

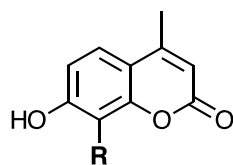
# Supporting Information

## Novel 8-Substituted Coumarins That Selectively Inhibit Human Carbonic Anhydrase IX and XII

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### Table of Contents

<b>Table S1.</b> Yields obtained for compounds 2- 13	S2
<b>Figure S1.</b> Alignment between <i>hCA I</i> , <i>hCA II</i> , <i>hCA IX</i> and <i>hCA XII</i>	S3
NMR spectra of final compounds.	S4-S28

**Table S1.** Yields obtained for compounds **2- 13**

	<b>R Groups</b>	<b>% Yield</b>
<b>2</b>		63
<b>3</b>		32
<b>4</b>		47
<b>5</b>		26
<b>6</b>		50
<b>7</b>		53
<b>8</b>		64
<b>9</b>		67
<b>10</b>		50
<b>11</b>		60
<b>12</b>		76
<b>13</b>		60

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CAI      -----
CAII     -----
CAXII    -----
CAIX     MAPLCPSPWLPPLLI PAPAPGLTVQLLSLLLLLVFVHPQRLPRMQEDSPLG

CAI      -----
CAII     -----
CAXII    -----MP
CAIX     GGSSGEDDPLGEEDLPSEEDSPREEDPPGEEDLPGEEDLPGEEDLPEVKP

CAI      -----MASPDWGYDDKNGPEQWS
CAII     -----MSHHWGYGKHNGPEHWH
CAXII    RRS LHAAAVLLLVLKEQPSSPAP-----VNGSKWTFYFGPDGENSW
CAIX     KSEEEGSLKLEDLPTVEAPGDPQEPQNNNAHRDKEGDDQSHWRYGGDPPWP

CAI      KLYPIANGNNQSPVDIKTSETKHDTSLKPI SVS-YNPATAKEI INVGH
CAII     KDFPIAKGERQSPVDIDHTHTAKYDPSLKPLSVS-YDQATSLRILNNGHAF
CAXII    KKYPCSGLLQSPIDLHSDILQYDASLTPLFQGYNLSANKQFLLTNNGH
CAIX     RVSPACAGRFQSPVDIRPQLAAFCPALRPLELLGFQLPPLPELRLRNNGH

CAI      HVNFEDNDNRSVLKGGPFSDSYRLFQFHFHWGSTNE-HGSEHTVDGVKYS
CAII     NVEFDDSQDKAVLKGGLDGTYRLIQFHFHWGSLDG-QGSEHTVDKPKYA
CAXII    SVKLNLPSDMHIQG---LQSRYSATQLHLHWGNPNDPHGSEHTVSGQHFA
CAIX     SVQLTLPPGLEMALG--PGREYRALQLHLHWGAAGR-PGSEHTVEGHRFP

CAI      AELHVAHWNSAKYSSLAEAASKADGLAVIGVLMKVG-EANPKLQKVLDAL
CAII     AELHLVHWN-TKYGDFGKAVQPDGLAVLGI FLKVG-SAKPGLQKVVDVL
CAXII    AELHIVHYNLDLPDASTASNKSEGLAVLAVLIE MG-SFNPSYDKIFSHL
CAIX     AEIHVVHLS-TAFARVDEALGRPGGLAVLAAFLEE GPEENSAYEQLLSRL

CAI      QAIKTKKRAPFTNFD PSTLLPS-SLDFWTFYPGSLTHPPLYESVTWICK
CAII     DSIKTKGKSADFTNFDPRGLLPE-SLDYWTFYPGSLTTPPLLECVTWIVLK
CAXII    QHVVKYKQEA FVPGFNIEELLPERTAEYYRYRGS LTPPCNPTVLWTVFR
CAIX     EEIAEEGSETQVPGLDISALLPSDFSR YFQYEGSLTTPPCAQGVWTVFN

CAI      ESISVSSEQLAQFRSLLSNVEGDNAV--PMQHNNRPTQPLKGRTVRAS
CAII     EPI SVSSEQVLKFRKLNFNGE GEP EE--LMVDNWRPAQPLKNRQIKAS
CAIX     NPVQISQEQLLALETALYCTHMDDPSPREMINNFRQVQKFDERLVYTS
CAIX     QTVMLSAKQLHTLSDTLWG-----PGDSRLQLNFRATQPLNGRVIEAS

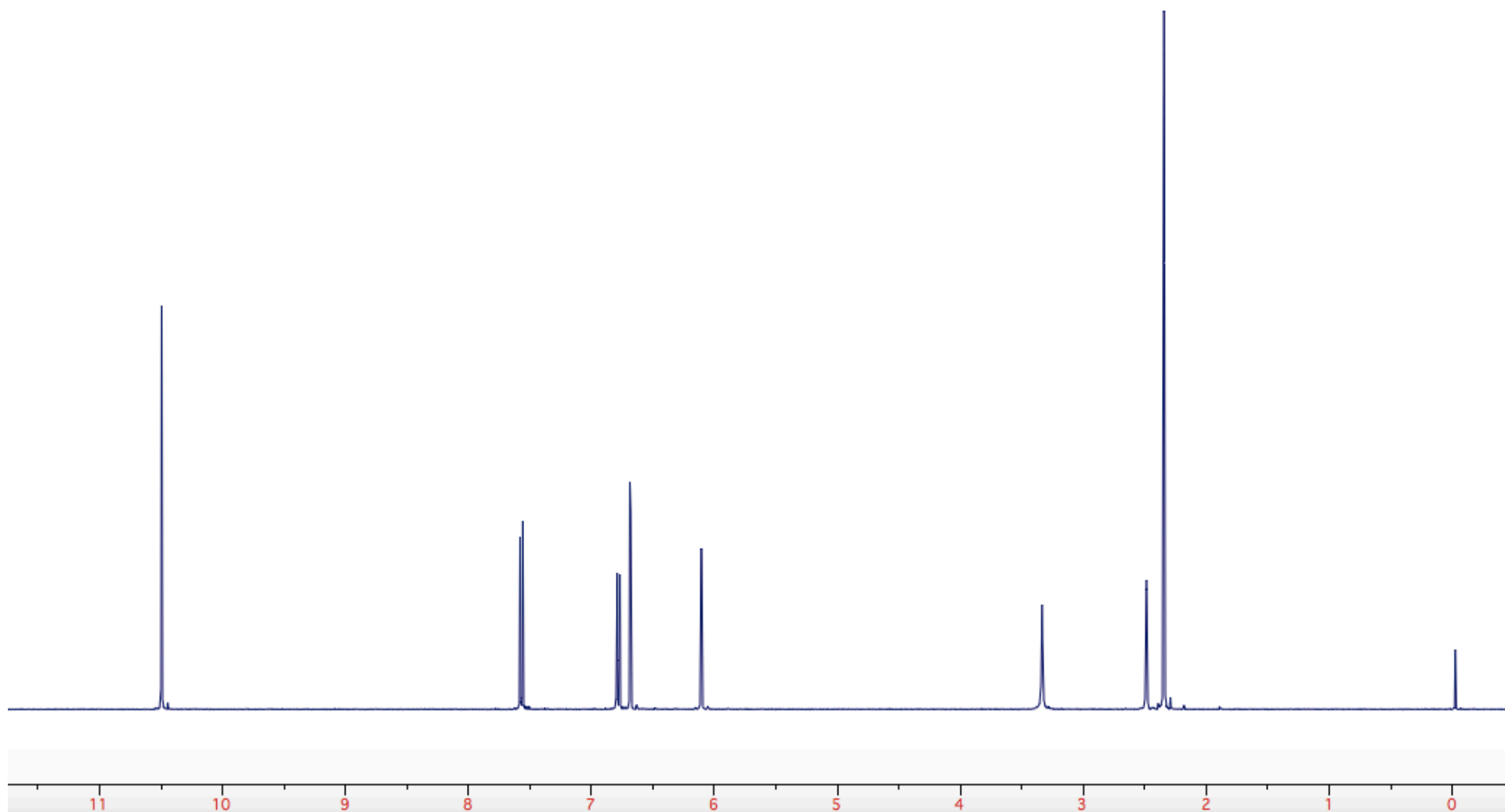
CAI      -----
CAII     -----
CAXII    Q-VQVCTAAGLSLGIILSLALAGILGICI-----VVVSIWLFRRKSIK
CAIX     AGVDSSPRAAEFVQLNSCLAAGDILALVFGLLFAVTSVAFLVQMRQHR

CAI      -----
CAII     -----
CAXII    GDNKGV IYK PATKMETEAHA
CAIX     GTKGGVS YRPAEVAETGA--

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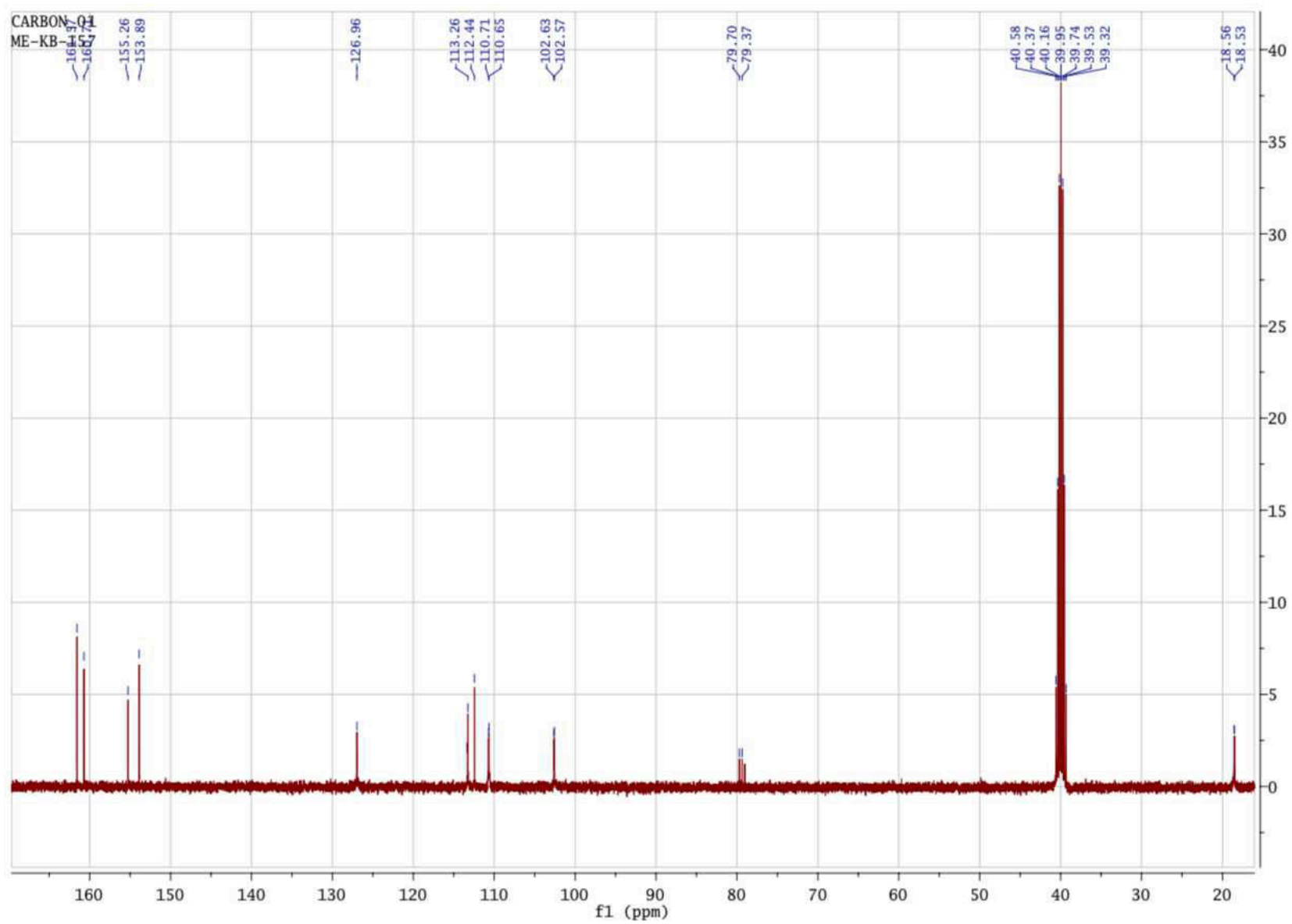
**Figure S1.** Alignment between *hCA I*, *hCA II*, *hCA IX* and *hCA XII*. Conserved residues are reported in bold.

**Compound 1**  
 **$^1\text{H}$  NMR**



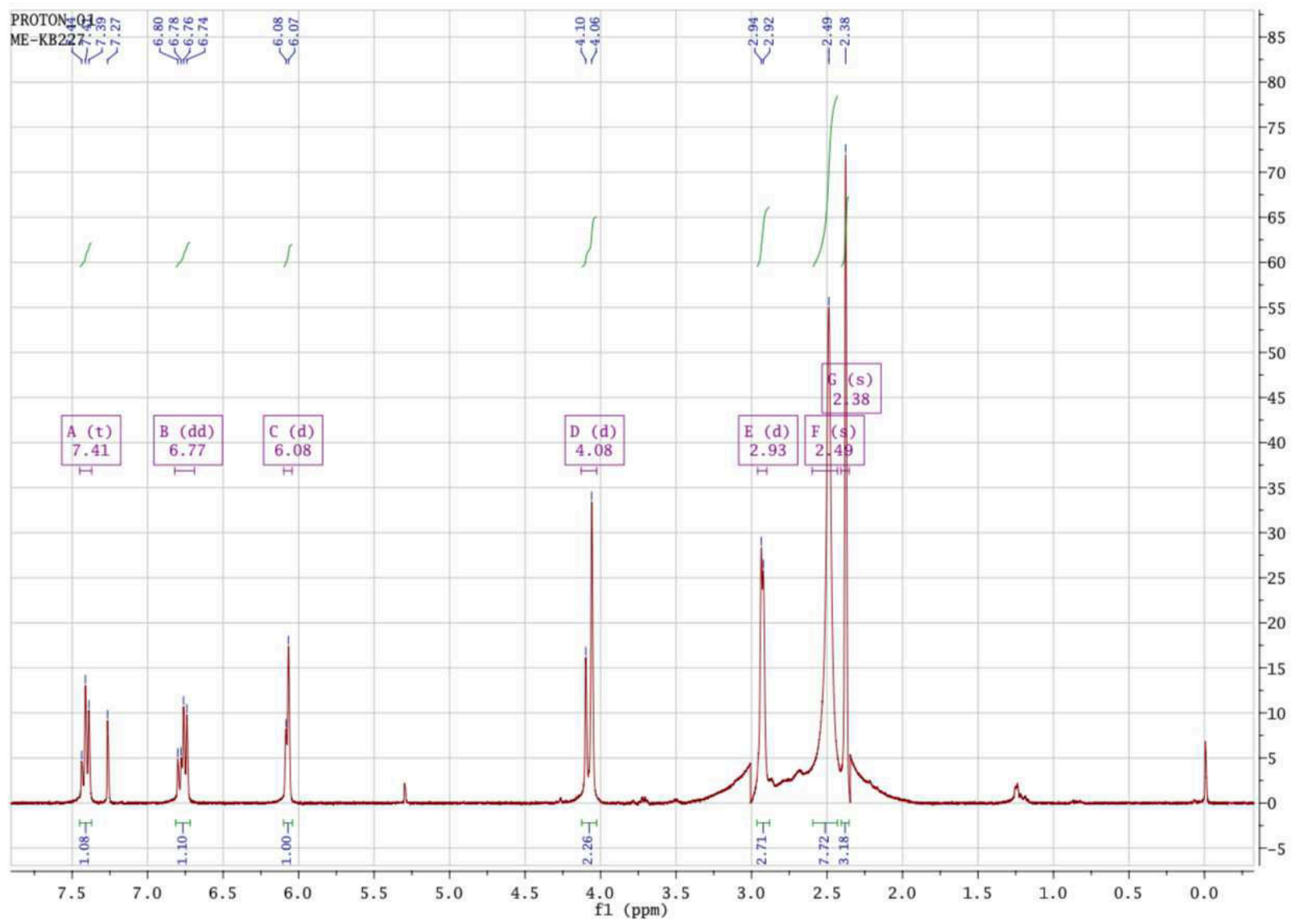
# Compound 1

## <sup>13</sup>C NMR



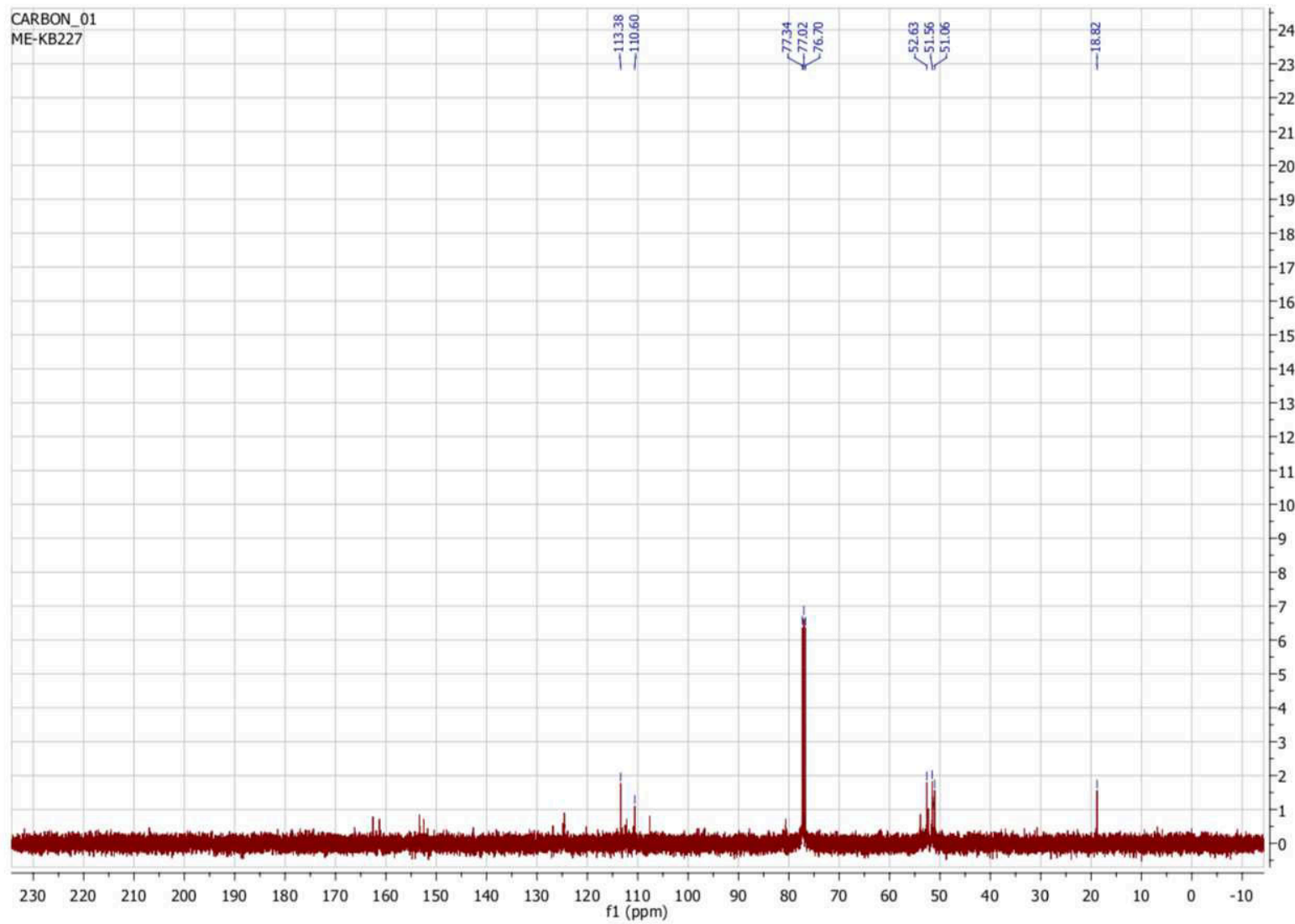
# Compound 2

## <sup>1</sup>H NMR

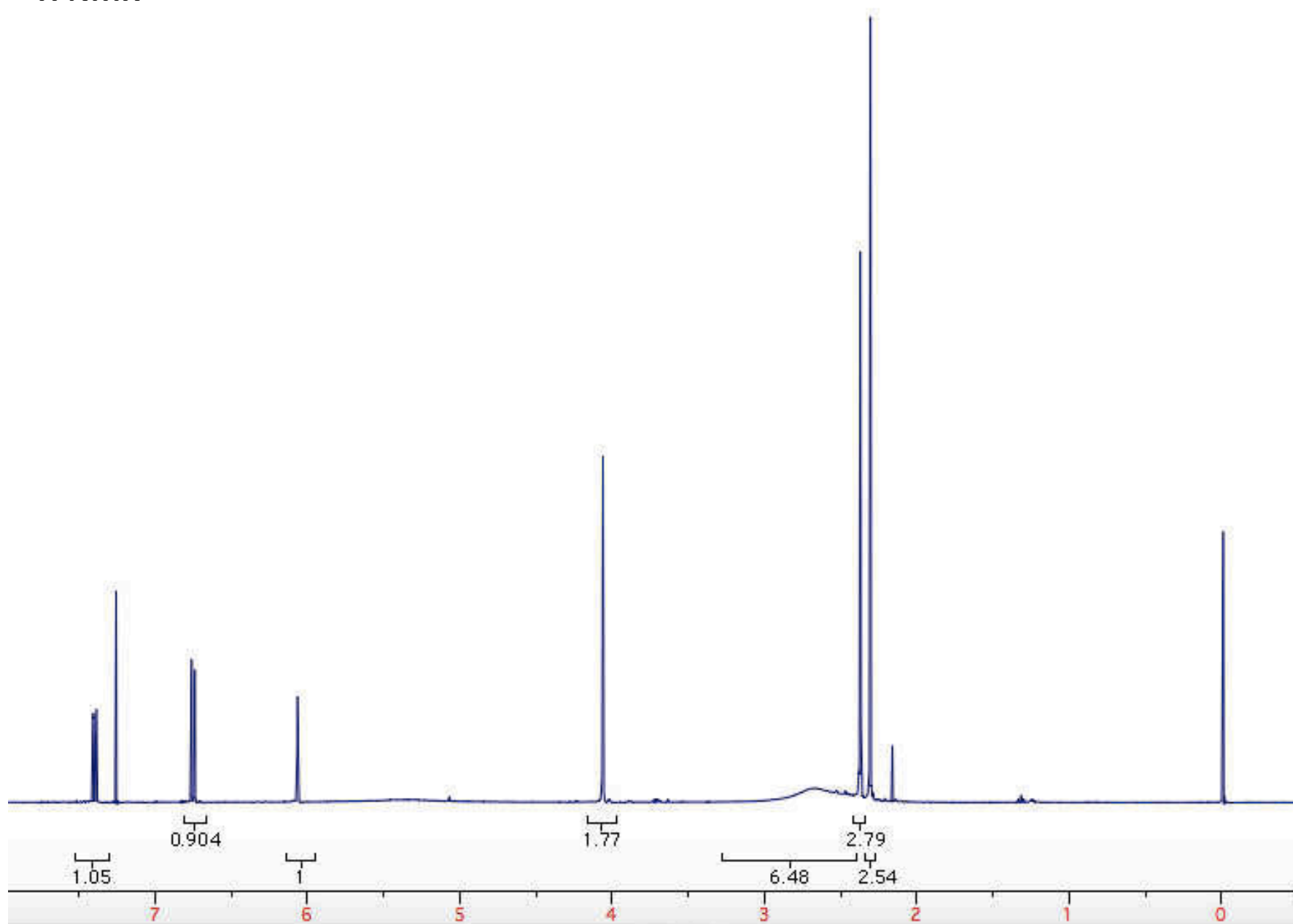


# Compound 2

## <sup>13</sup>C NMR



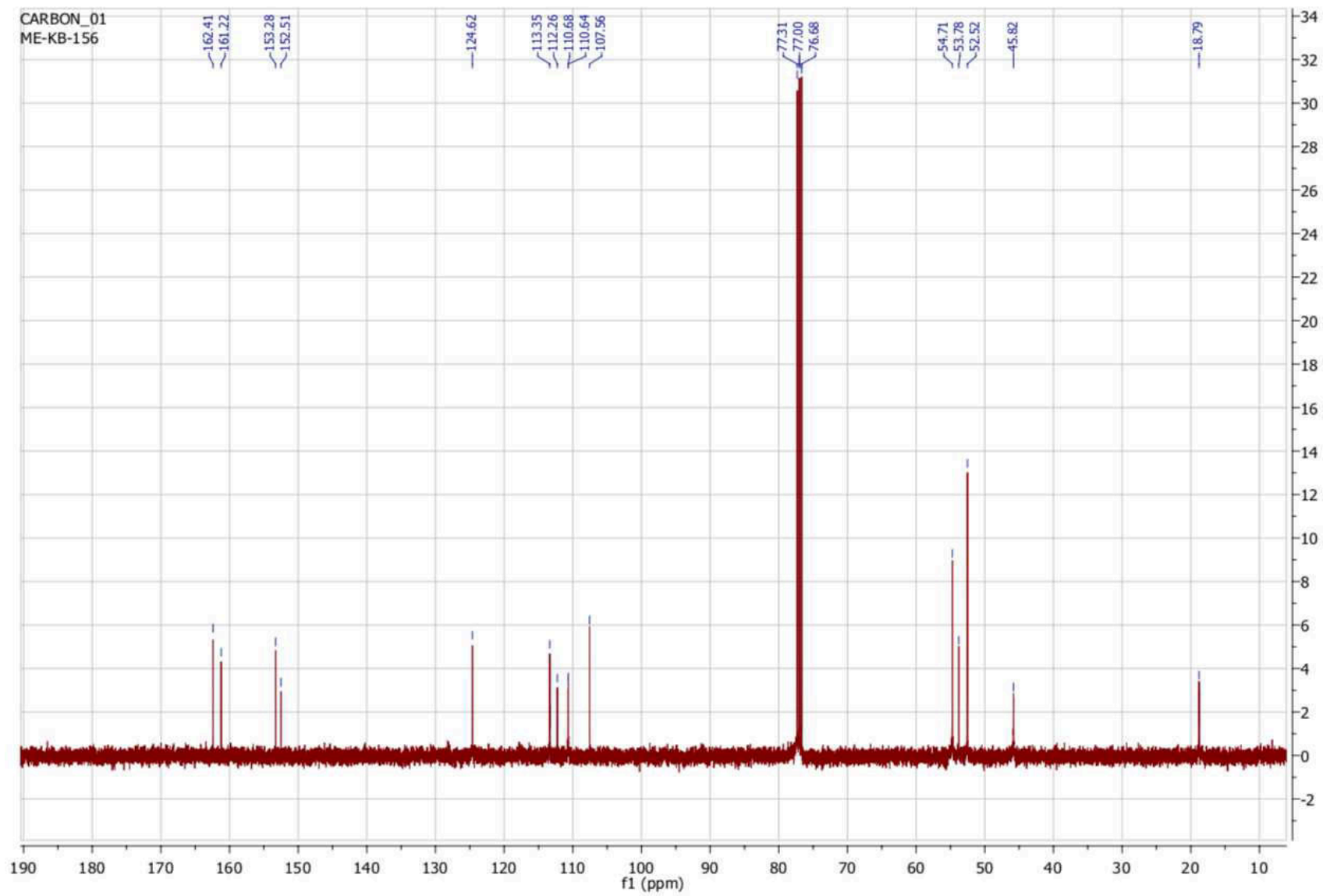
**Compound 3**  
 **$^1\text{H}$  NMR**



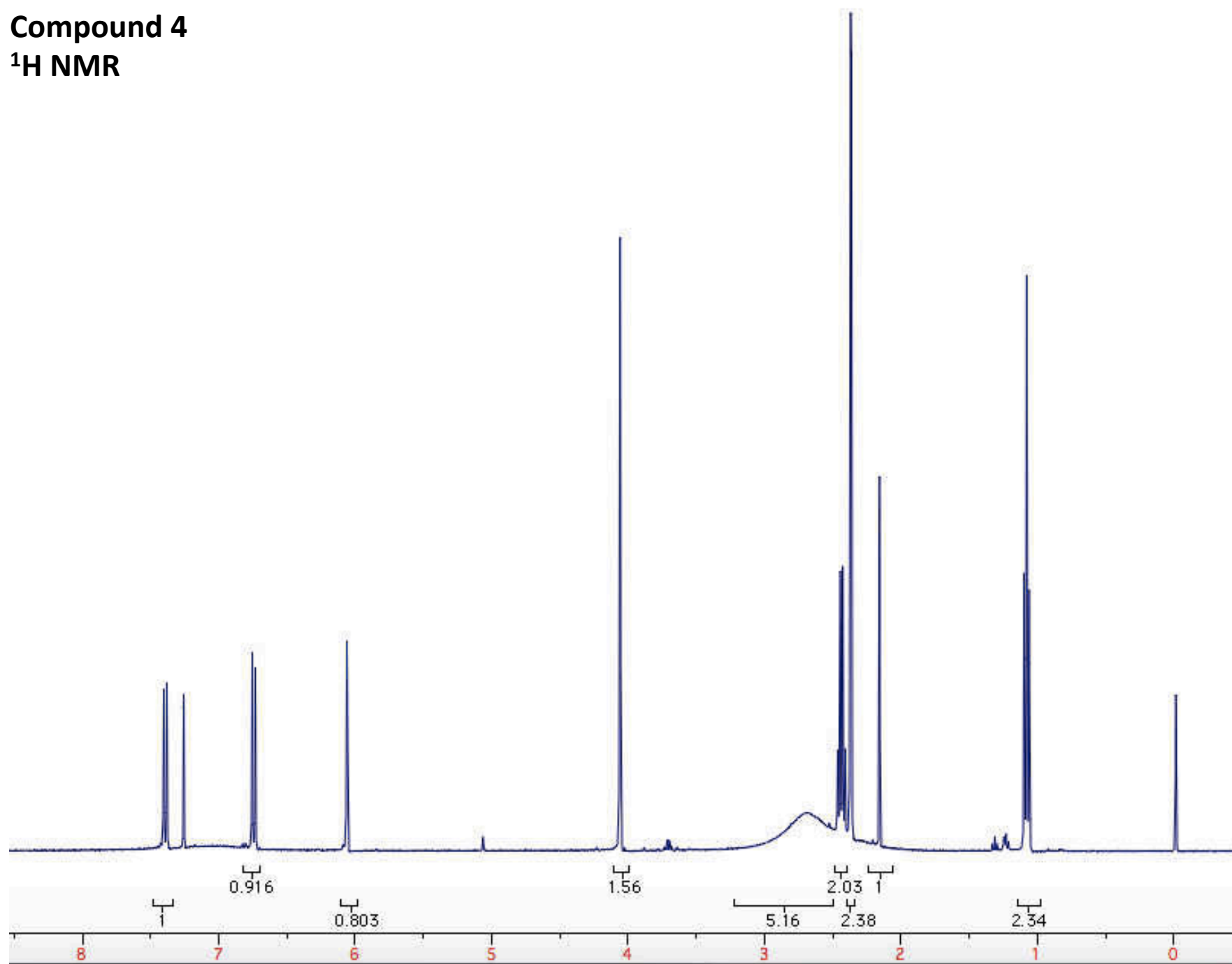


# Compound 3

## <sup>13</sup>C NMR

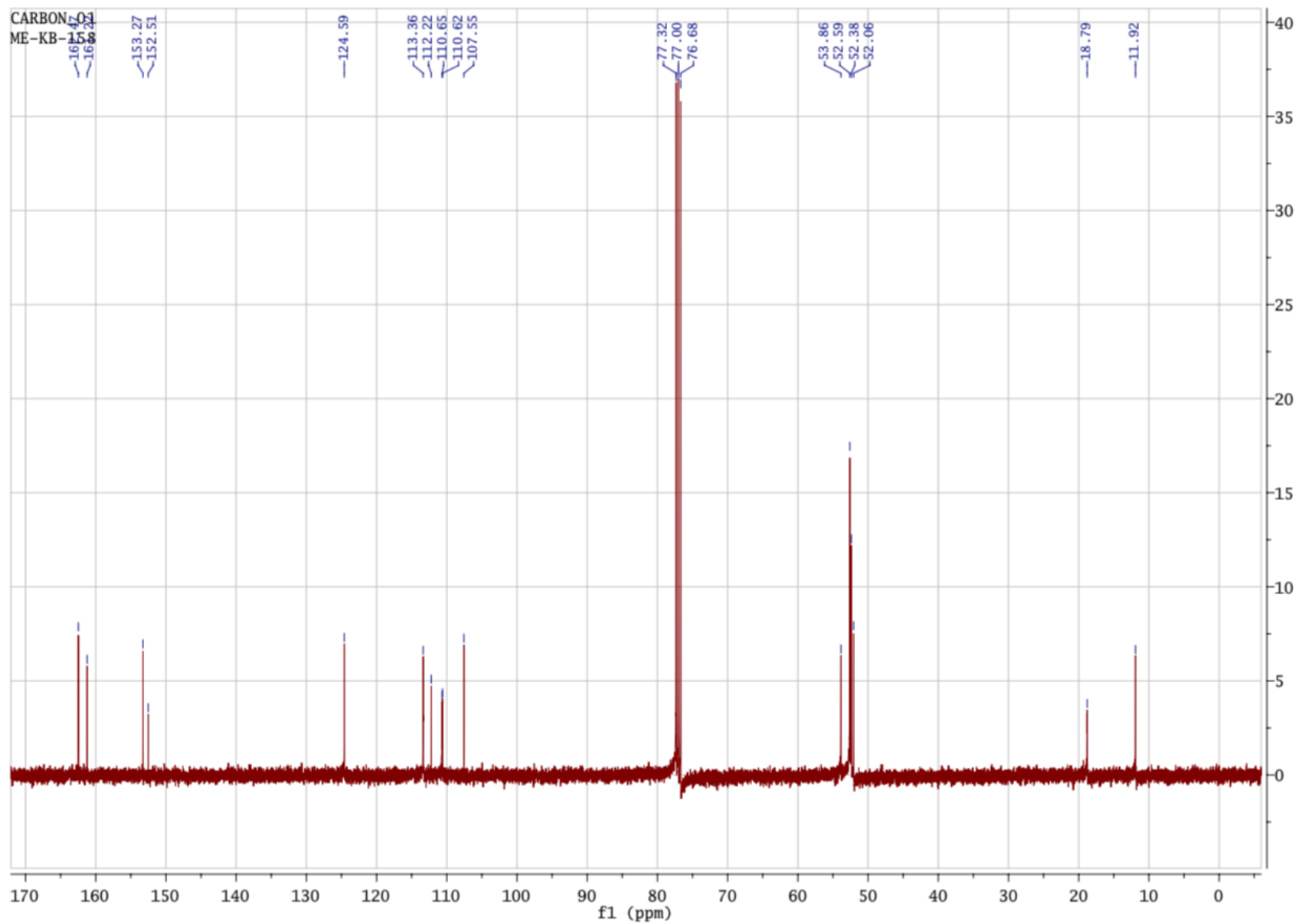


**Compound 4**  
 **$^1\text{H}$  NMR**

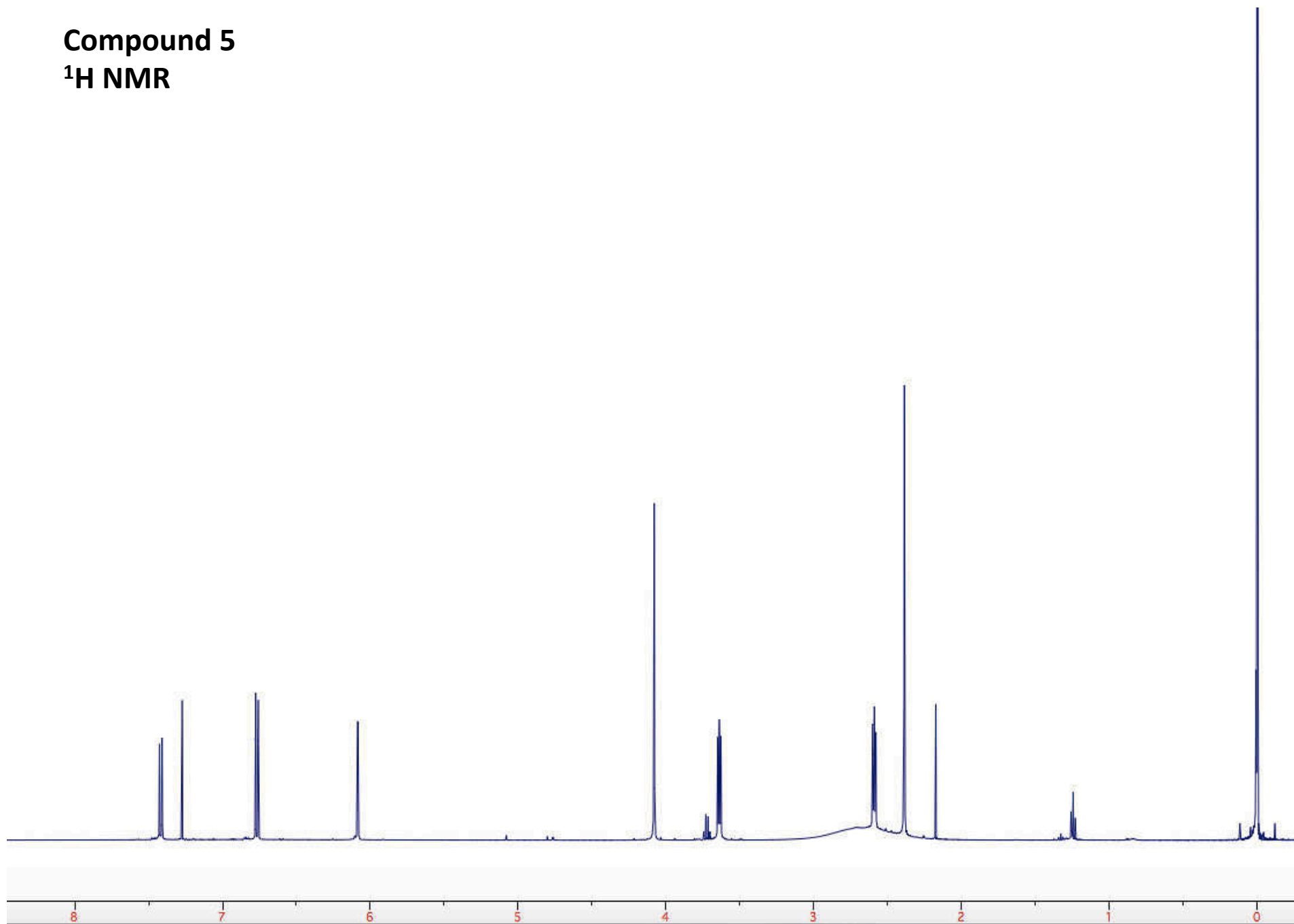


# Compound 4

## <sup>13</sup>C NMR

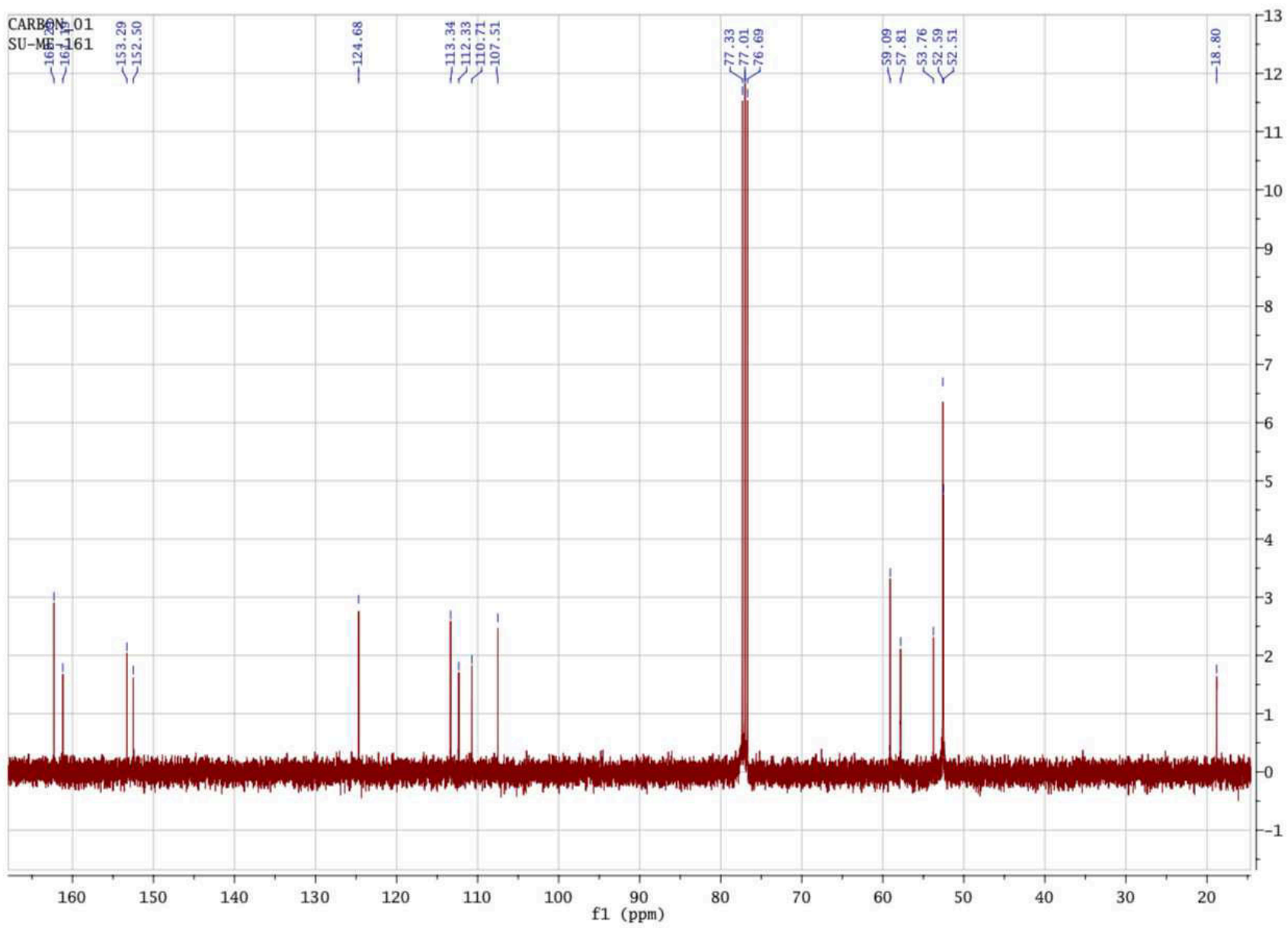


**Compound 5**  
 **$^1\text{H}$  NMR**

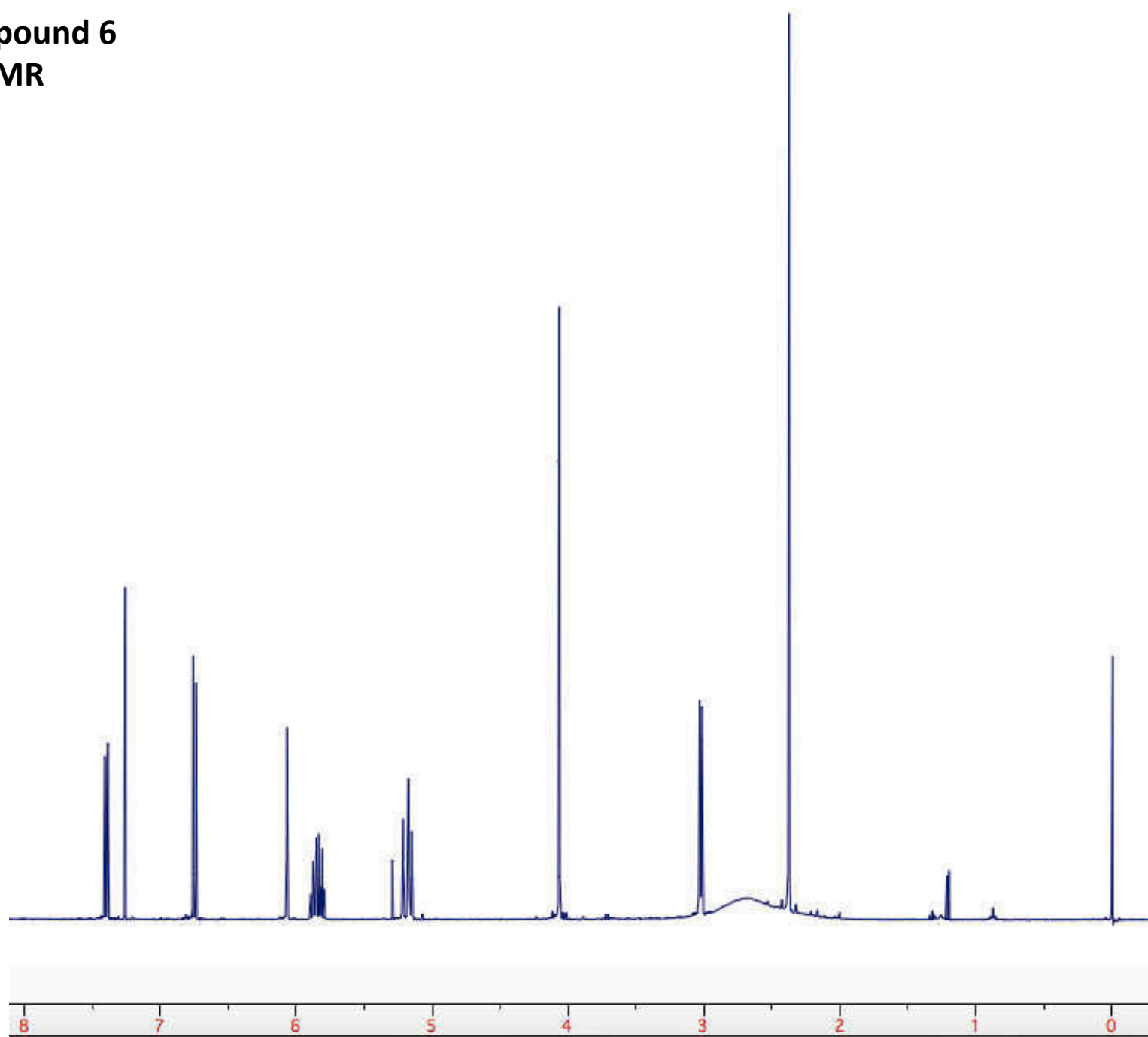


# Compound 5

## <sup>13</sup>C NMR

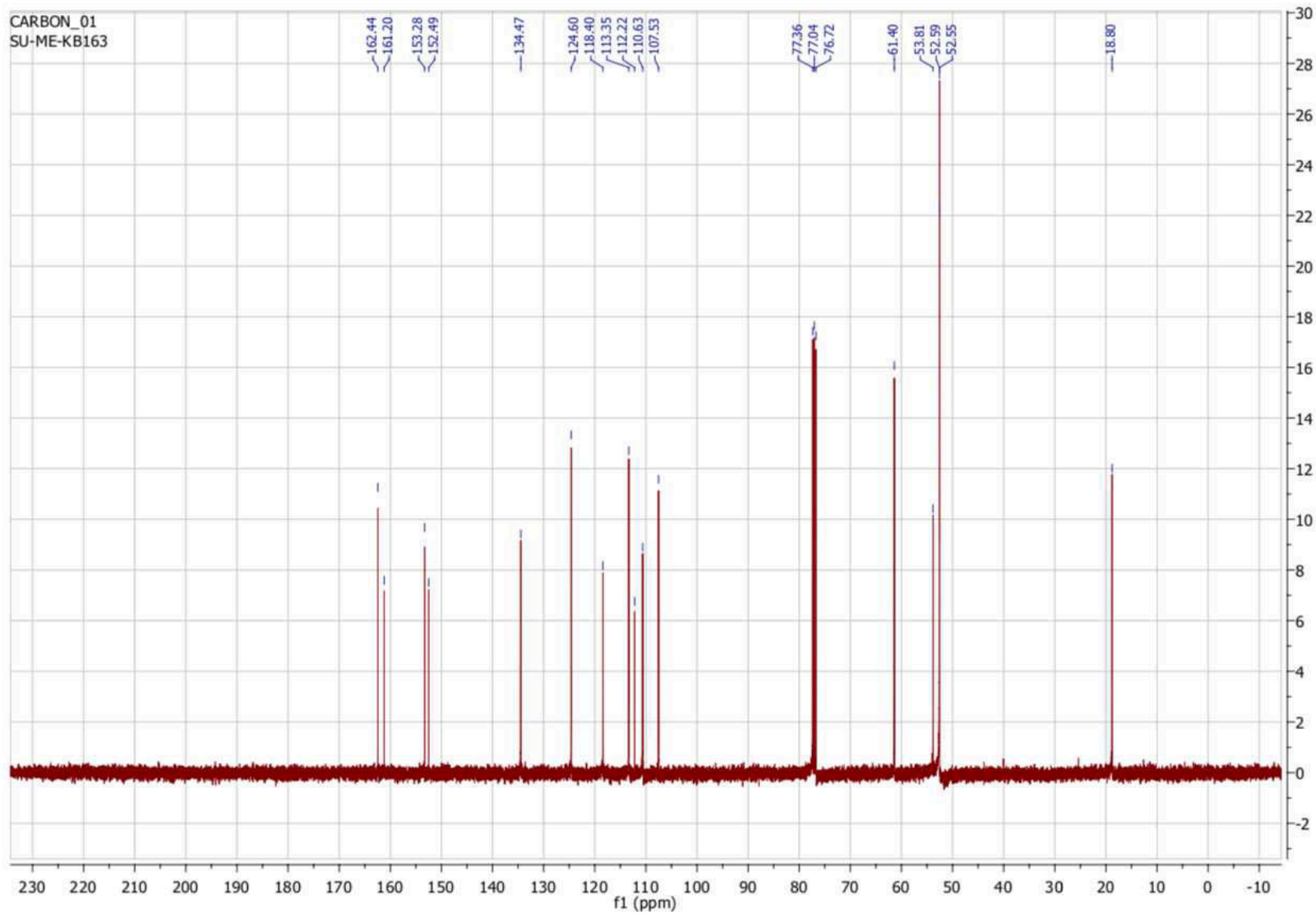


**Compound 6**  
 **$^1\text{H}$  NMR**

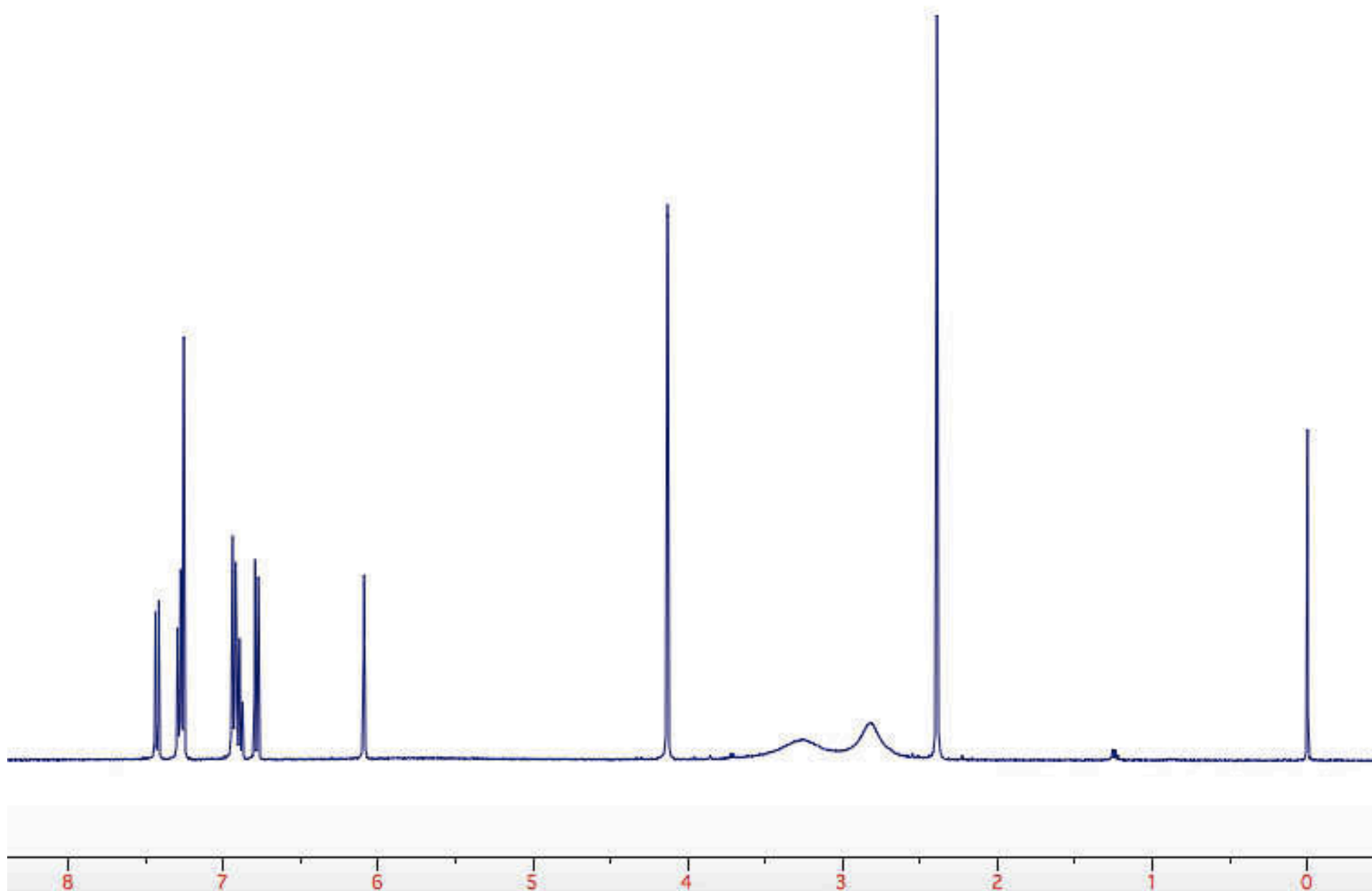


# Compound 6

## <sup>13</sup>C NMR



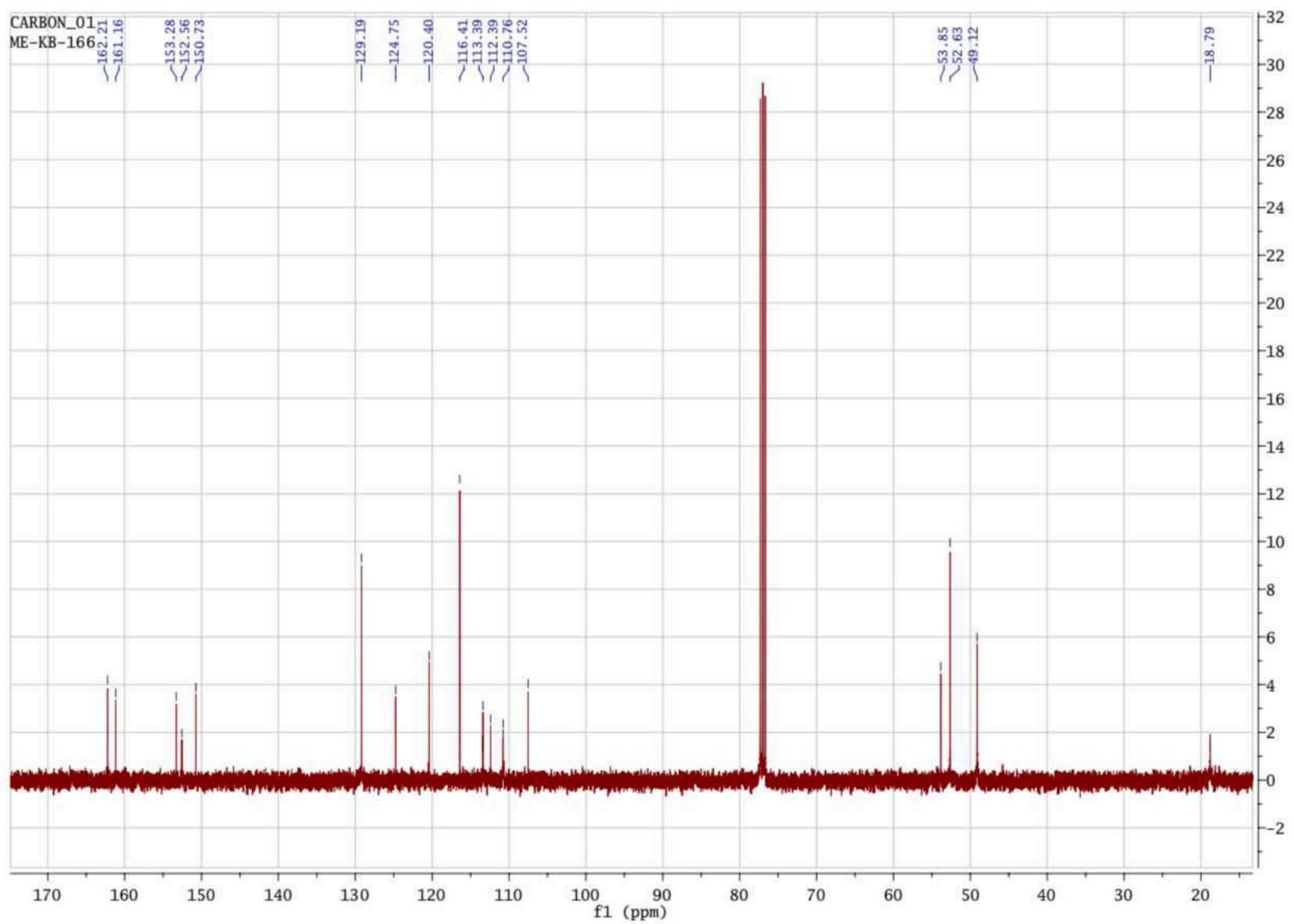
**Compound 7**  
 **$^1\text{H}$  NMR**



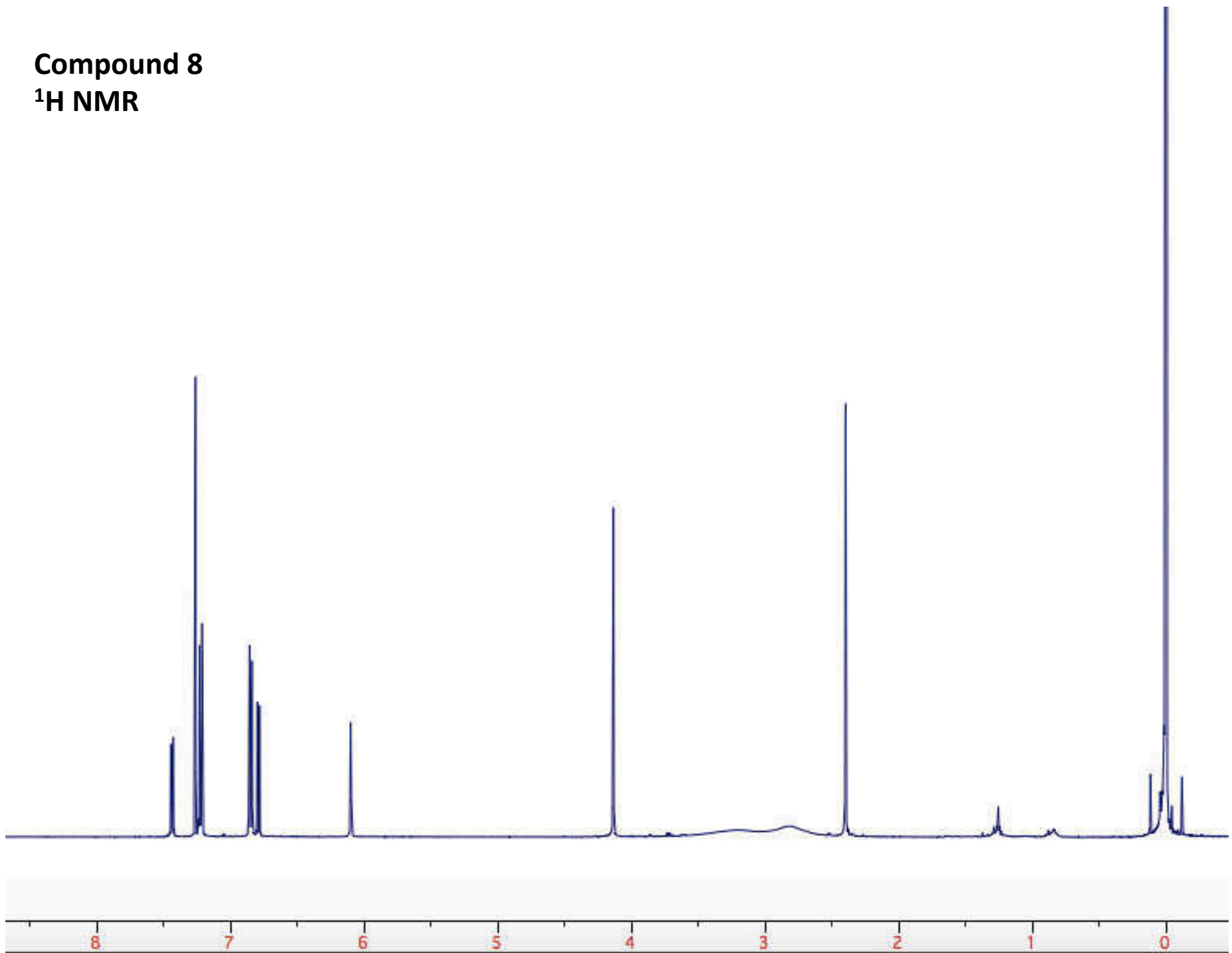


# Compound 7

## <sup>13</sup>C NMR

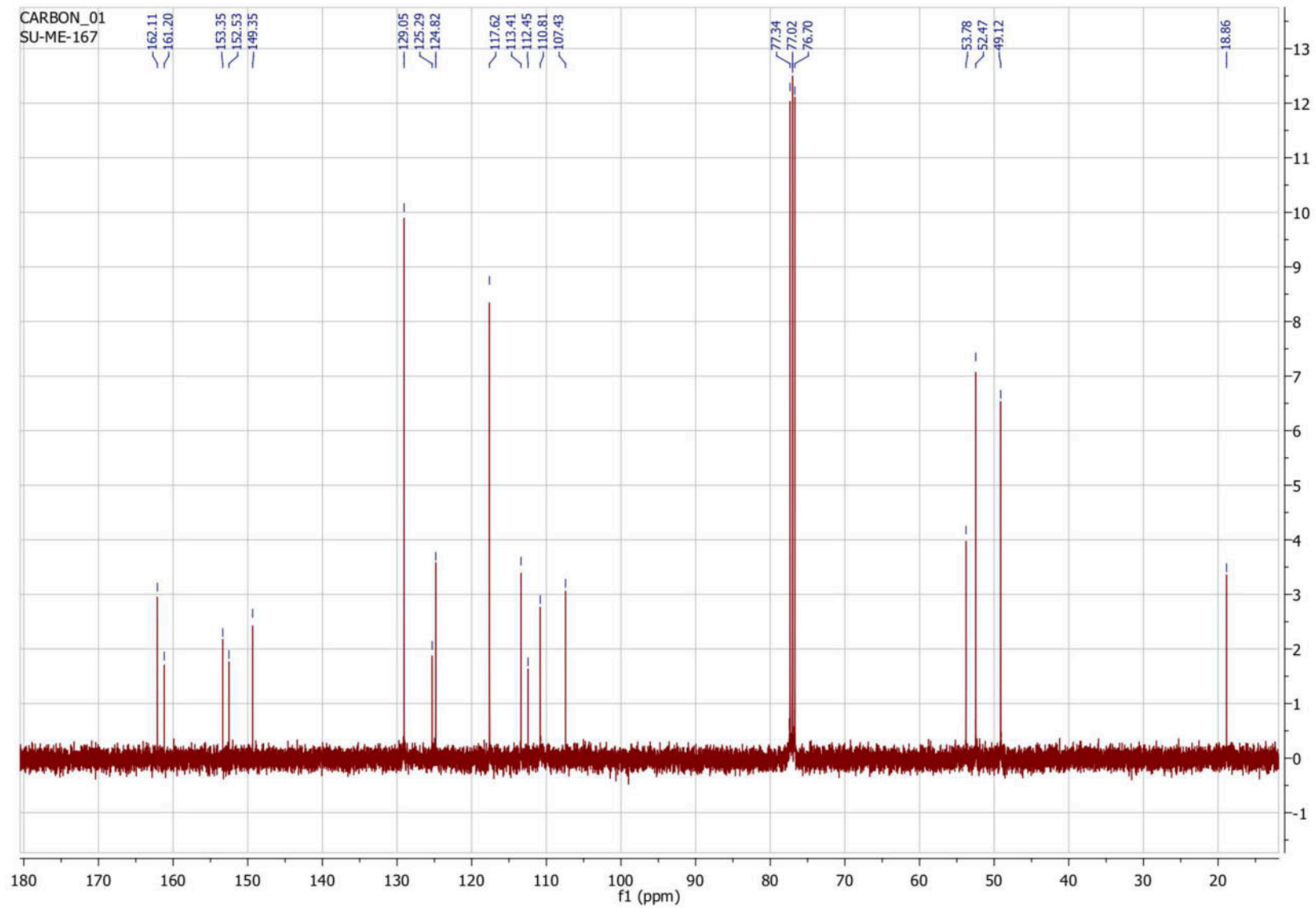


**Compound 8**  
 **$^1\text{H}$  NMR**



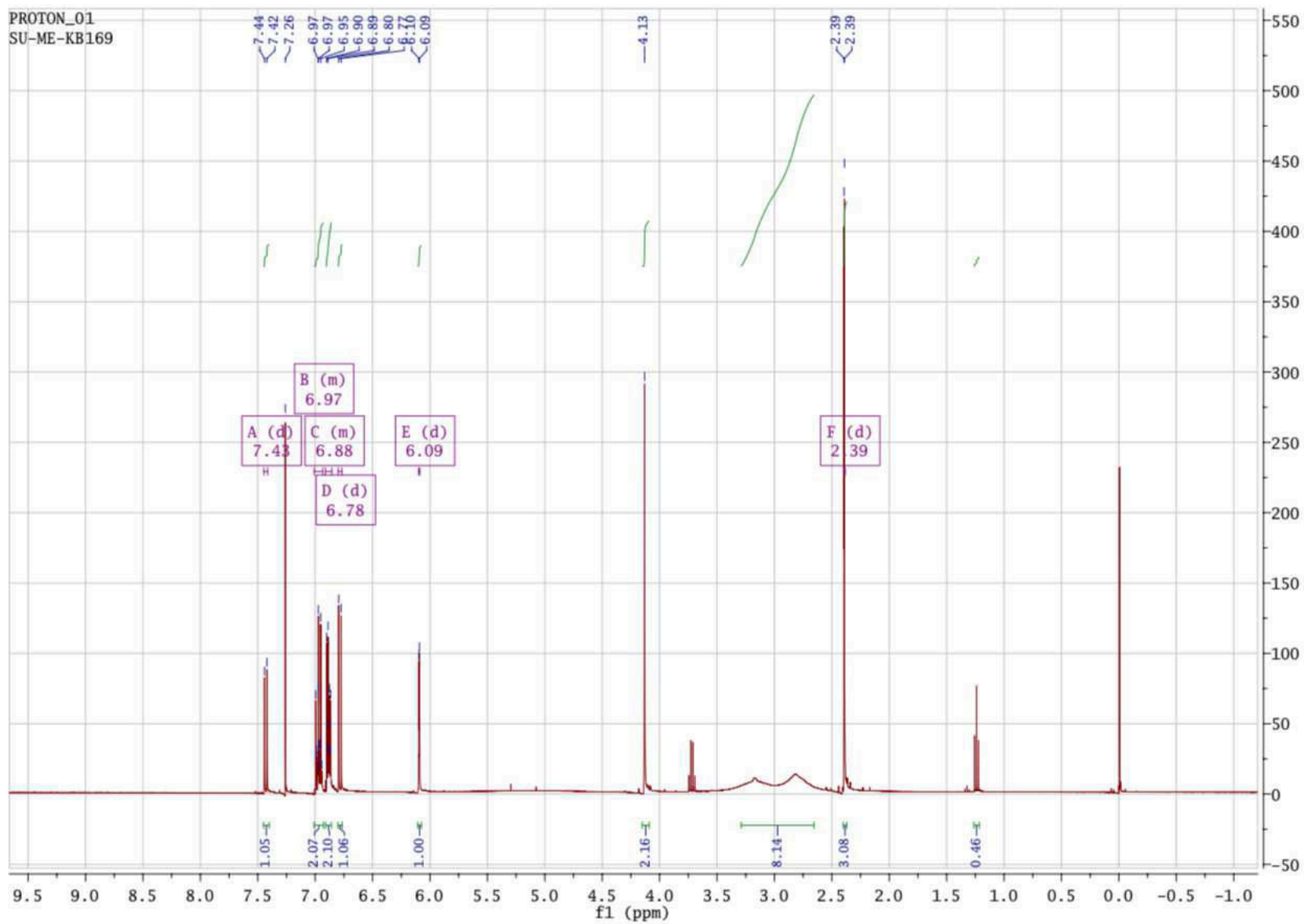
# Compound 8

## <sup>13</sup>C NMR



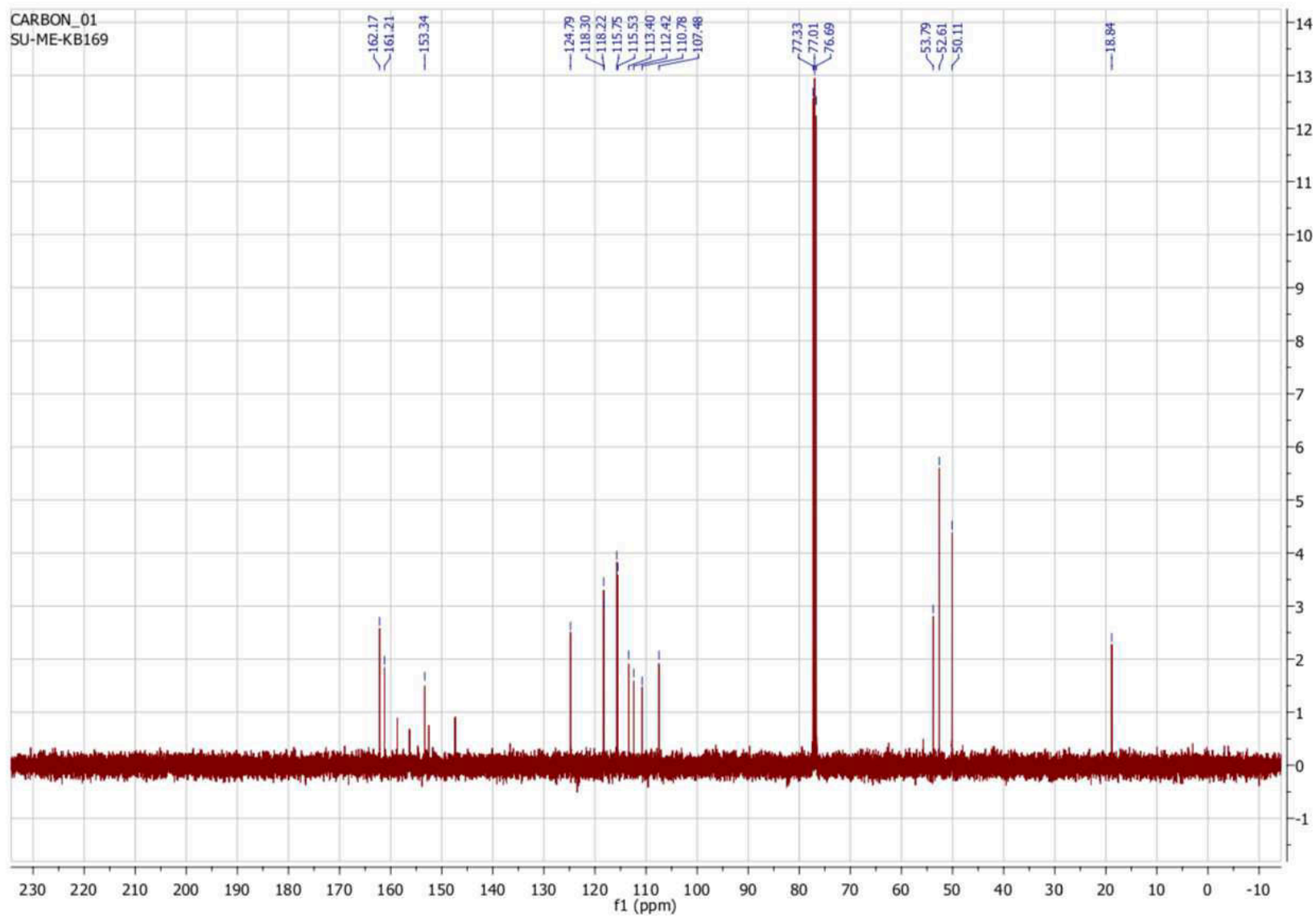
# Compound 9

## <sup>1</sup>H NMR

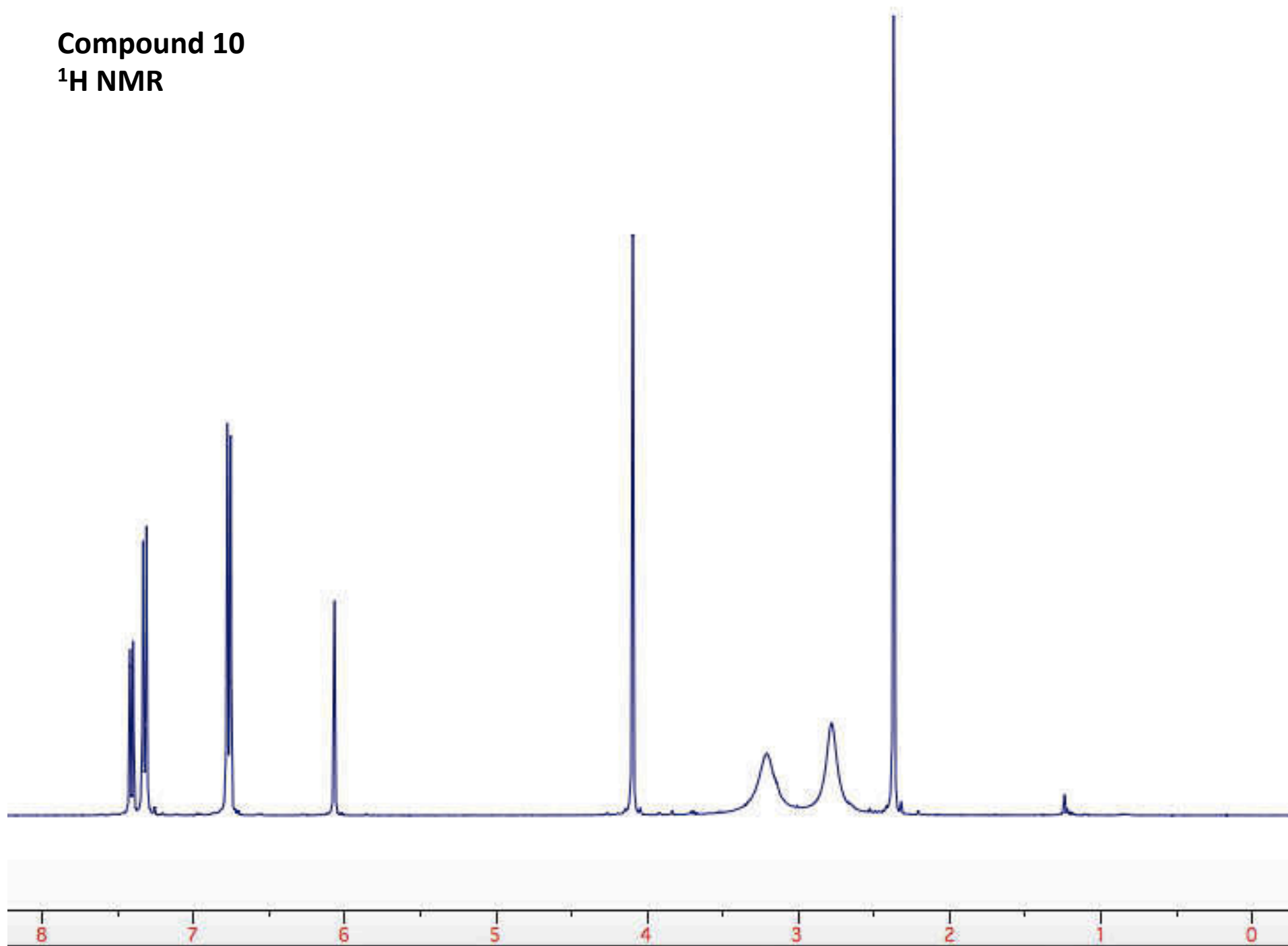


# Compound 9

## <sup>13</sup>C NMR

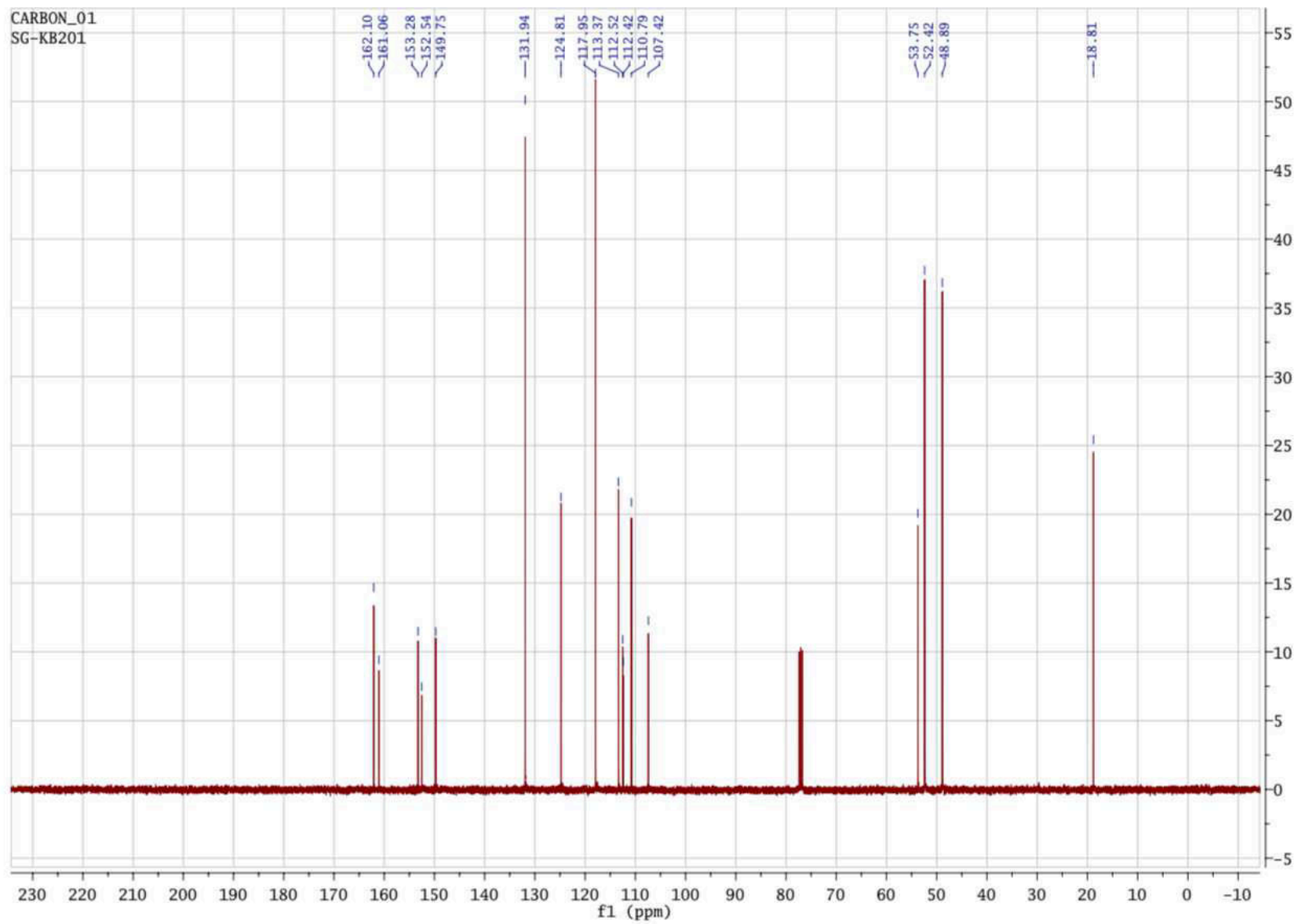


**Compound 10**  
 **$^1\text{H}$  NMR**

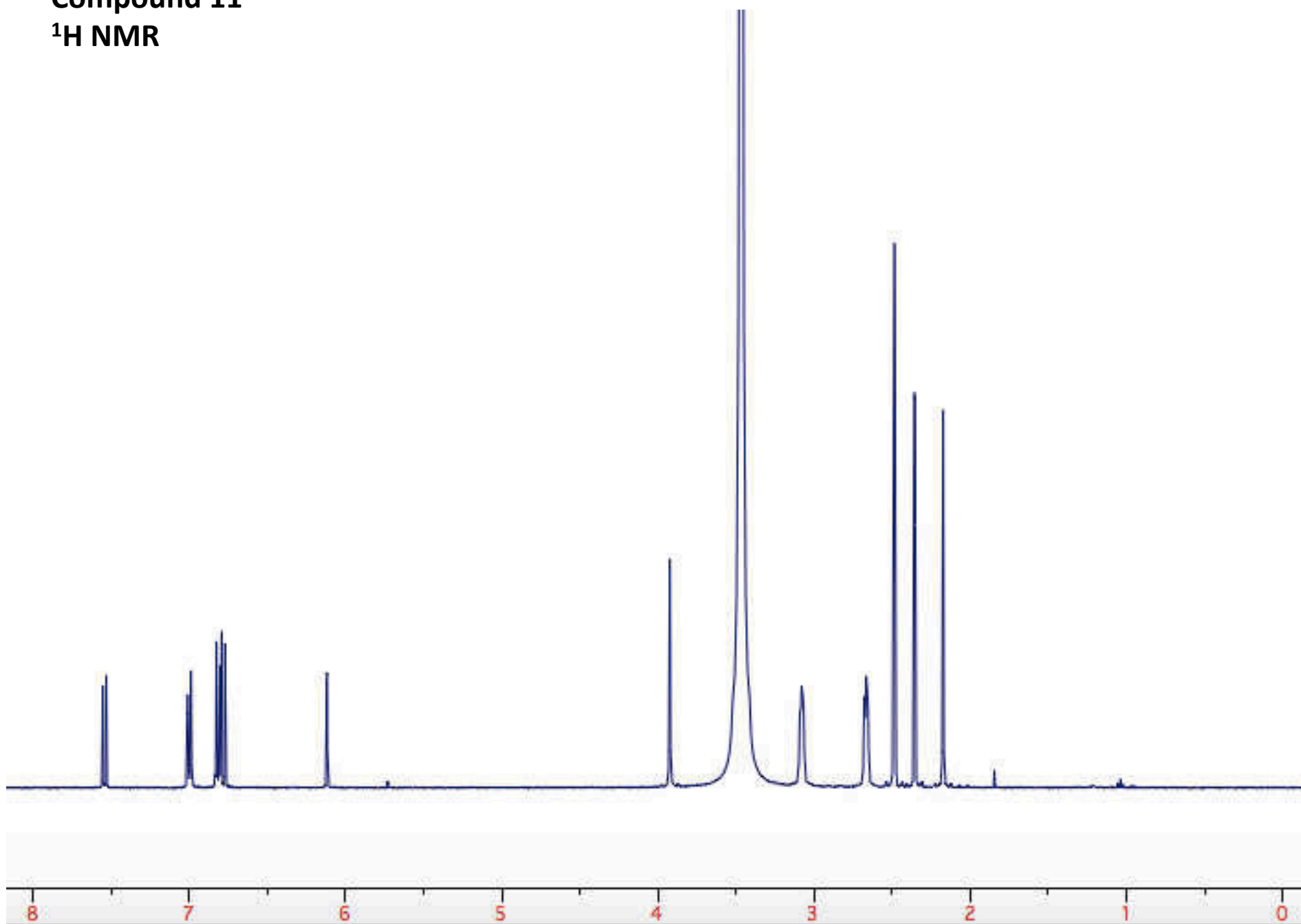


# Compound 10

## <sup>13</sup>C NMR



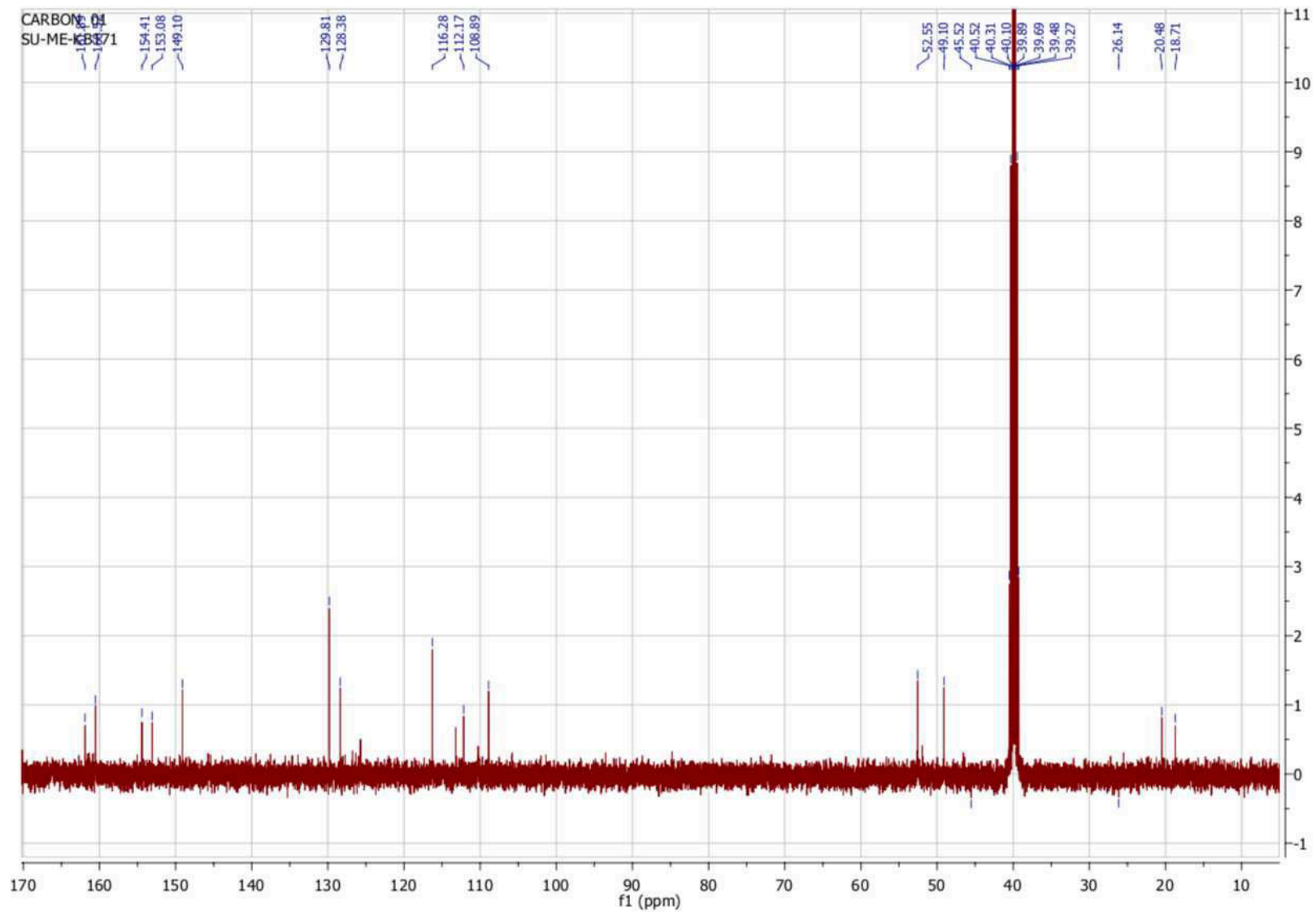
**Compound 11**  
 **$^1\text{H}$  NMR**



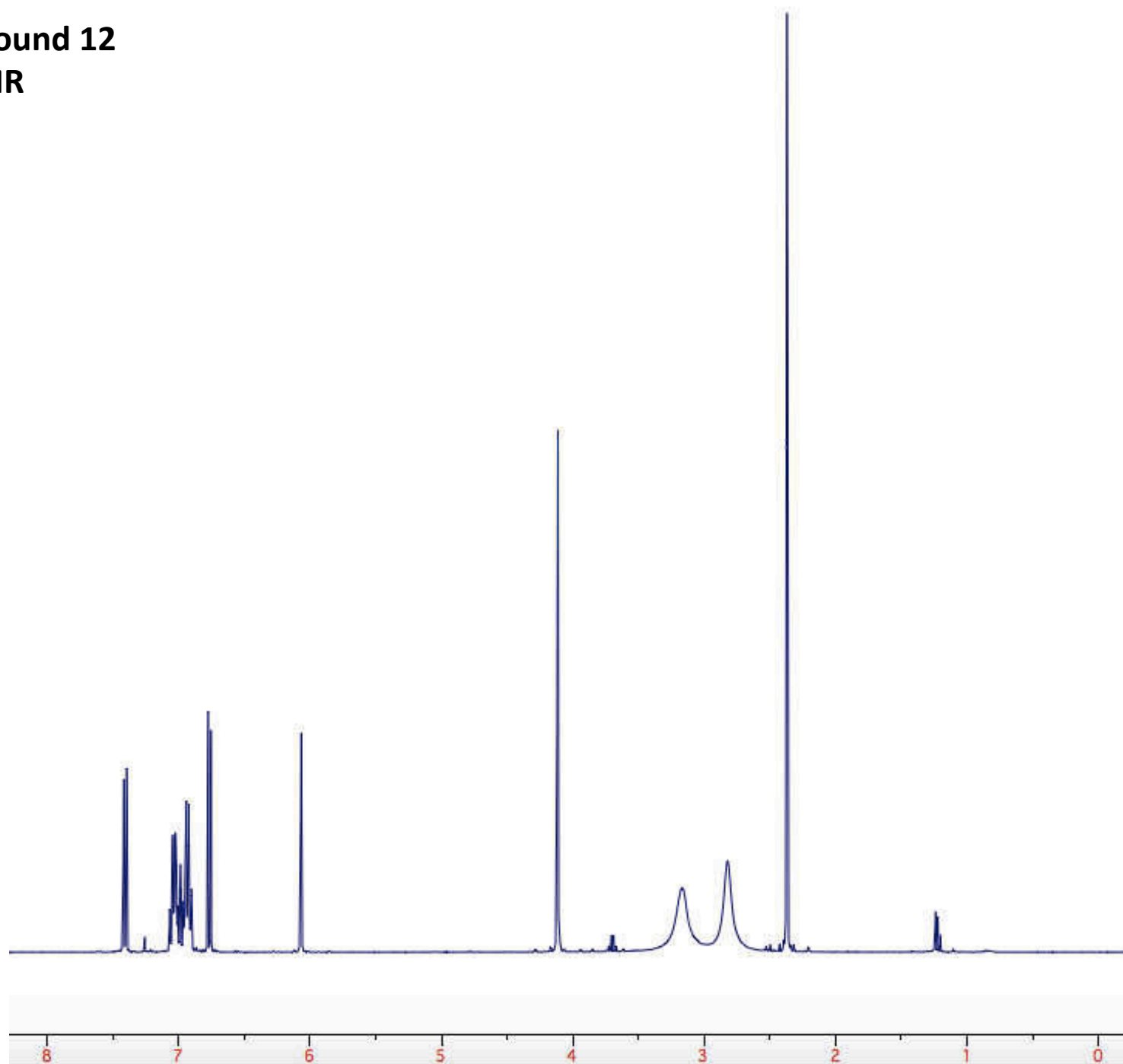


# Compound 11

## <sup>13</sup>C NMR

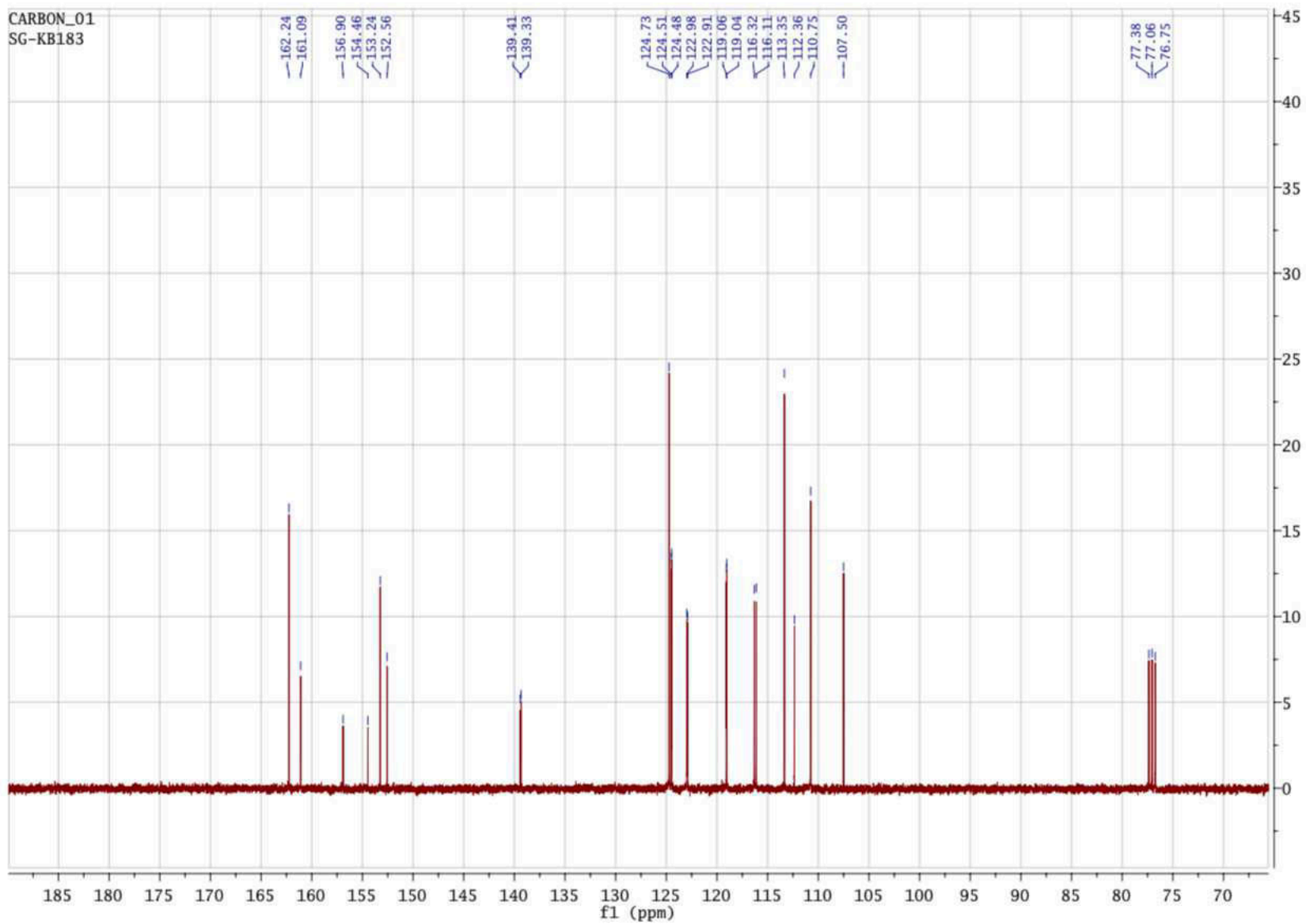


**Compound 12**  
 **$^1\text{H}$  NMR**



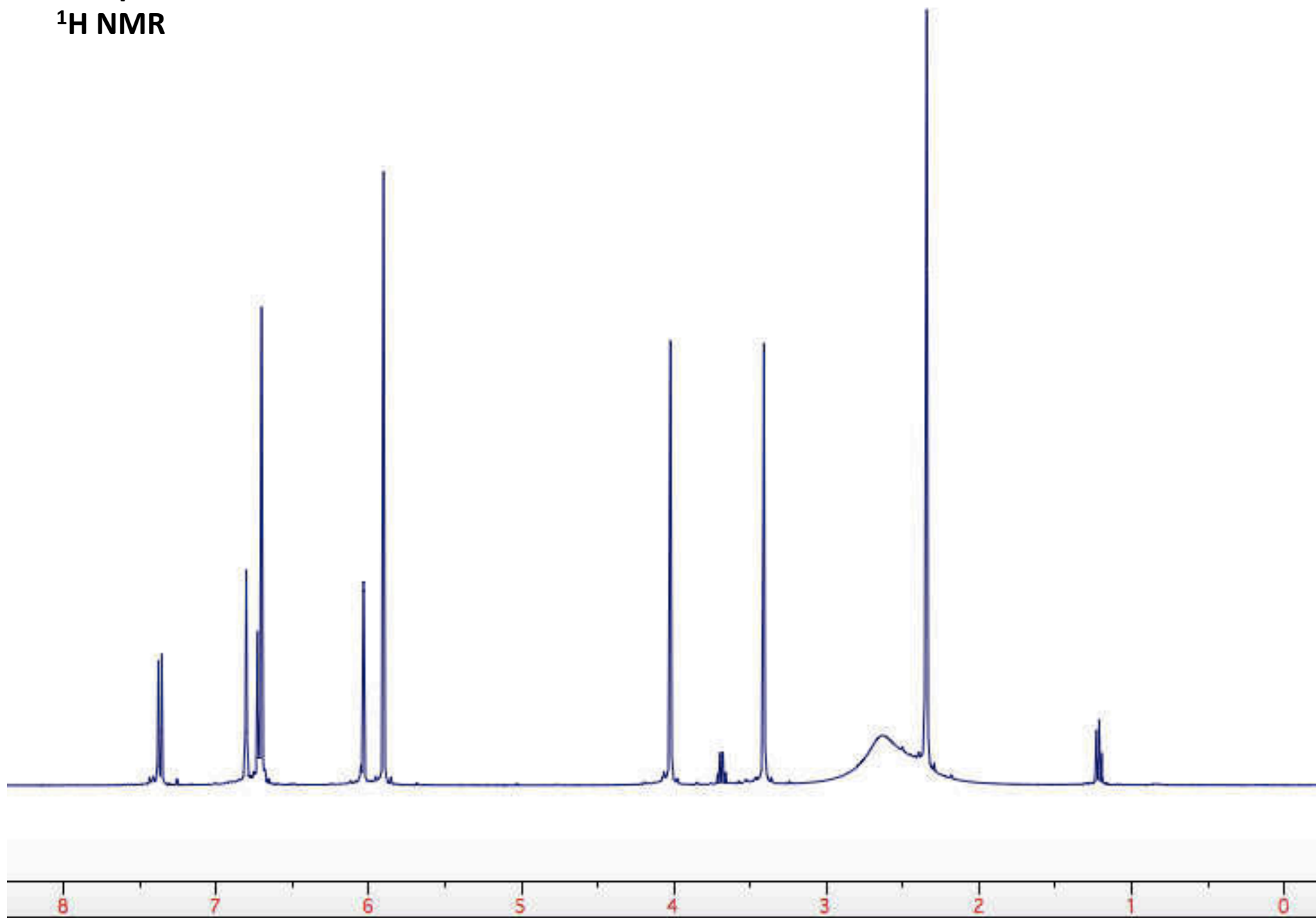
# Compound 12

## <sup>13</sup>C NMR



Compound 13

$^1\text{H}$  NMR



# Compound 13

## <sup>13</sup>C NMR

