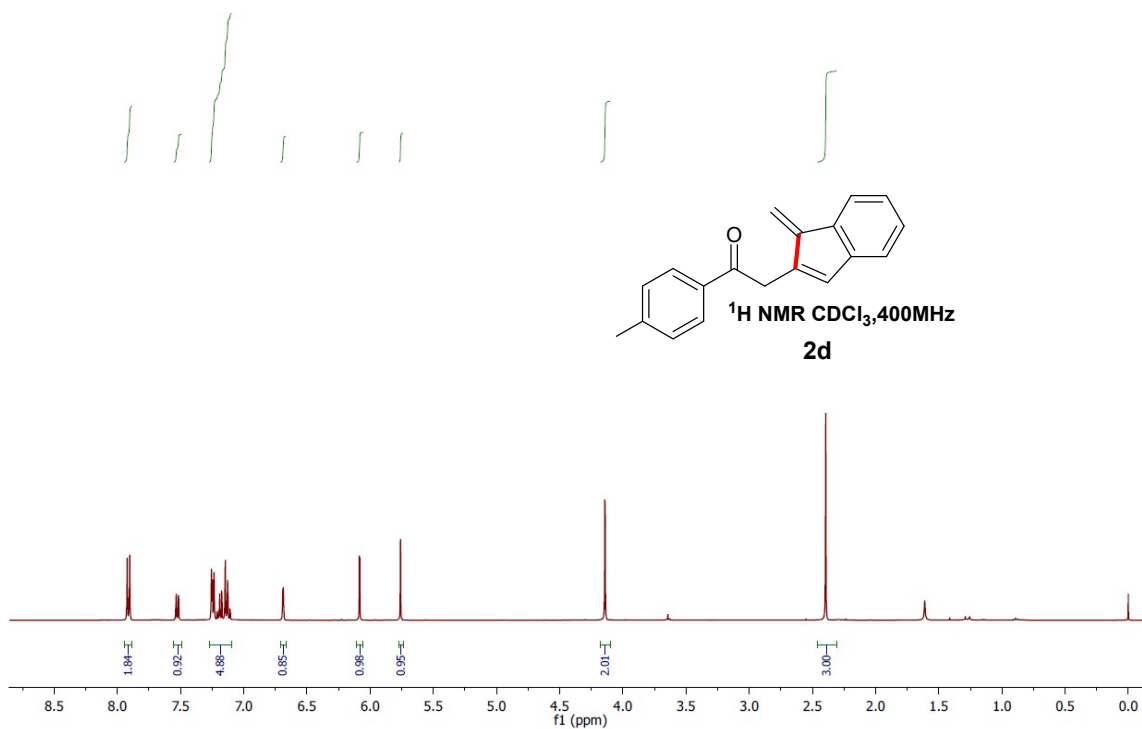
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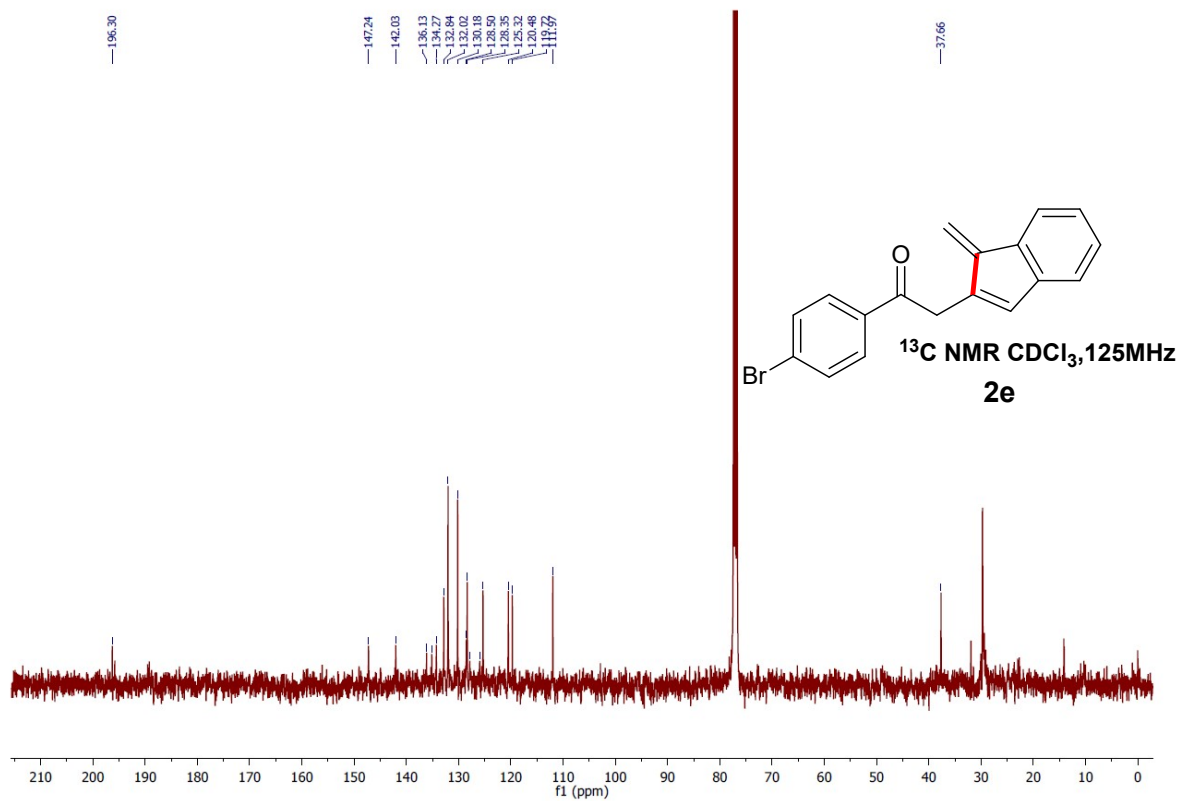
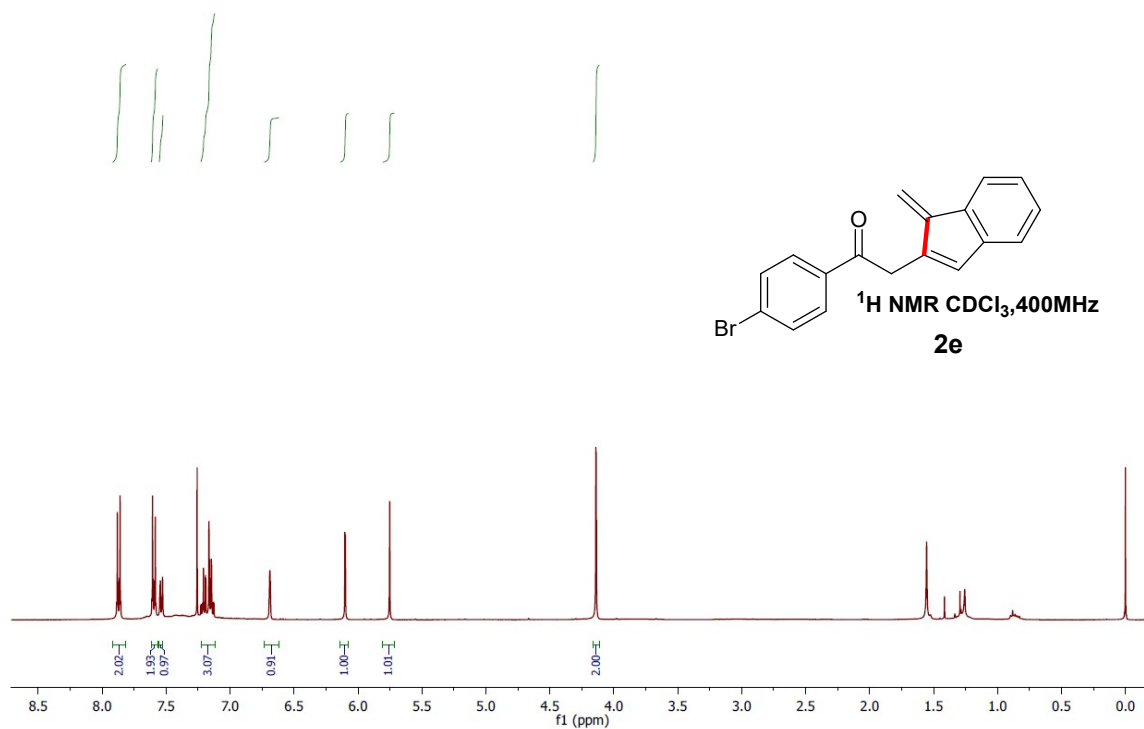
1-(4-Methoxyphenyl)-2-(1-methylene-1H-inden-2-yl)ethan-1-one 2c



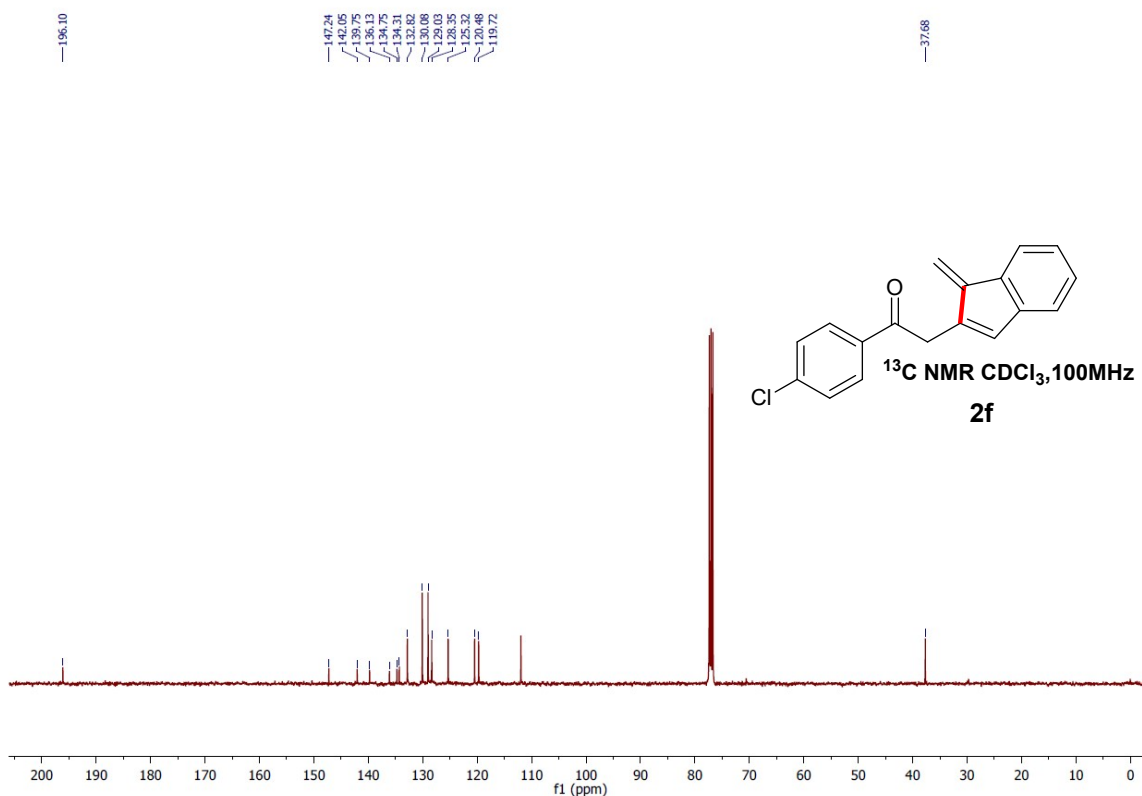
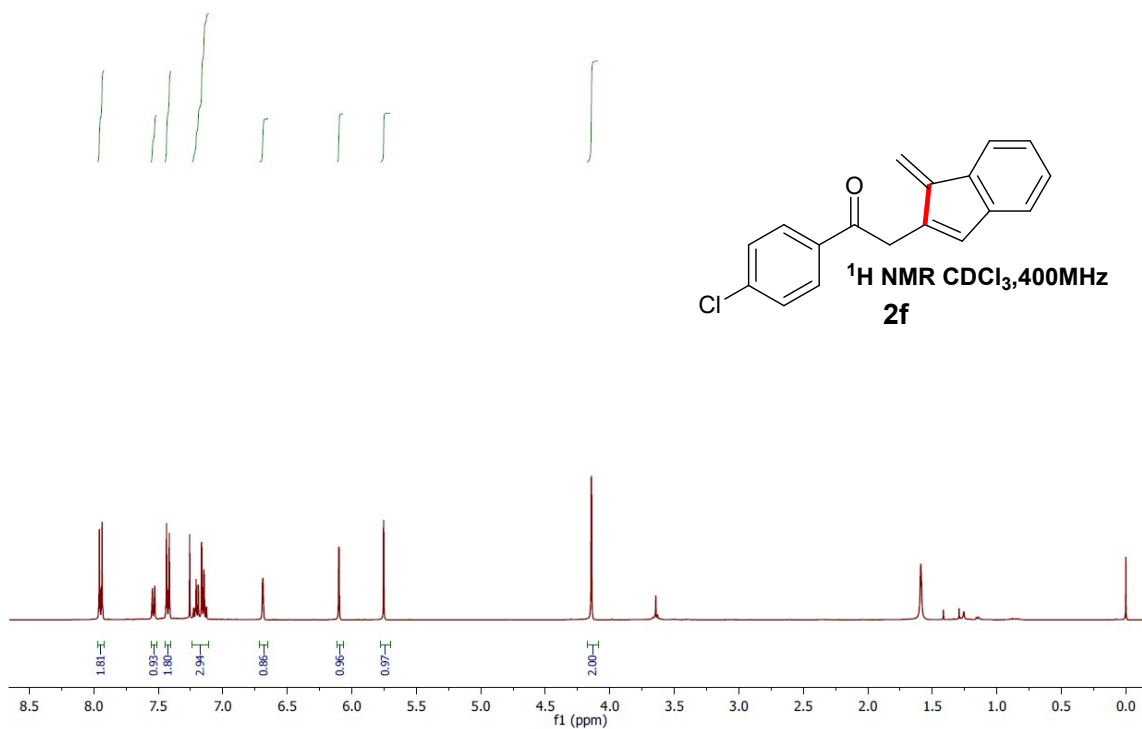
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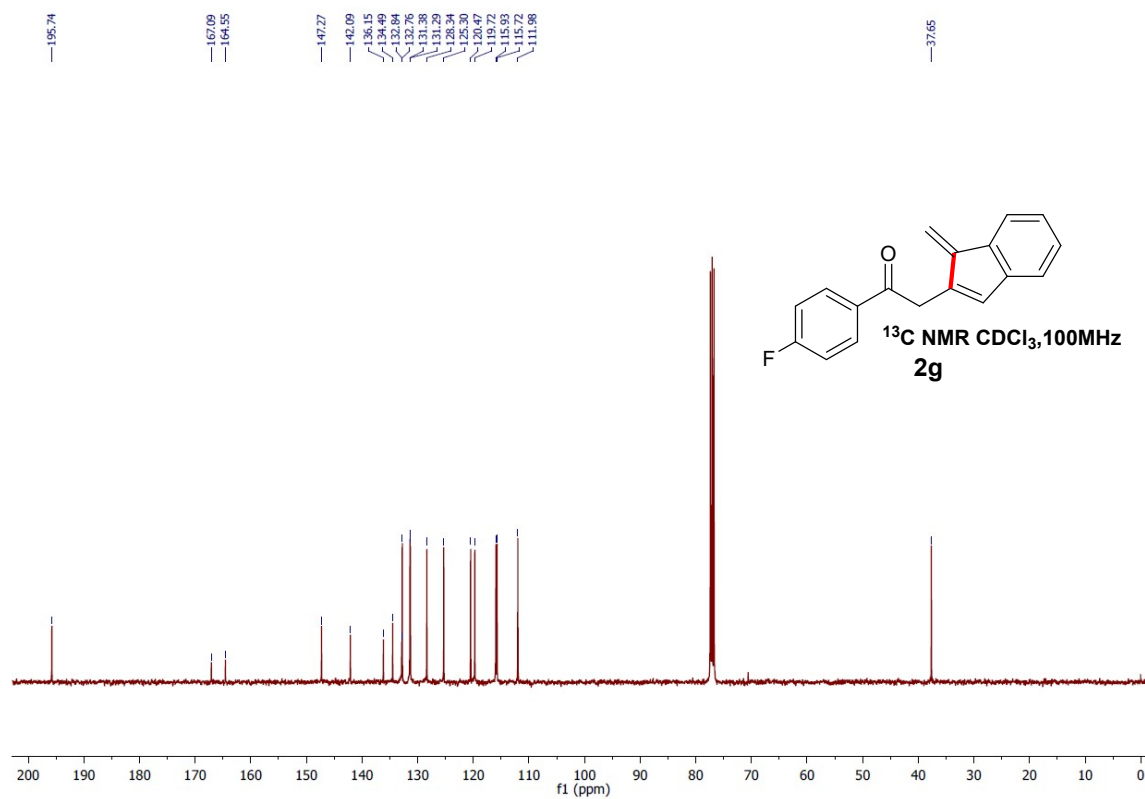
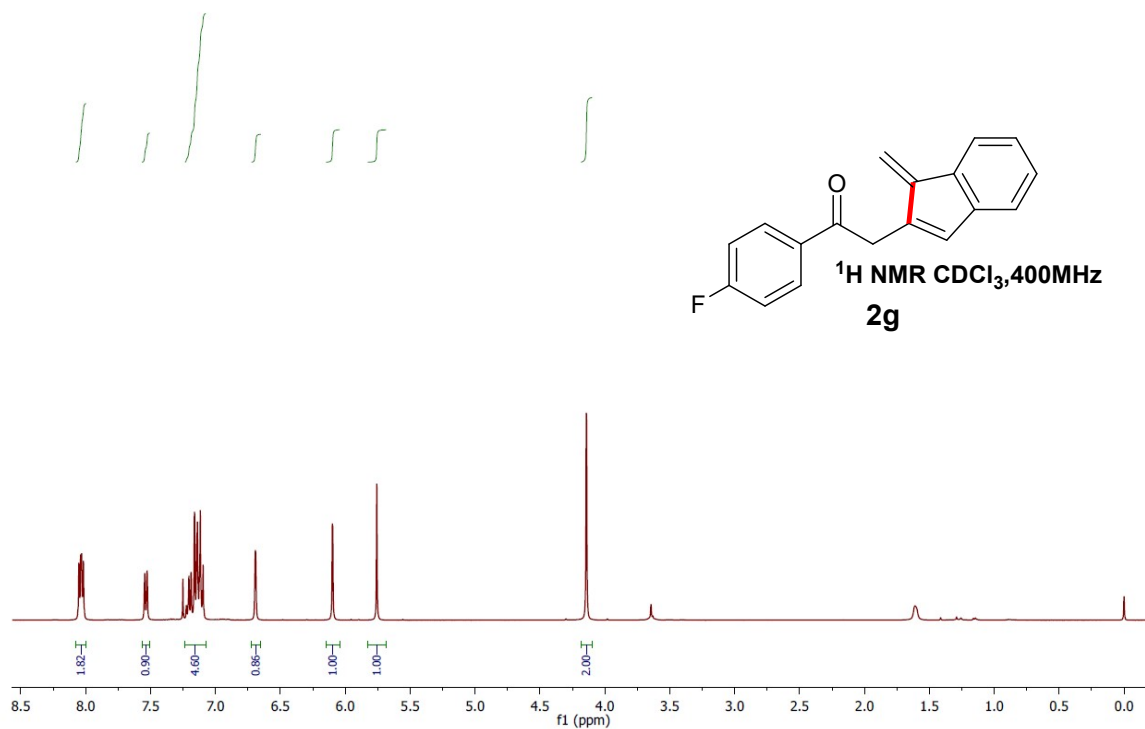
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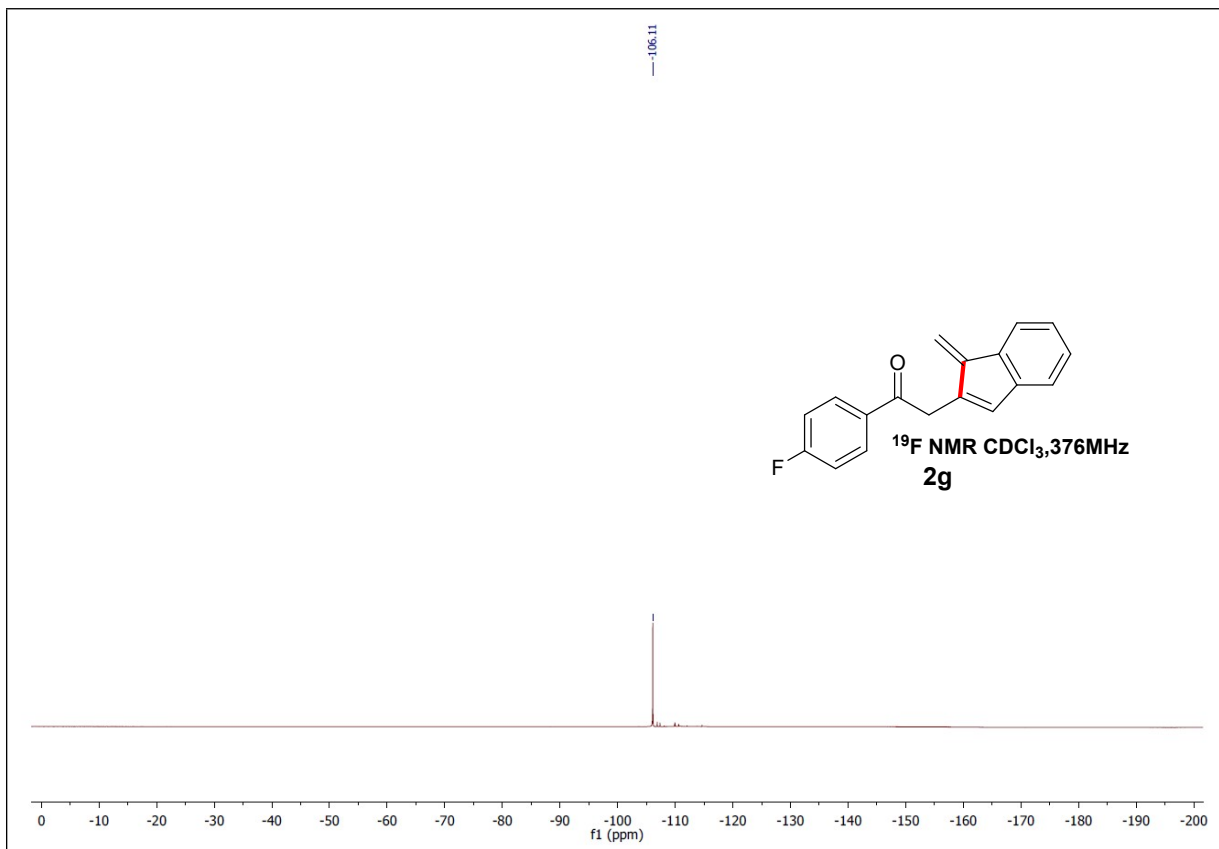
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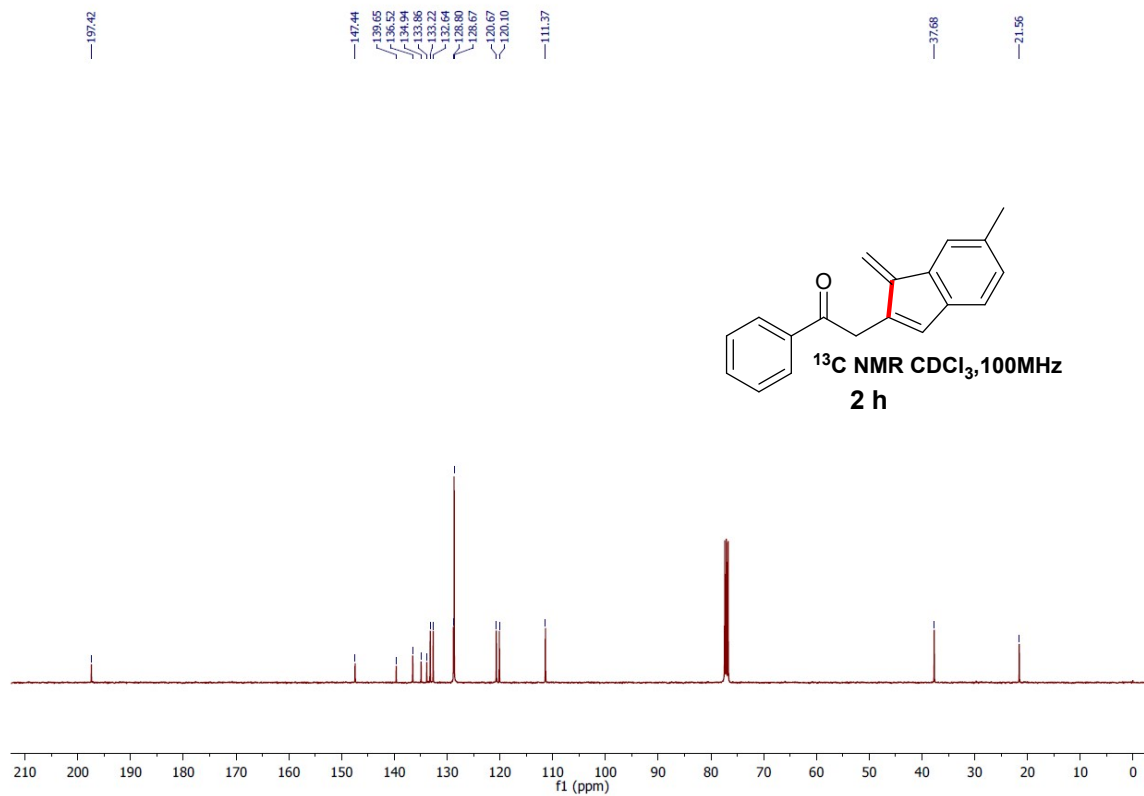
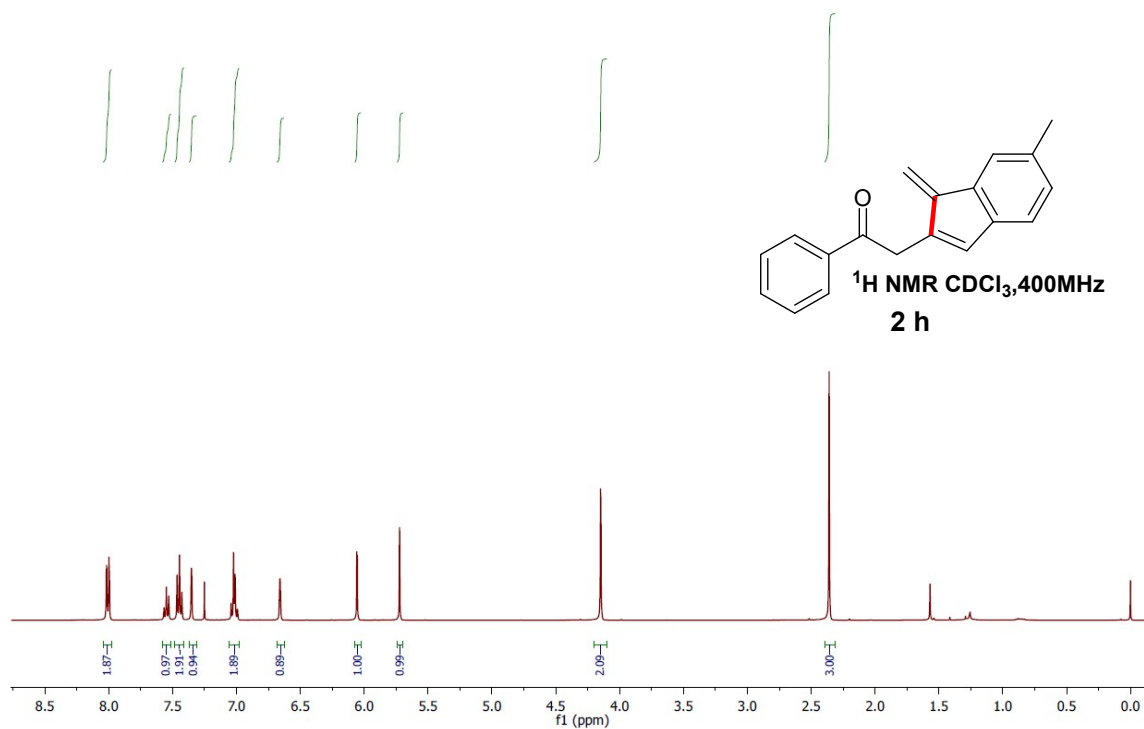
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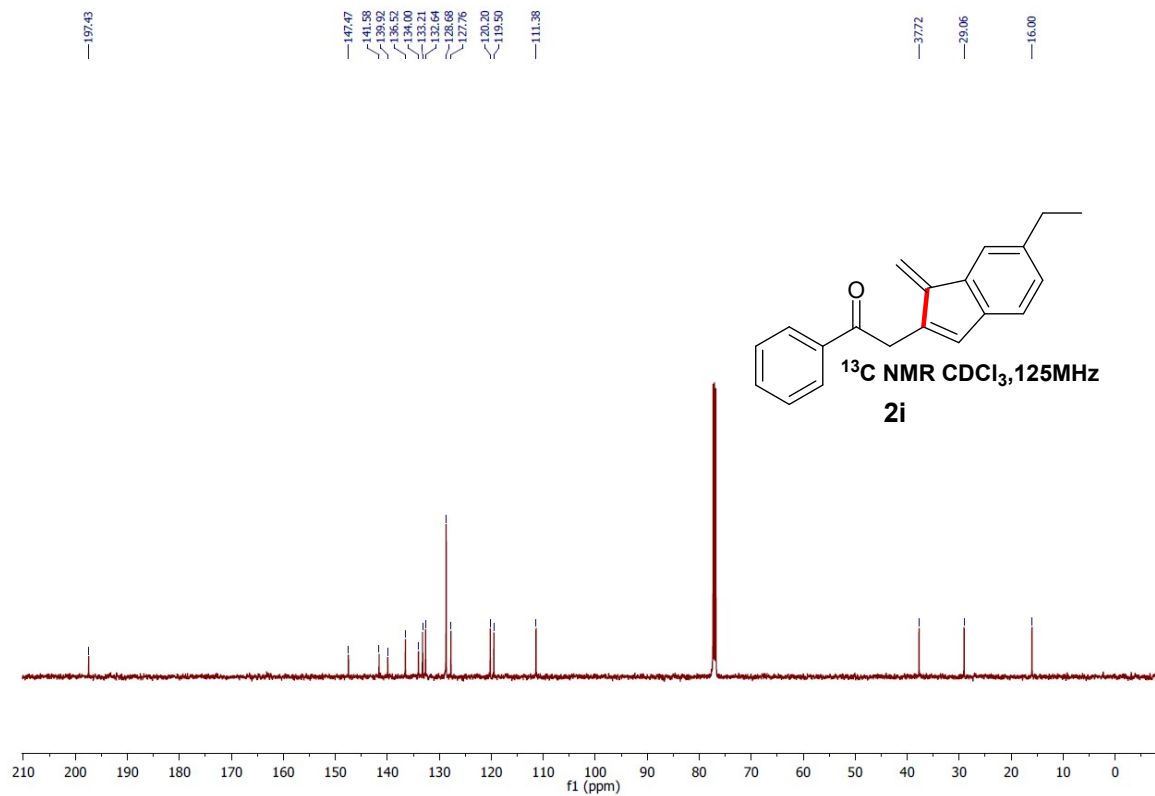
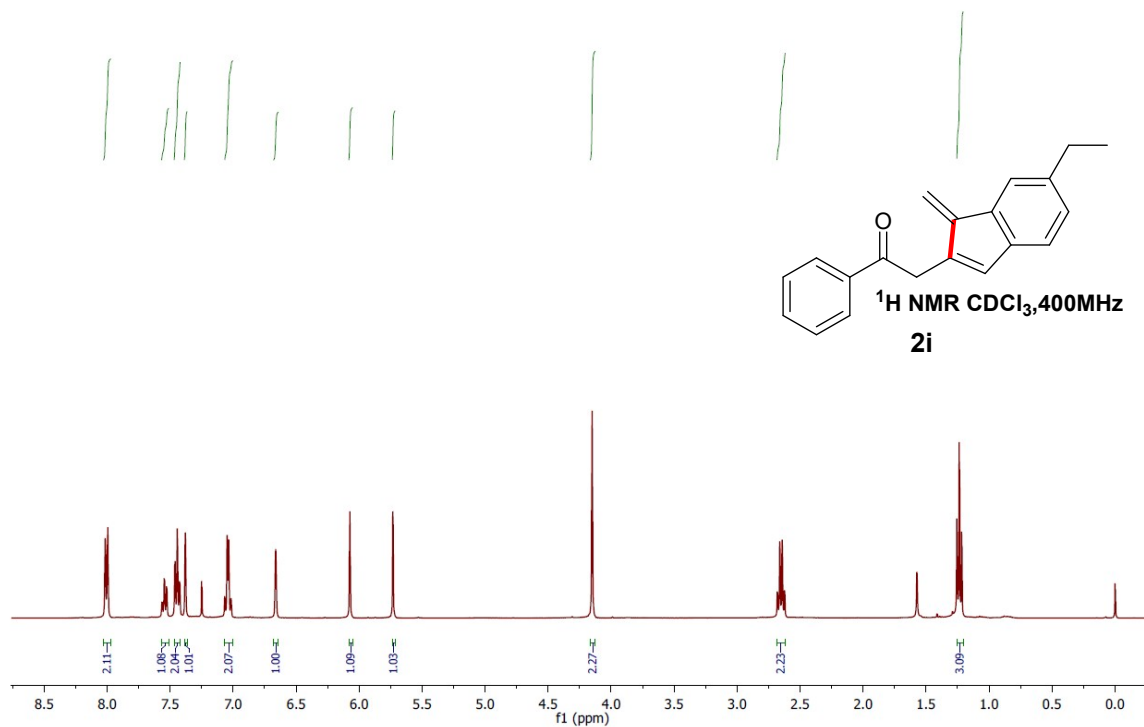




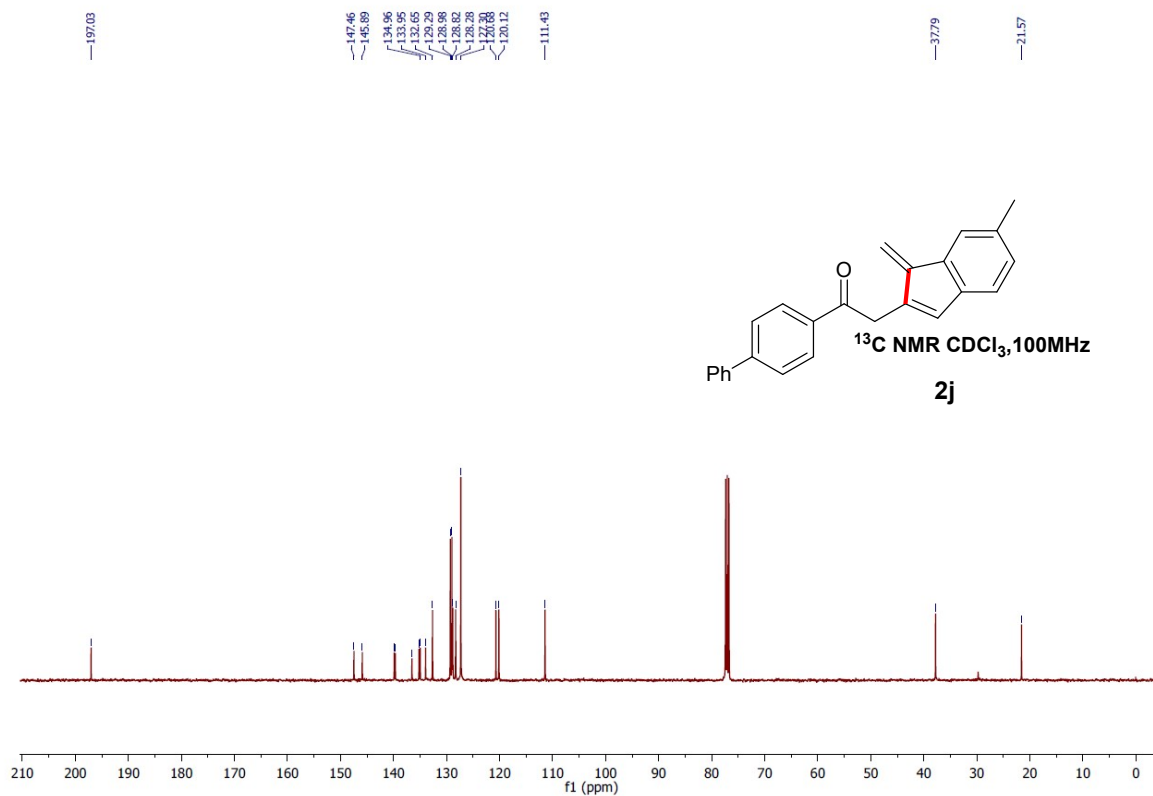
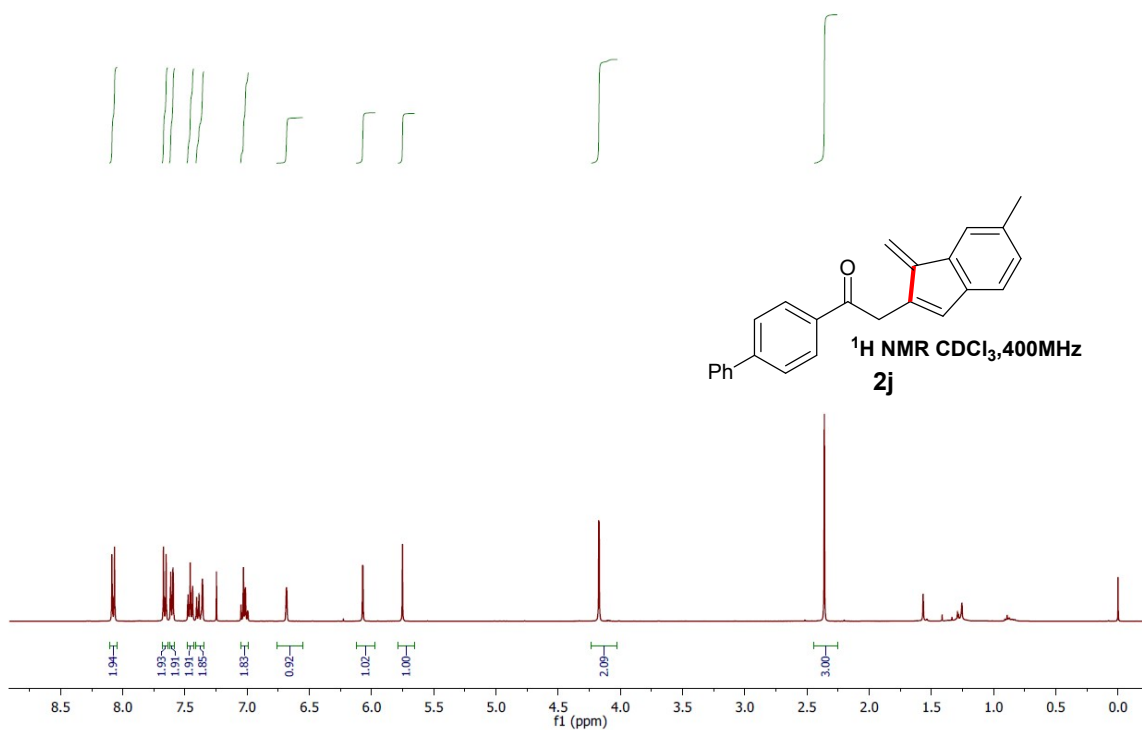
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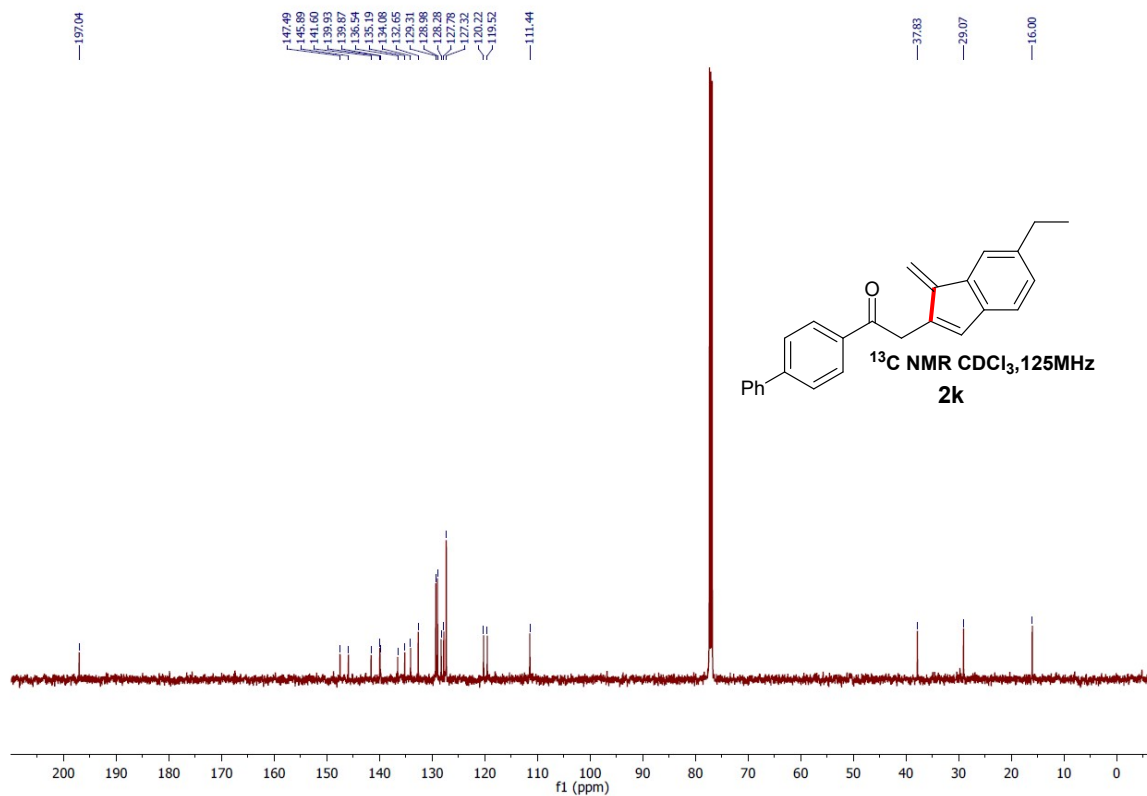
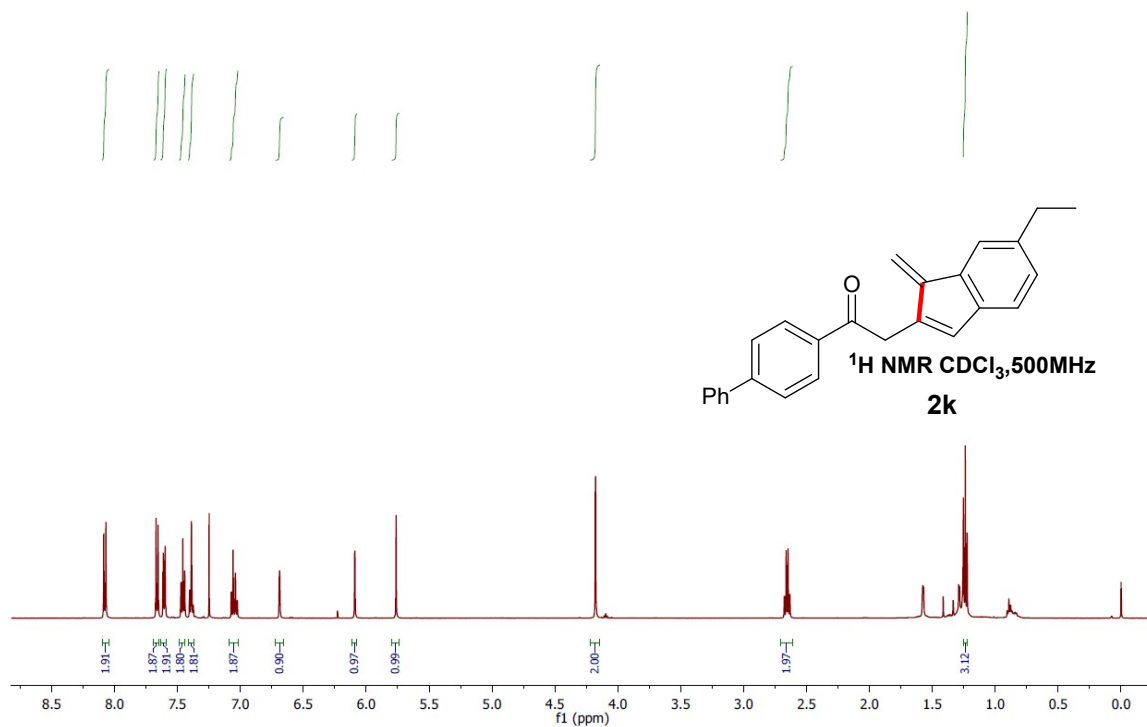
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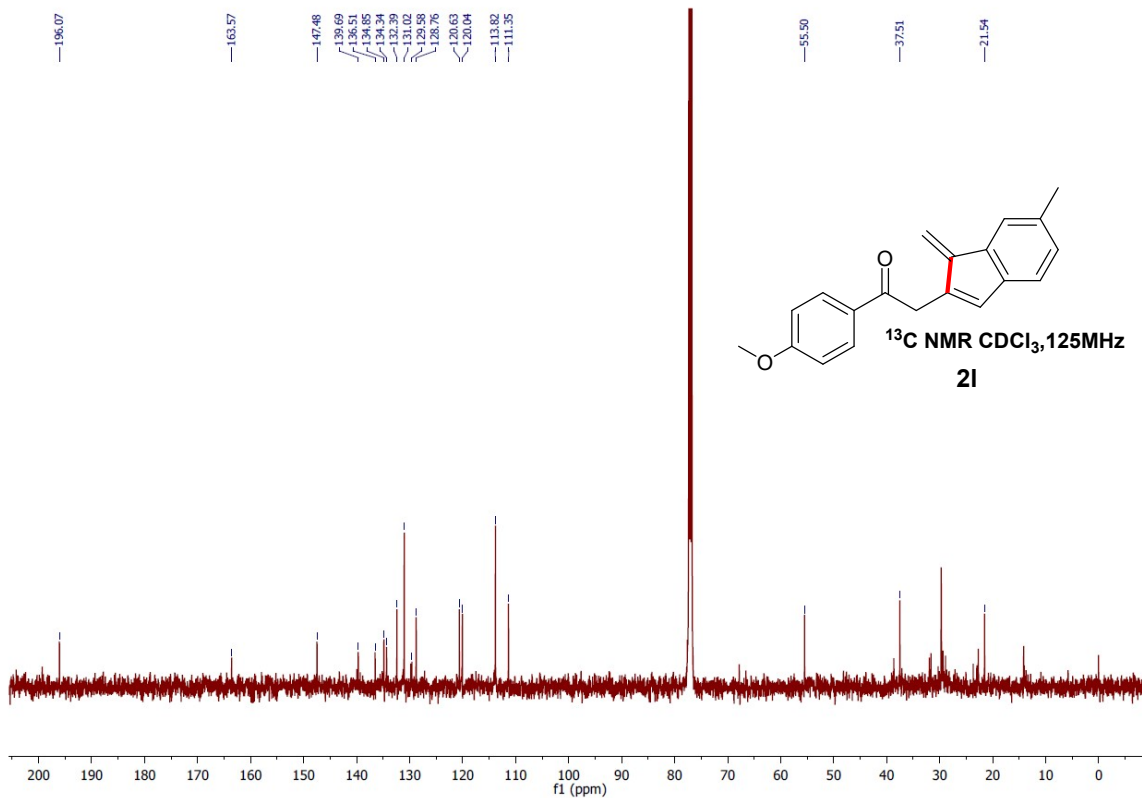
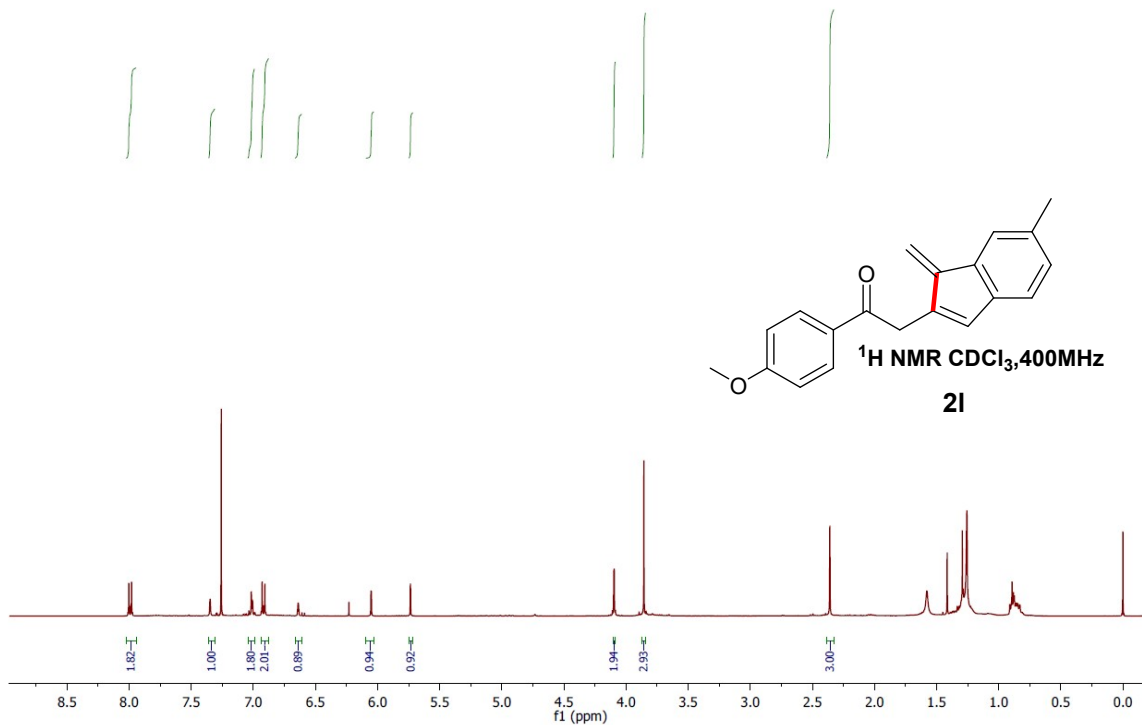
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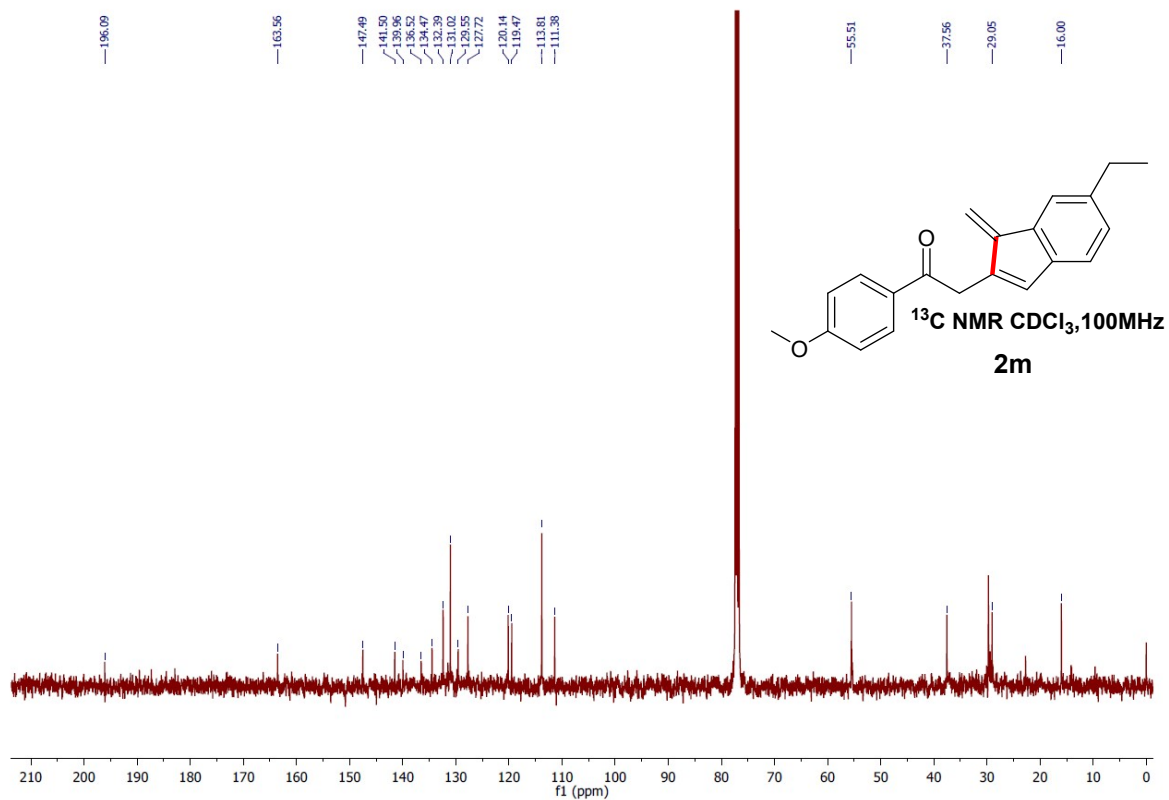
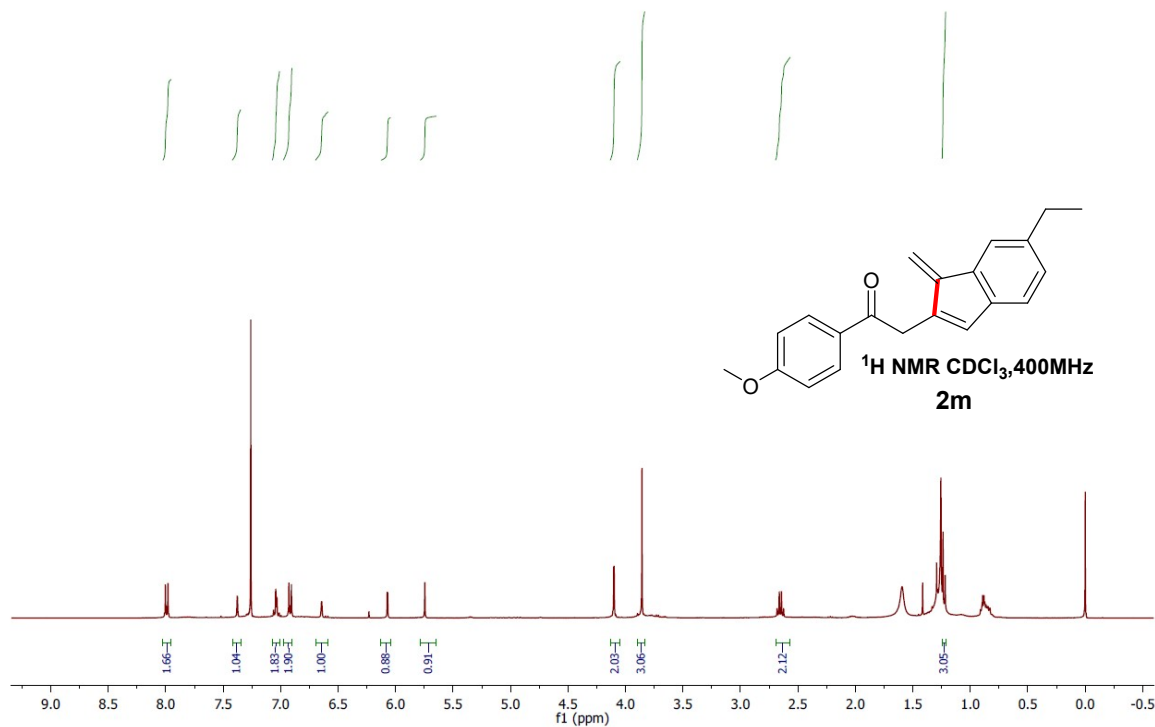
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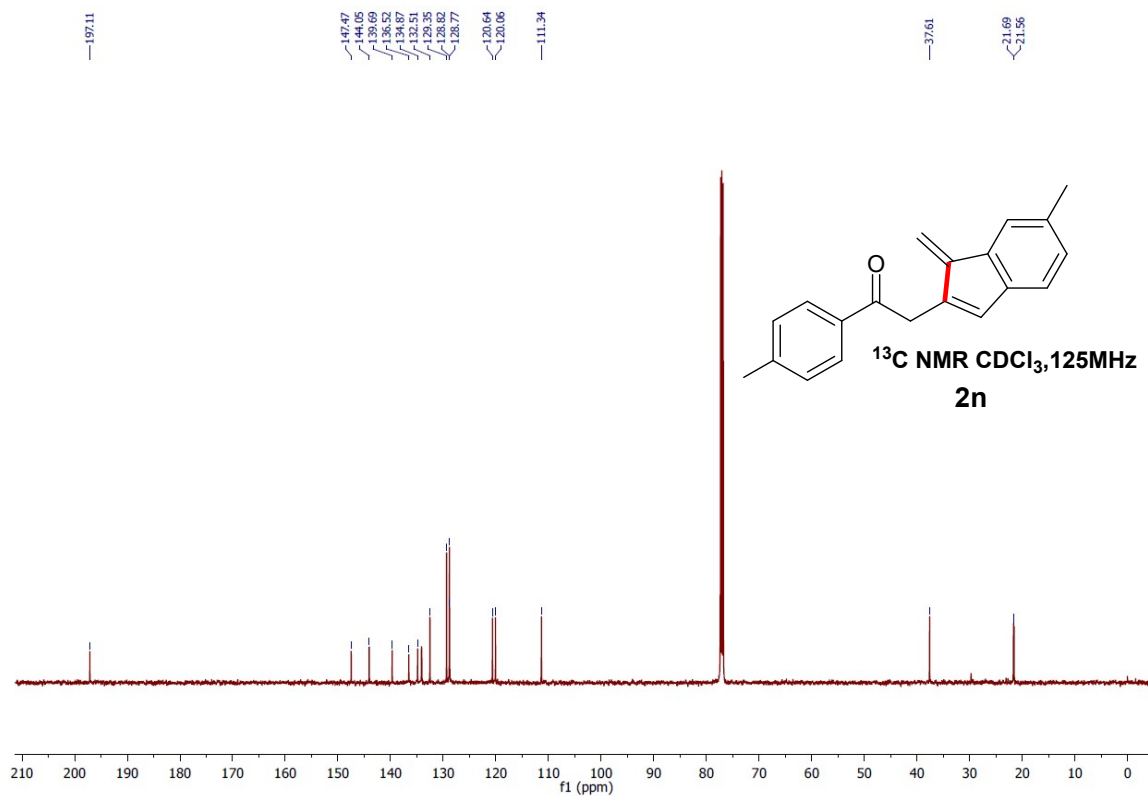
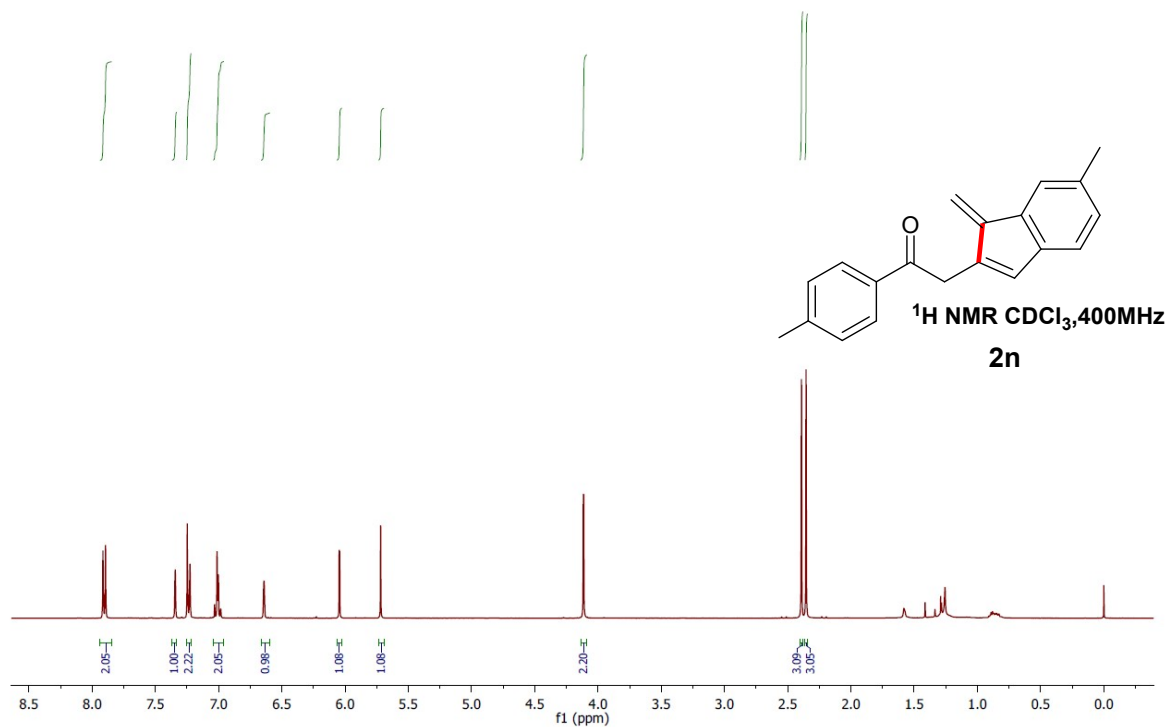
**1-(4-Methoxyphenyl)-2-(6-methyl-1-methylene-1H-inden-2-yl)ethan-1-one:2l**



**2-(6-Ethyl-1-methylene-1*H*-inden-2-yl)-1-(4-methoxyphenyl)ethan-1-one:2m**

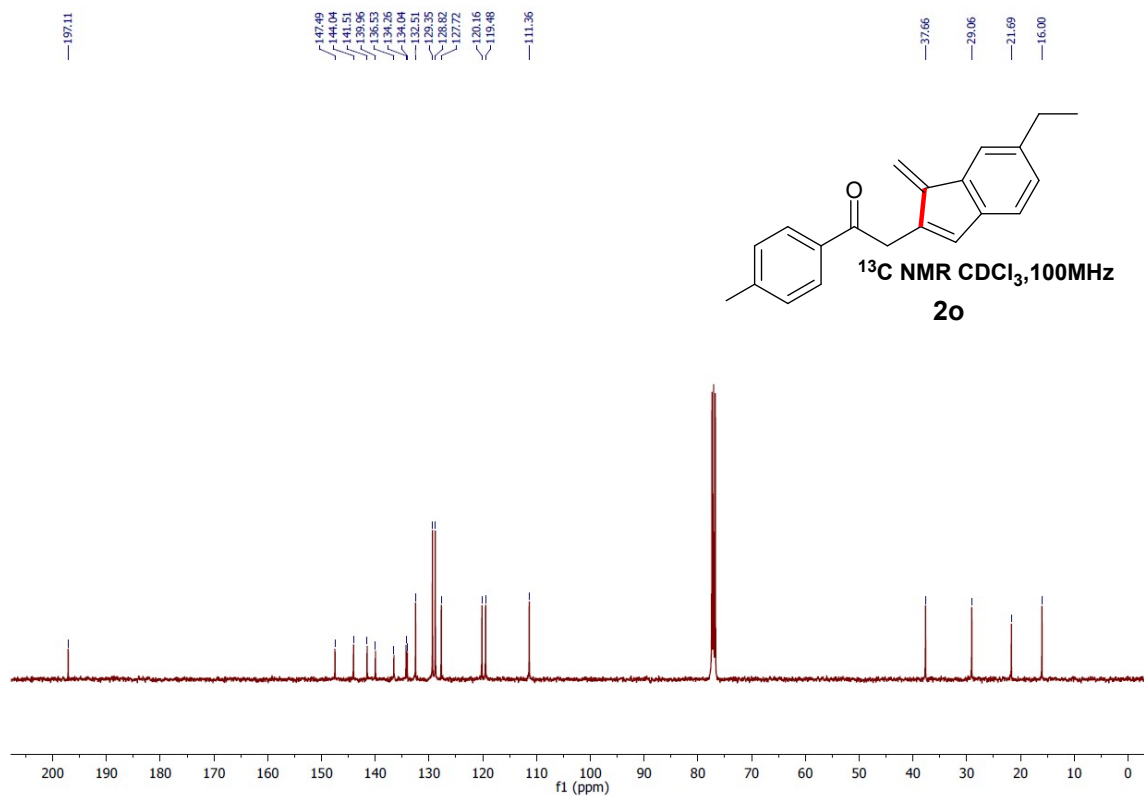
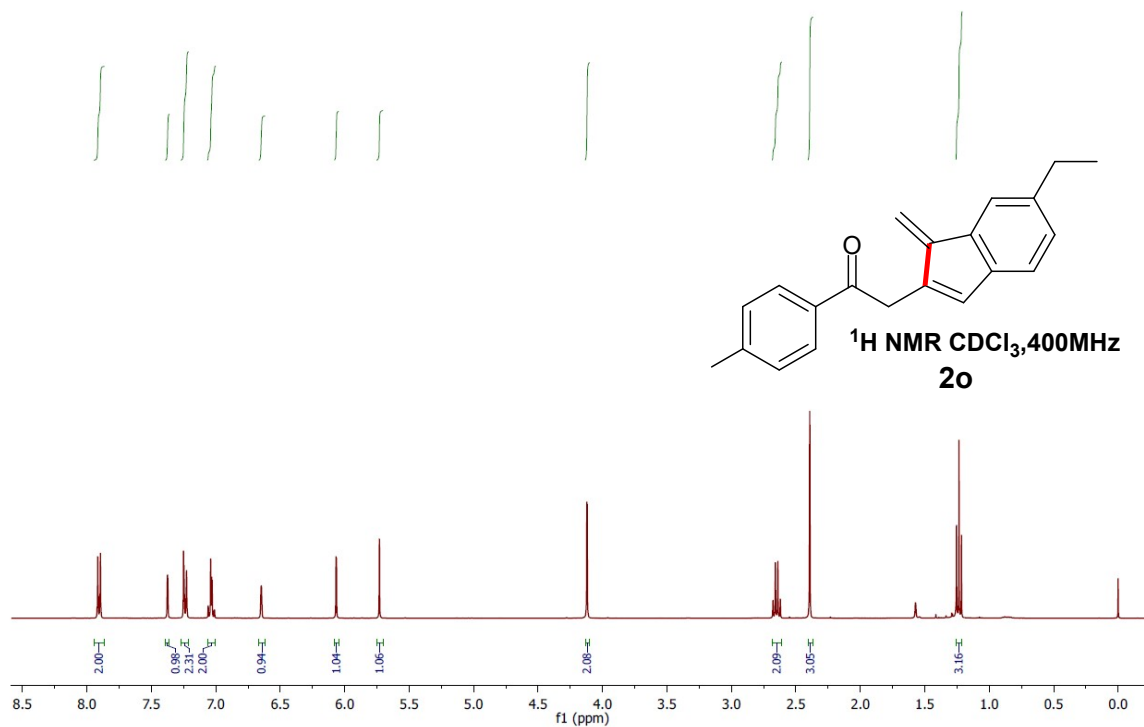


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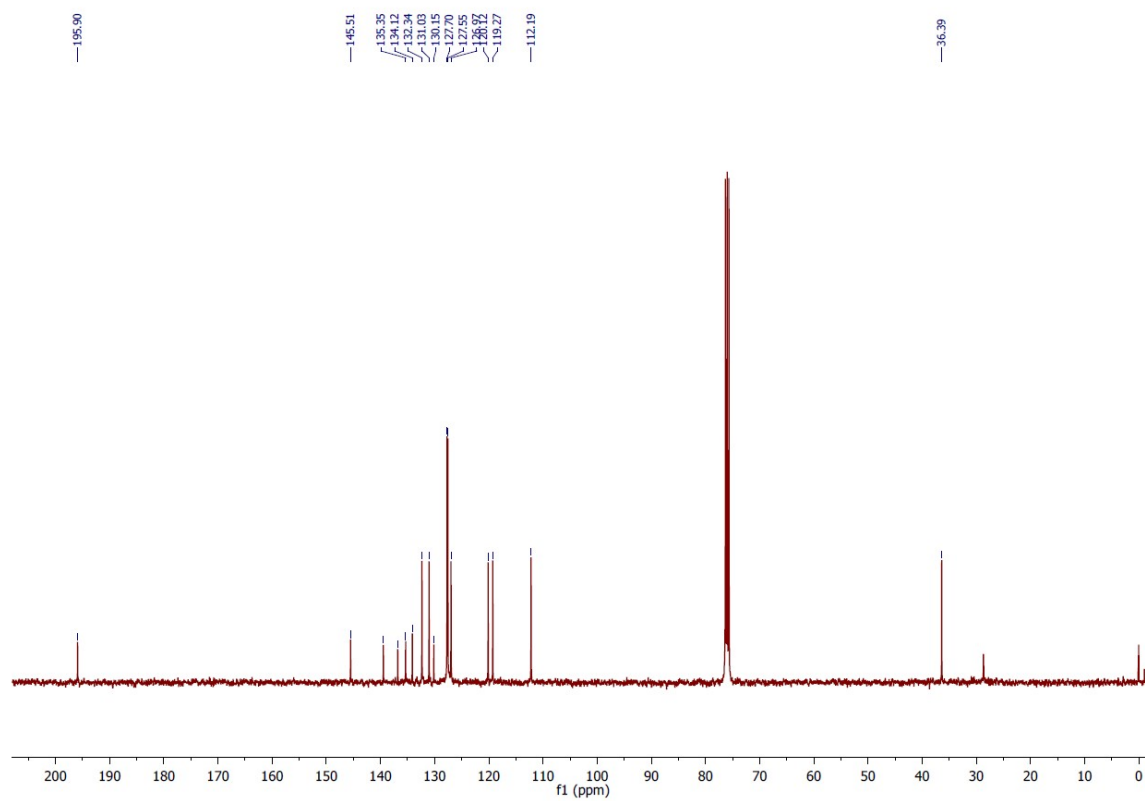
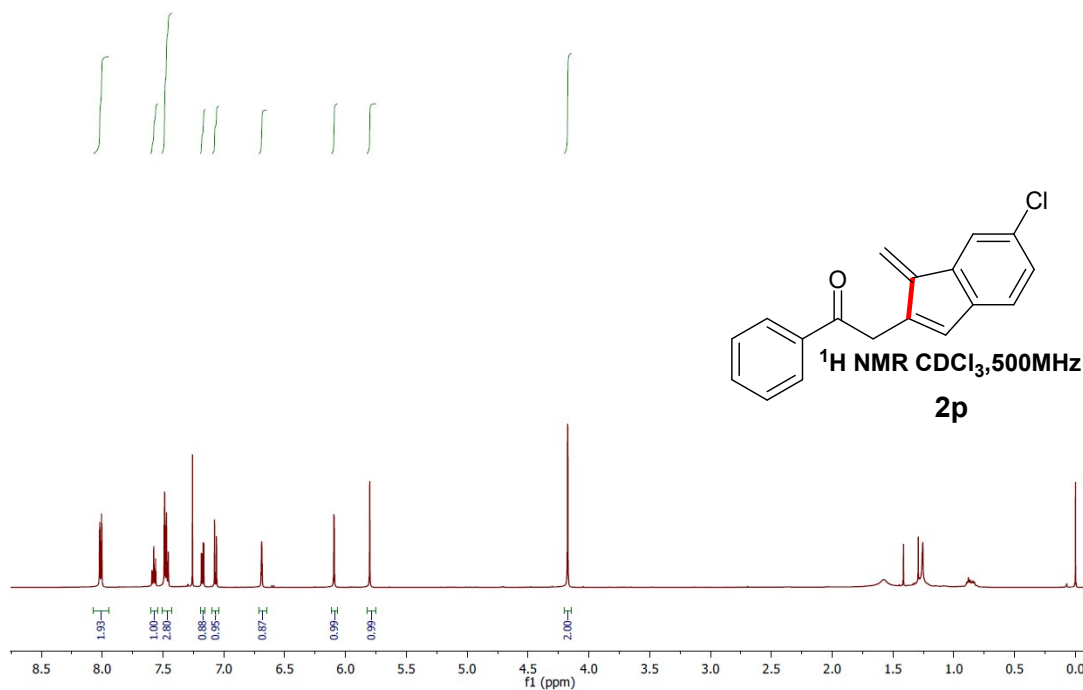




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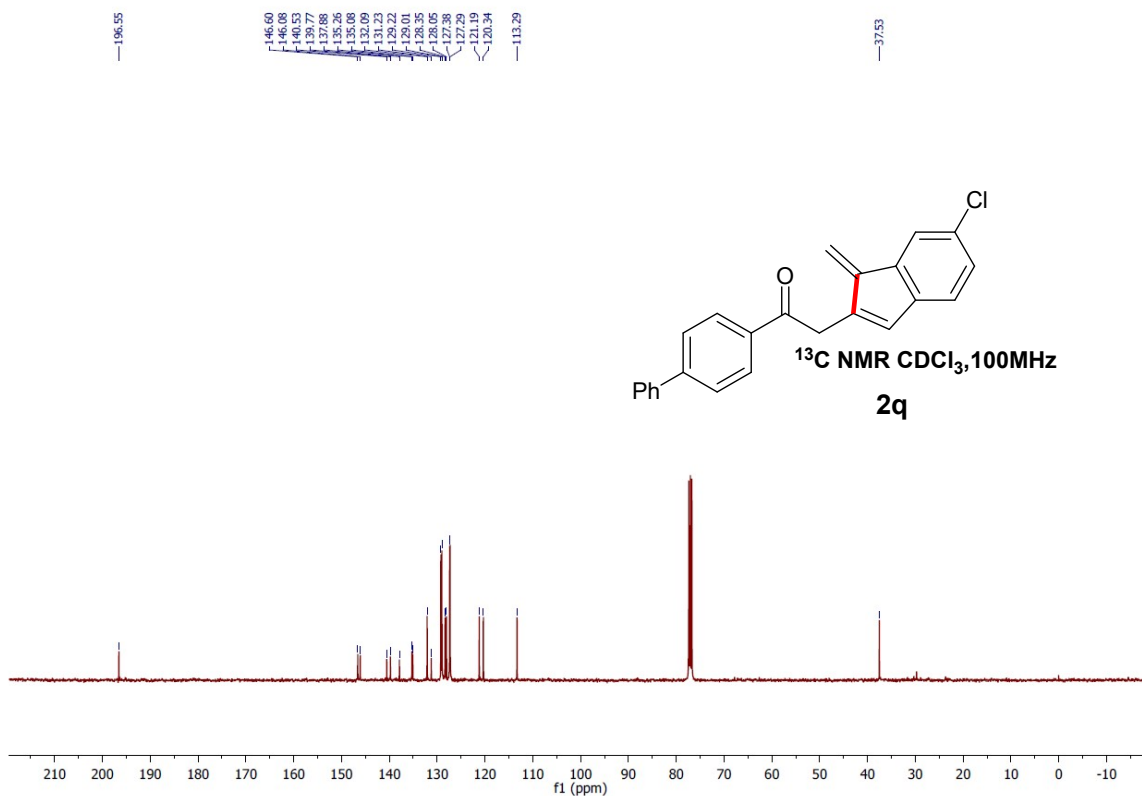
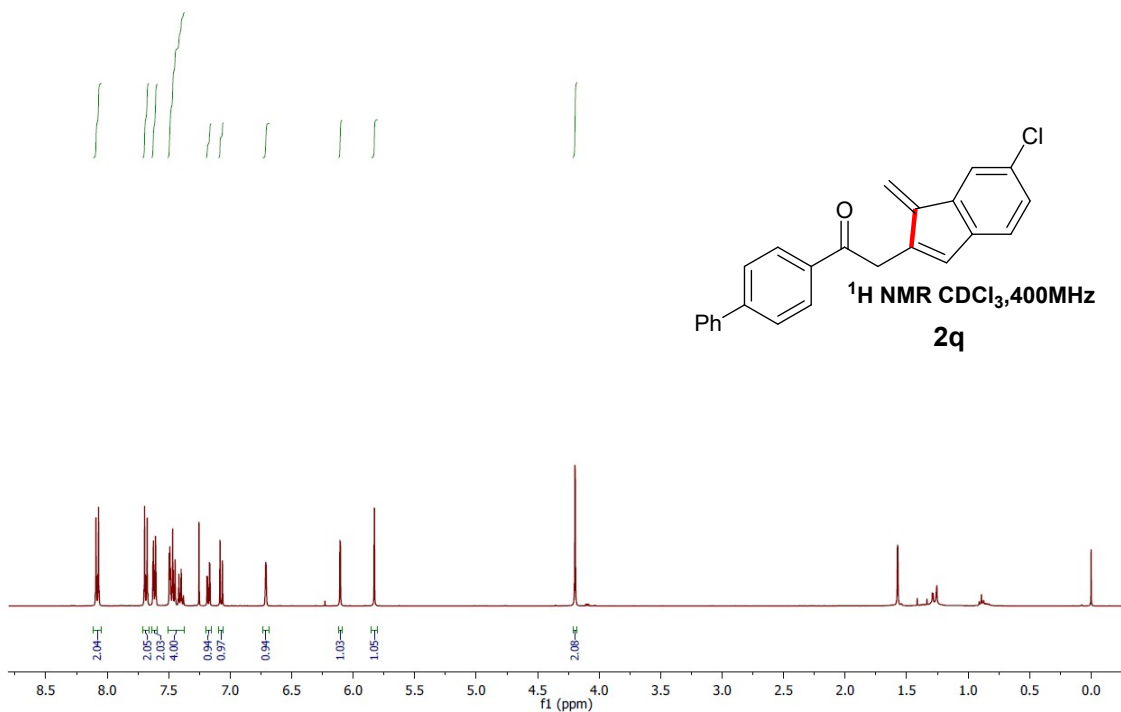


2-(6-Chloro-1-methylene-1*H*-inden-2-yl)-1-phenylethan-1-one: 2p

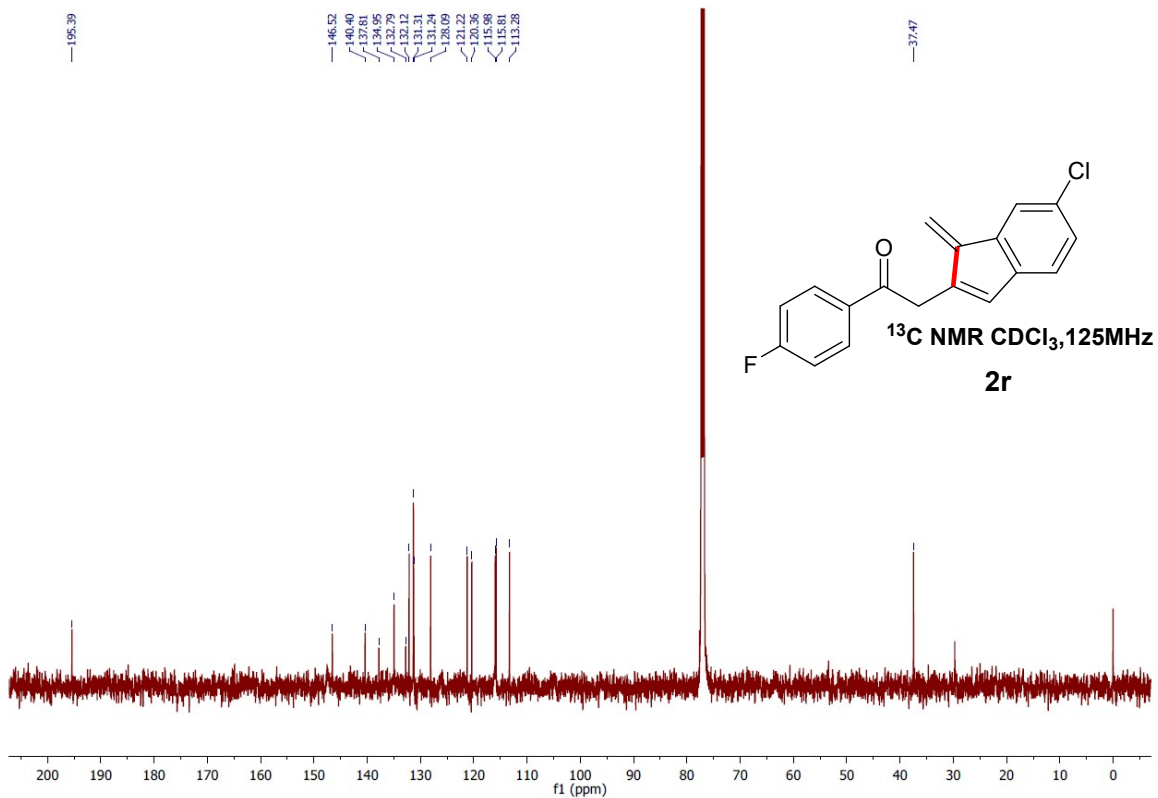
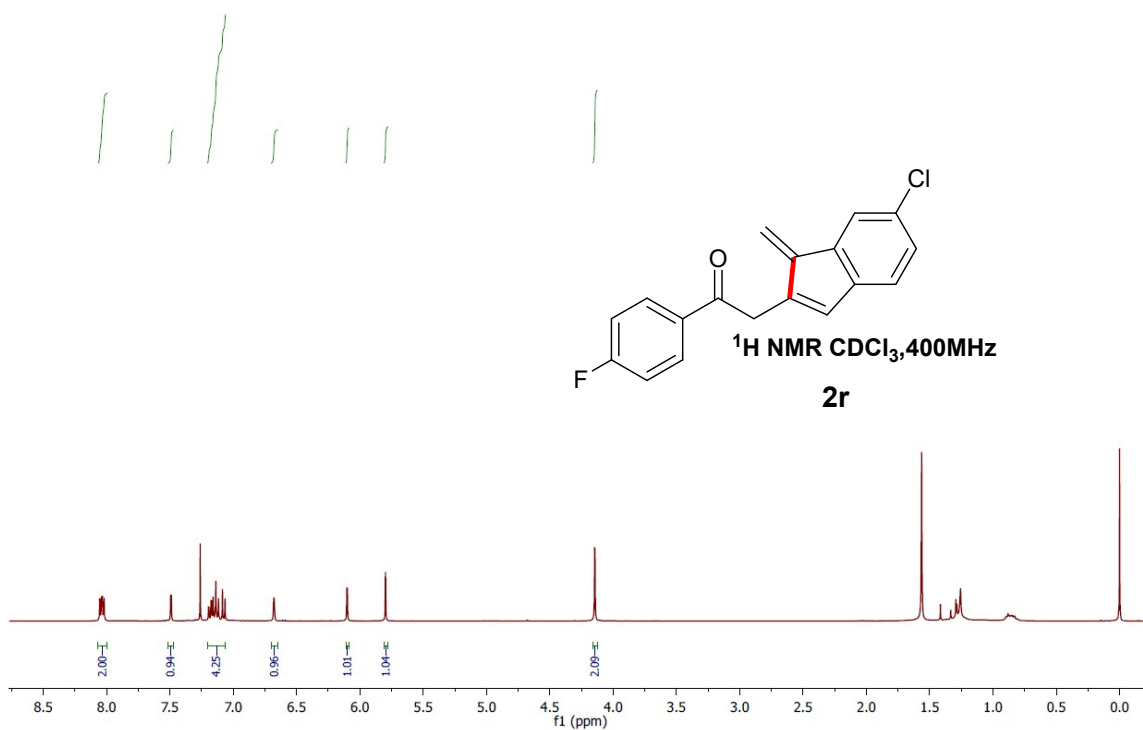


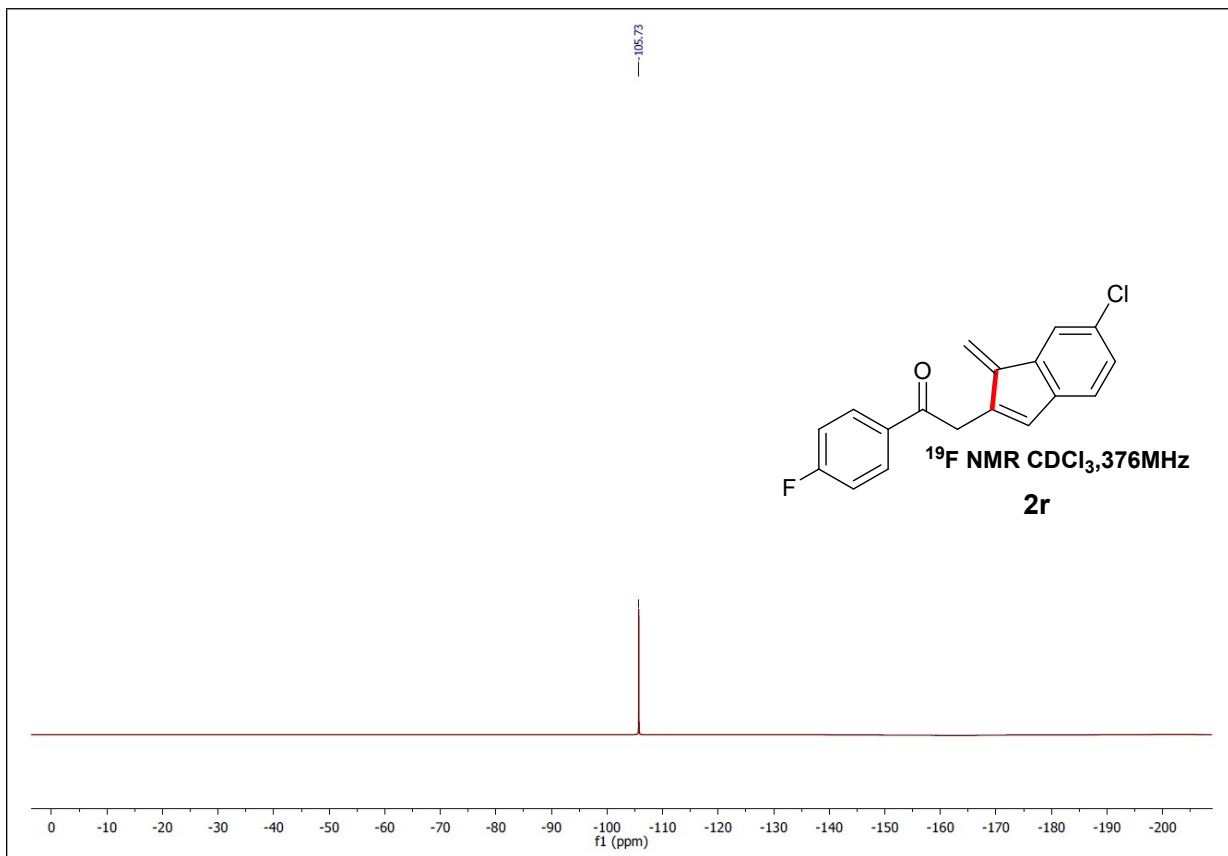
a

1-([1,1'-Biphenyl]-4-yl)-2-(6-chloro-1-methylene-1*H*-inden-2-yl)ethan-1-one:2q

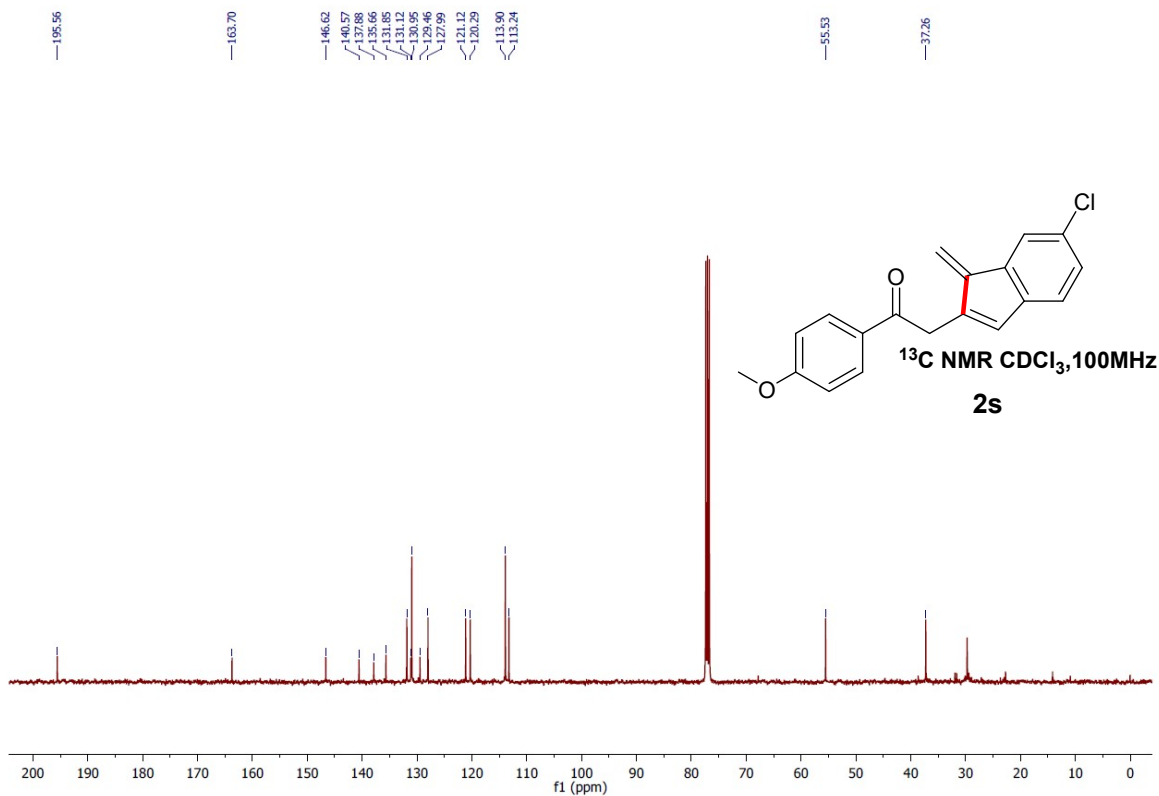
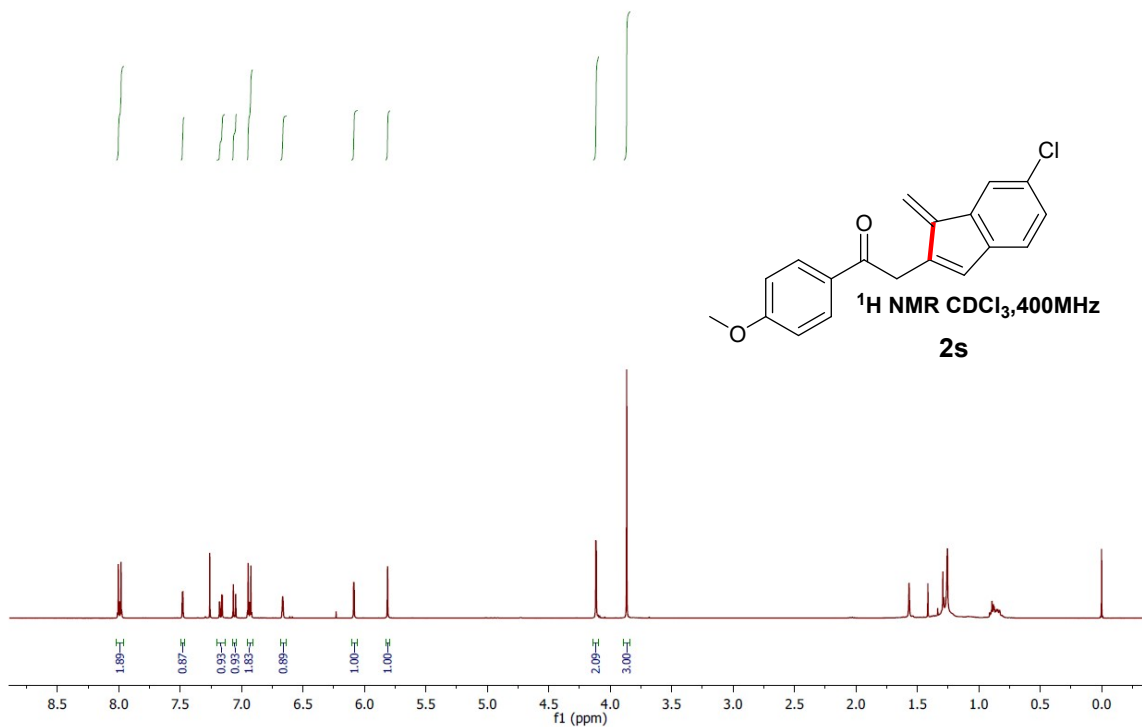


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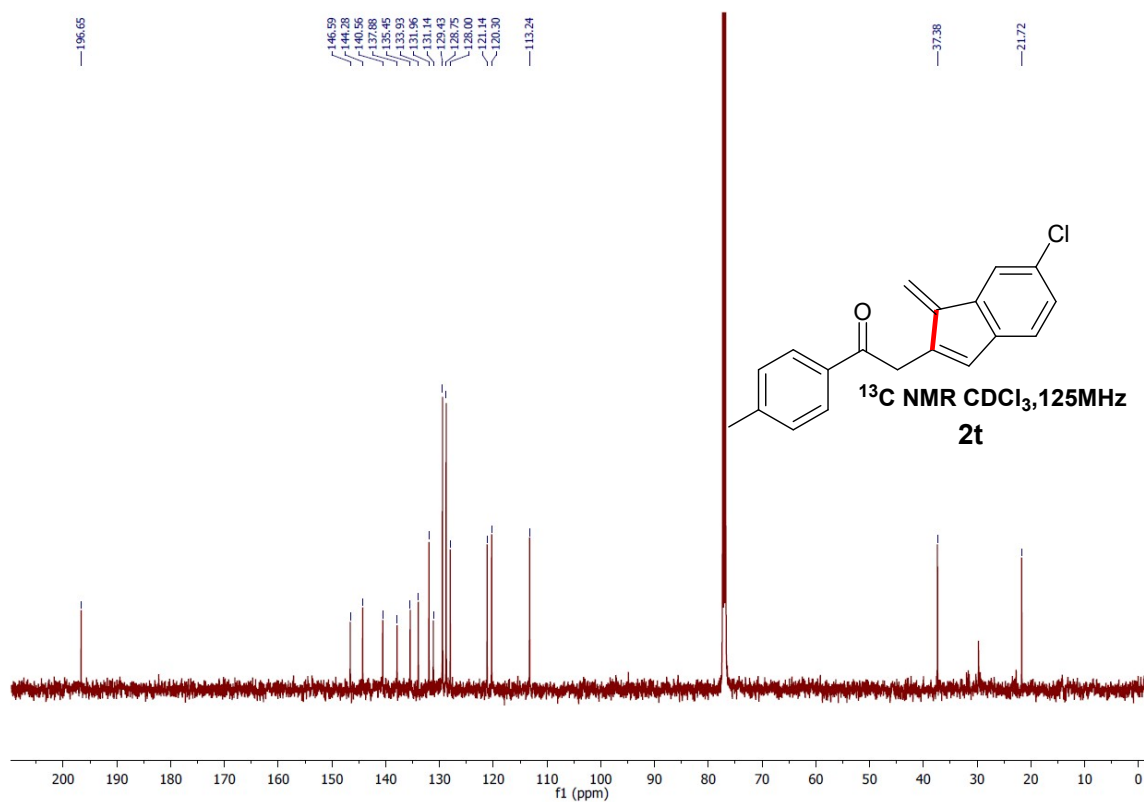
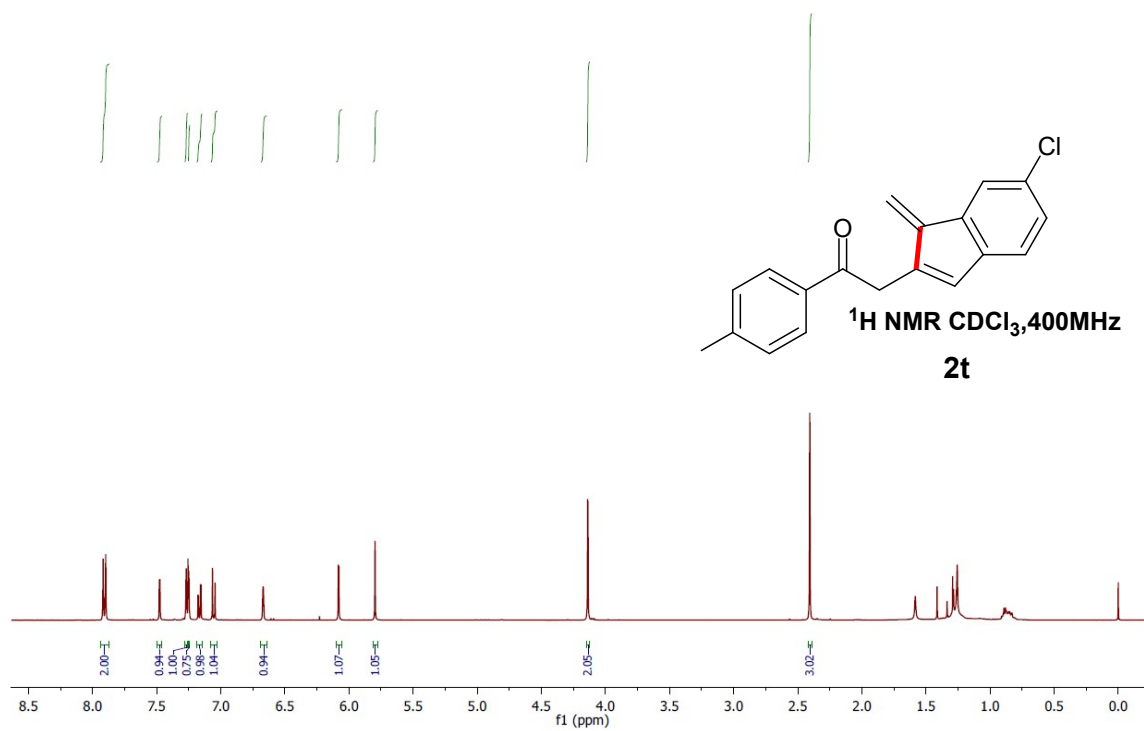




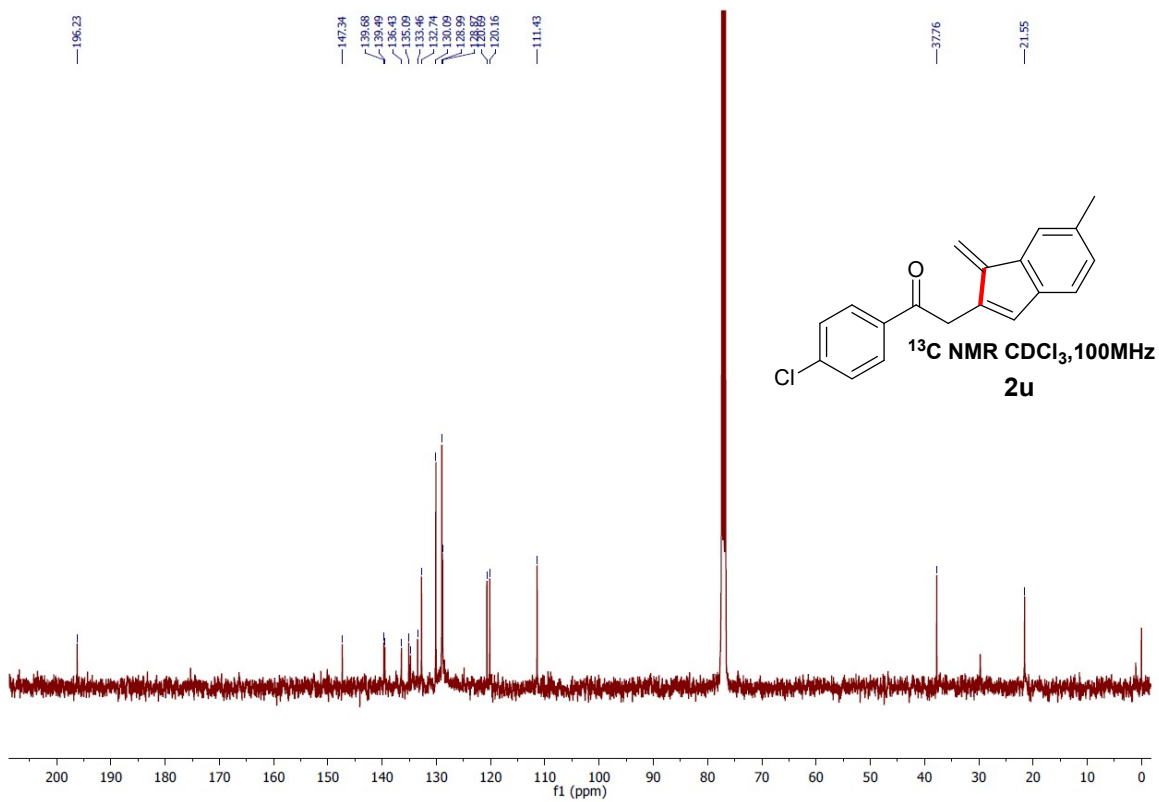
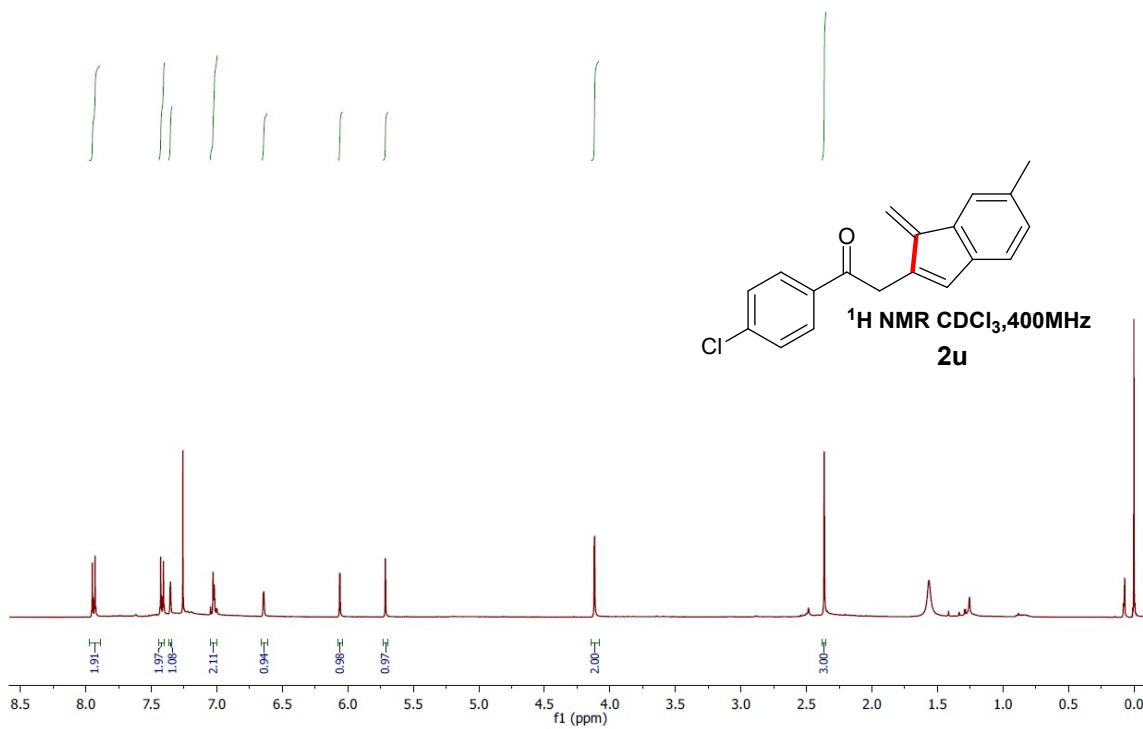
**2-(6-Chloro-1-methylene-1*H*-inden-2-yl)-1-(4-methoxyphenyl)ethan-1-one:2s**



2-(6-Chloro-1-methylene-1*H*-inden-2-yl)-1-(*p*-tolyl)ethan-1-one:2t

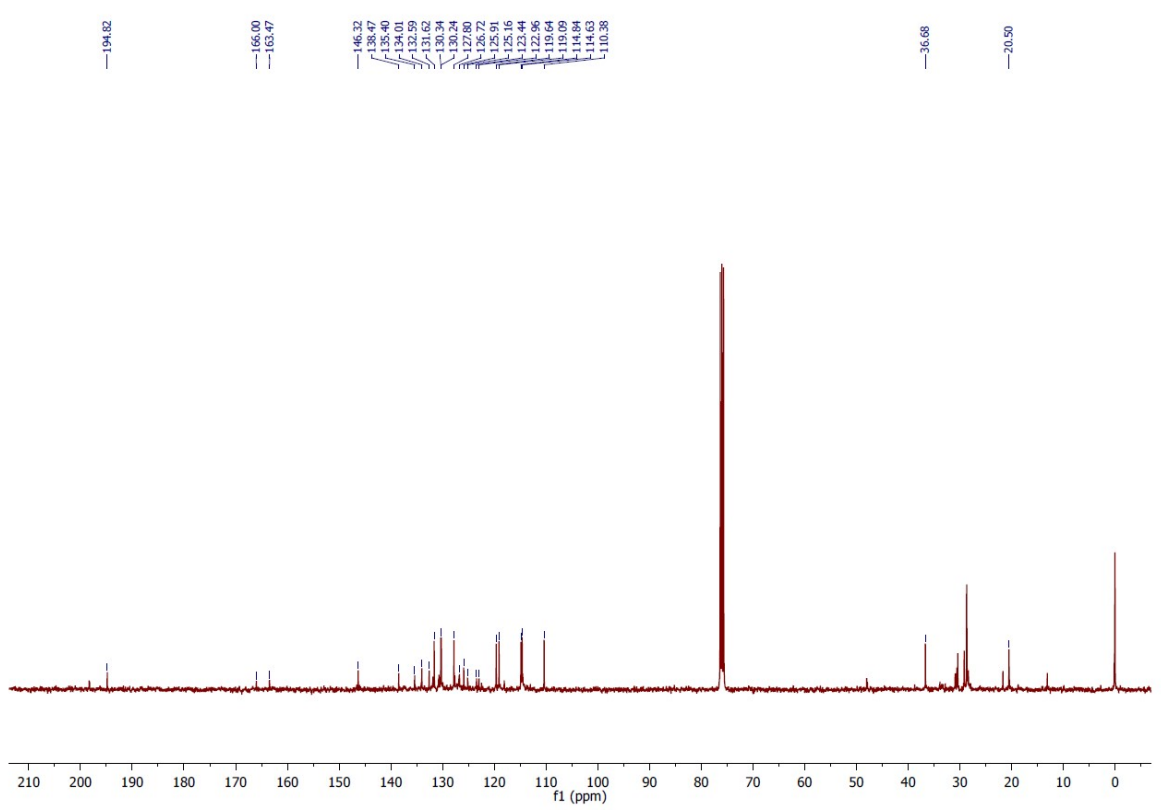
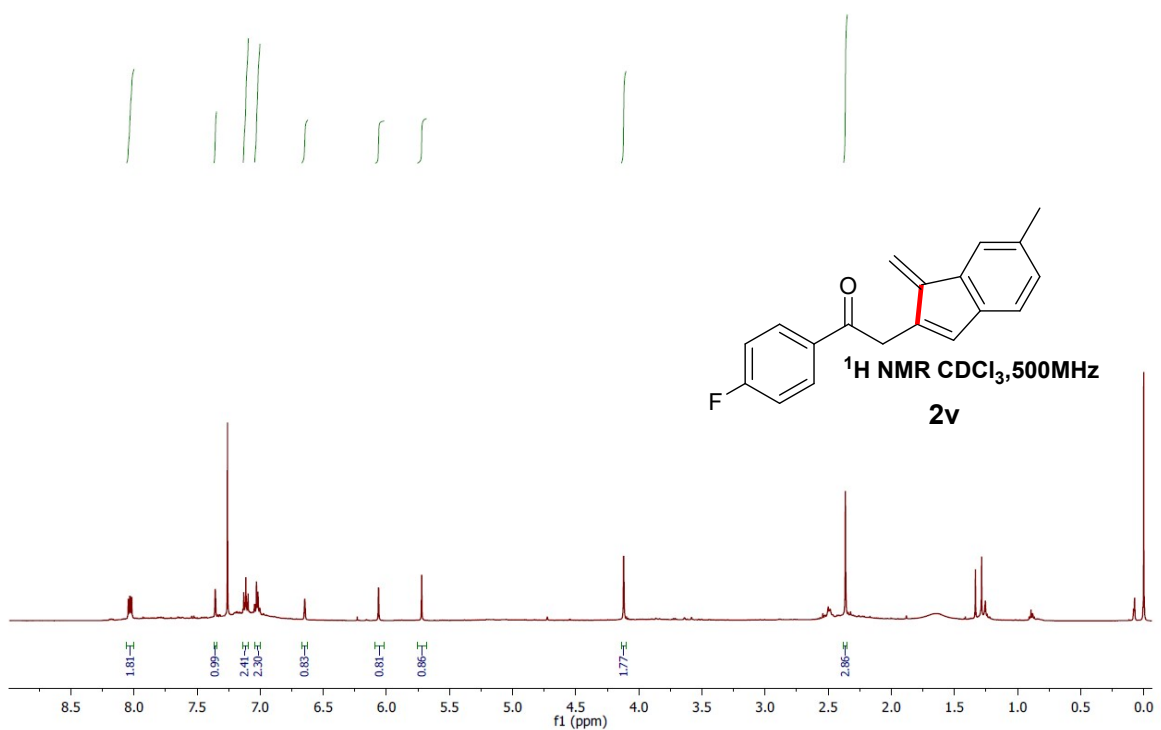


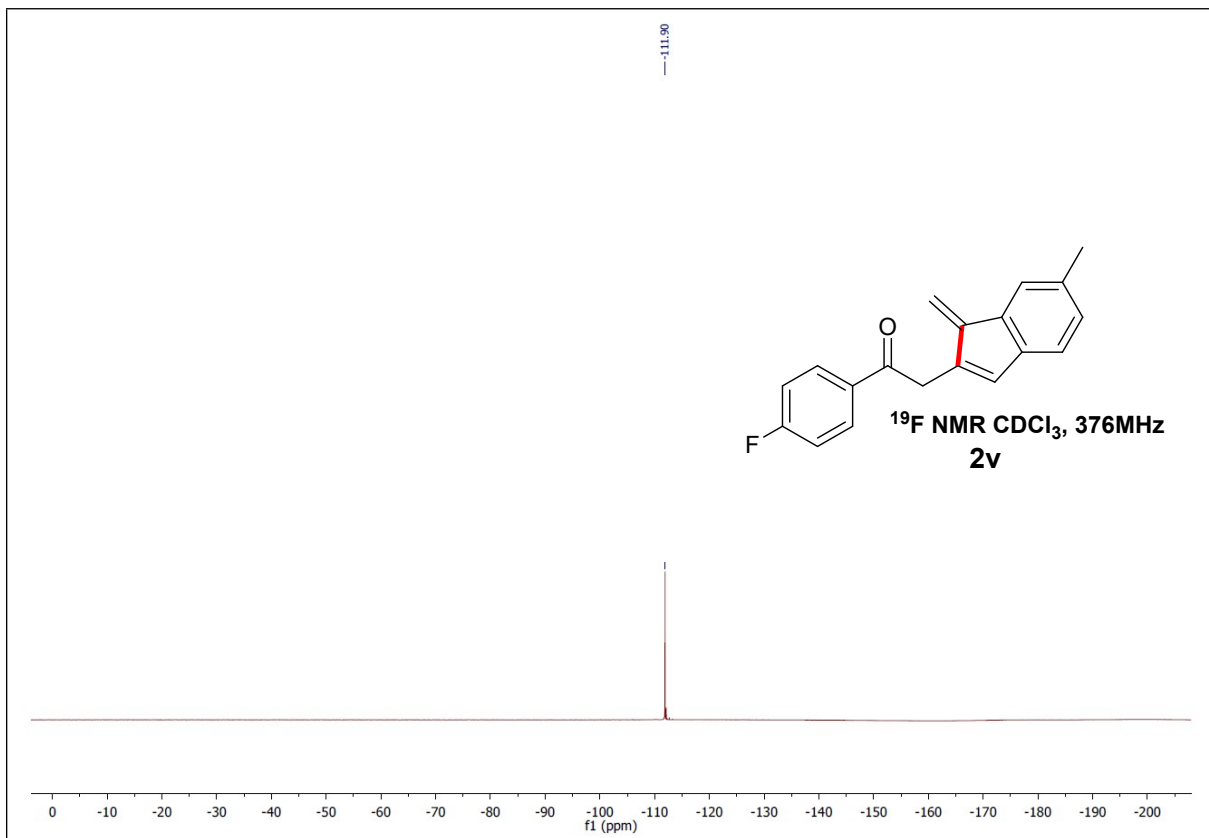
# 1-(4-Chlorophenyl)-2-(6-methyl-1-methylene-1H-inden-2-yl)ethan-1-one:2u





1-(4-Fluorophenyl)-2-(6-methyl-1-methylene-1H-inden-2-yl)ethan-1-one:2v



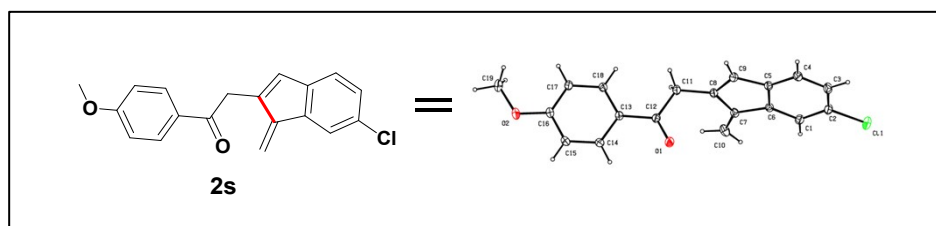


## 2. X-ray Crystallography

X-ray data for the compound was collected at room temperature on a Bruker D8 QUEST instrument with an I $\mu$ S Mo microsource ( $\lambda = 0.7107$  Å) and a PHOTON-III detector. The raw data frames were reduced and corrected for absorption effects using the Bruker Apex 3 software suite programs.<sup>1</sup> The structure was solved using intrinsic phasing method [2] and further refined with the SHELXL<sup>2</sup> program and expanded using Fourier techniques. Anisotropic displacement parameters were included for all non-hydrogen atoms. All C bound H atoms were positioned geometrically and treated as riding on their parent C atoms [C-H = 0.93-0.97 Å, and U<sub>iso</sub>(H) = 1.5U<sub>eq</sub>(C) for methyl H or 1.2U<sub>eq</sub>(C) for other H atoms].

### Crystal structure determination of **2s** [KB418\_0m\_a]

**Crystal Data** for C<sub>19</sub>H<sub>15</sub>ClO<sub>2</sub> ( $M = 310.76$  g/mol): monoclinic, space group P2<sub>1</sub>/c (no. 14),  $a = 16.4838(4)$  Å,  $b = 11.3226(3)$  Å,  $c = 8.5334(2)$  Å,  $\beta = 98.0460(10)^\circ$ ,  $V = 1576.99(7)$  Å<sup>3</sup>,  $Z = 4$ ,  $T = 294.15$  K,  $\mu(\text{MoK}\alpha) = 0.246$  mm<sup>-1</sup>,  $D_{\text{calc}} = 1.309$  g/cm<sup>3</sup>, 21052 reflections measured ( $4.378^\circ \leq 2\Theta \leq 56.538^\circ$ ), 3888 unique ( $R_{\text{int}} = 0.0415$ ,  $R_{\text{sigma}} = 0.0388$ ) which were used in all calculations. The final  $R_1$  was 0.0460 ( $I > 2\sigma(I)$ ) and  $wR_2$  was 0.1462 (all data). CCDC 2254463 deposition numbers contains the supplementary crystallographic data for this paper which can be obtained free of charge at <https://www.ccdc.cam.ac.uk/structures/>



**Figure 3:** ORTEP diagram of **2s** (KB418) compound with the atom-numbering. Displacement ellipsoids are drawn at the 30% probability level and H atoms are shown as small spheres of arbitrary radius.

1. Bruker (2016). APEX3, SAINT and SADABS. Bruker AXS, Inc., Madison, Wisconsin, USA.
2. Sheldrick G. M. (2015). Acta Crystallogr C71: 3-8.