

*Supporting Information for*

## **CuBr<sub>2</sub>-Catalyzed Diastereoselective Allylation of Six-Membered Lactols: Total Synthesis of Decytospolides A and B and their C6-Epimers**

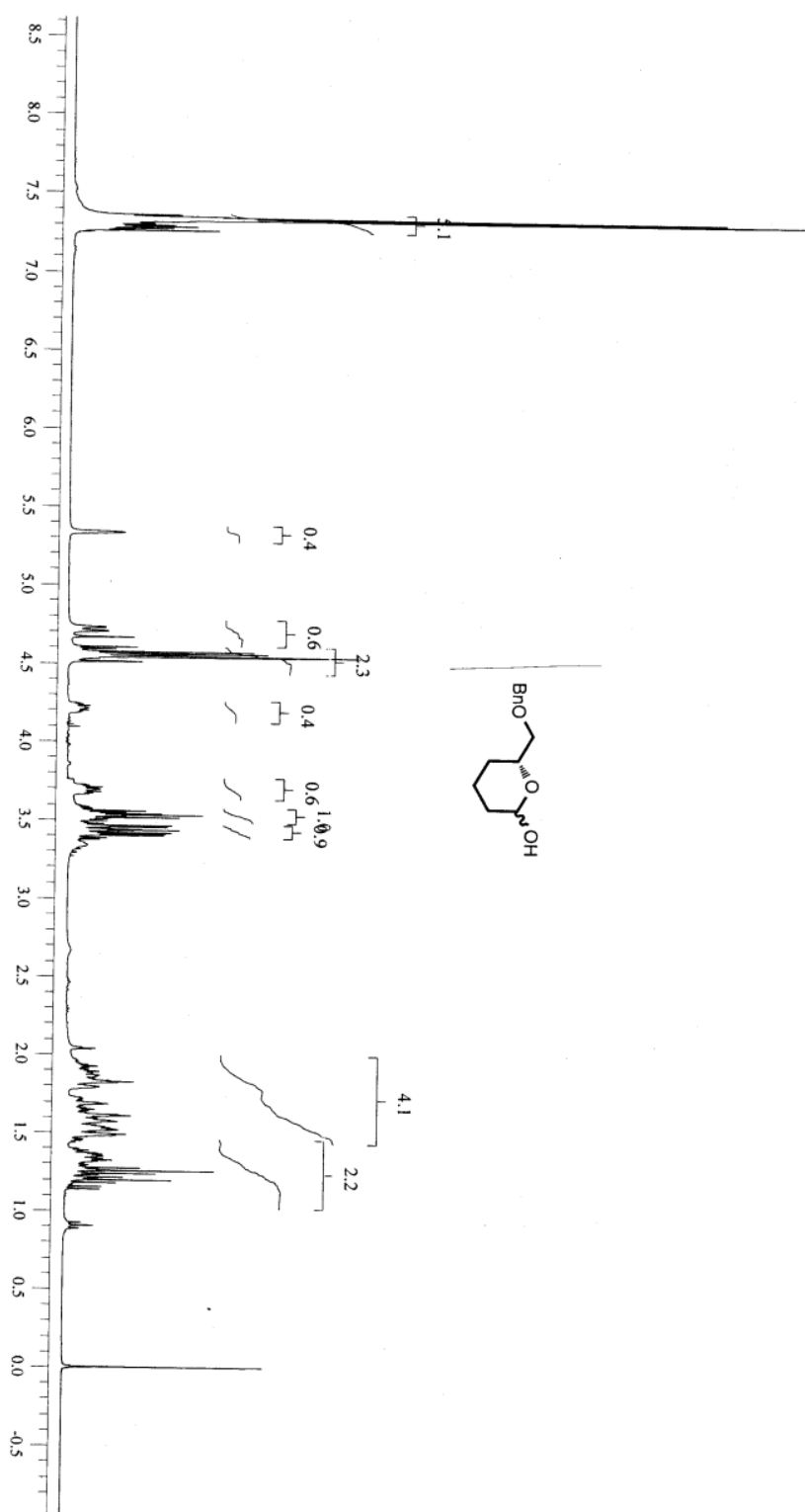
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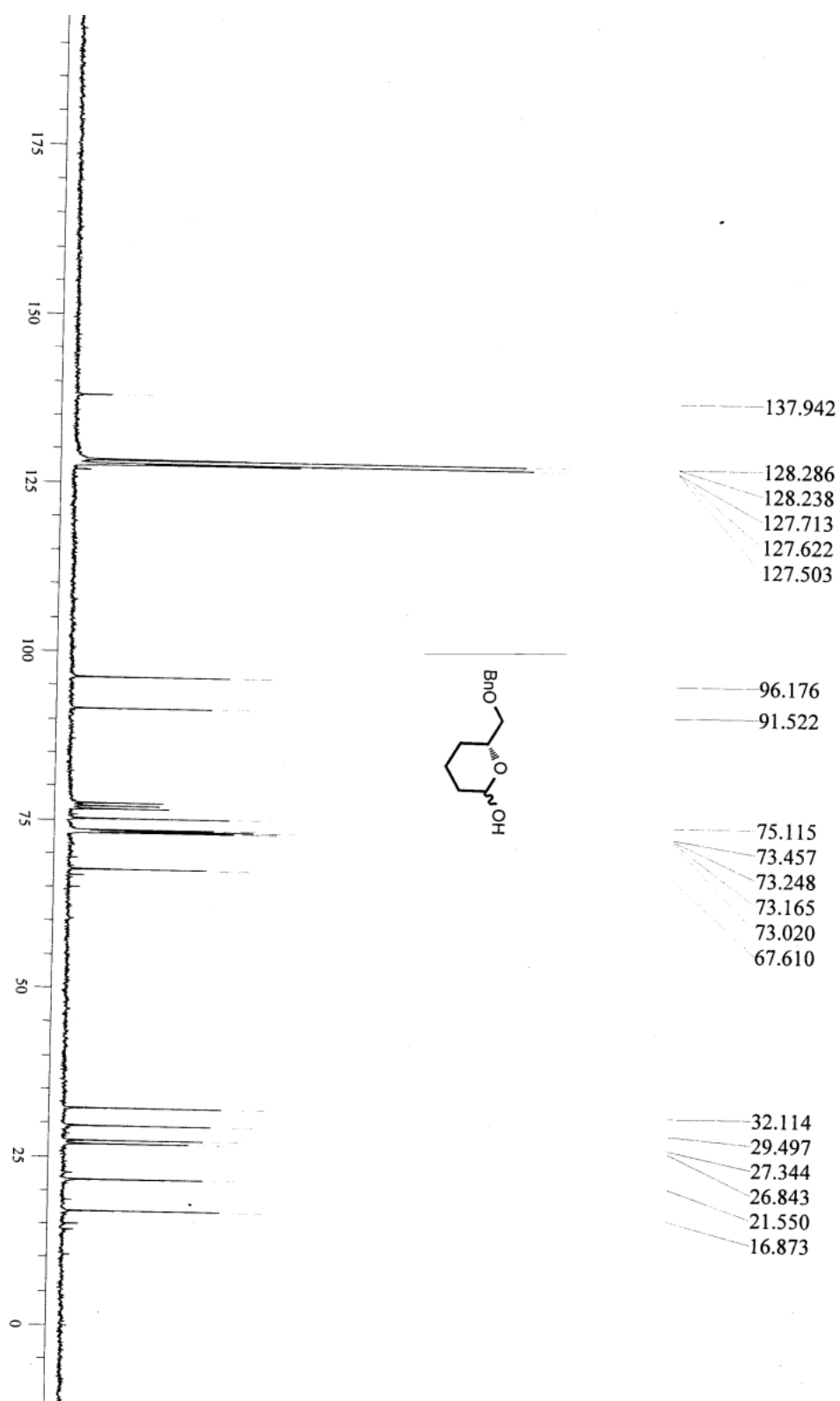
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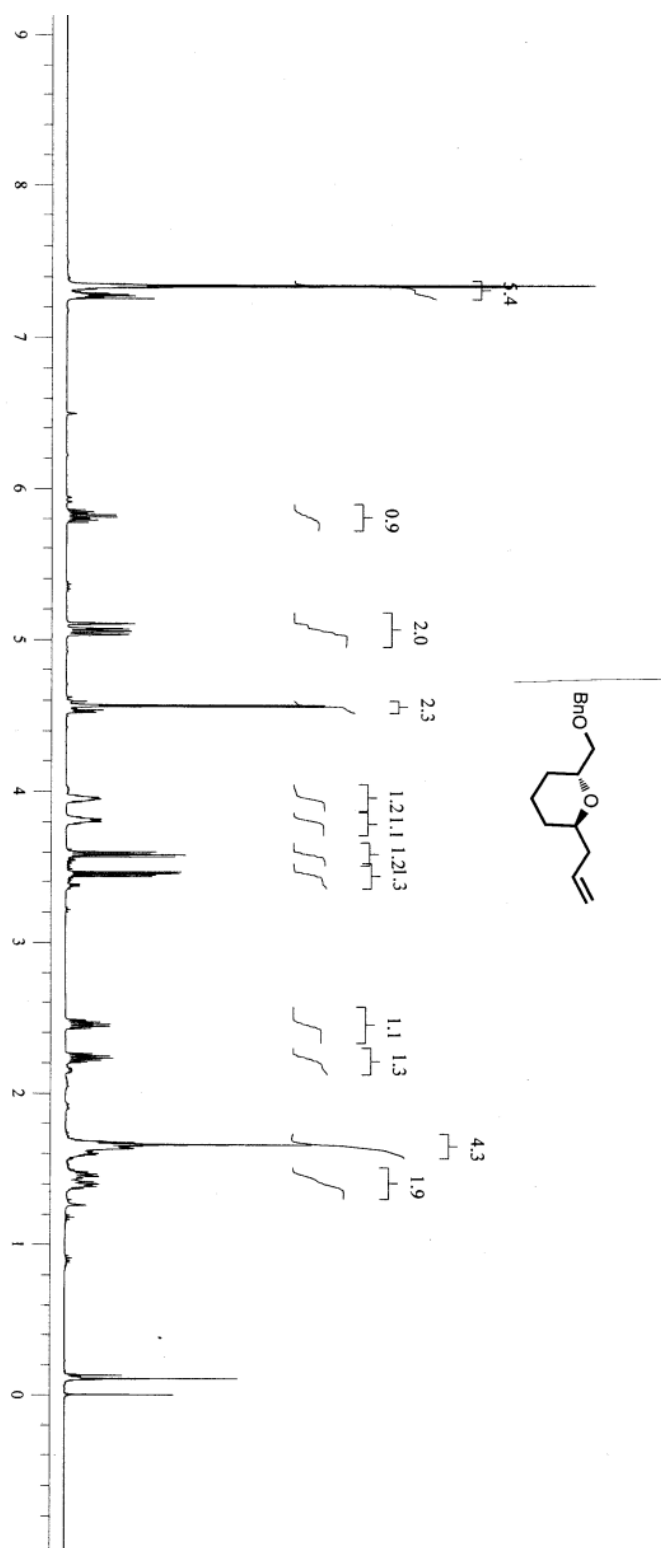
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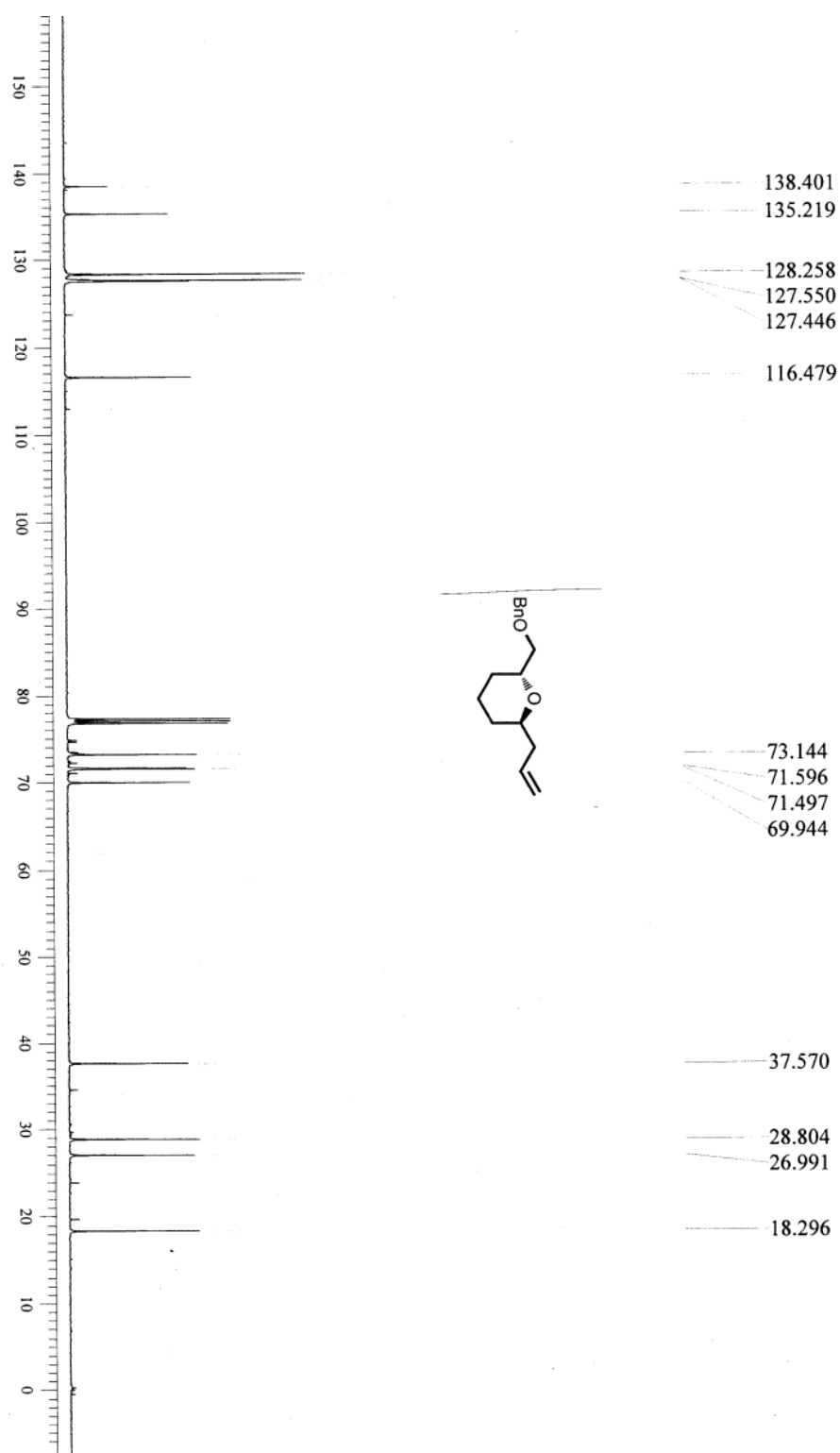
$^1\text{H}$  NMR Spectrum of Compound 10 (400 MHz,  $\text{CDCl}_3$ )



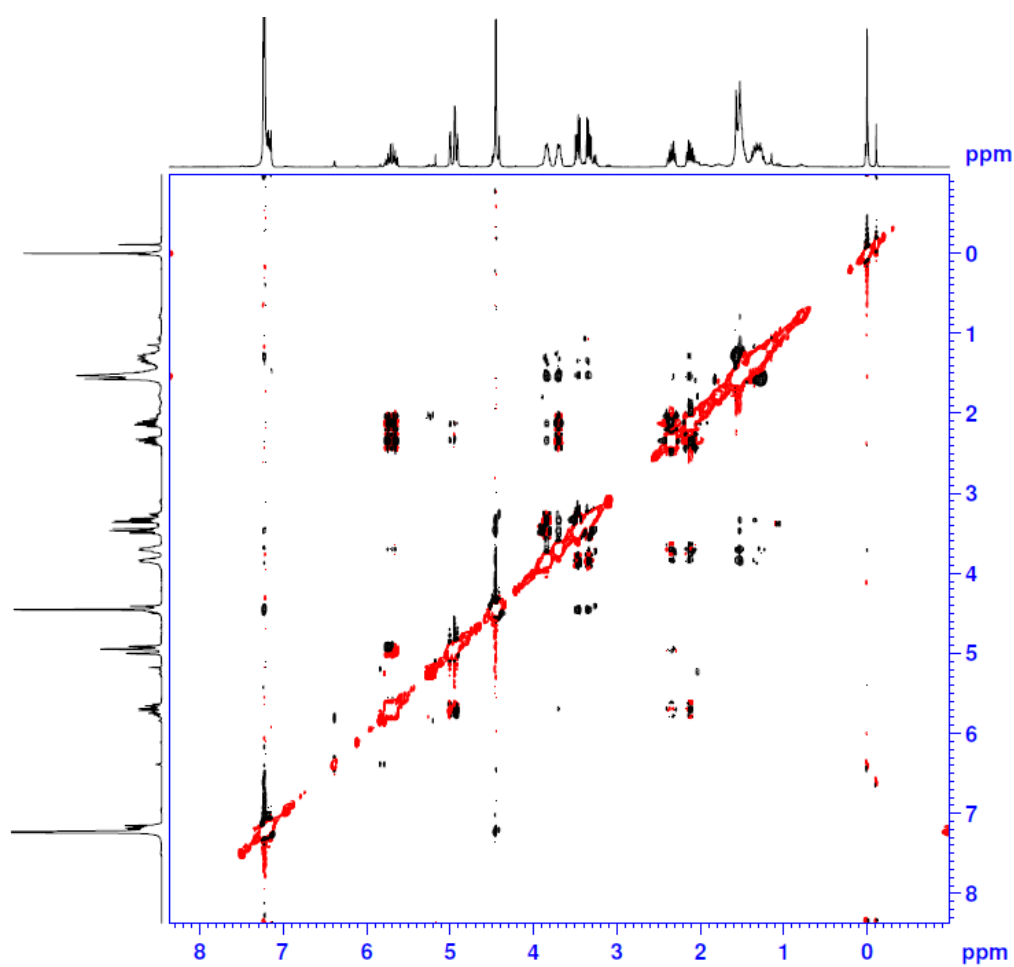
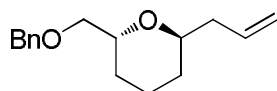
<sup>13</sup>C NMR Spectrum of Compound 10 (75 MHz, CDCl<sub>3</sub>)



$^1\text{H}$  NMR Spectrum of Compound 11 (300 MHz,  $\text{CDCl}_3$ )

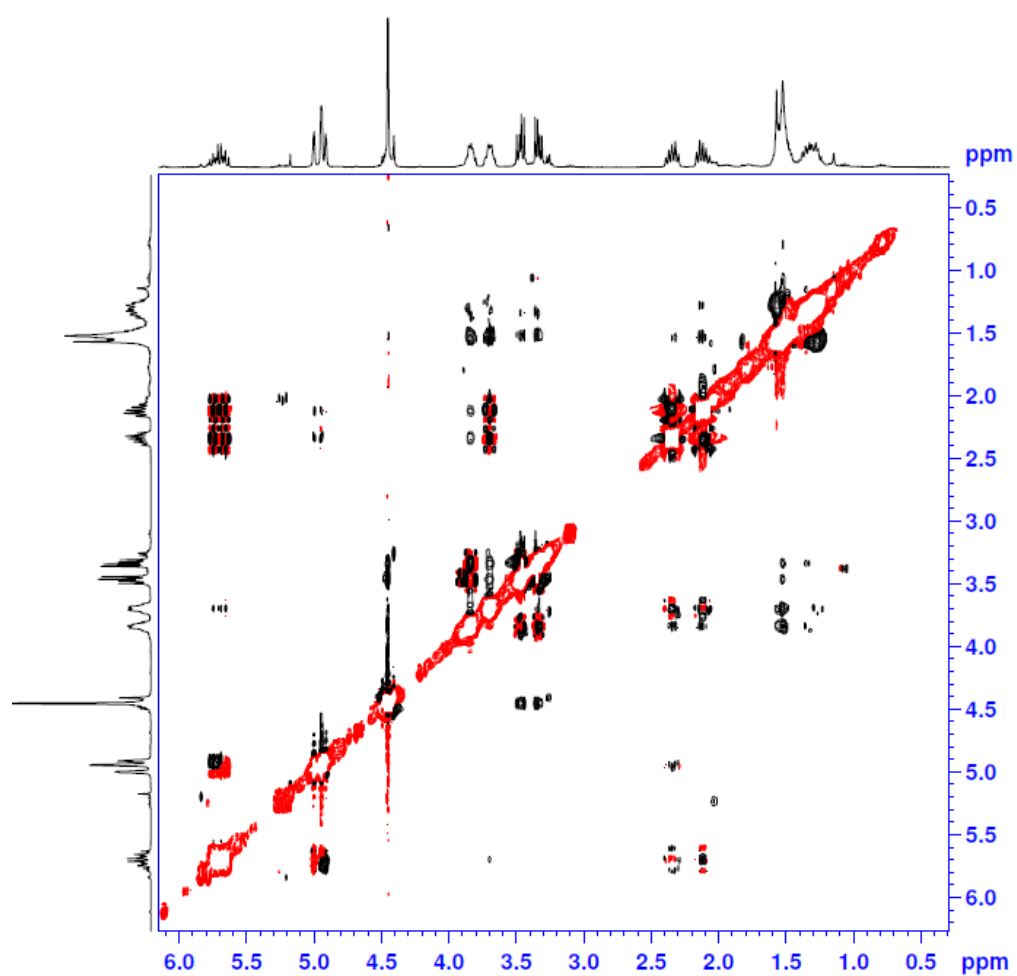
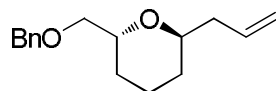


$^{13}\text{C}$  NMR Spectrum of Compound 11 (125 MHz,  $\text{CDCl}_3$ )

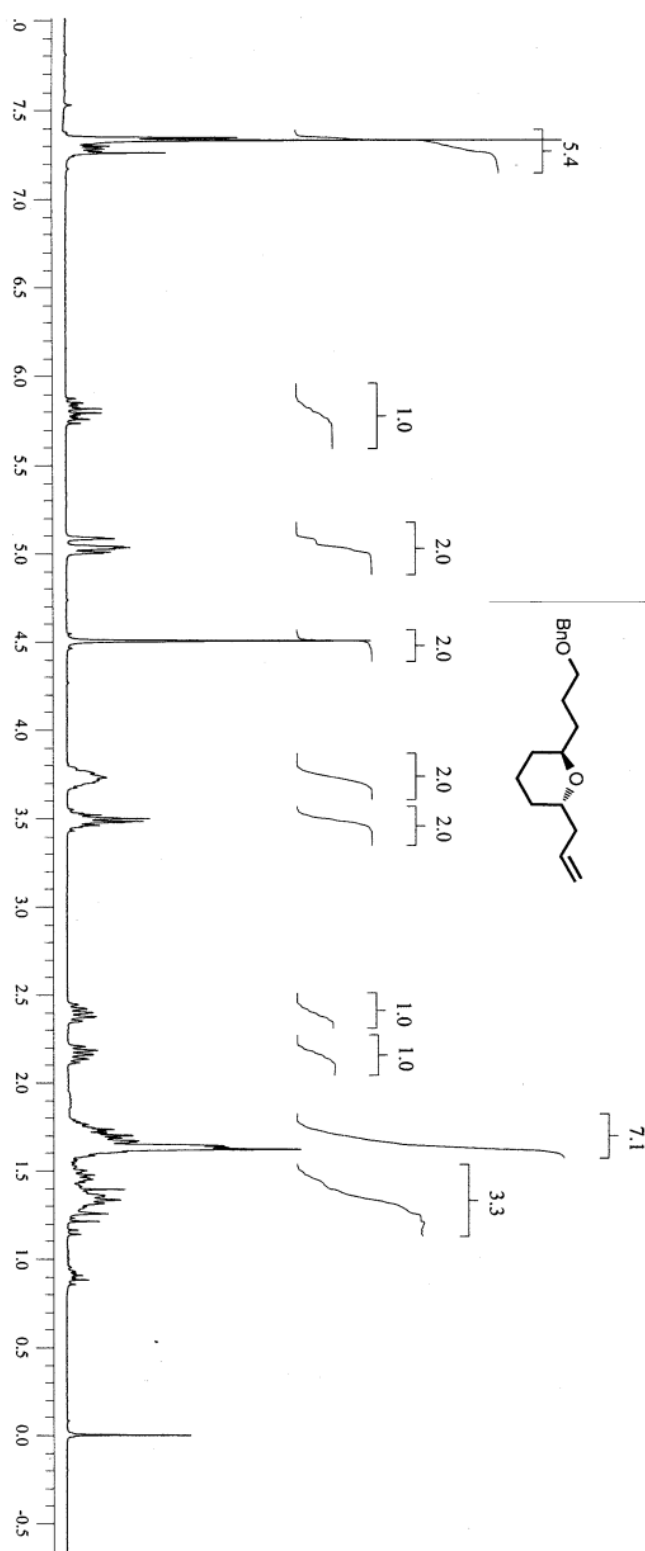


2D  $^1\text{H}$  NOE of Compound 11 (300 MHz,  $\text{CDCl}_3$ )

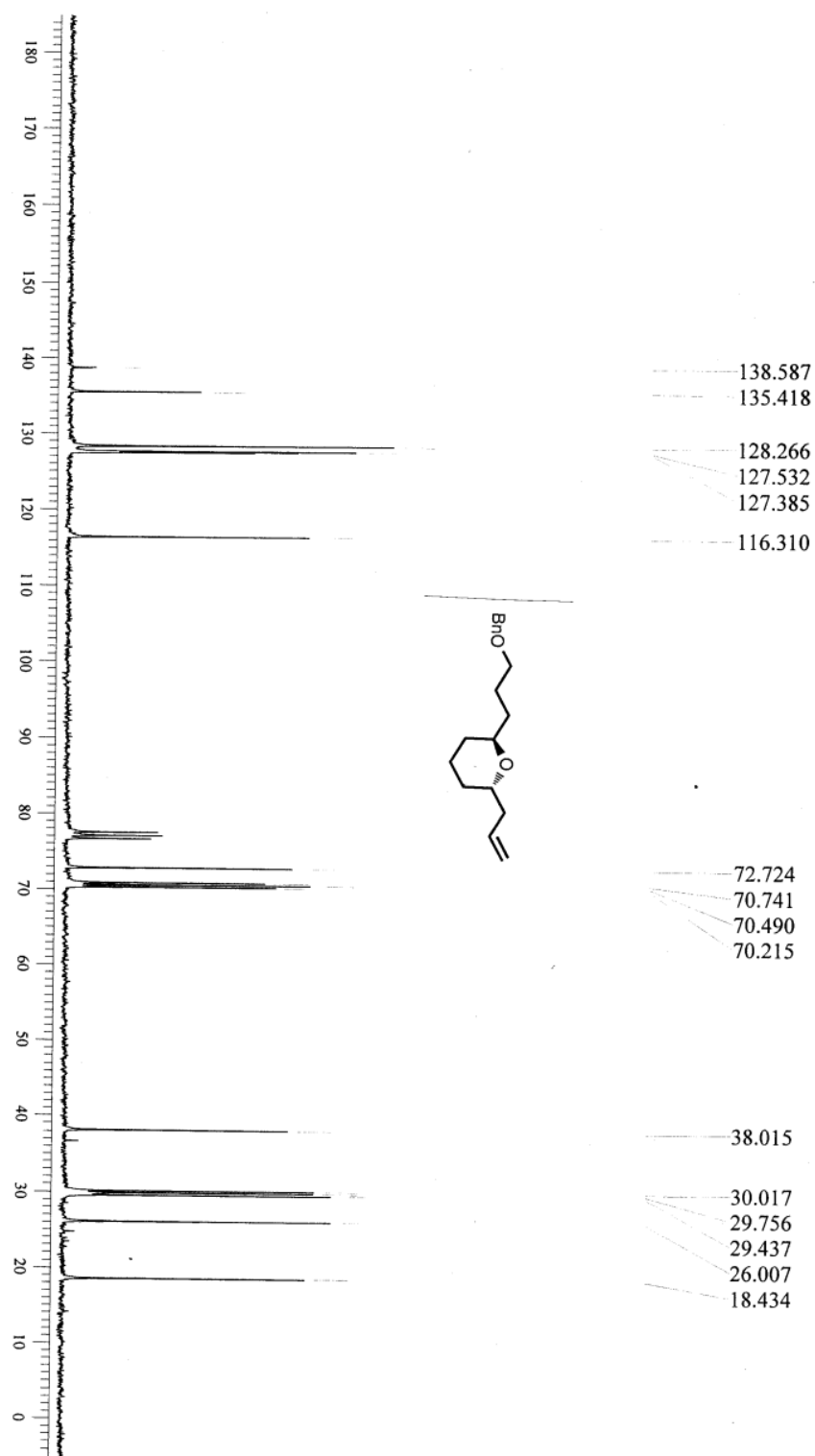




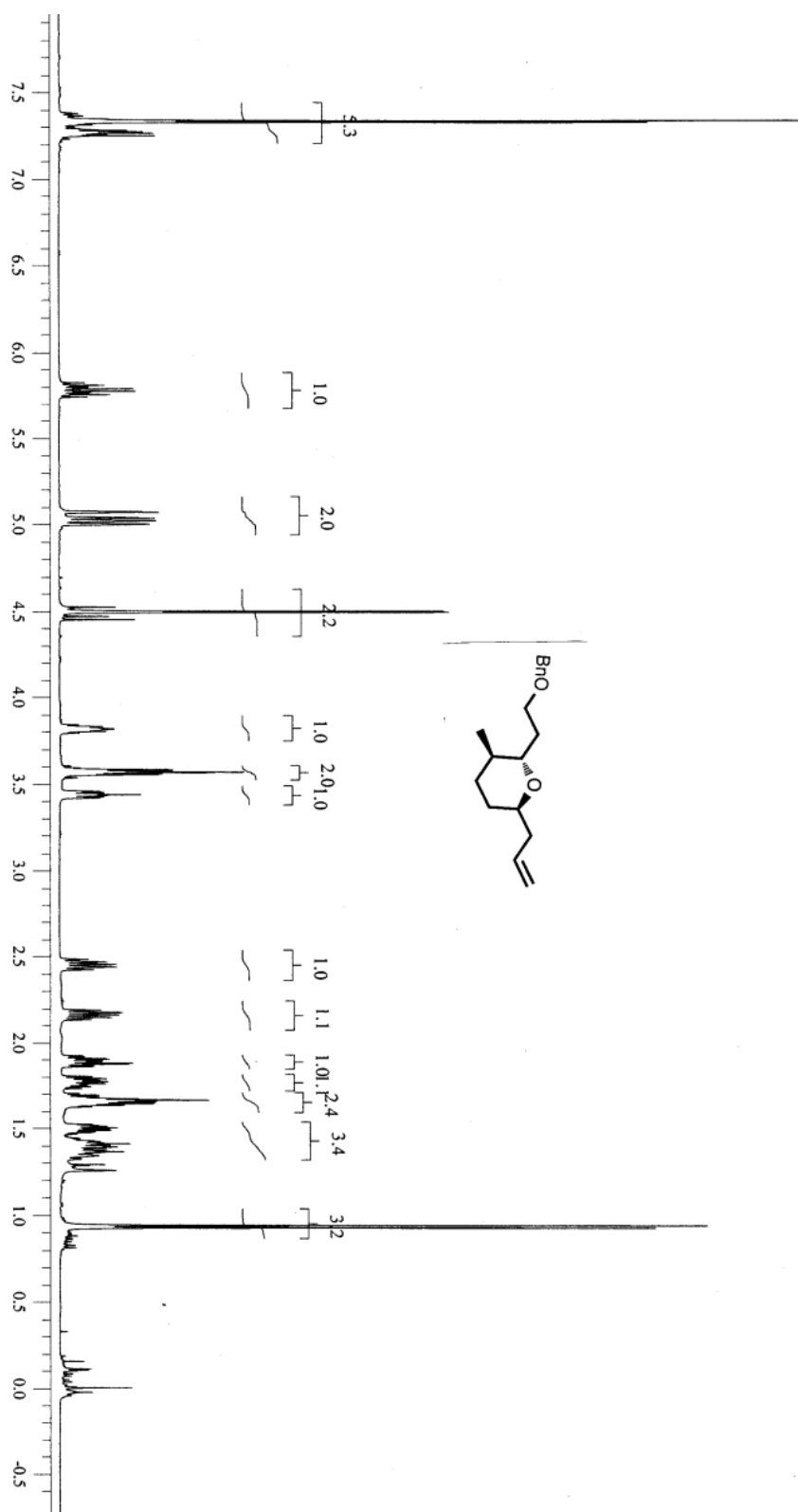
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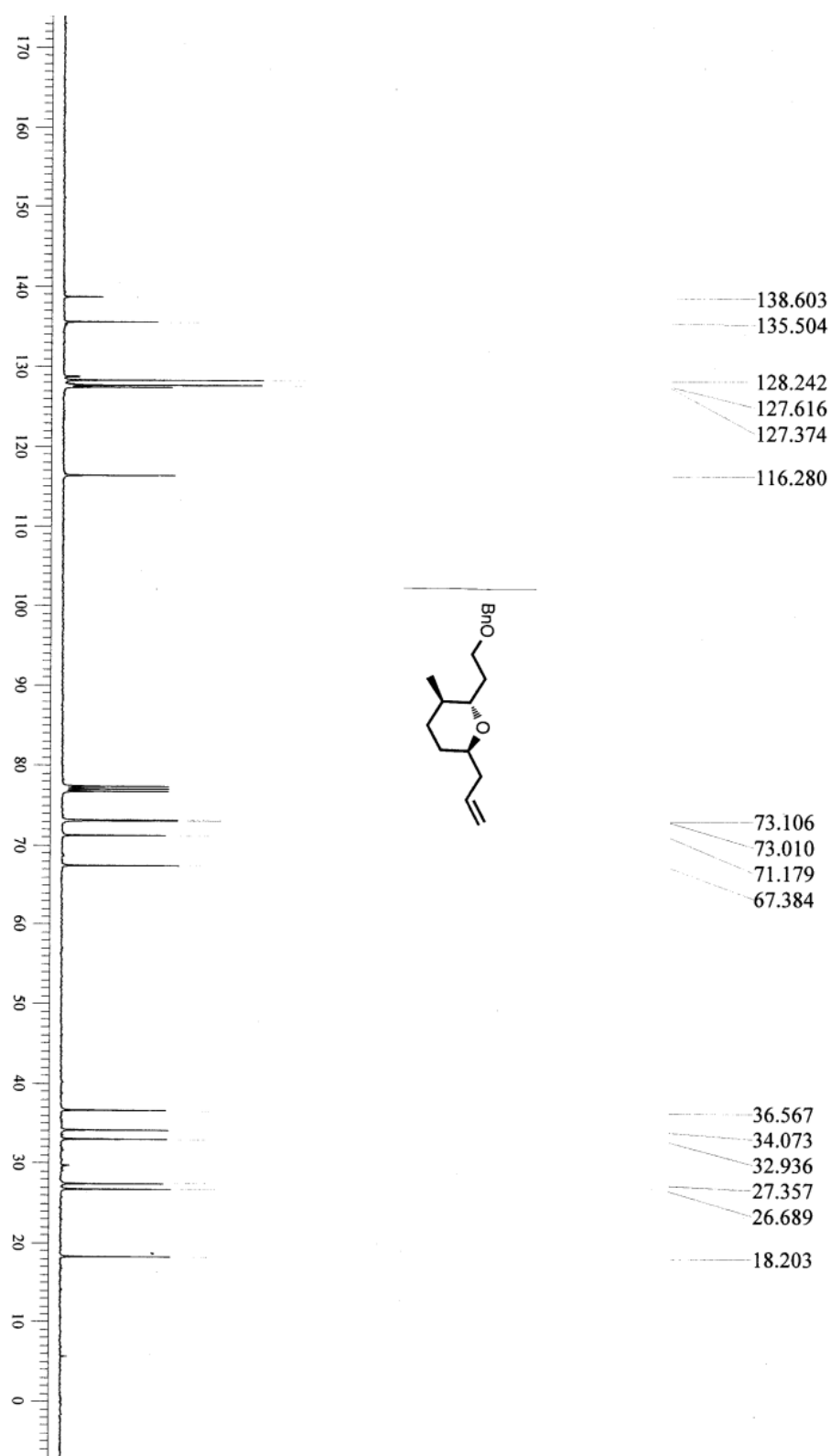
$^1\text{H}$  NMR Spectrum of Compound 11a (300 MHz,  $\text{CDCl}_3$ )



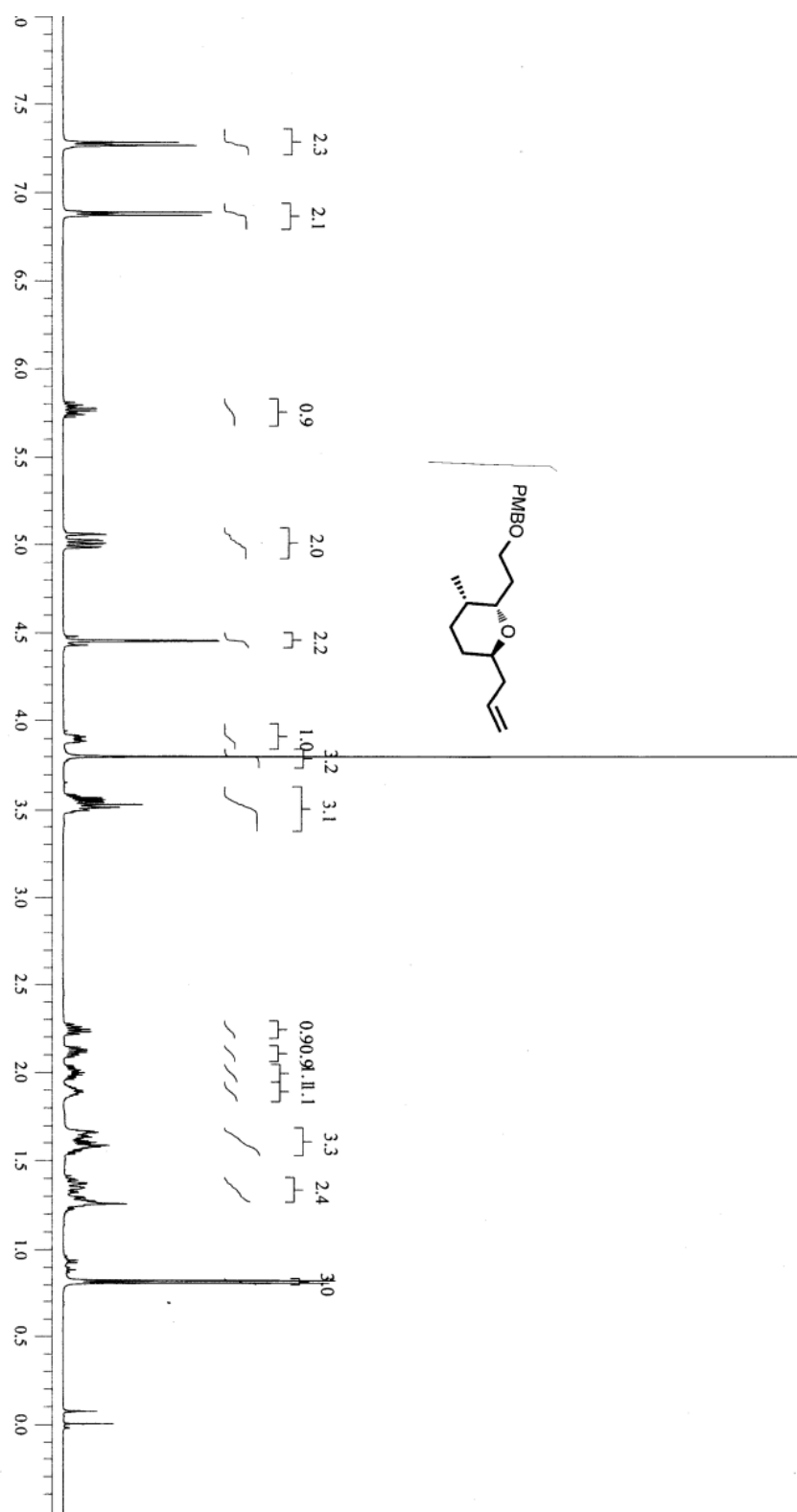
<sup>13</sup>C NMR Spectrum of Compound 11a (75 MHz, CDCl<sub>3</sub>)



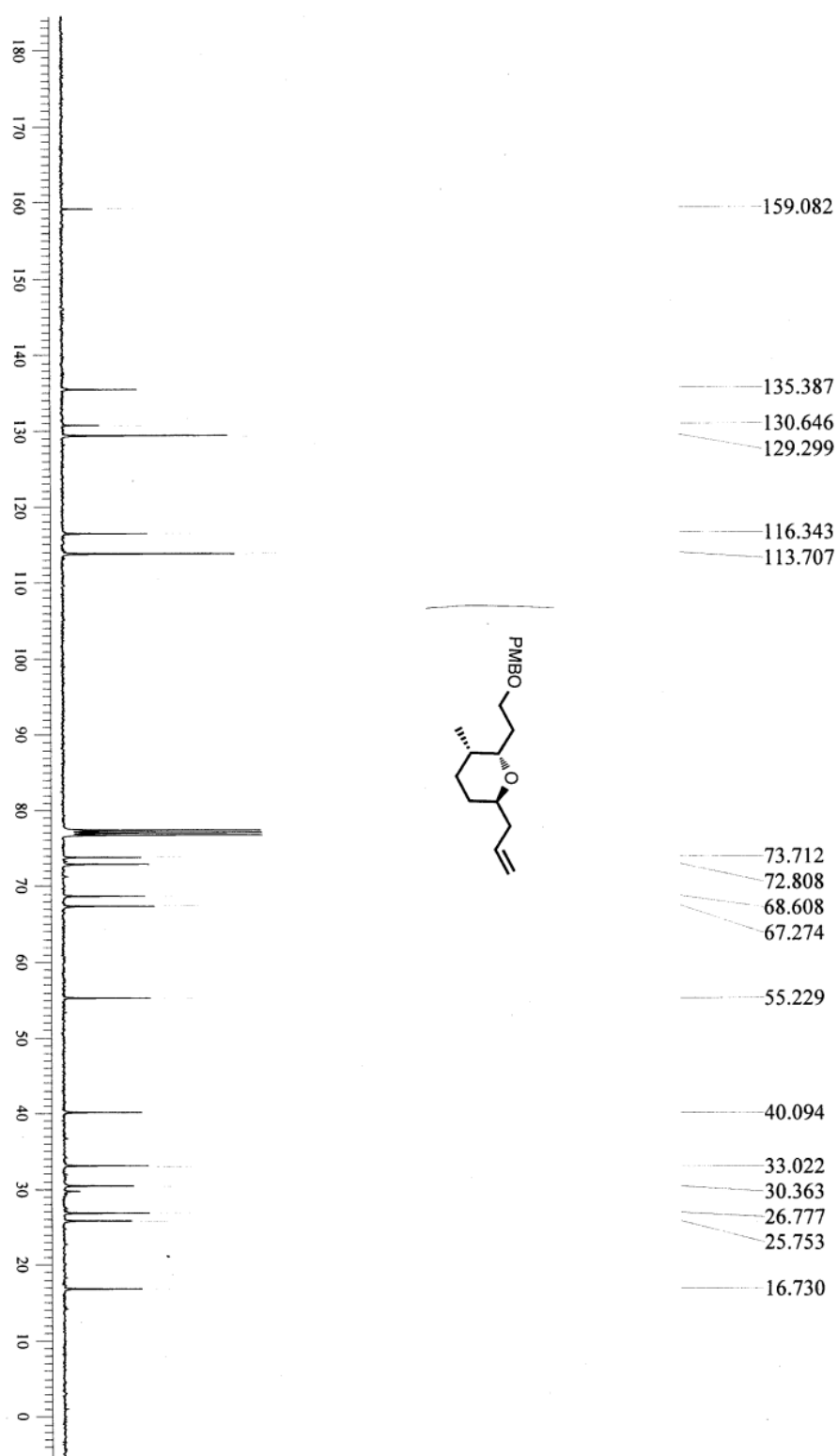
$^1\text{H}$  NMR Spectrum of Compound 11b (300 MHz,  $\text{CDCl}_3$ )



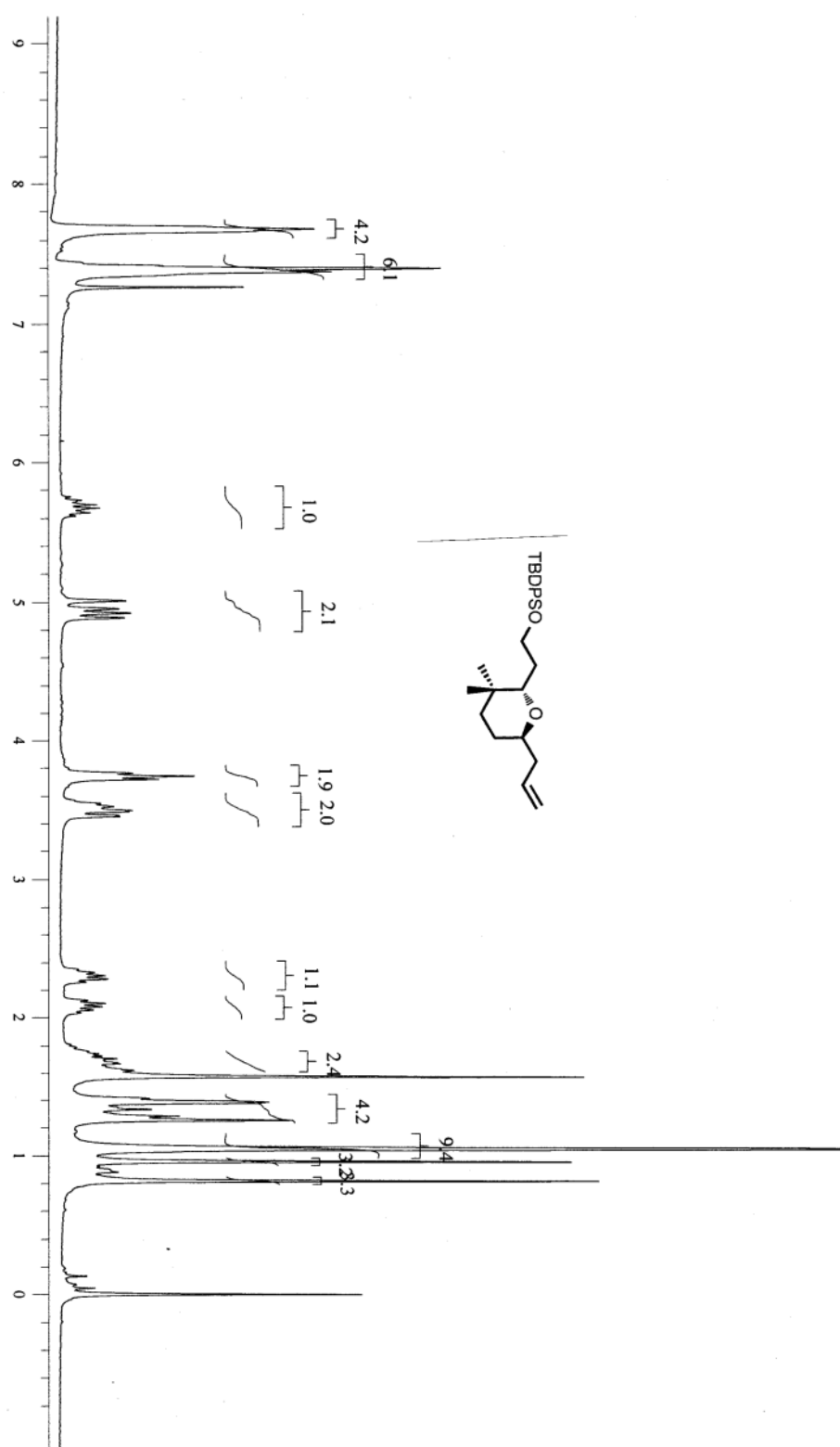
**<sup>13</sup>C NMR Spectrum of Compound 11b (100 MHz, CDCl<sub>3</sub>)**



$^1\text{H}$  NMR Spectrum of Compound 11c (500 MHz,  $\text{CDCl}_3$ )



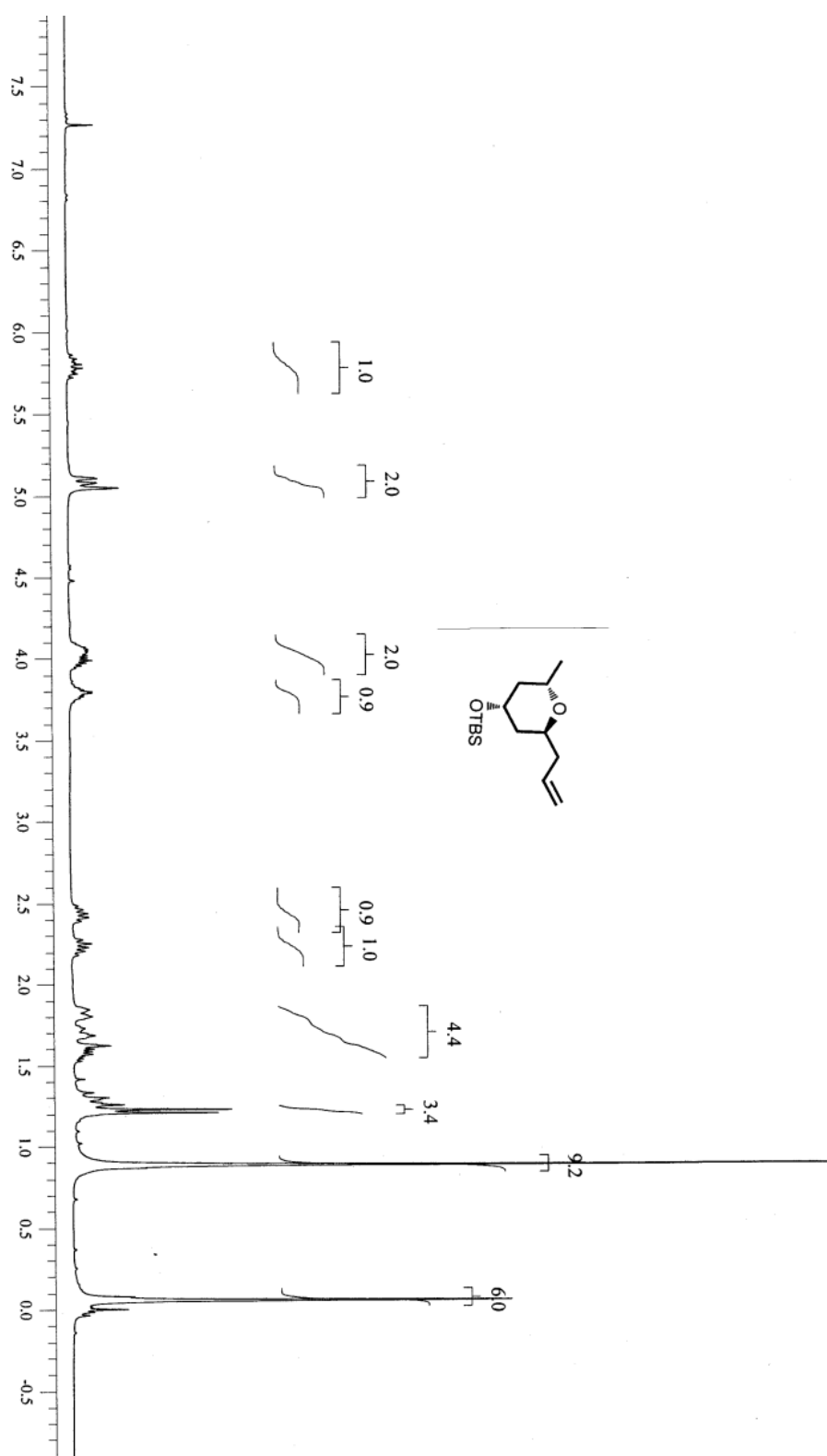
**<sup>13</sup>C NMR Spectrum of Compound 11c (100 MHz, CDCl<sub>3</sub>)**



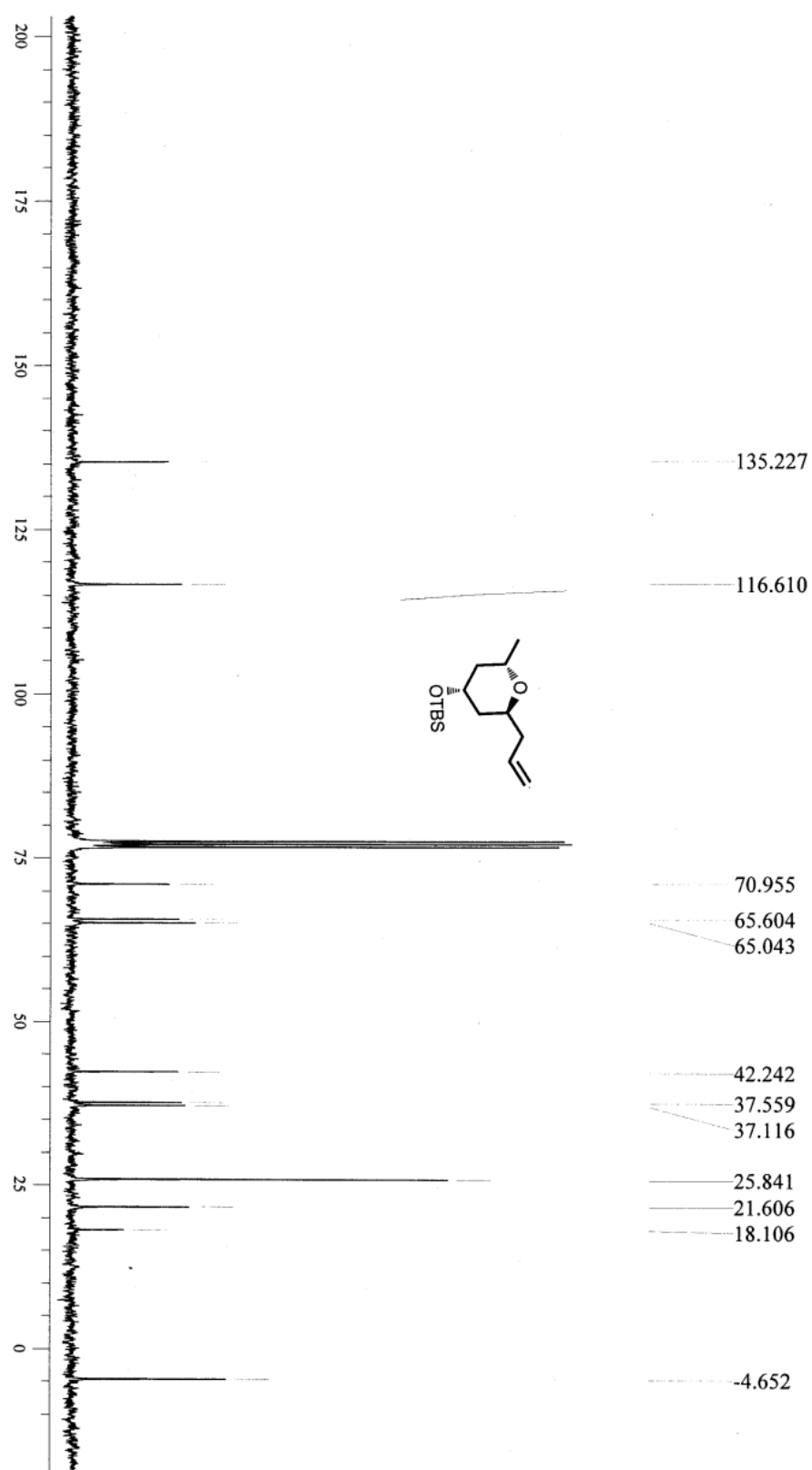
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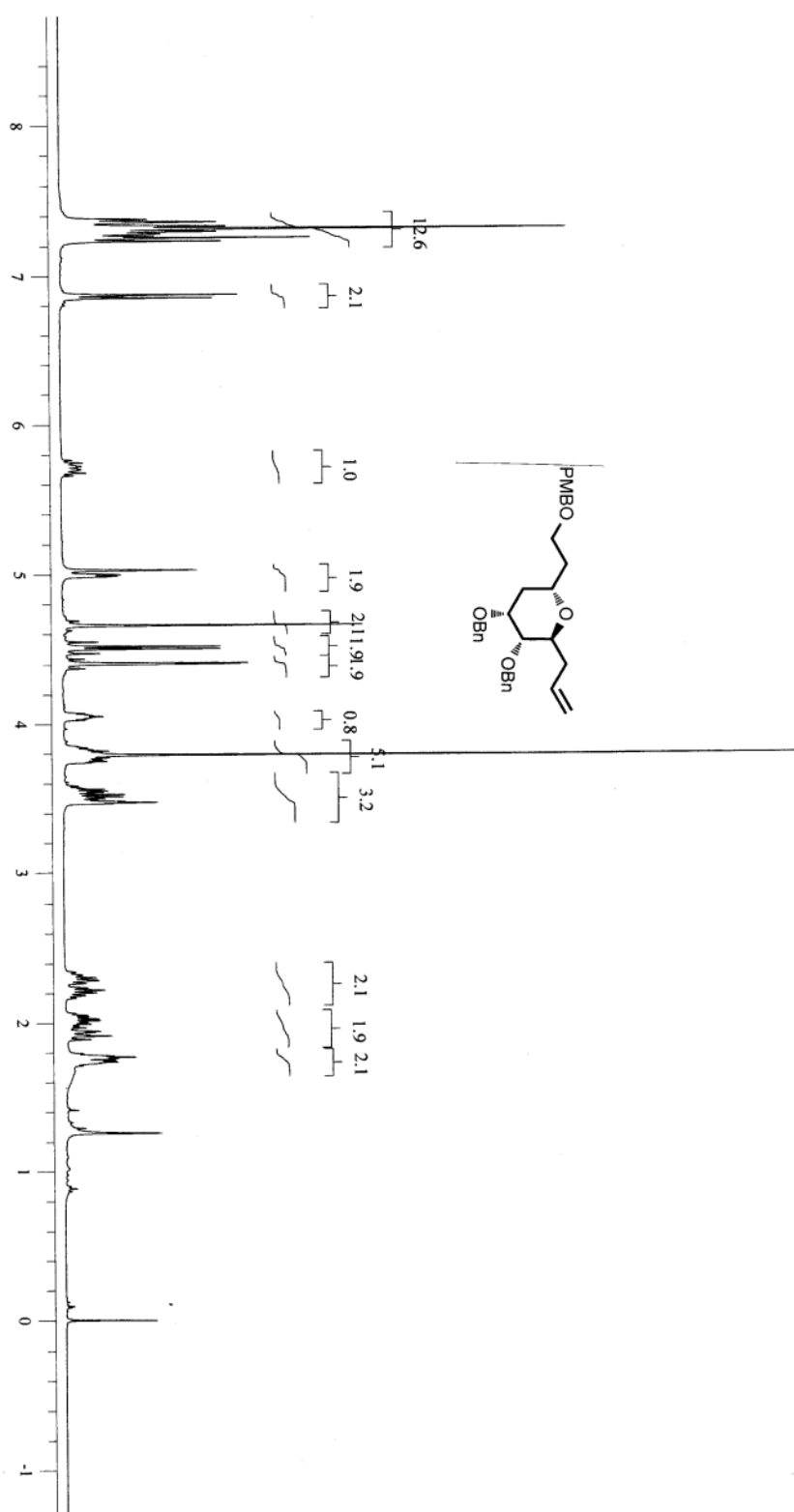
**$^{13}\text{C}$  NMR Spectrum of Compound 11d (75 MHz,  $\text{CDCl}_3$ )**



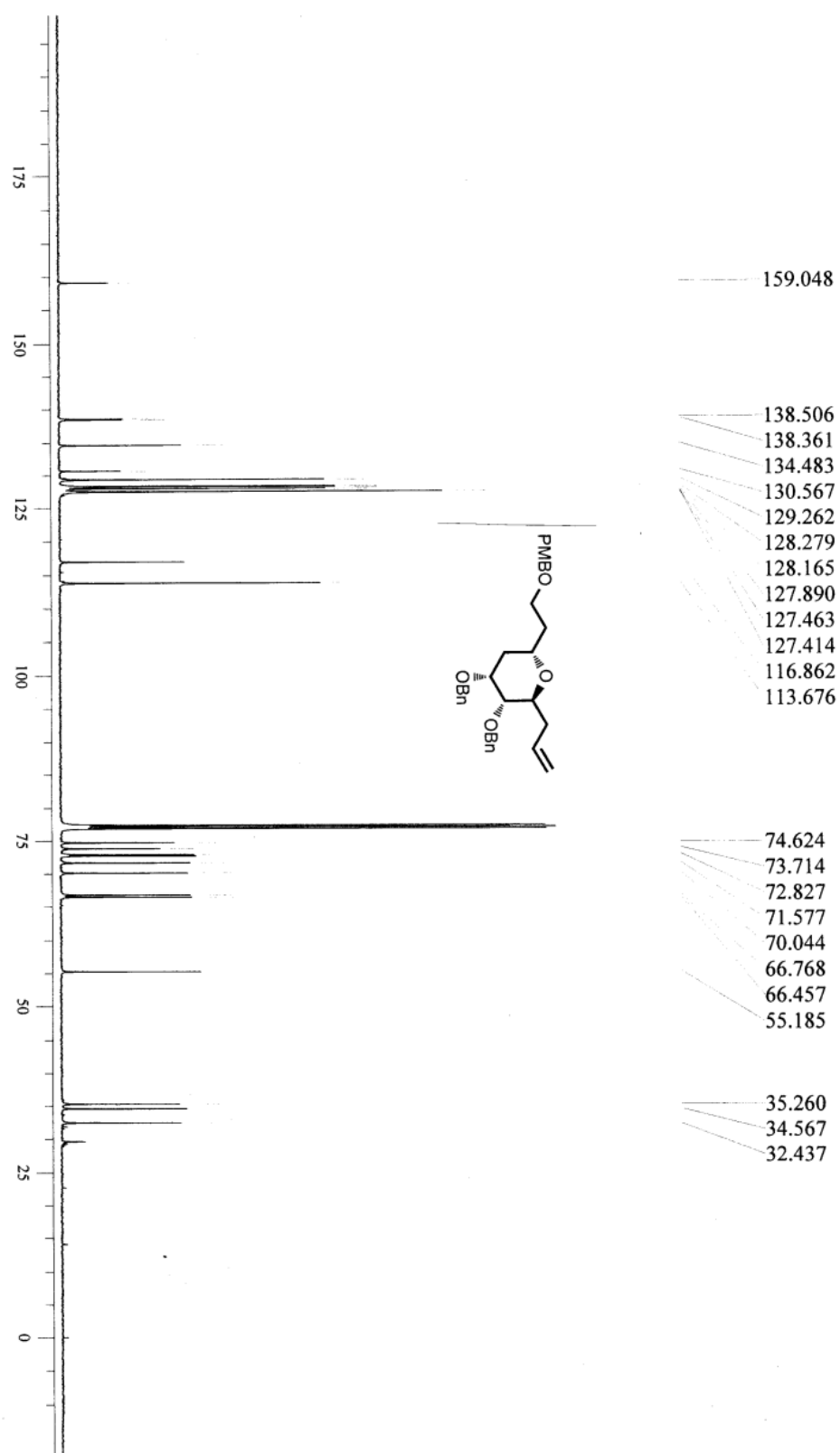
$^1\text{H}$  NMR Spectrum of Compound 11e (300 MHz,  $\text{CDCl}_3$ )



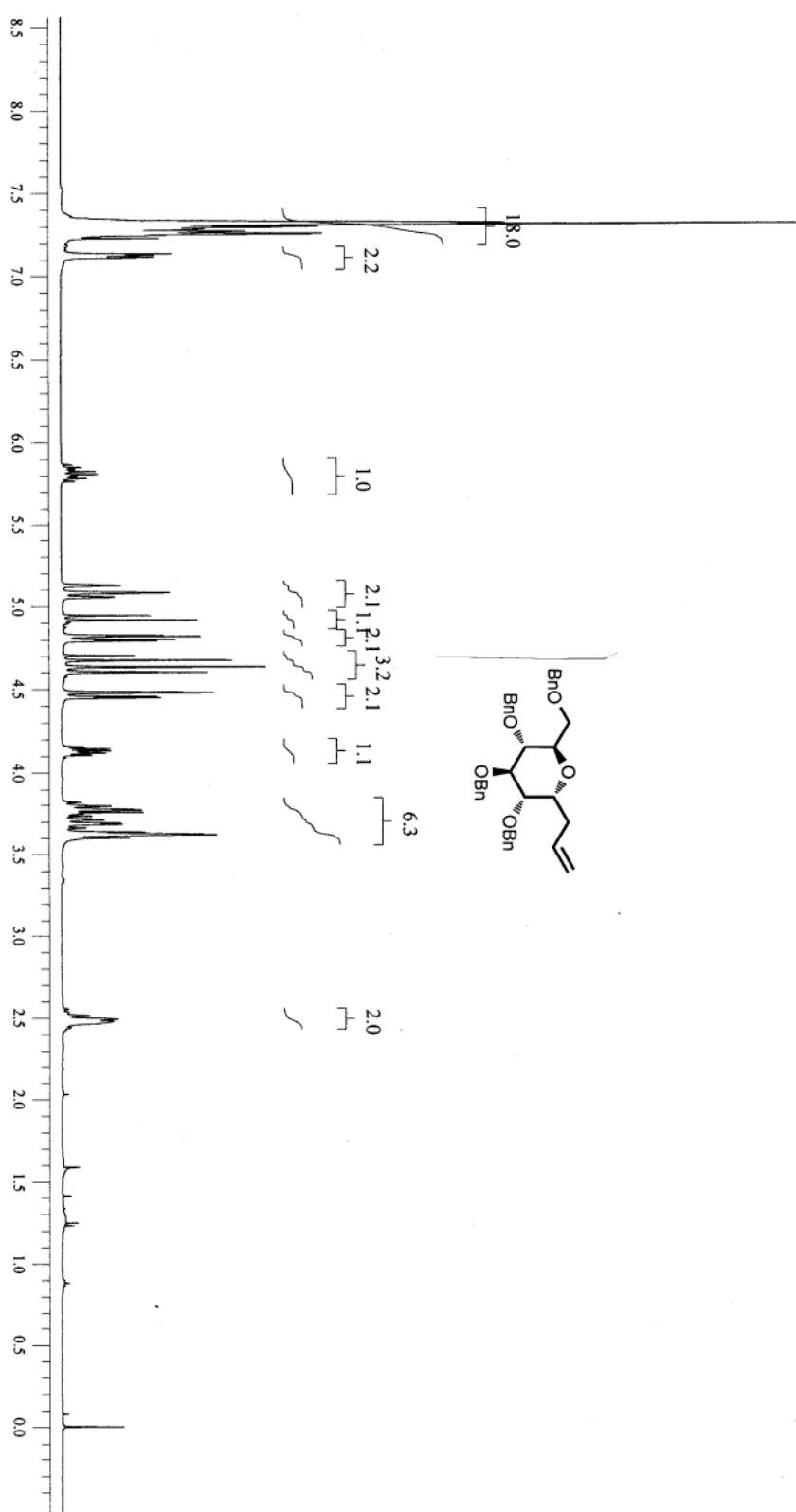
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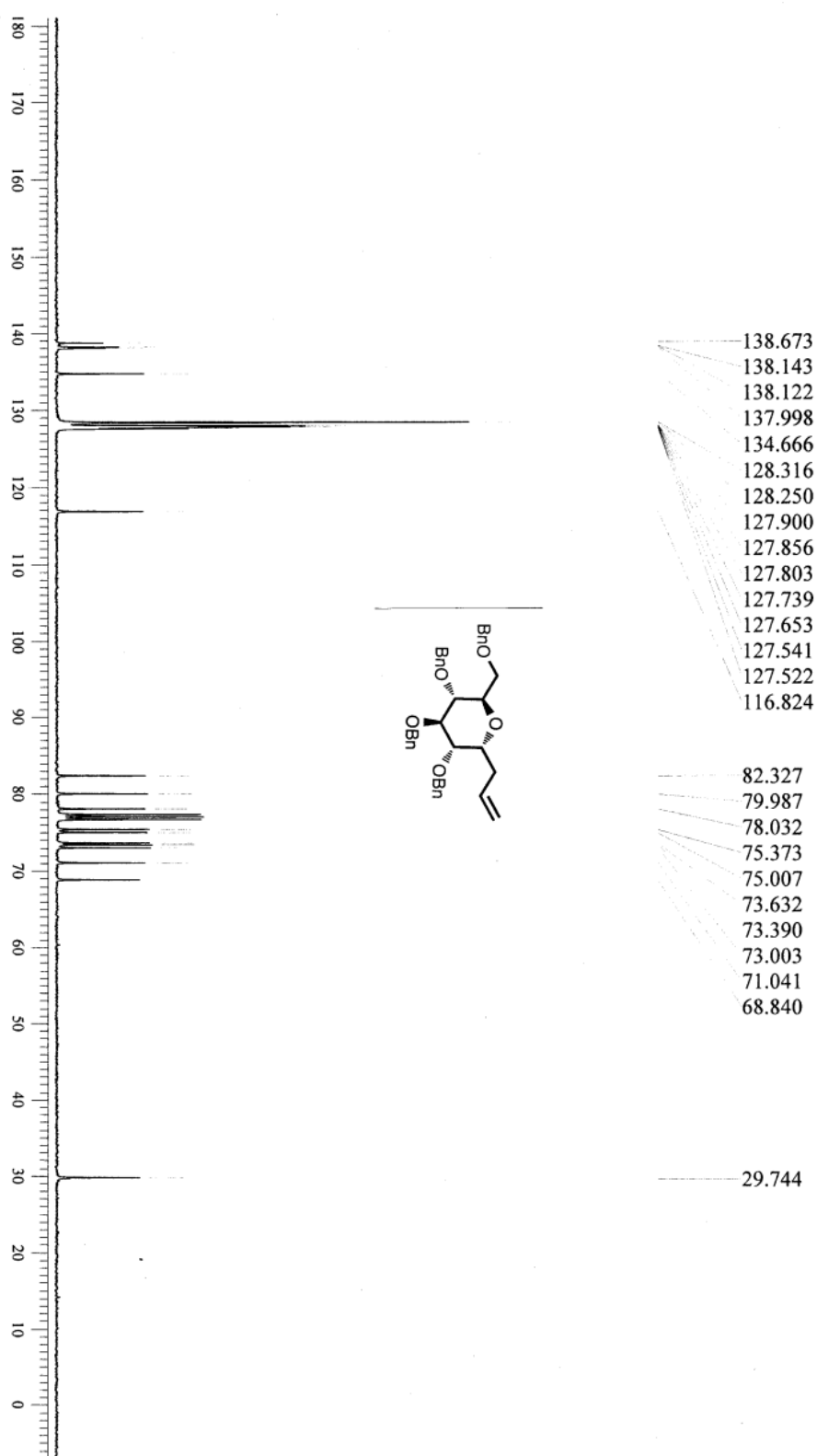
$^1\text{H}$  NMR Spectrum of Compound 11f (400 MHz,  $\text{CDCl}_3$ )



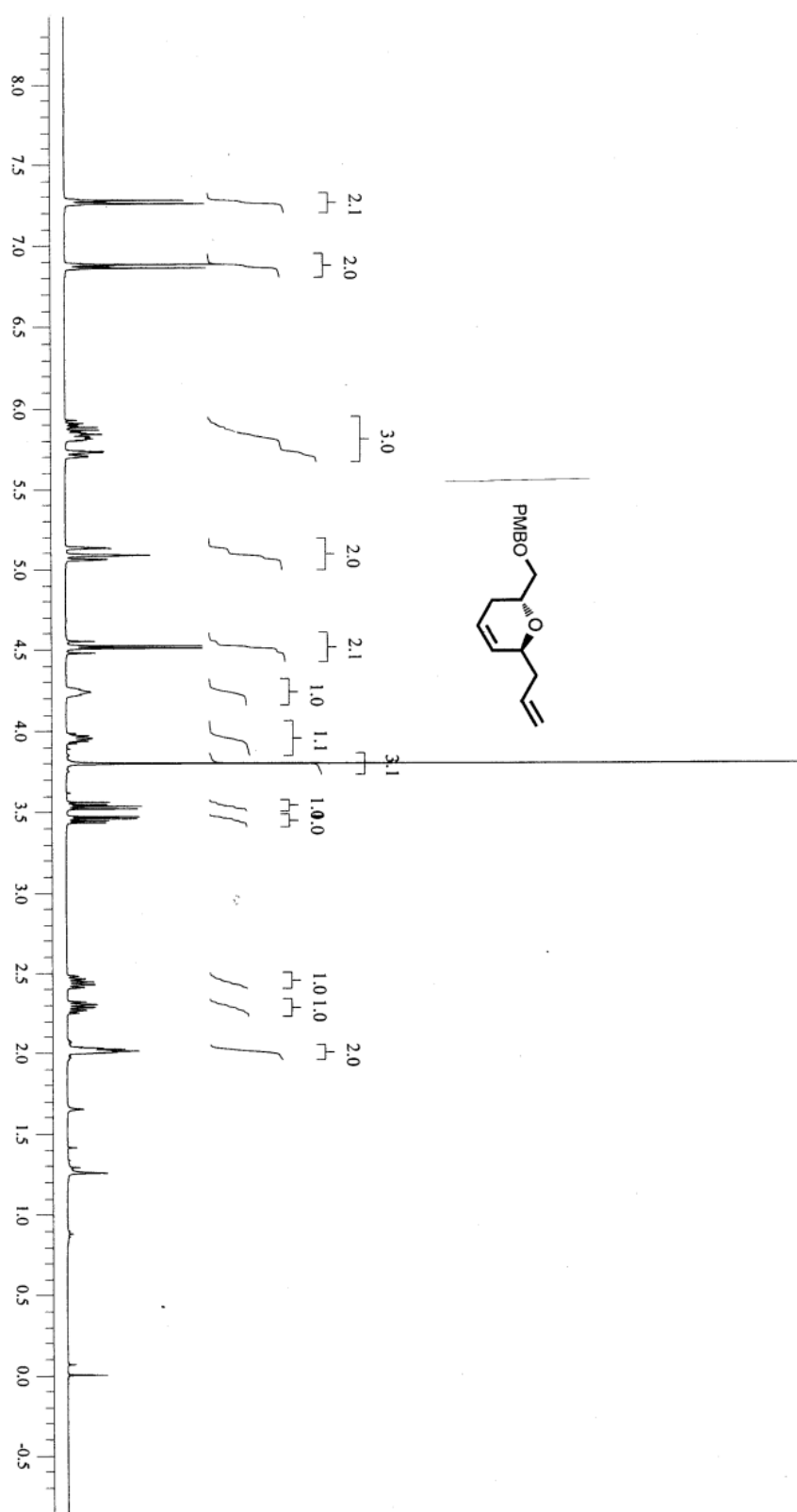
**<sup>13</sup>C NMR Spectrum of Compound 11f (125 MHz, CDCl<sub>3</sub>)**



$^1\text{H}$  NMR Spectrum of Compound 11g (400 MHz,  $\text{CDCl}_3$ )

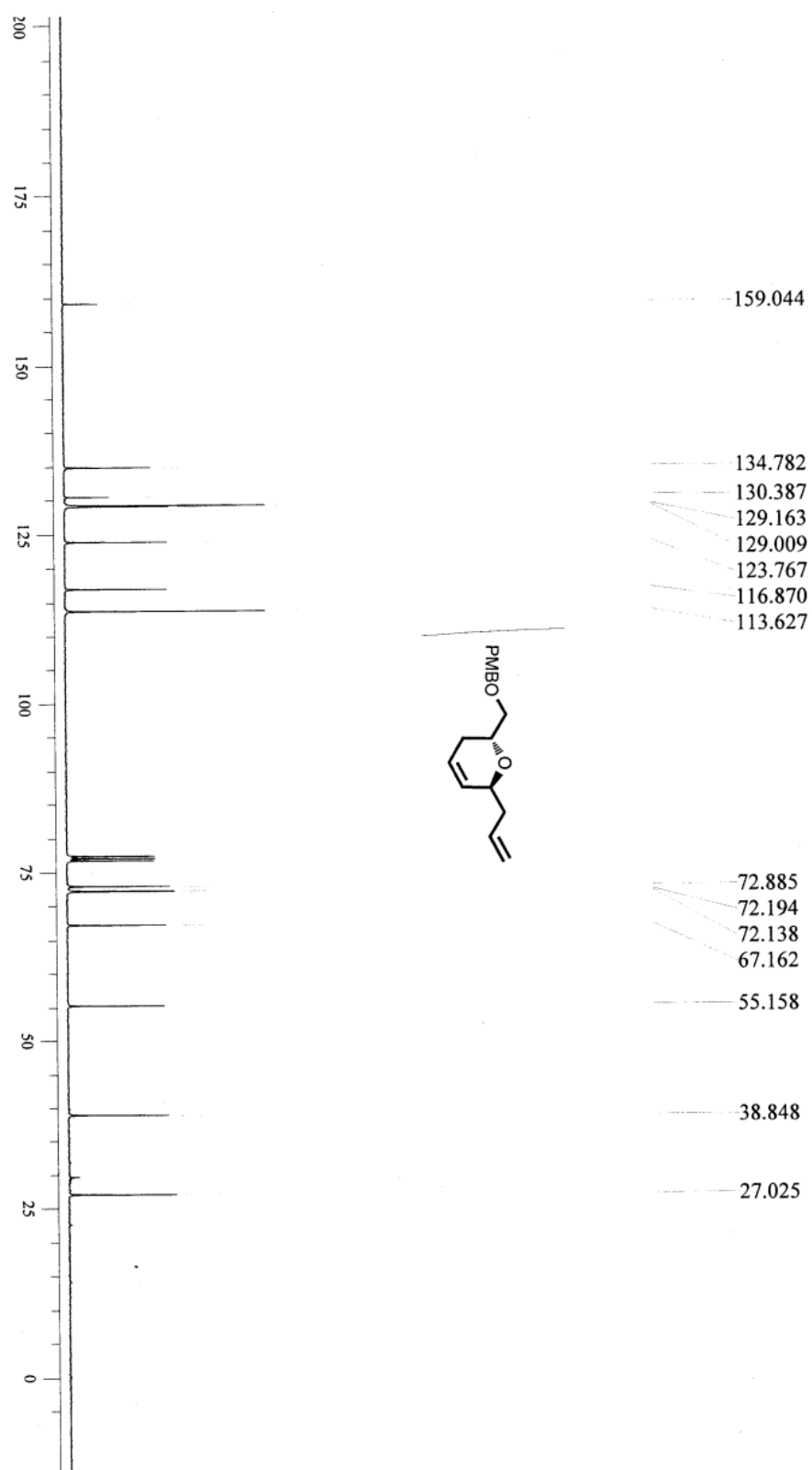


<sup>13</sup>C NMR Spectrum of Compound 11g (100 MHz, CDCl<sub>3</sub>)

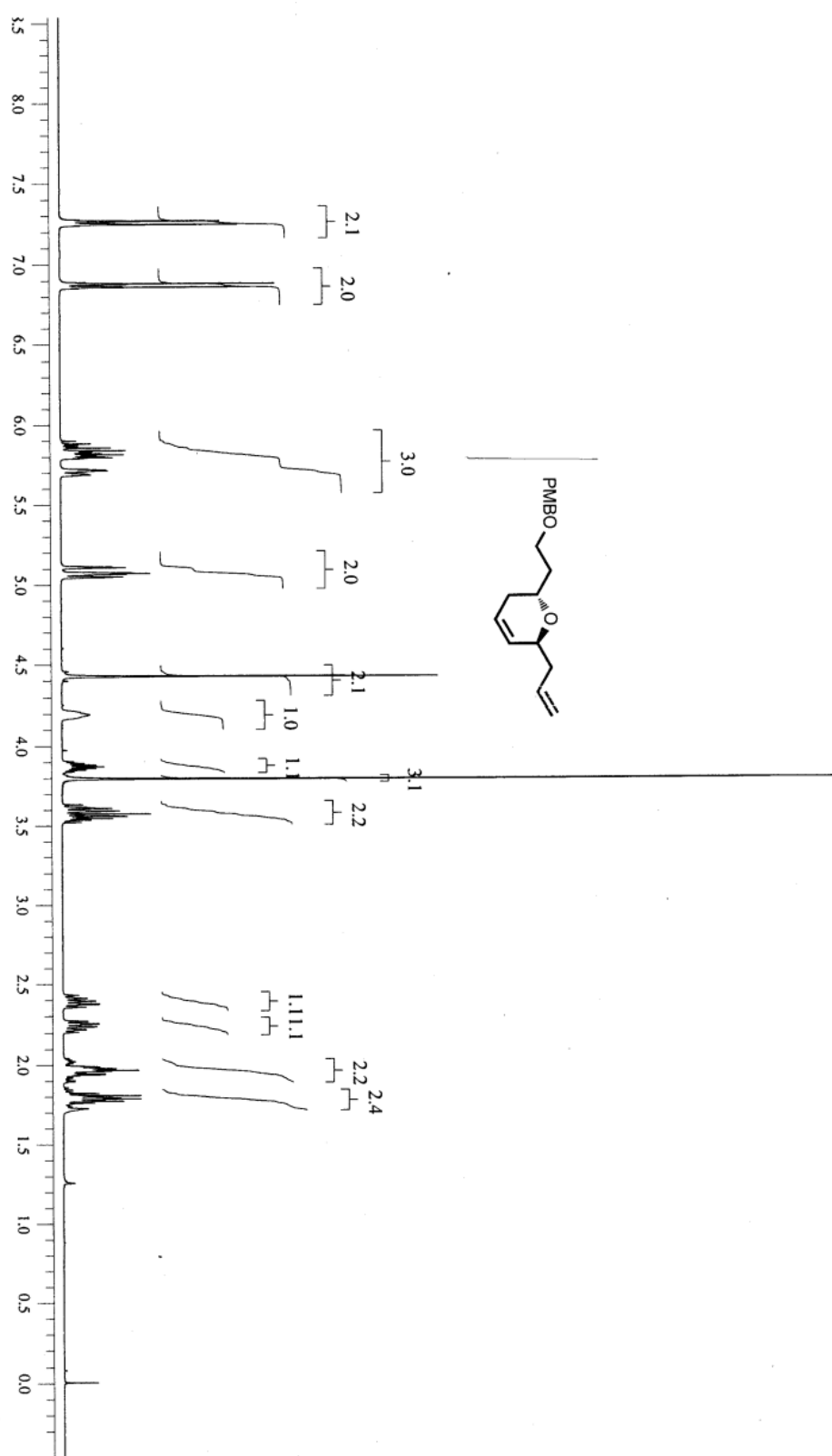


$^1\text{H}$  NMR Spectrum of Compound 11h (400 MHz,  $\text{CDCl}_3$ )

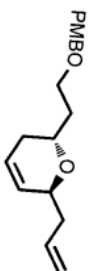




$^{13}\text{C}$  NMR Spectrum of Compound 11h (100 MHz,  $\text{CDCl}_3$ )

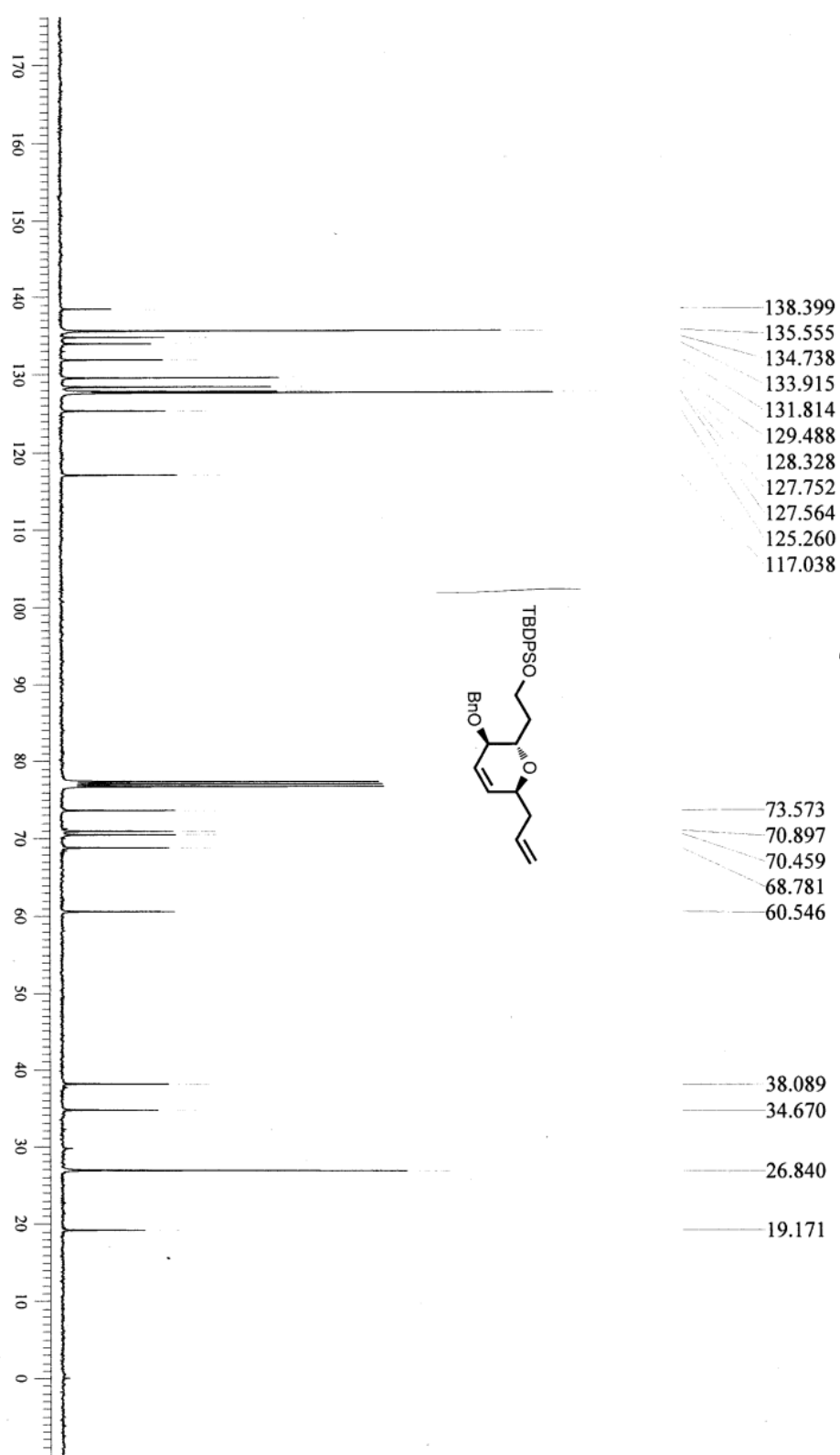


$^1\text{H}$  NMR Spectrum of Compound 11i (400 MHz,  $\text{CDCl}_3$ )

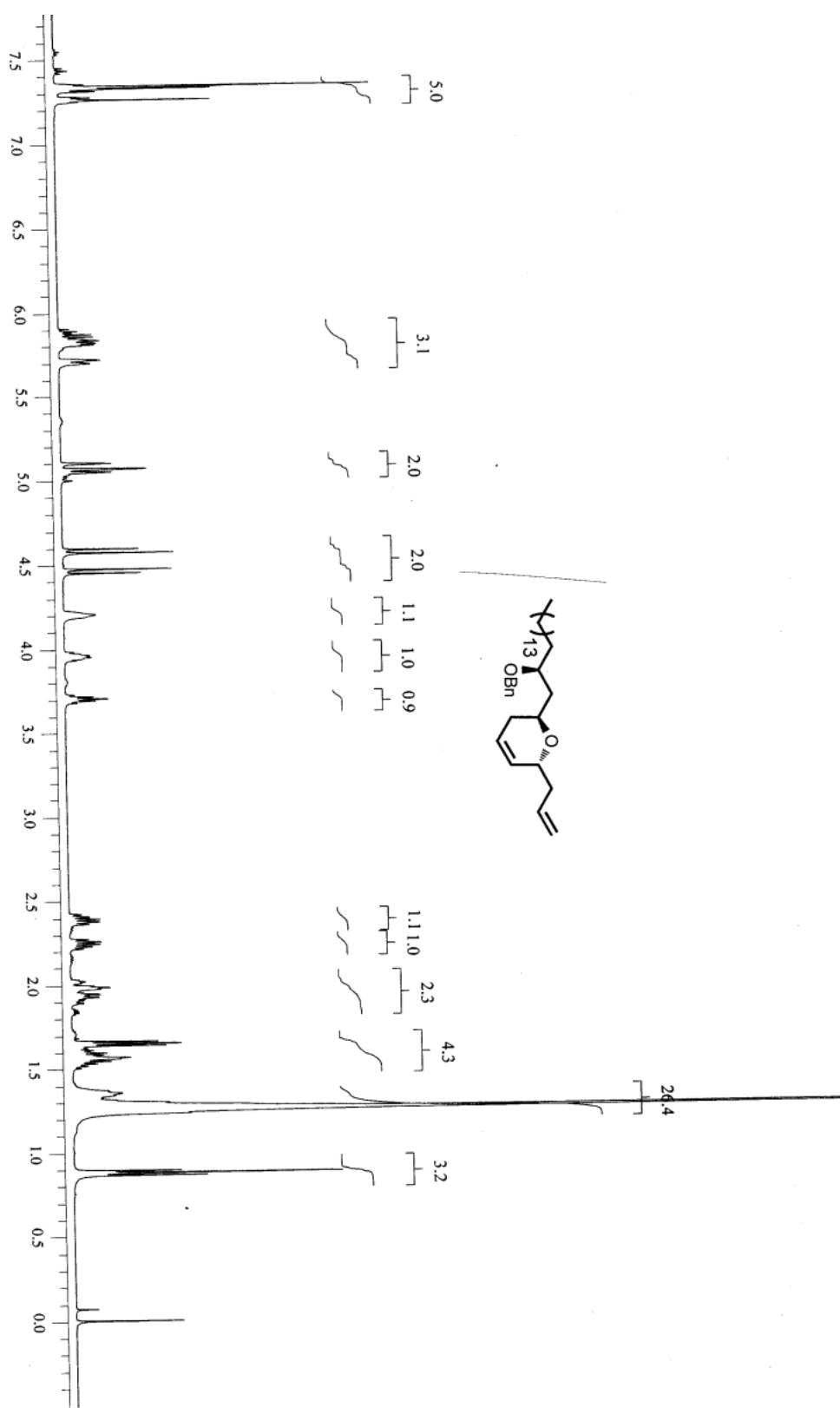


**$^{13}\text{C}$  NMR Spectrum of Compound 11i (100 MHz,  $\text{CDCl}_3$ )**

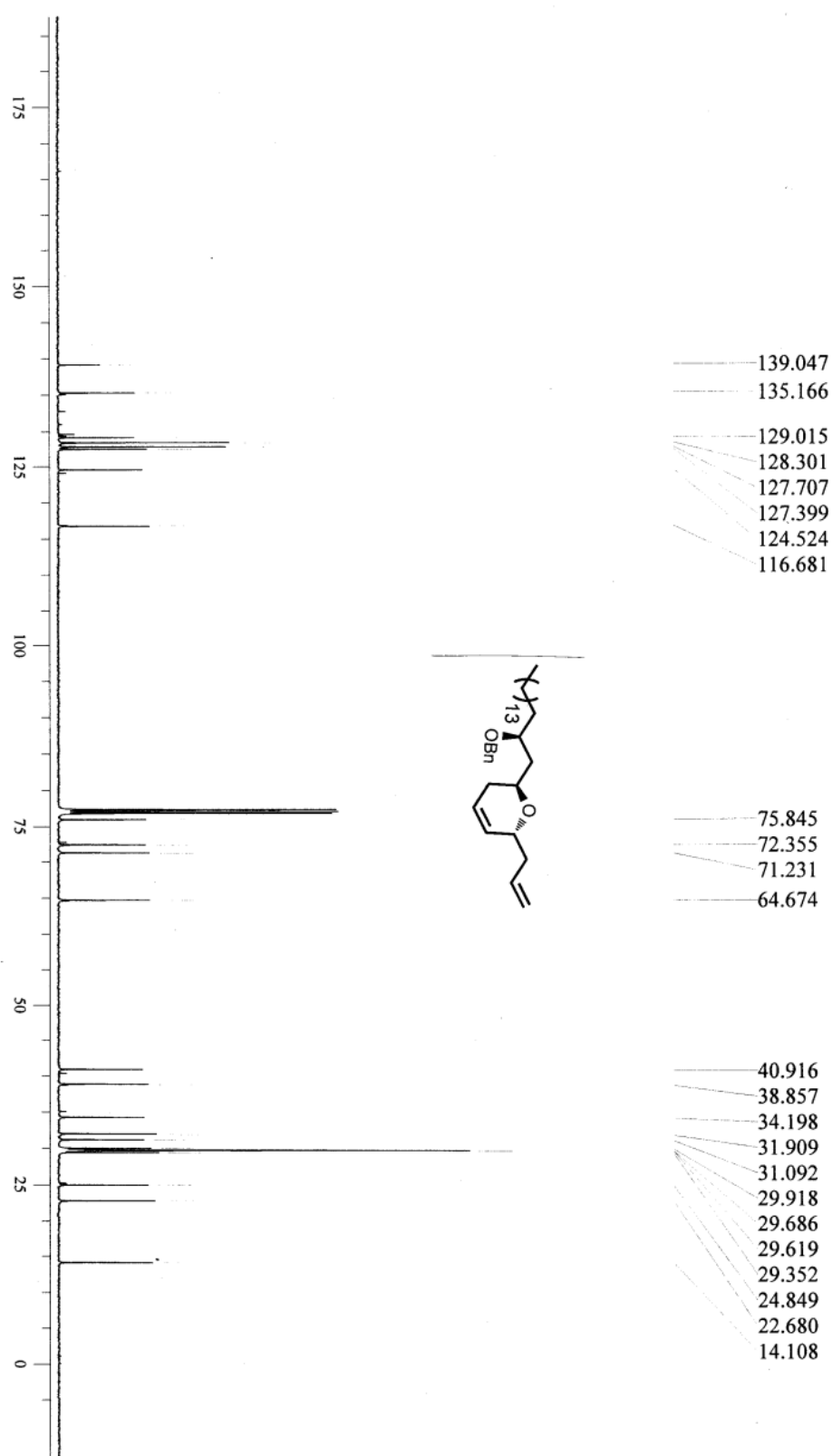
**<sup>1</sup>H NMR Spectrum of Compound 11j (400 MHz, CDCl<sub>3</sub>)**



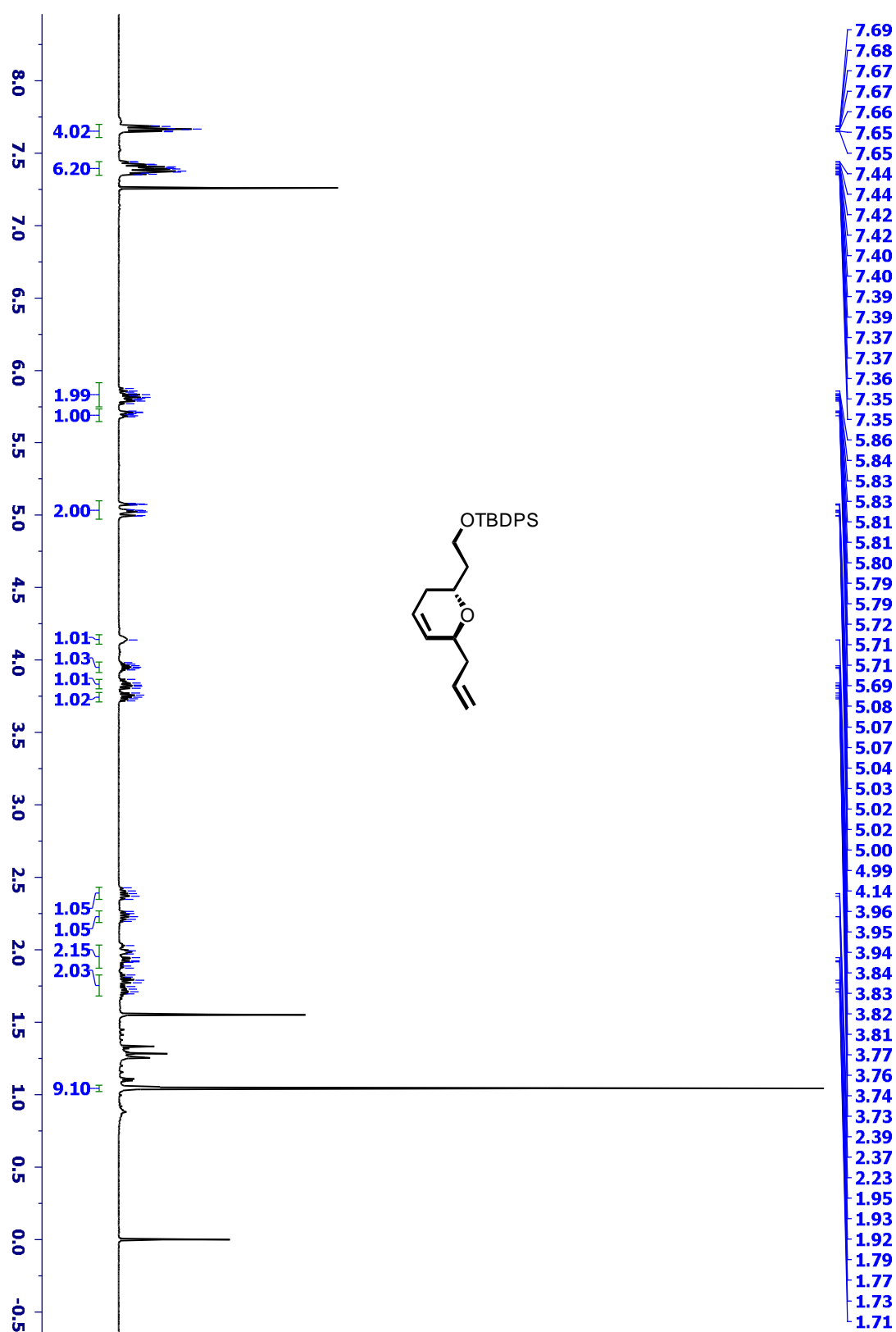
**<sup>13</sup>C NMR Spectrum of Compound 11j (100 MHz, CDCl<sub>3</sub>)**



$^1\text{H}$  NMR Spectrum of Compound 11k (500 MHz,  $\text{CDCl}_3$ )

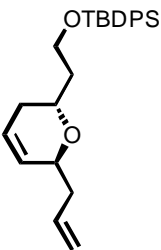


$^{13}\text{C}$  NMR Spectrum of Compound 11k (125 MHz,  $\text{CDCl}_3$ )

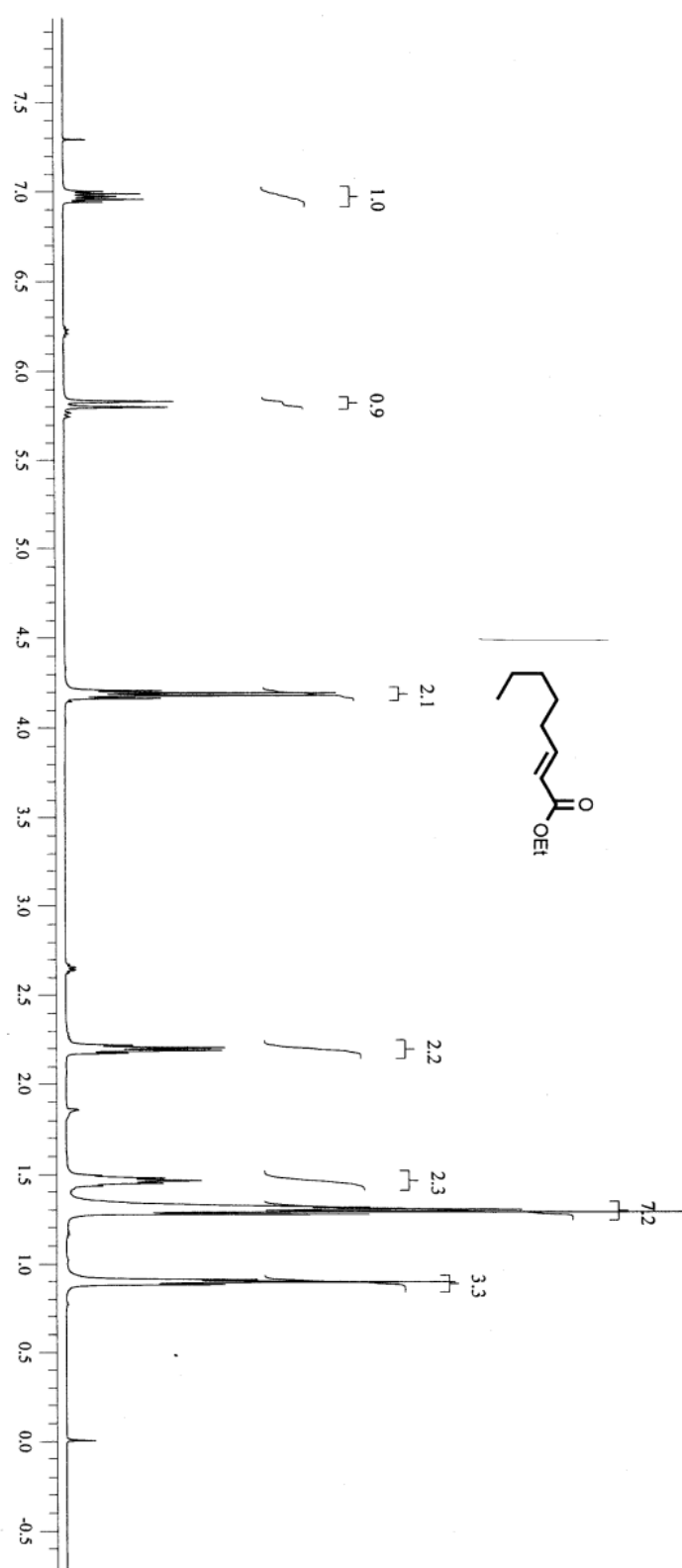


$^1\text{H}$  NMR Spectrum of Compound 11l (400 MHz,  $\text{CDCl}_3$ )

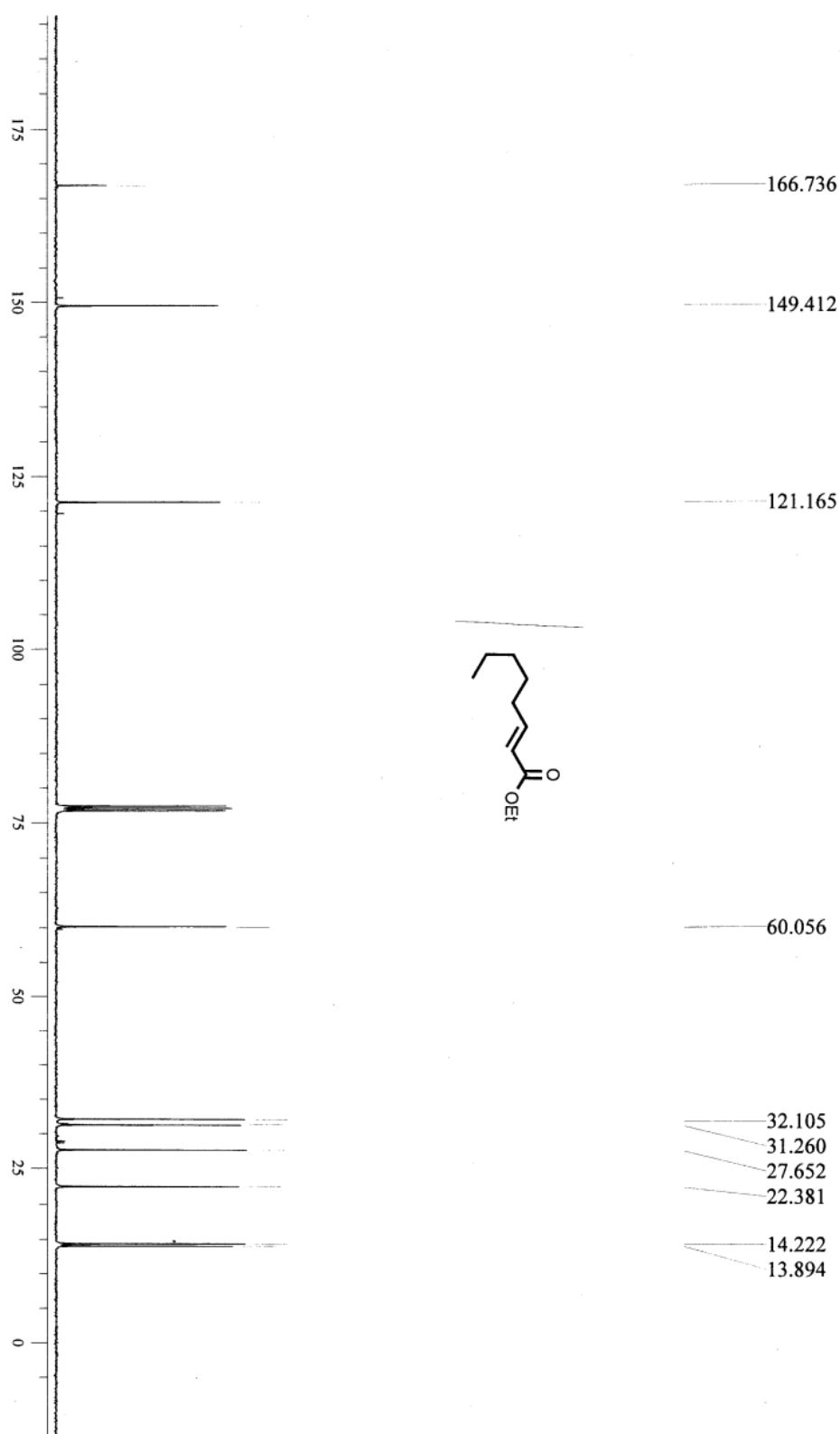




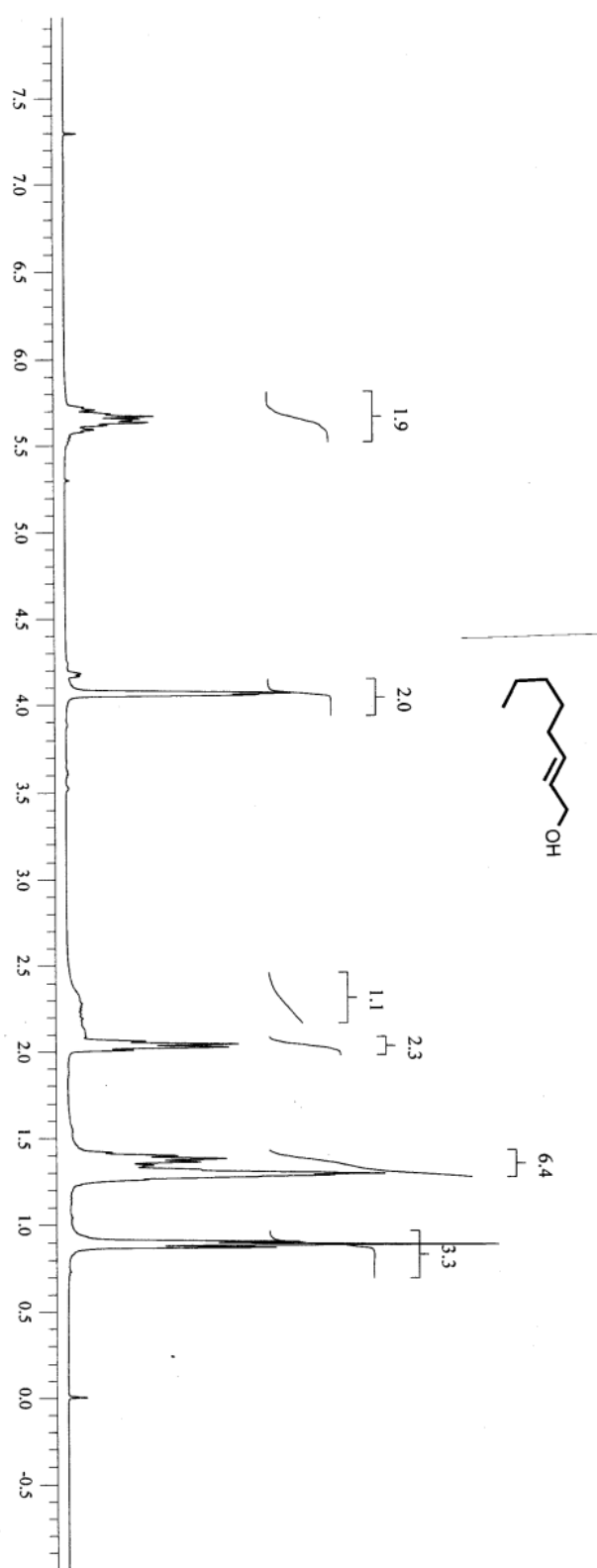
**$^{13}\text{C}$  NMR Spectrum of Compound 11l (100 MHz,  $\text{CDCl}_3$ )**



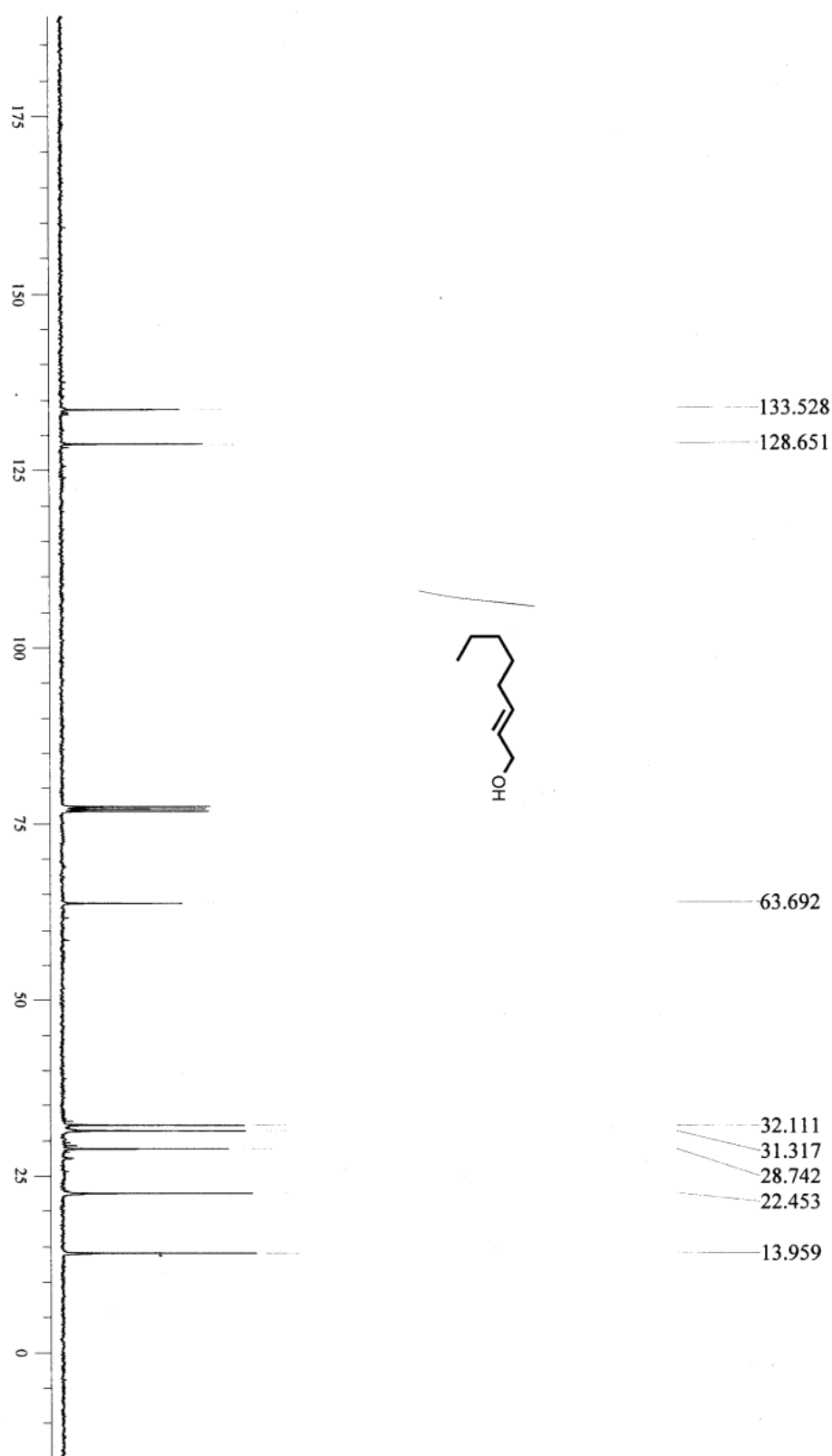
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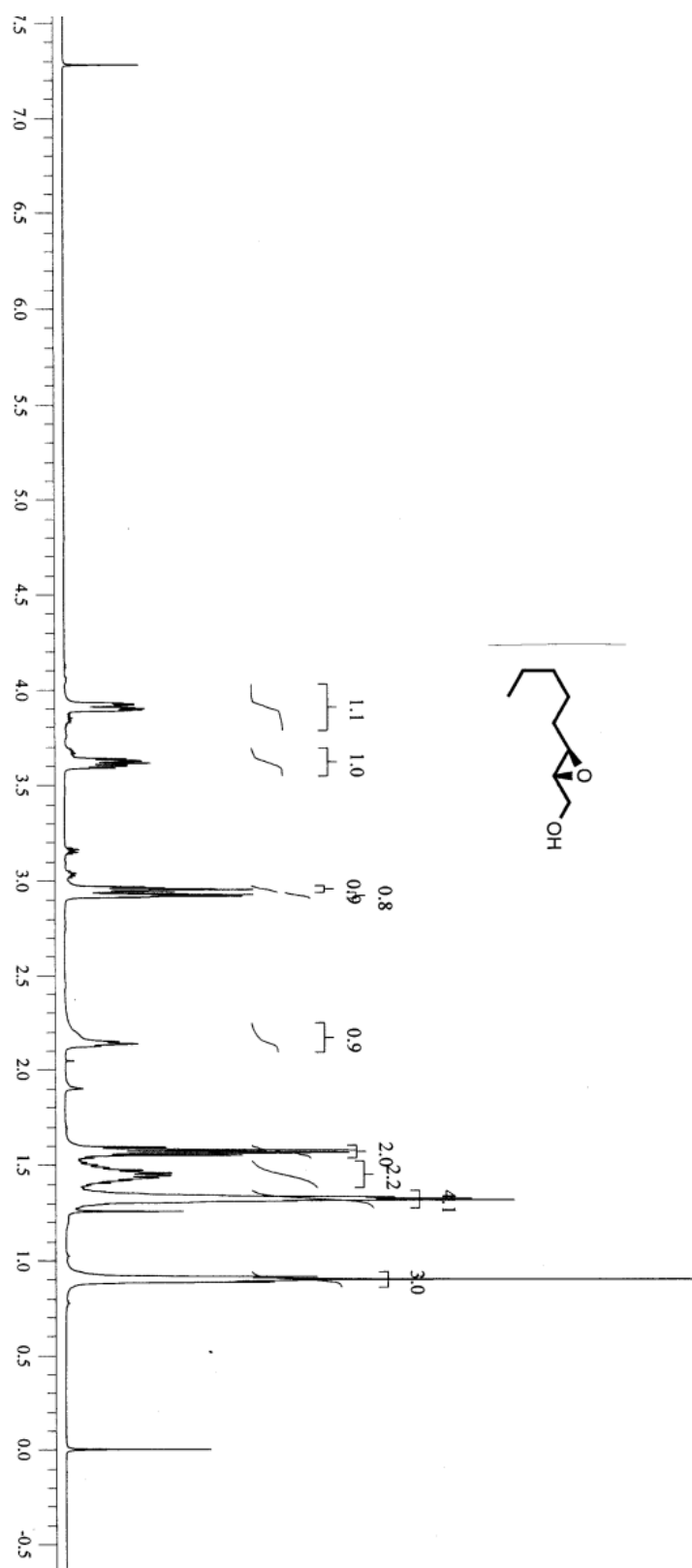
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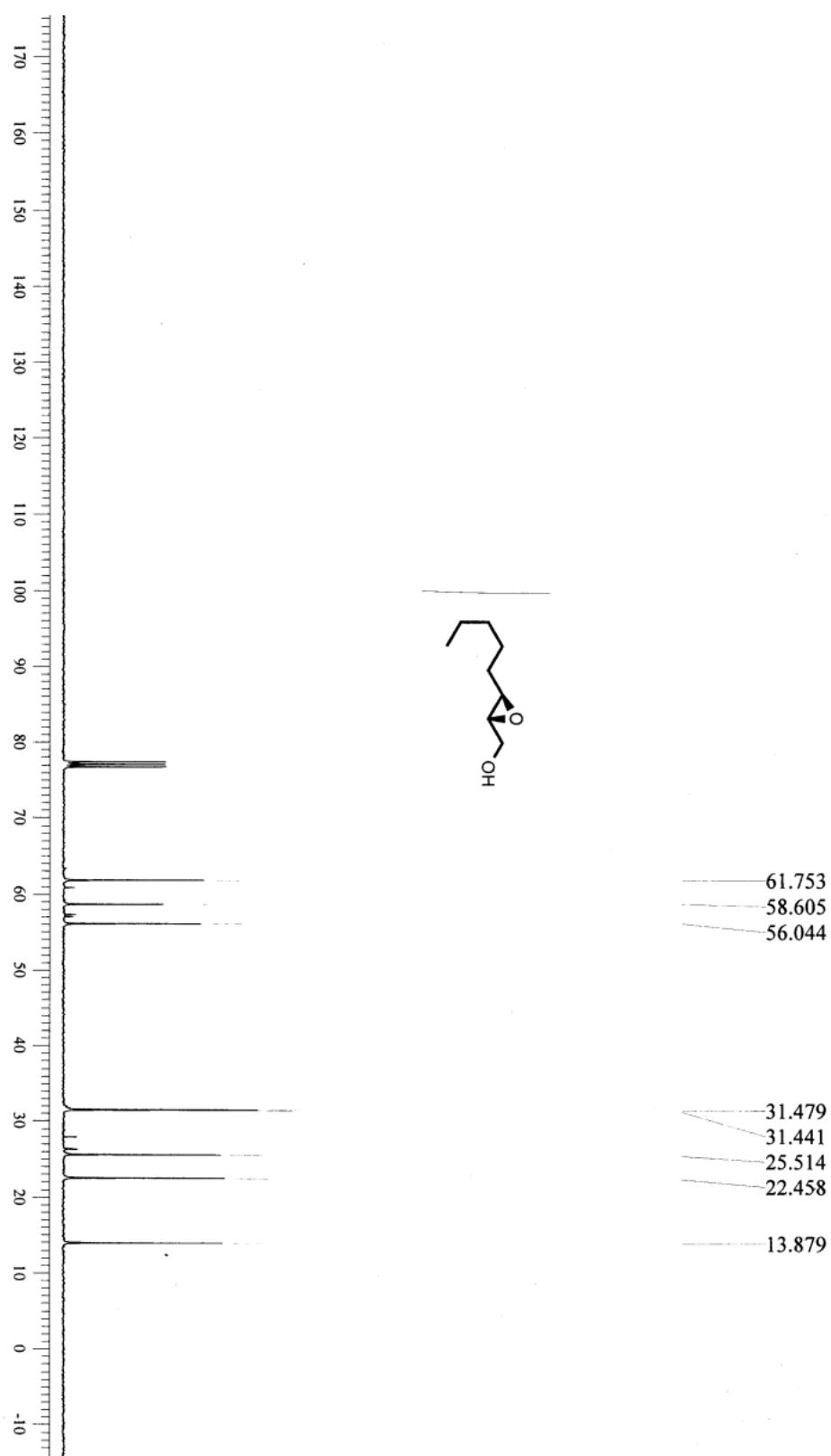
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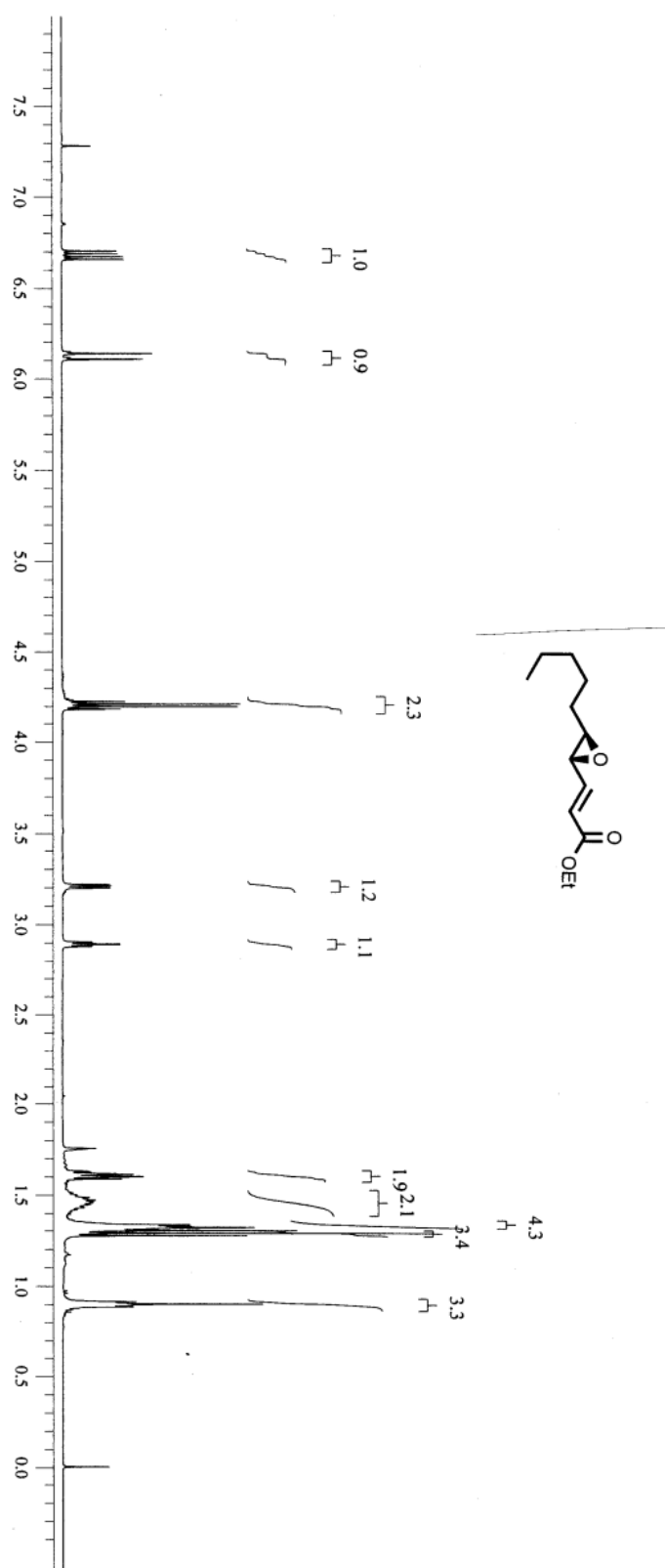
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$^1\text{H}$  NMR Spectrum of Compound 22 (500 MHz,  $\text{CDCl}_3$ )

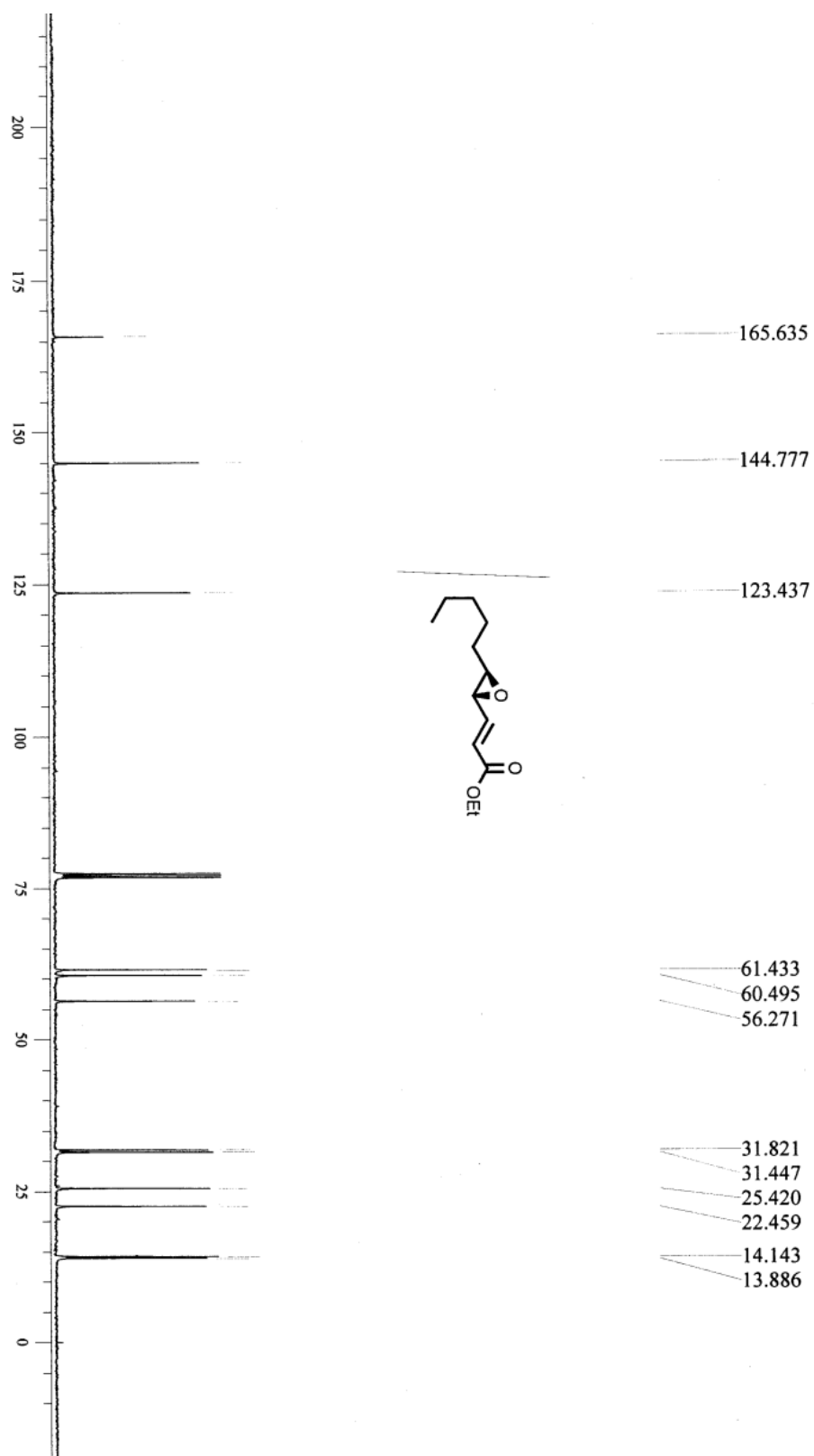


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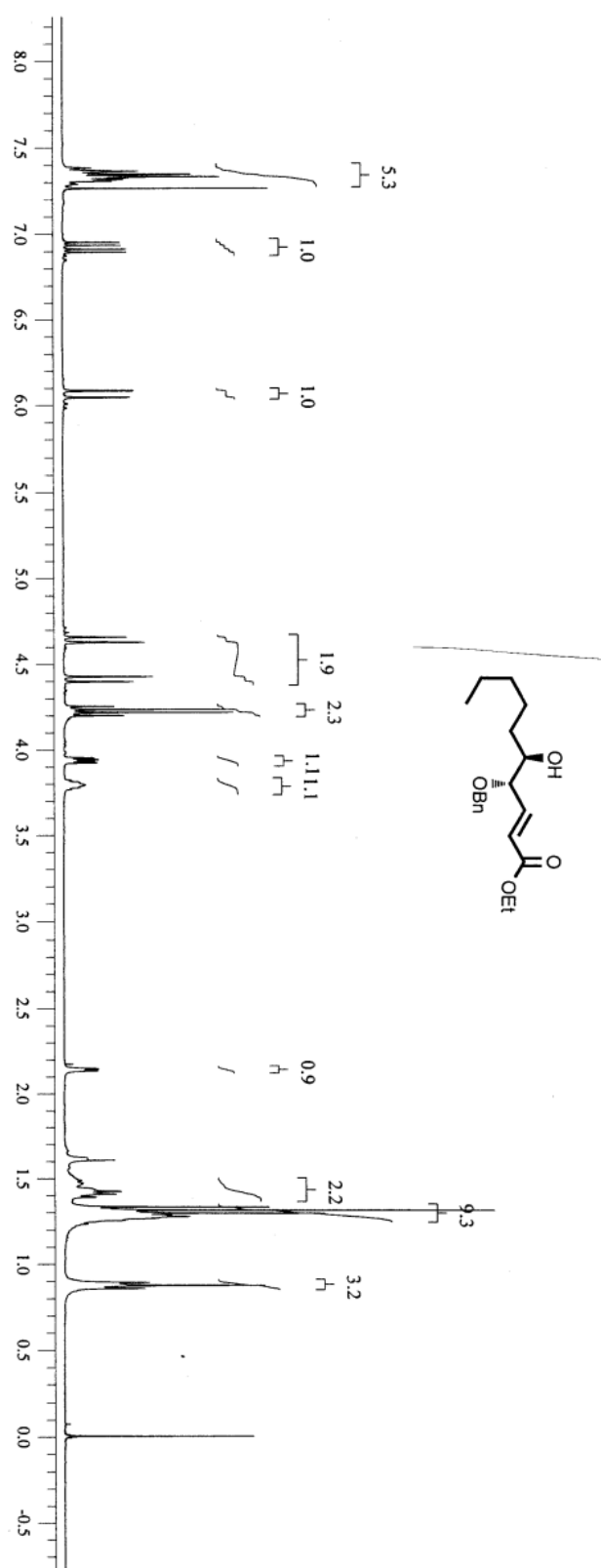


$^1\text{H}$  NMR Spectrum of Compound 23 (500 MHz,  $\text{CDCl}_3$ )

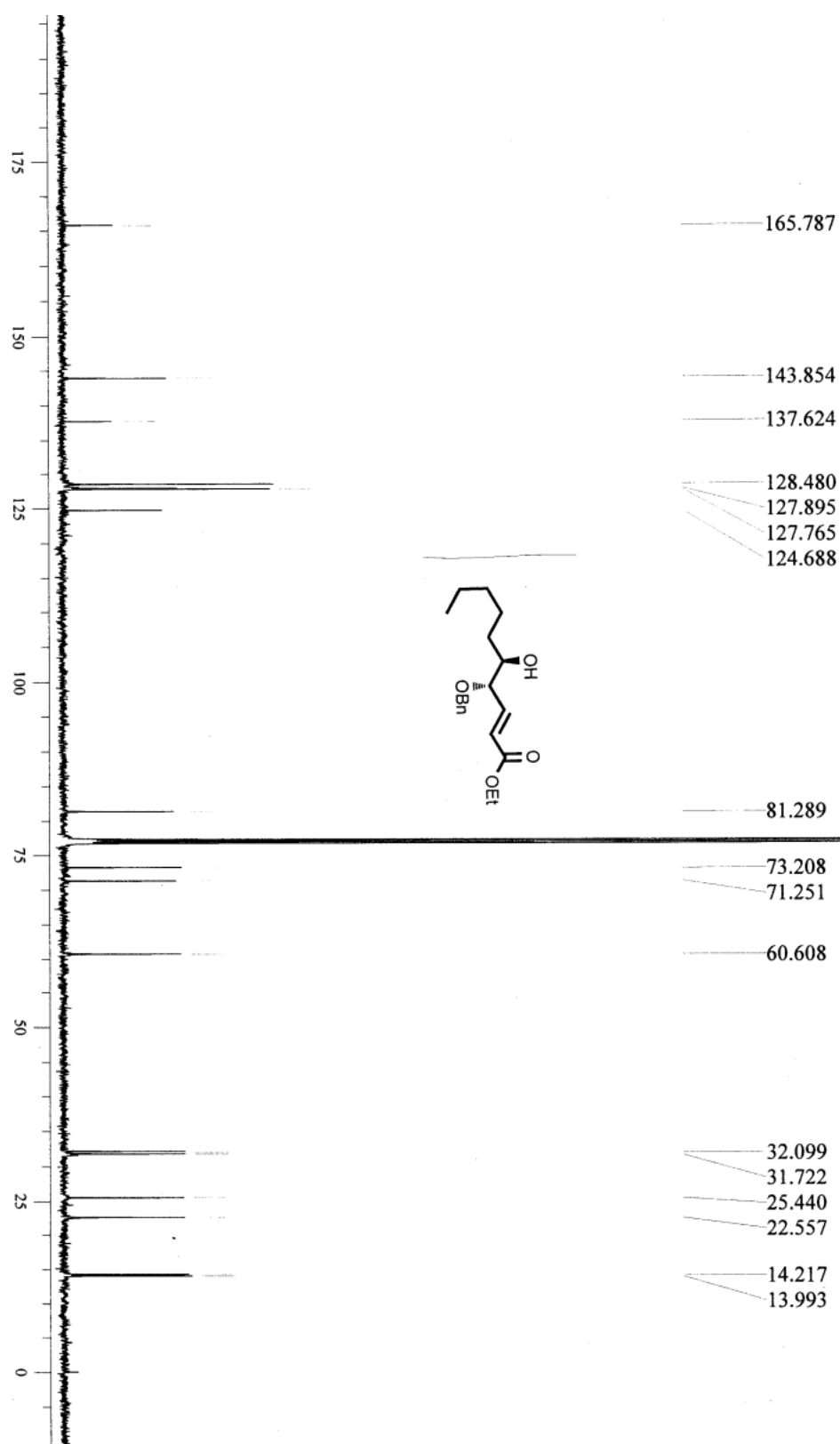




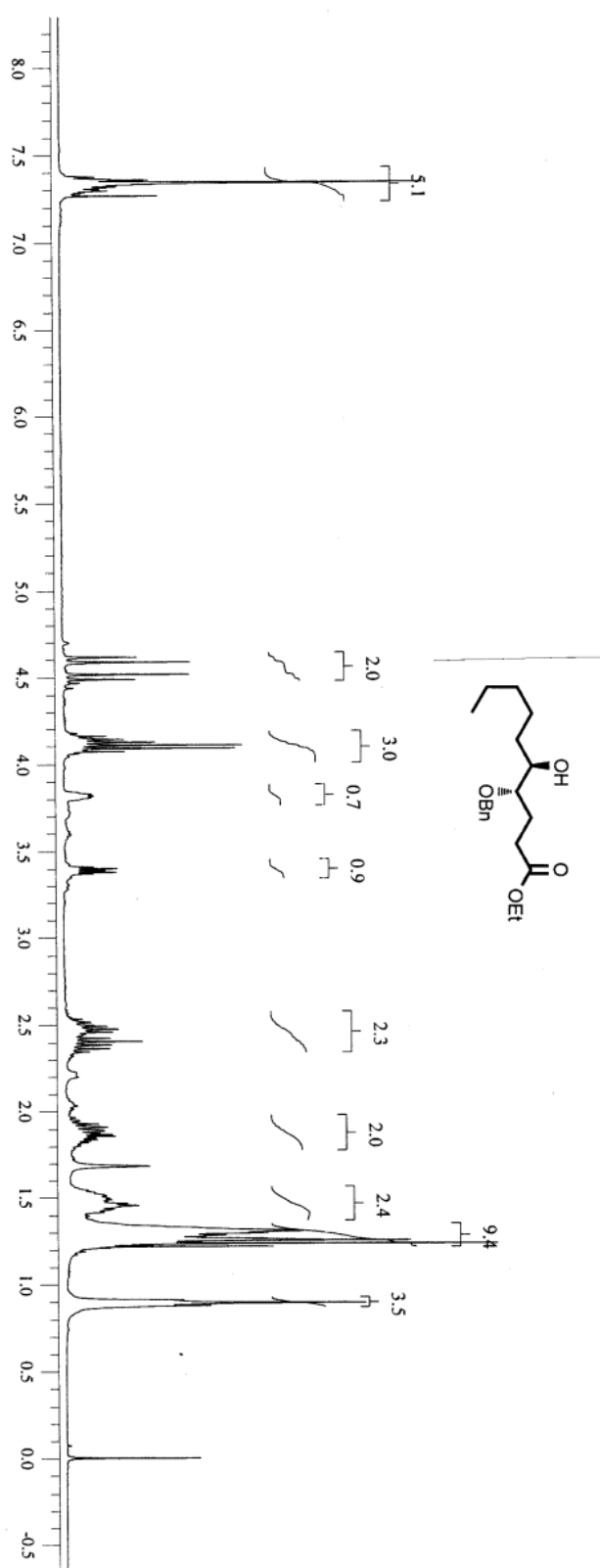
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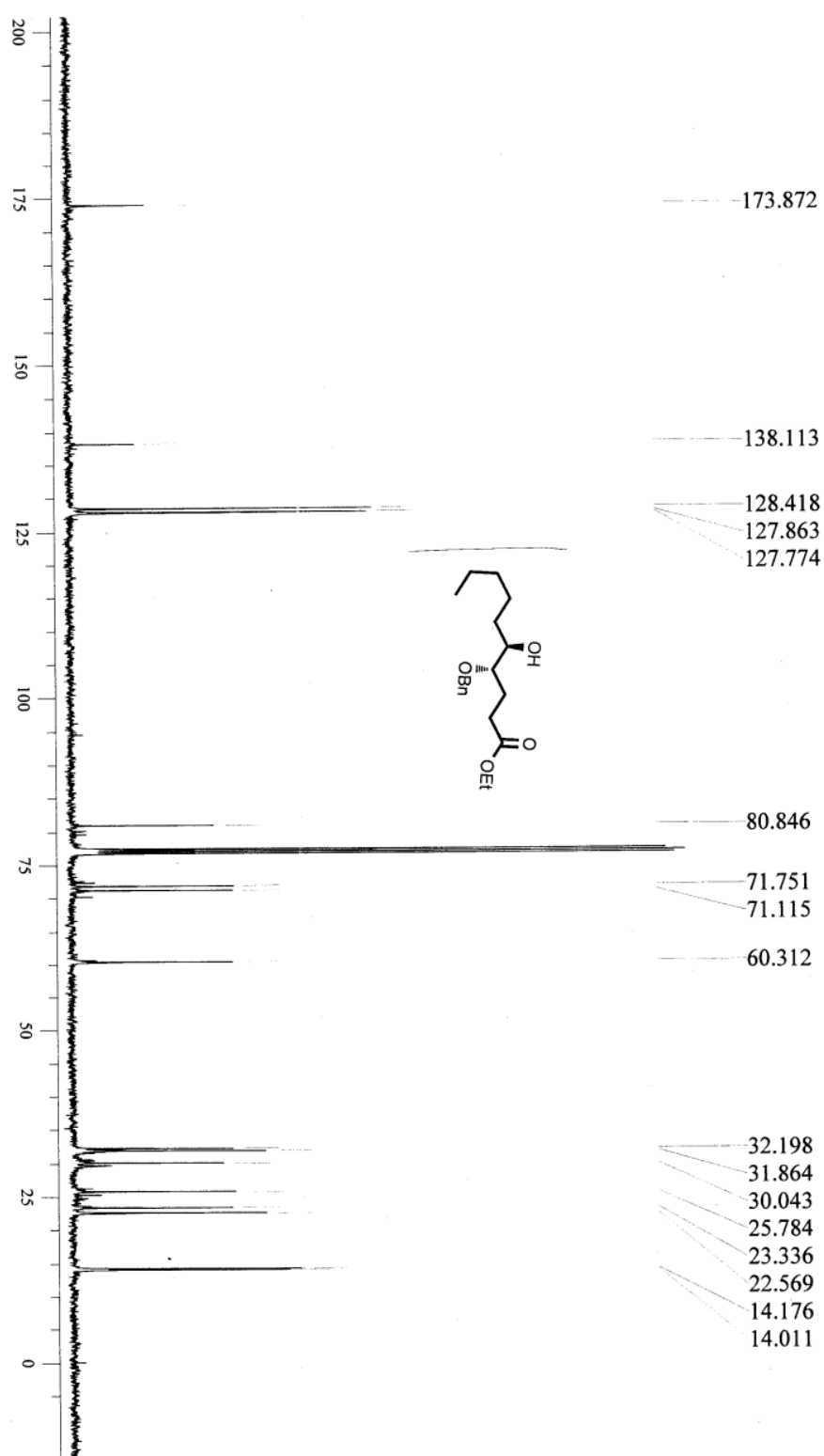
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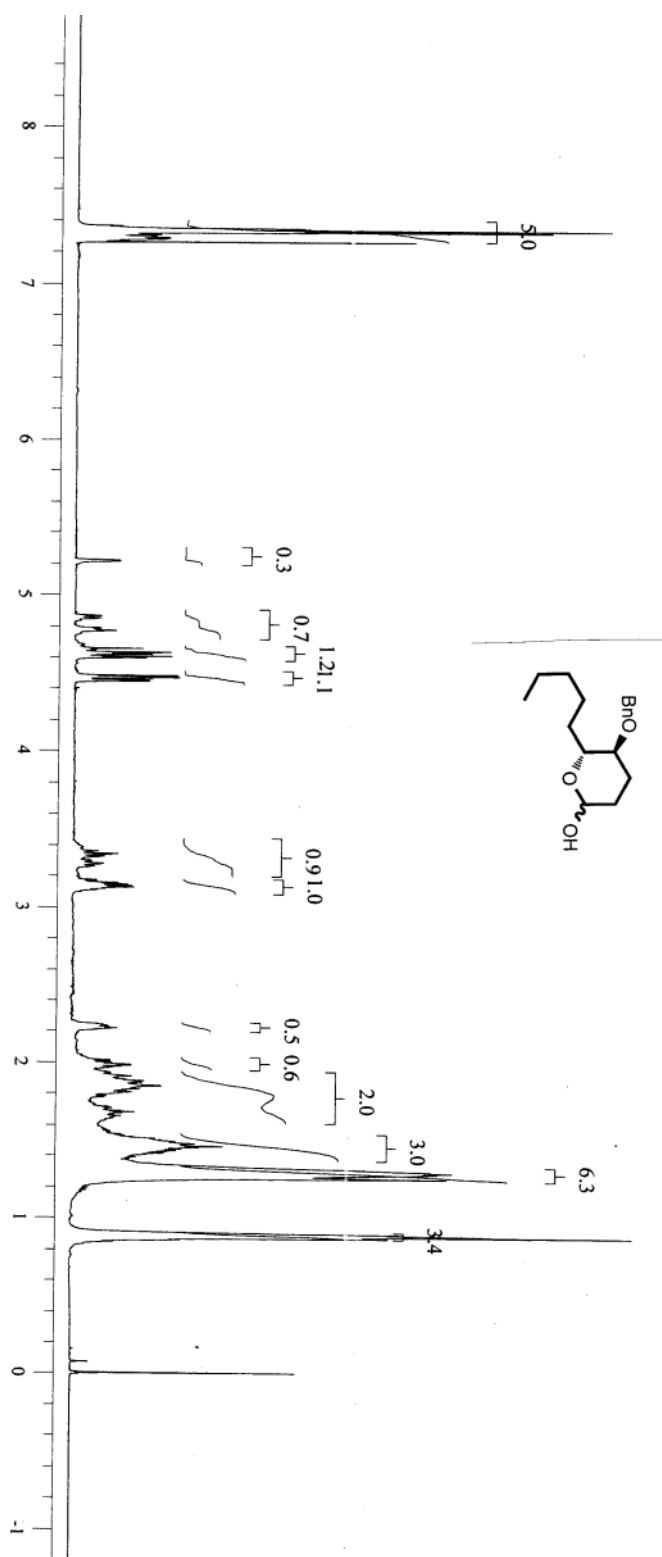
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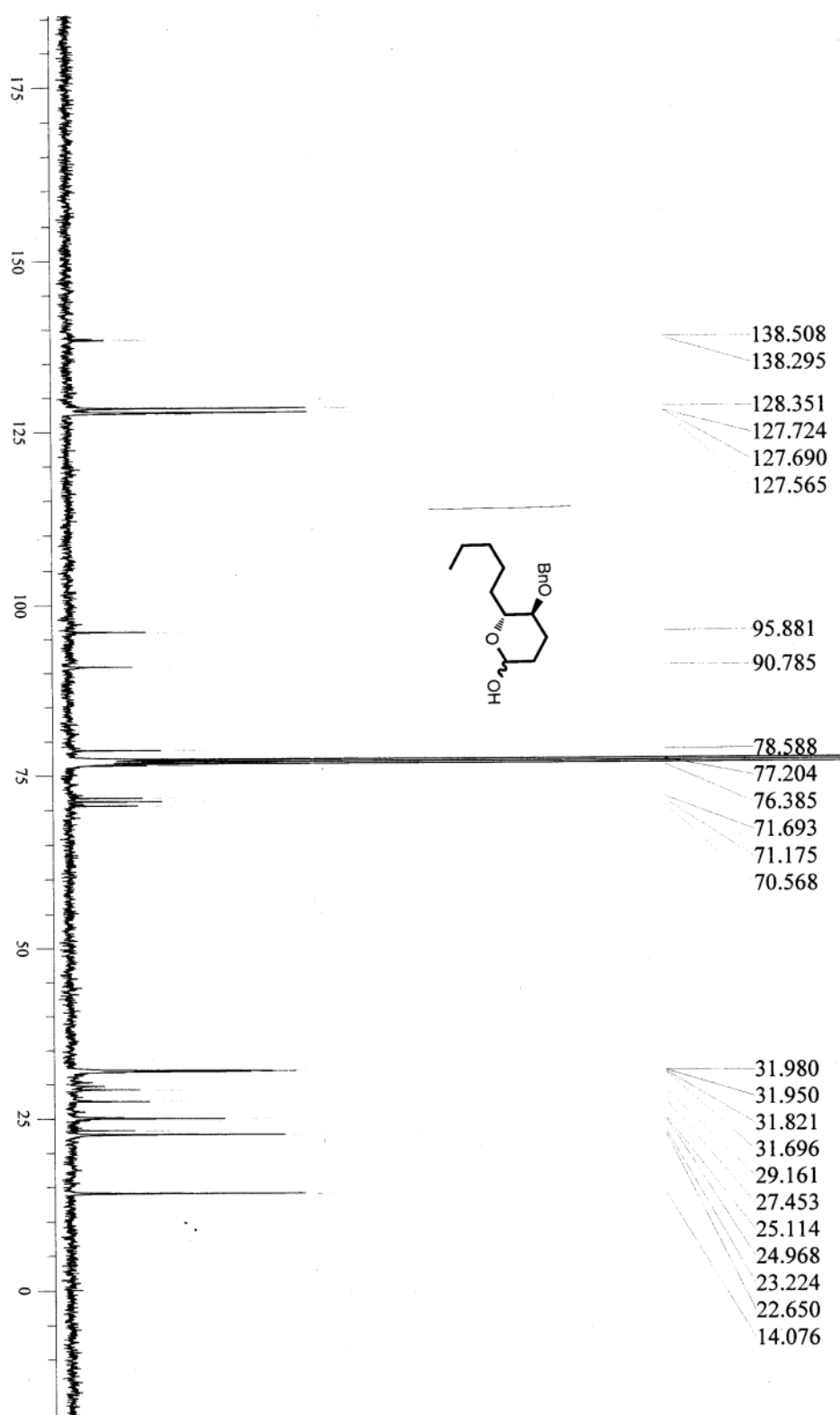
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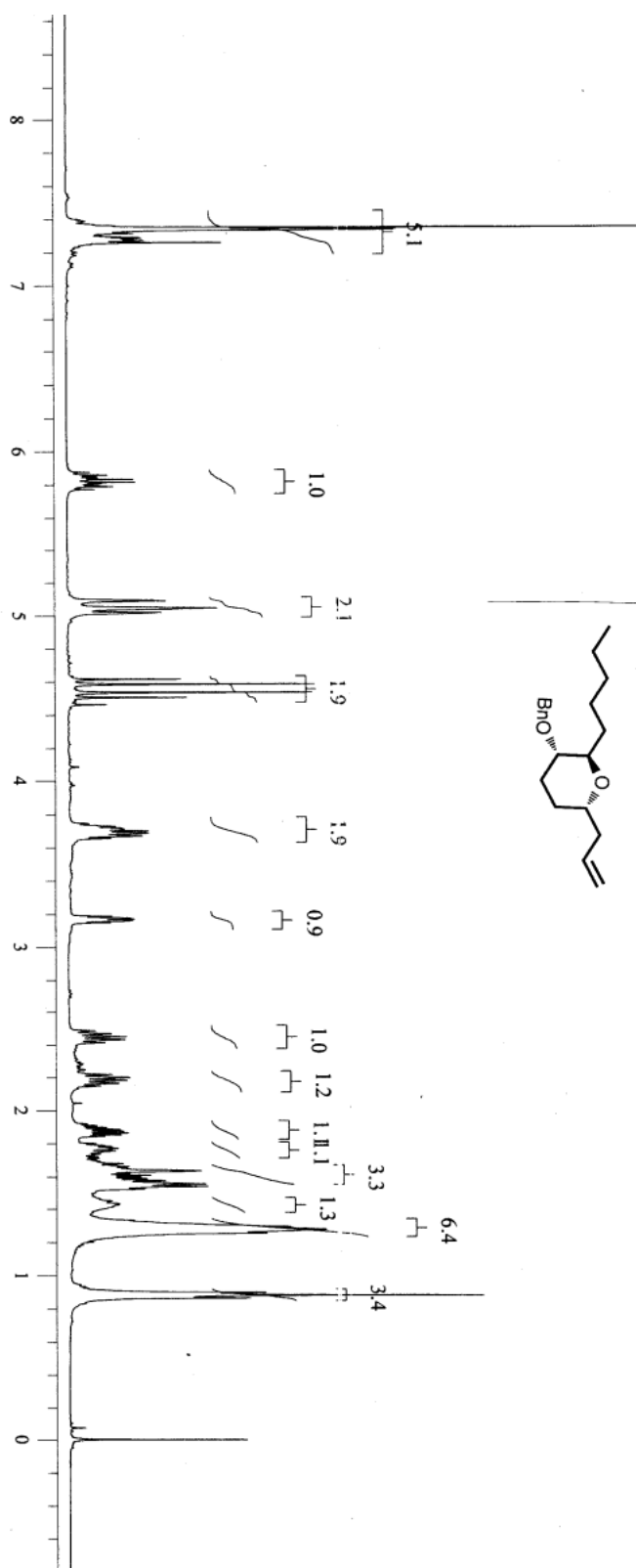
$^{13}\text{C}$  NMR Spectrum of Compound 24 (100 MHz,  $\text{CDCl}_3$ )



$^1\text{H}$  NMR Spectrum of Compound 10m (500 MHz,  $\text{CDCl}_3$ )

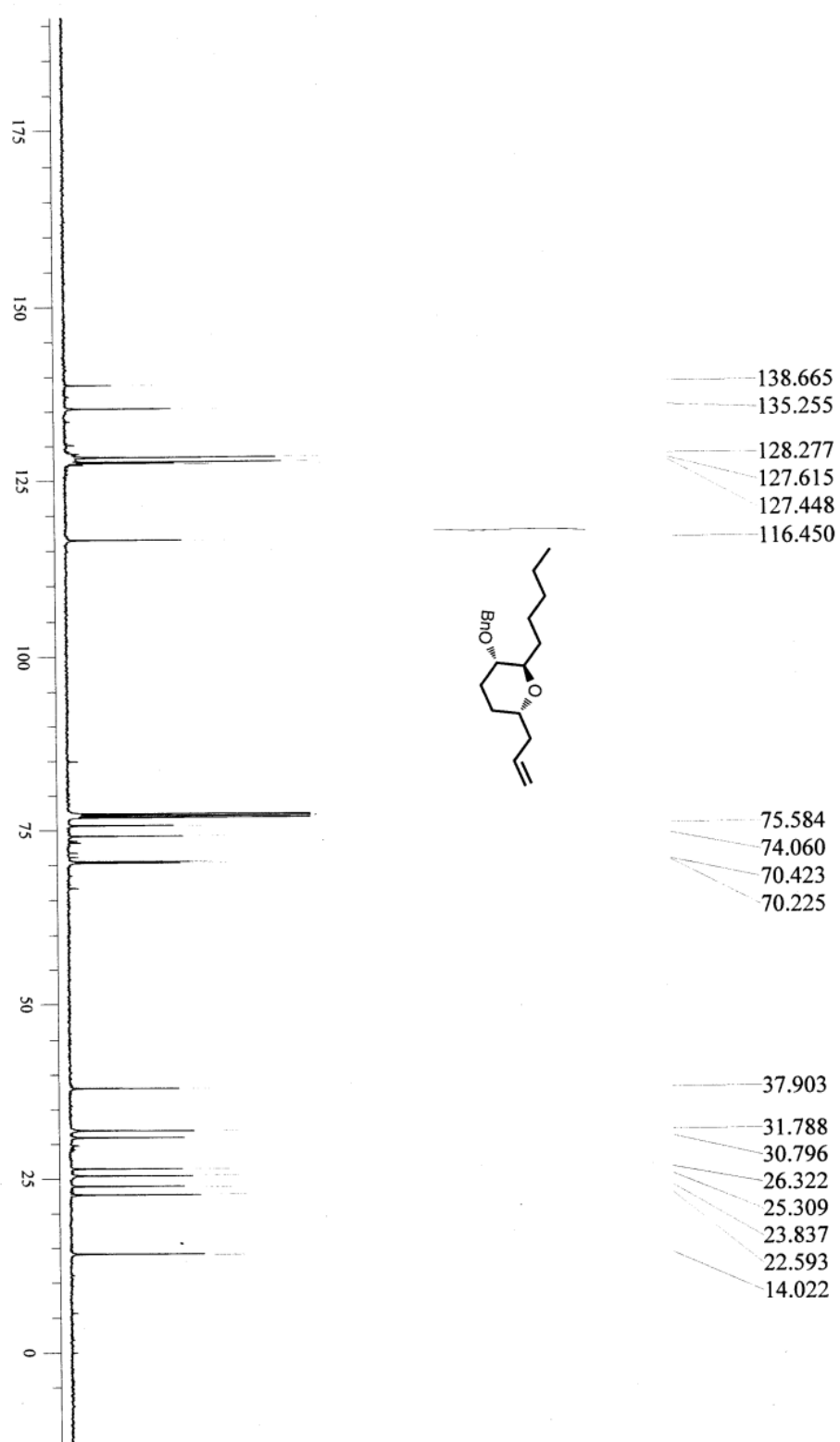


**<sup>13</sup>C NMR Spectrum of Compound 10m (100 MHz, CDCl<sub>3</sub>)**

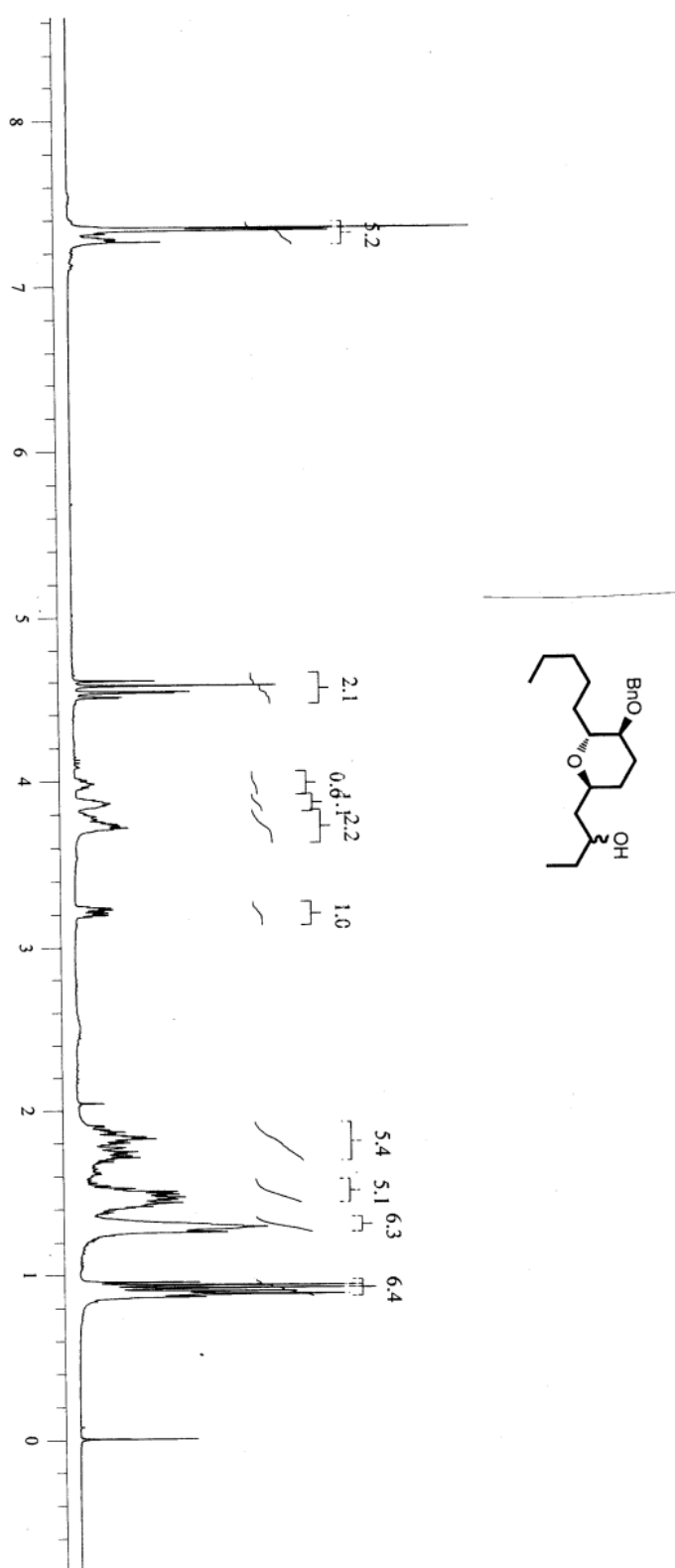


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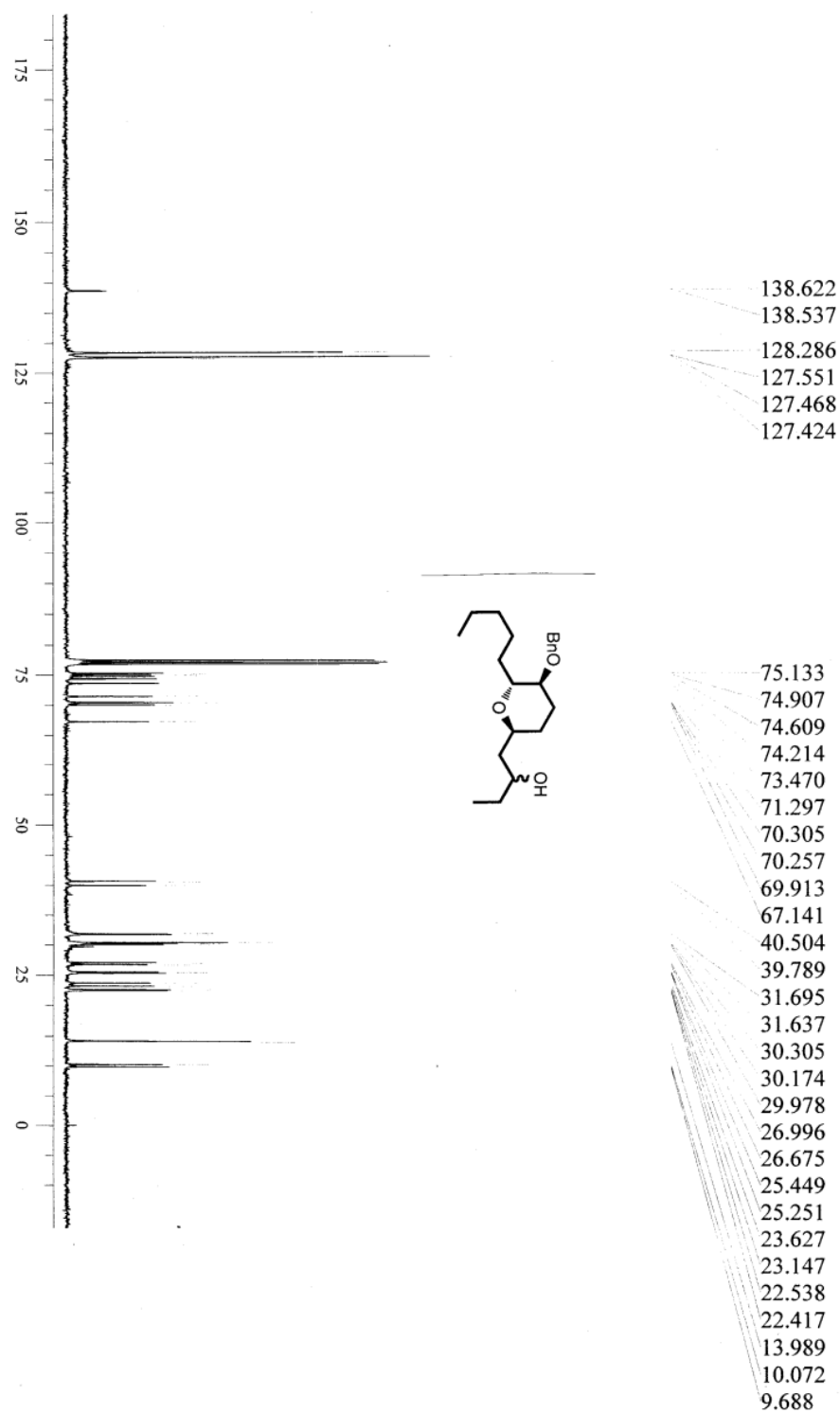




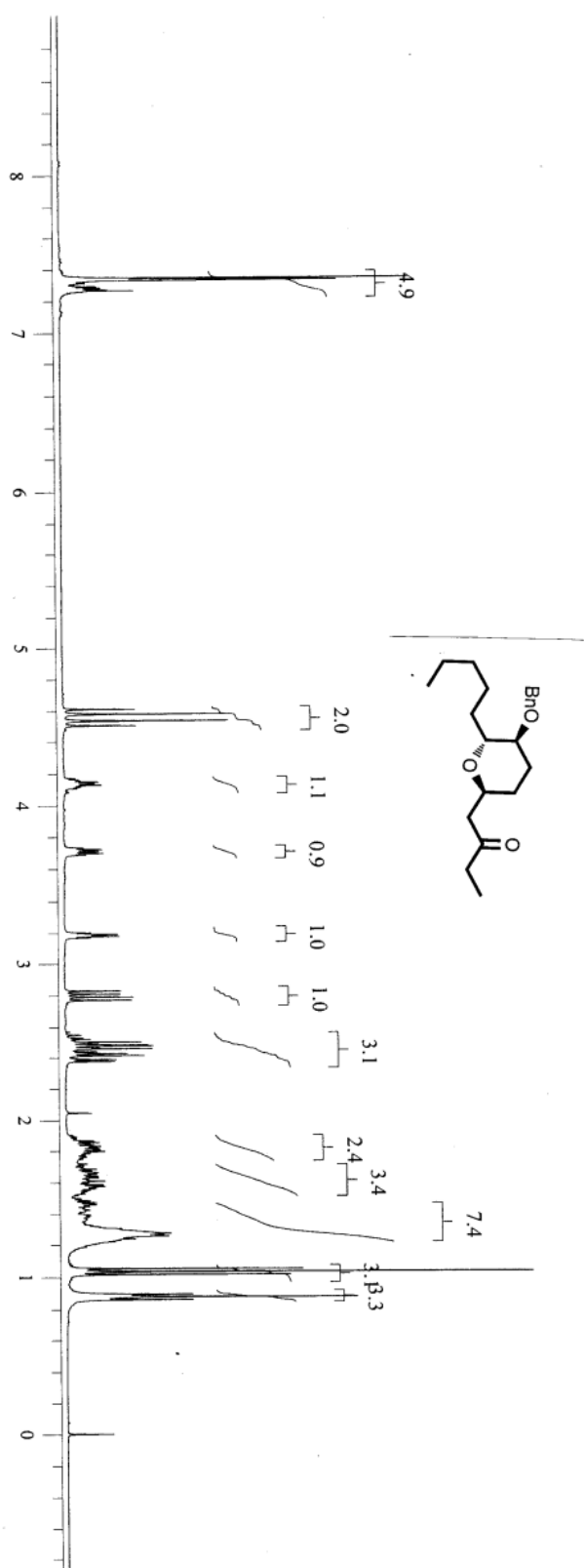
$^{13}\text{C}$  NMR Spectrum of Compound 11m (125 MHz,  $\text{CDCl}_3$ )



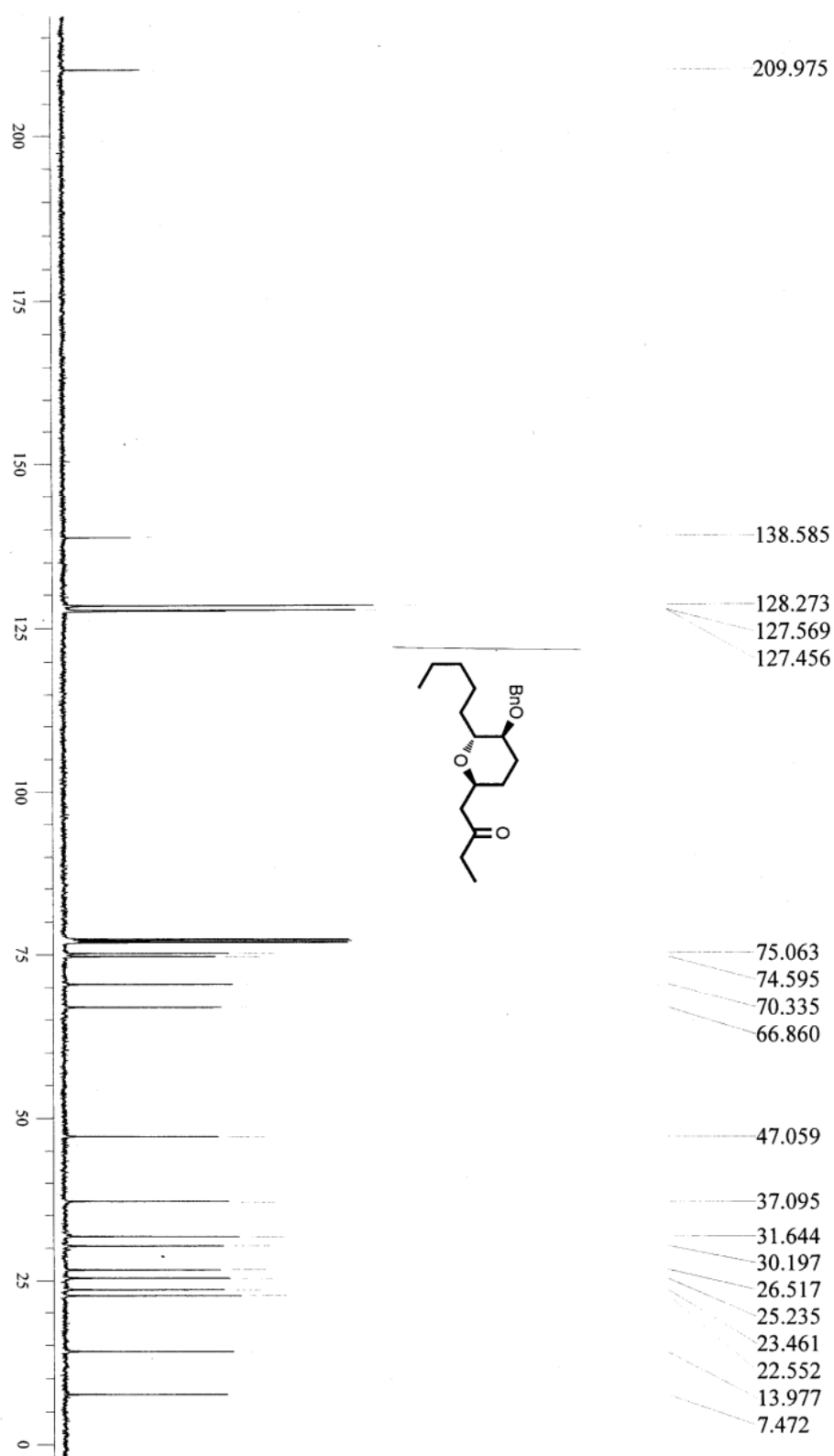
$^1\text{H}$  NMR Spectrum of Compound 25 (400 MHz,  $\text{CDCl}_3$ )



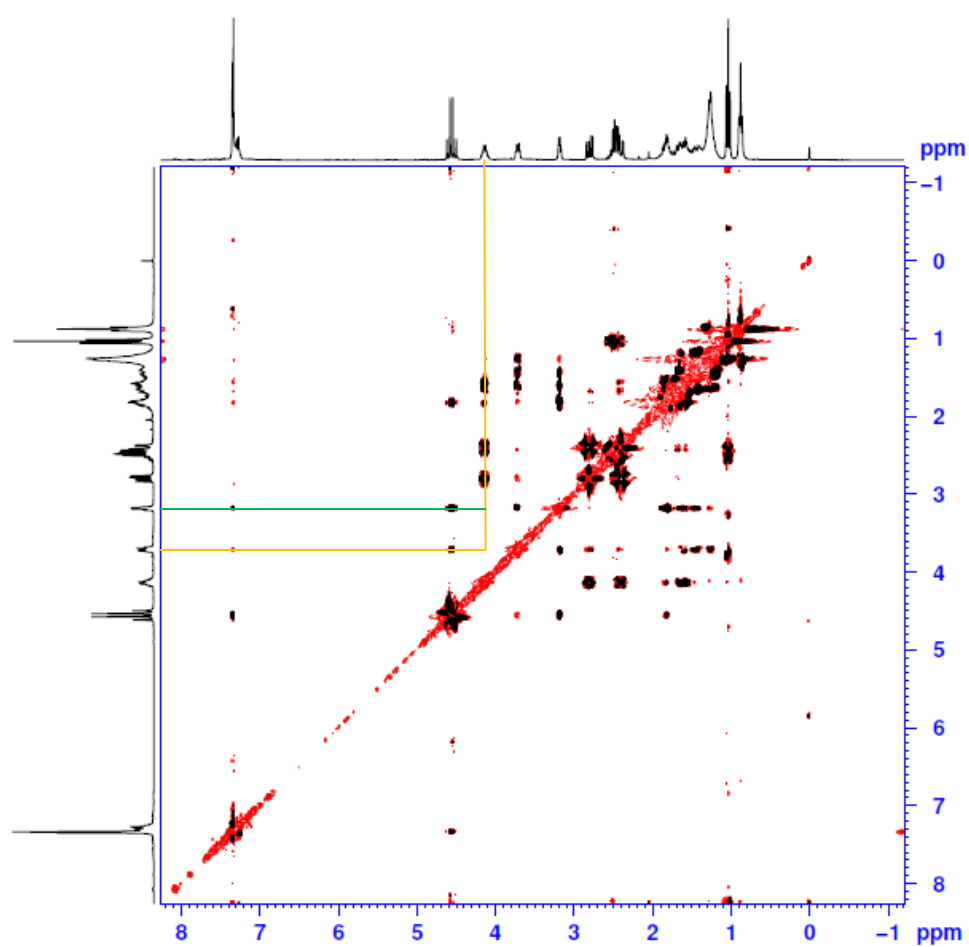
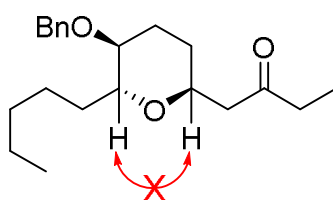
**<sup>13</sup>C NMR Spectrum of Compound 25 (100 MHz, CDCl<sub>3</sub>)**



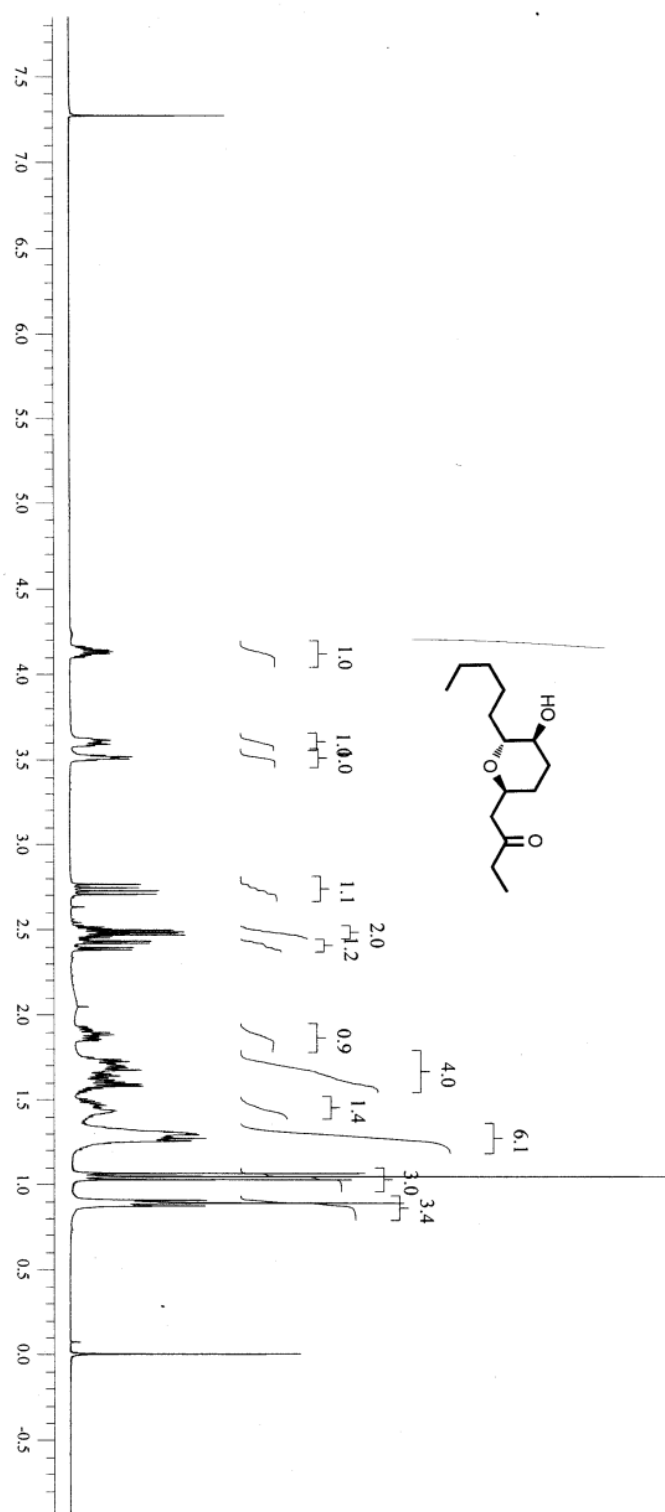
$^1\text{H}$  NMR Spectrum of Compound 17 (400 MHz,  $\text{CDCl}_3$ )



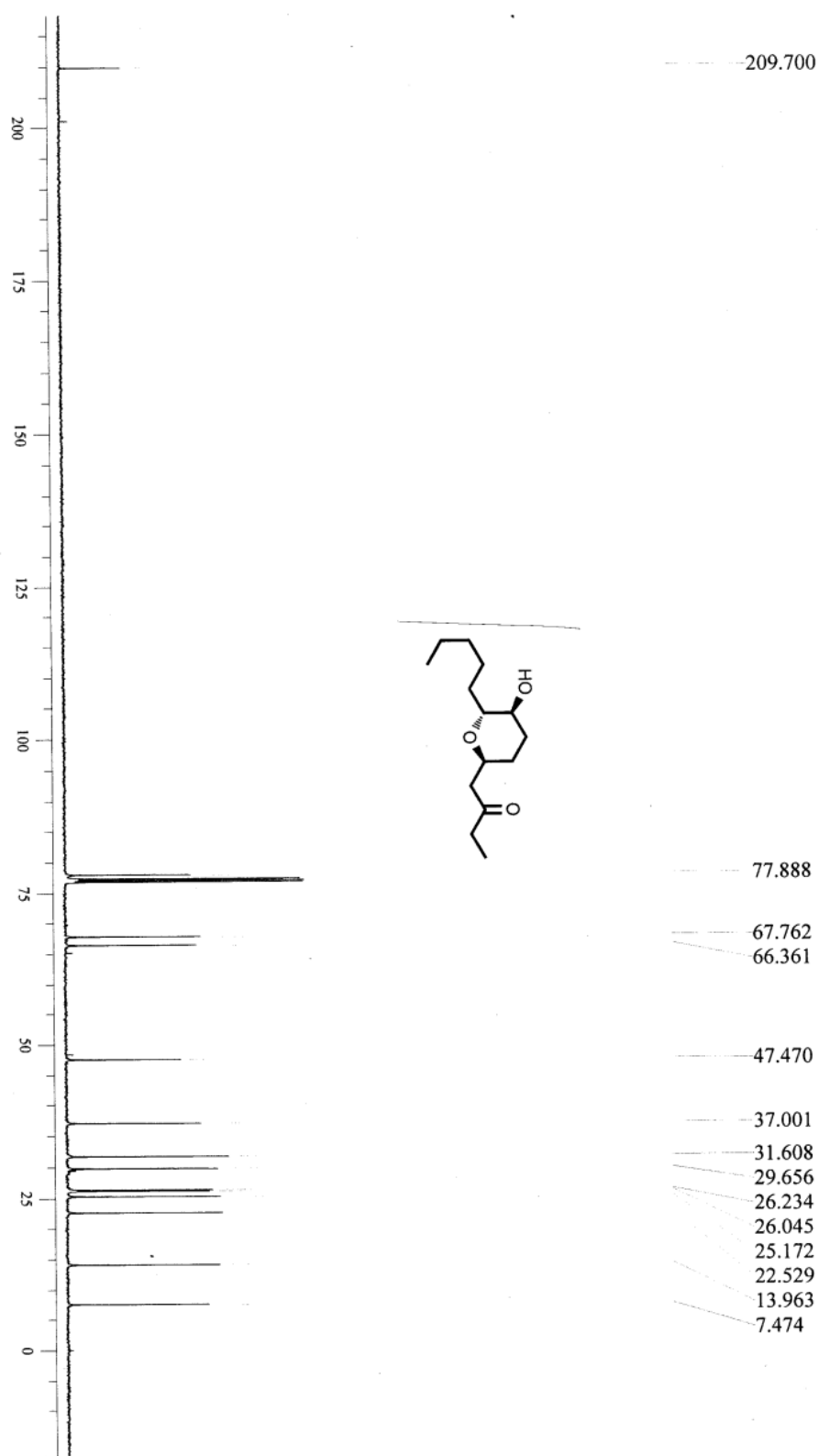
$^{13}\text{C}$  NMR Spectrum of Compound 17 (125 MHz,  $\text{CDCl}_3$ )



2D <sup>1</sup>H NOE of Compound 17 (300 MHz, CDCl<sub>3</sub>)

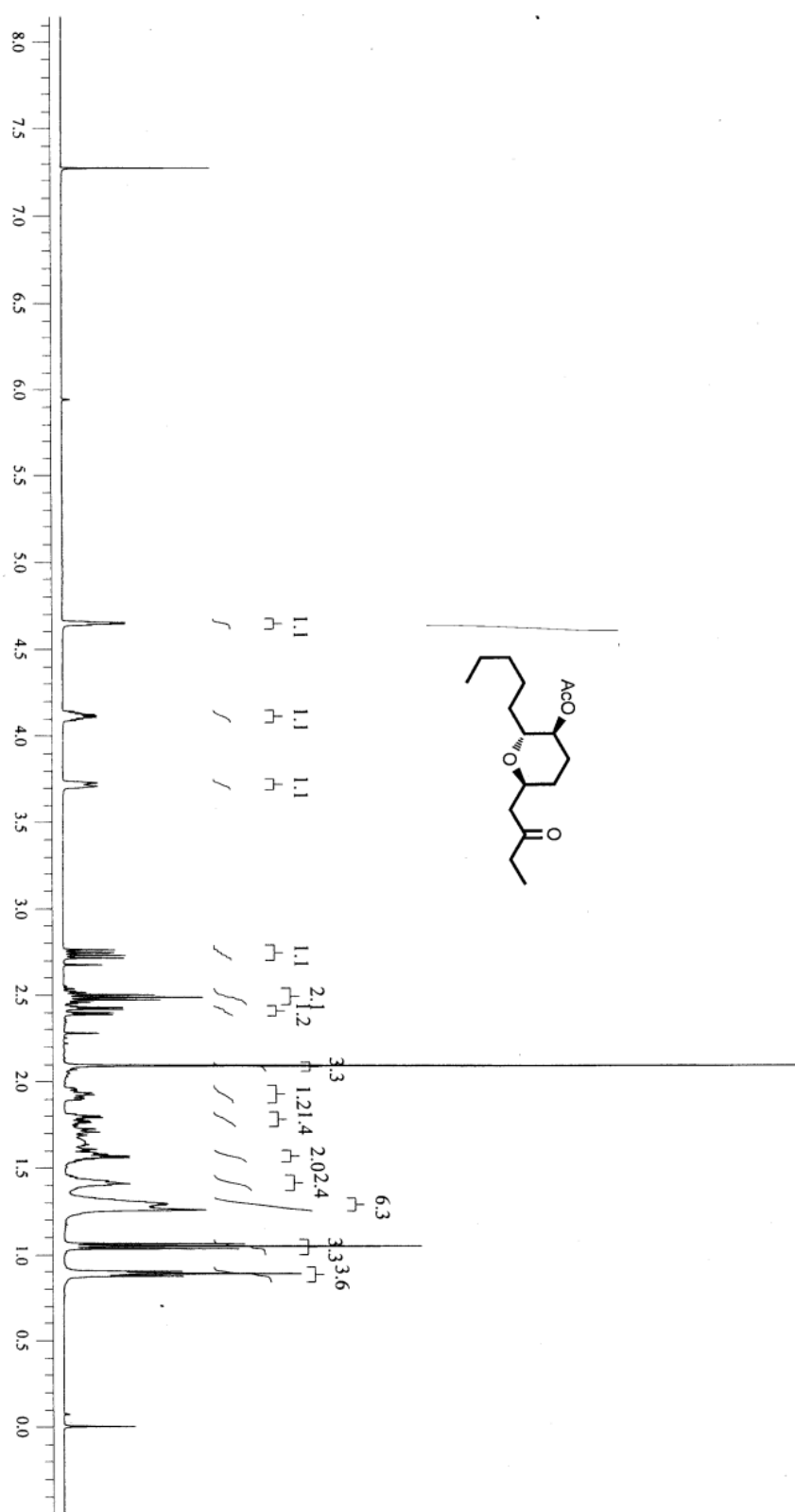


$^1\text{H}$  NMR Spectrum of Compound 14 (400 MHz,  $\text{CDCl}_3$ )

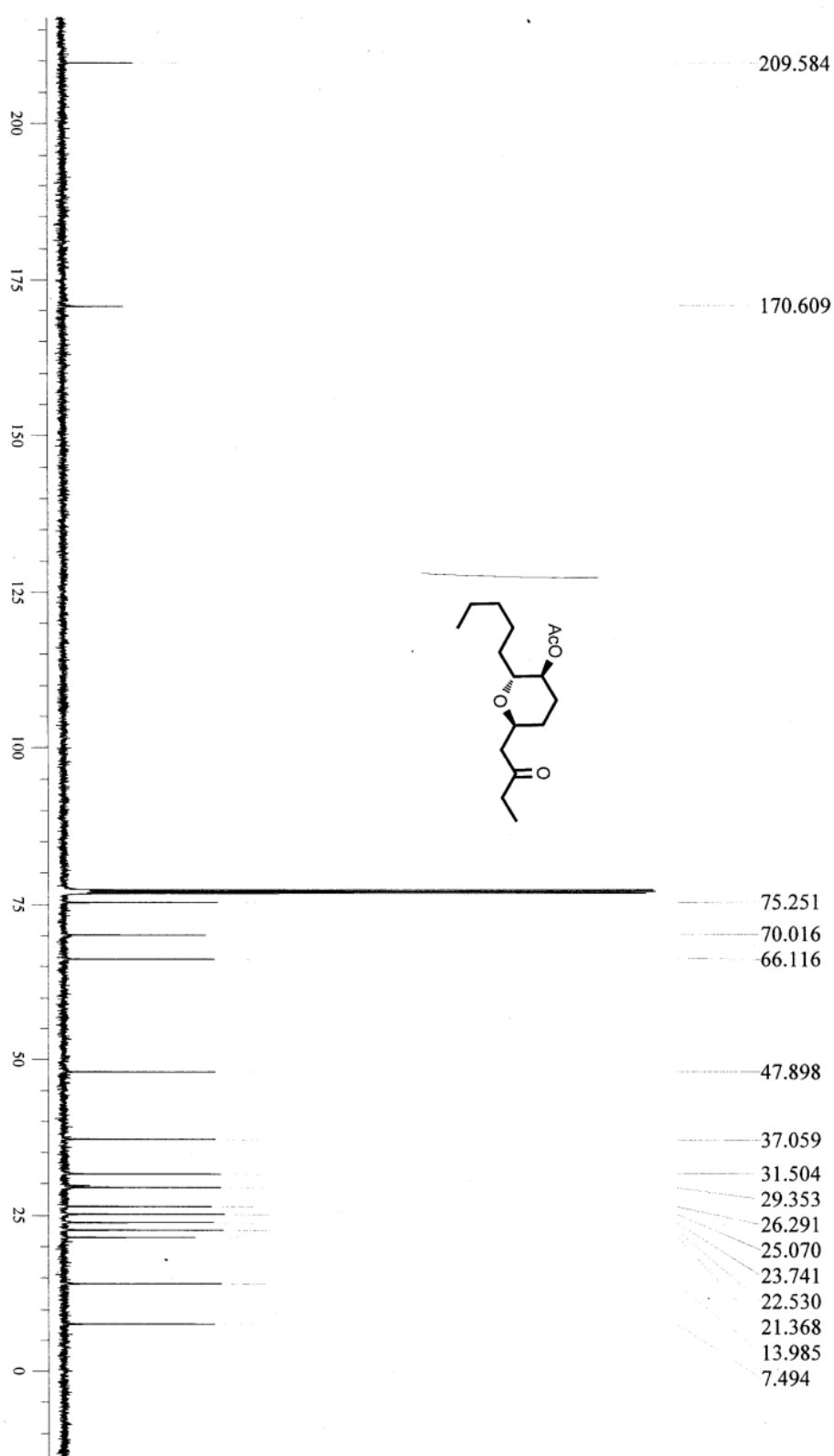


$^{13}\text{C}$  NMR Spectrum of Compound 14 (125 MHz,  $\text{CDCl}_3$ )

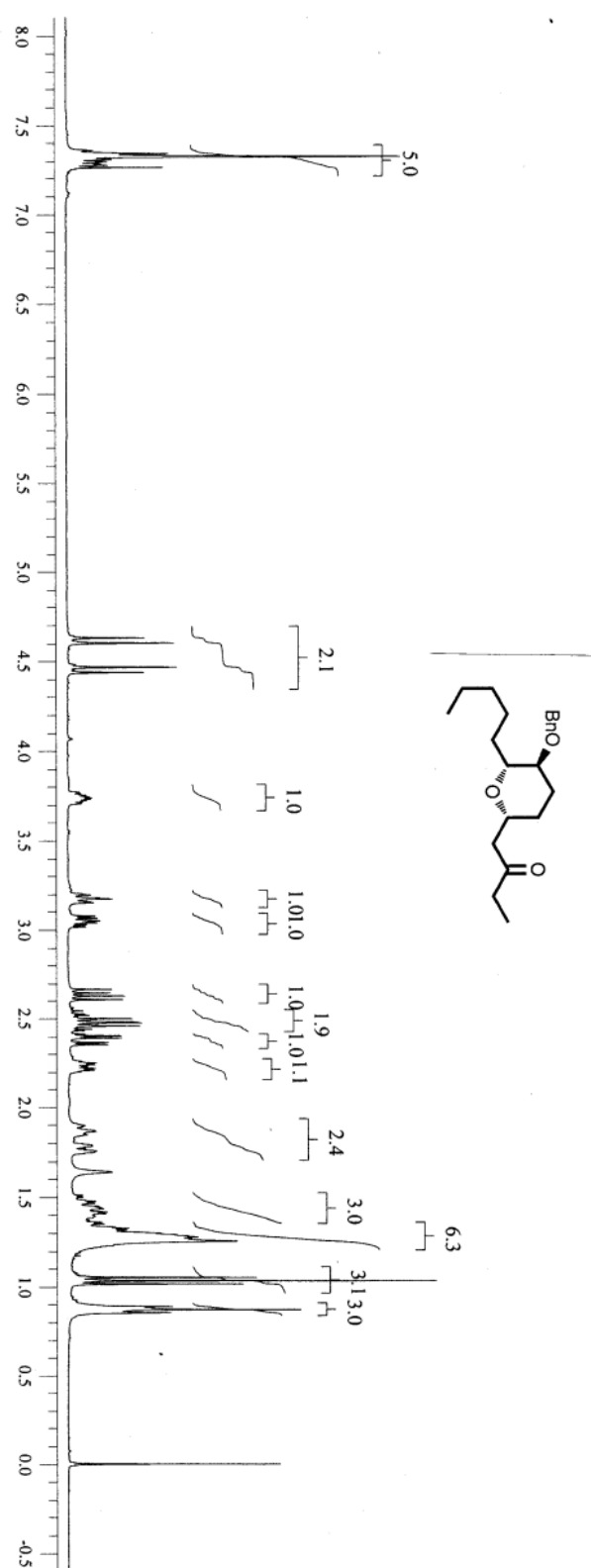




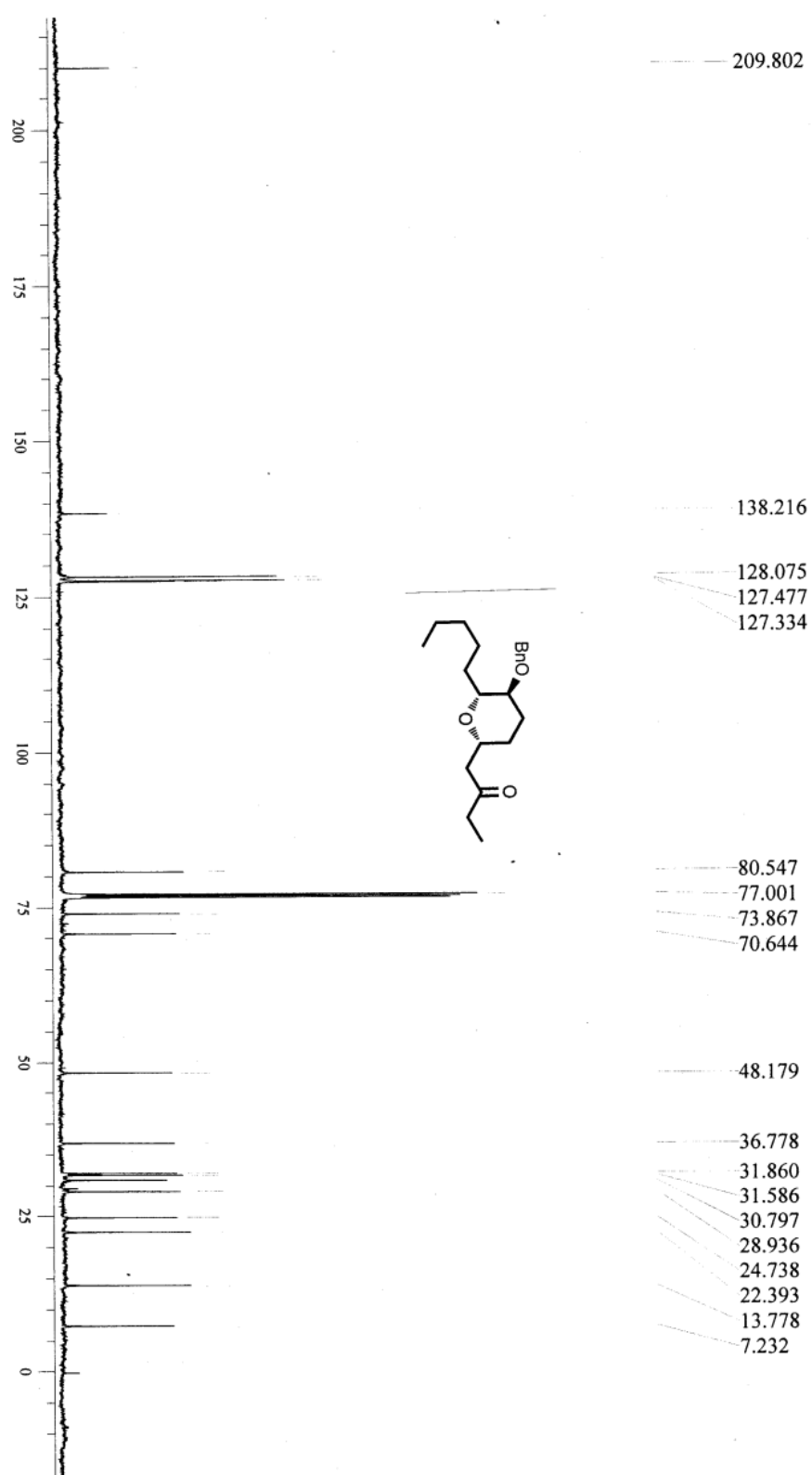
$^1\text{H}$  NMR Spectrum of Compound 15 (500 MHz,  $\text{CDCl}_3$ )



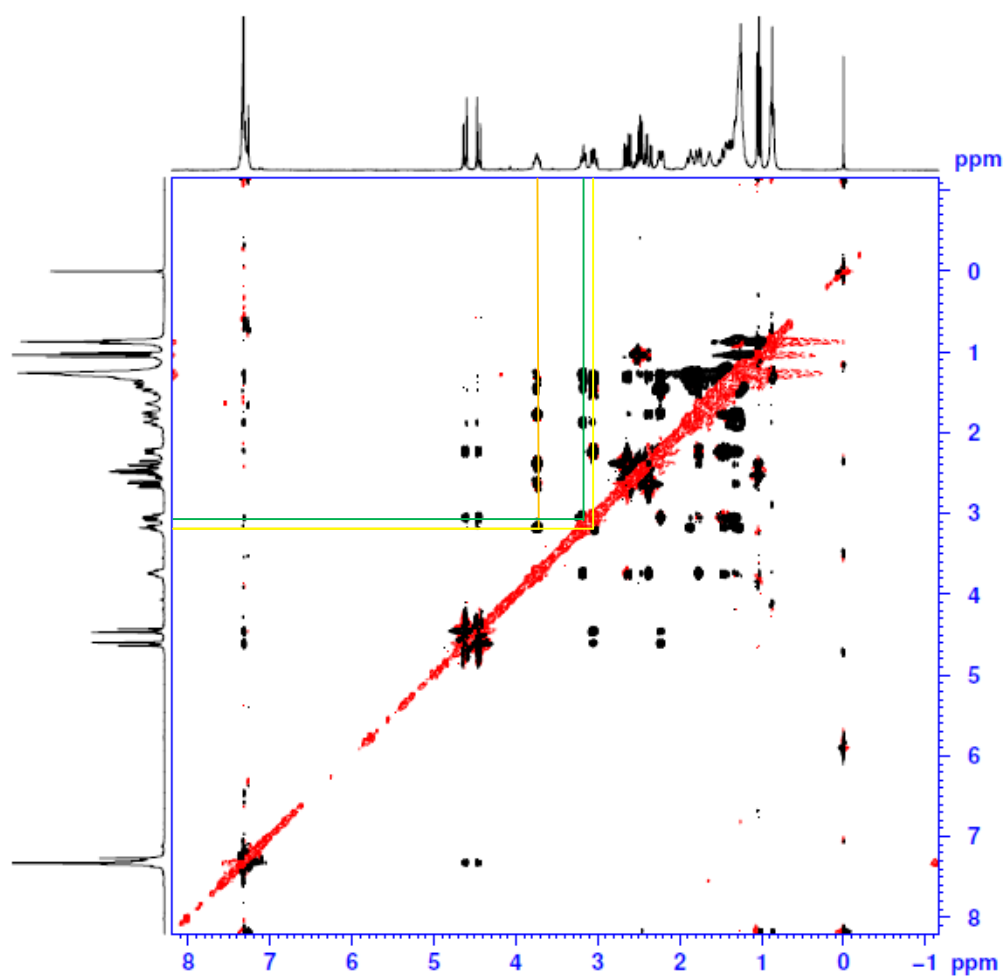
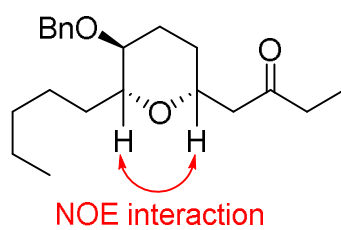
$^{13}\text{C}$  NMR Spectrum of Compound 15 (125 MHz,  $\text{CDCl}_3$ )



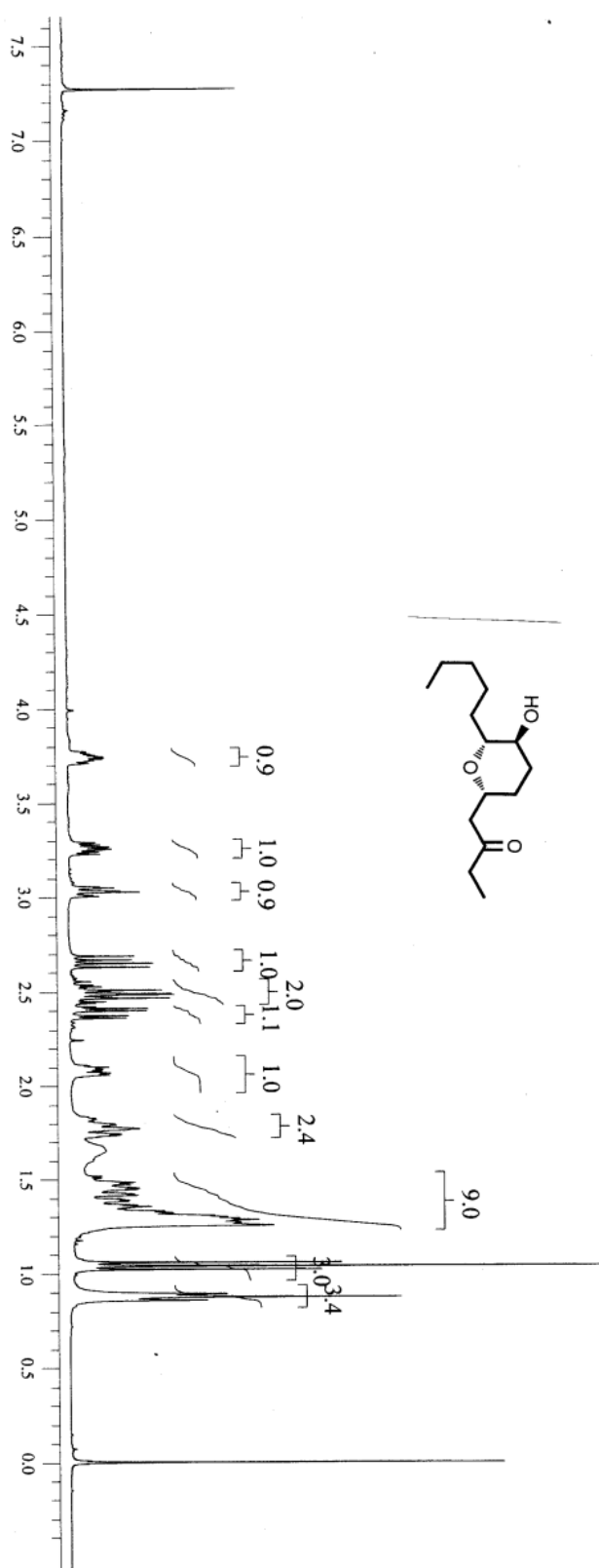
$^1\text{H}$  NMR Spectrum of Compound 16 (400 MHz,  $\text{CDCl}_3$ )



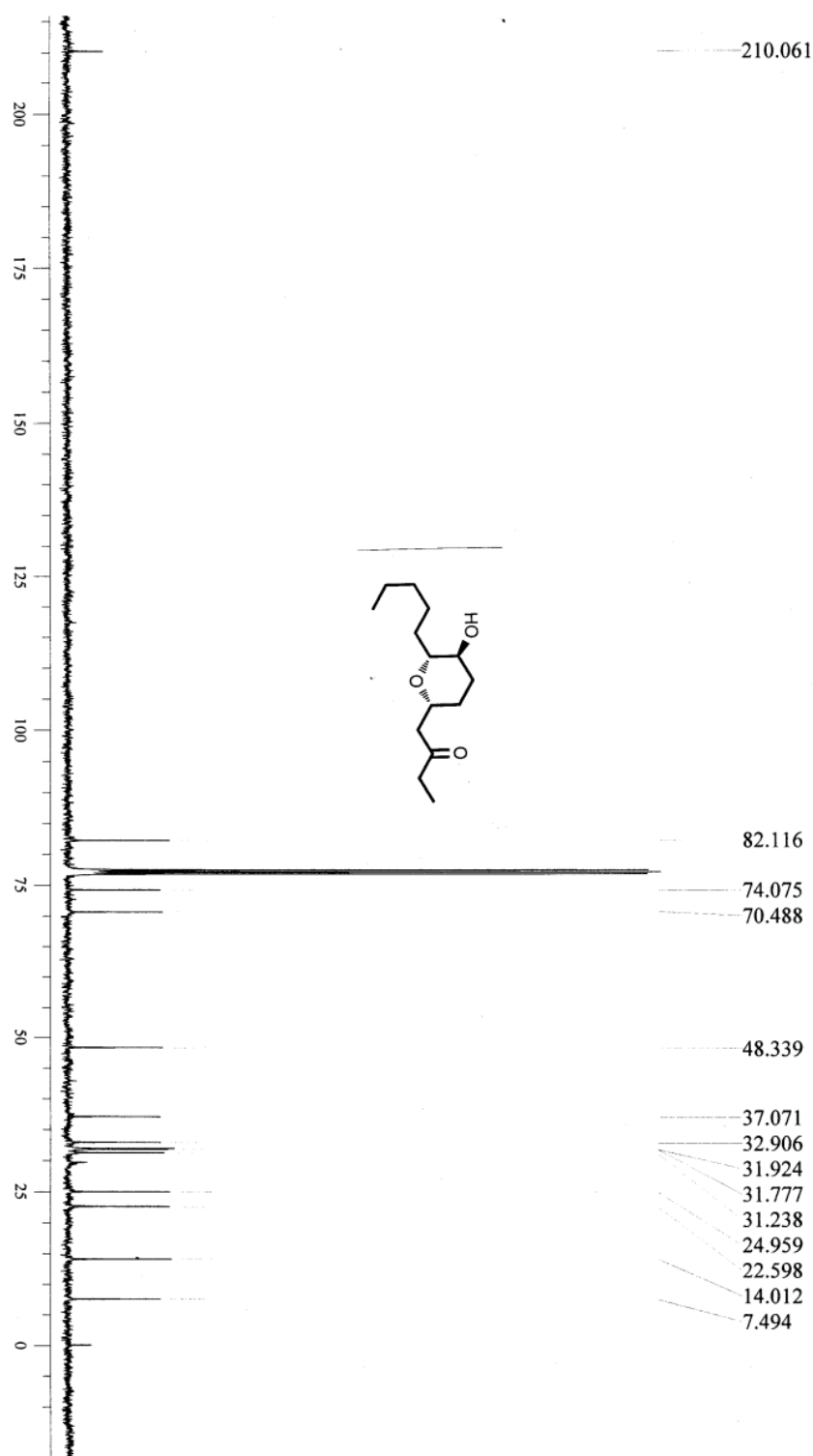
**<sup>13</sup>C NMR Spectrum of Compound 16 (125 MHz, CDCl<sub>3</sub>)**



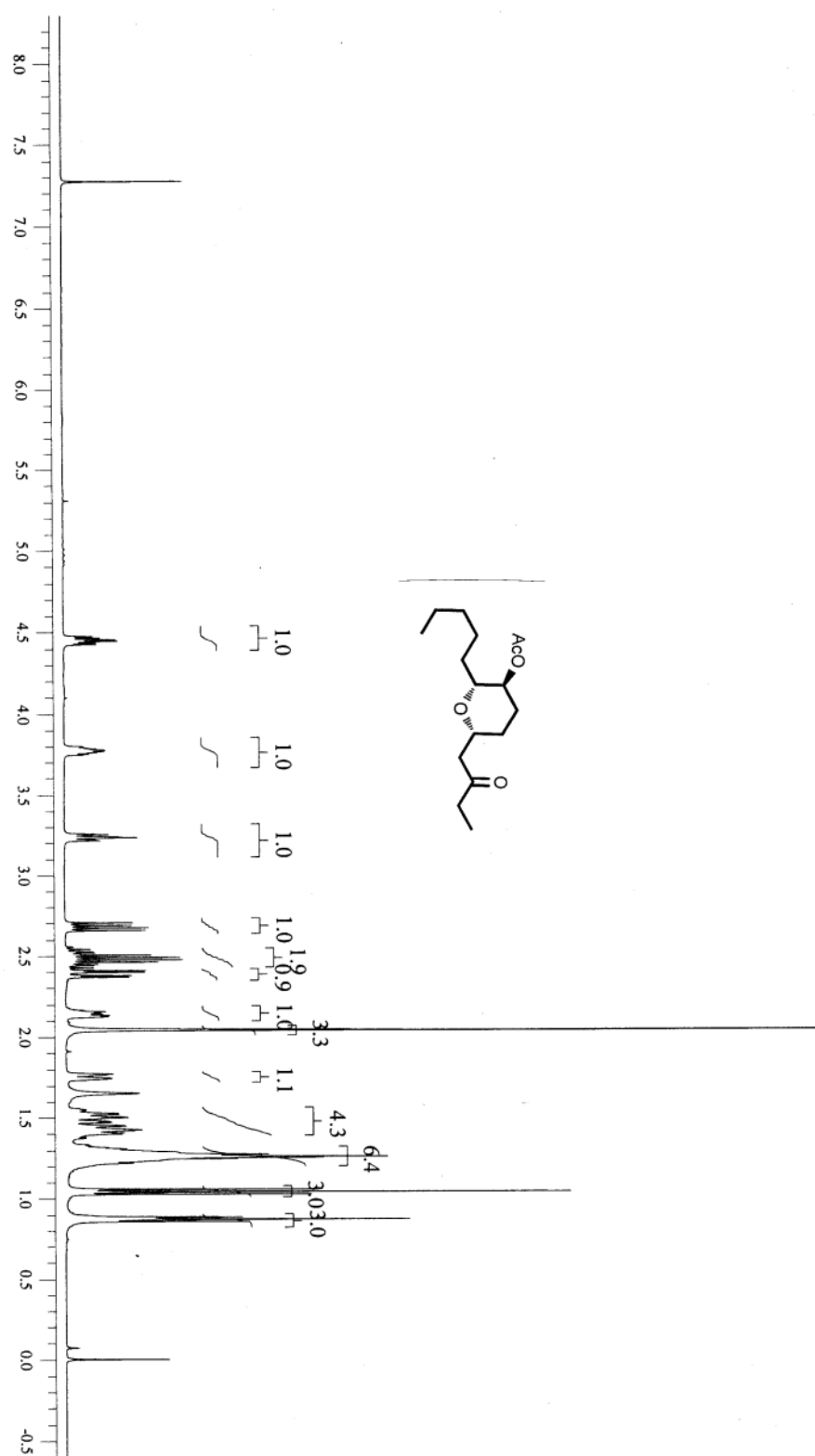
2D  $^1\text{H}$  NOE of Compound 16 (300 MHz,  $\text{CDCl}_3$ )



$^1\text{H}$  NMR Spectrum of Compound 12 (500 MHz,  $\text{CDCl}_3$ )

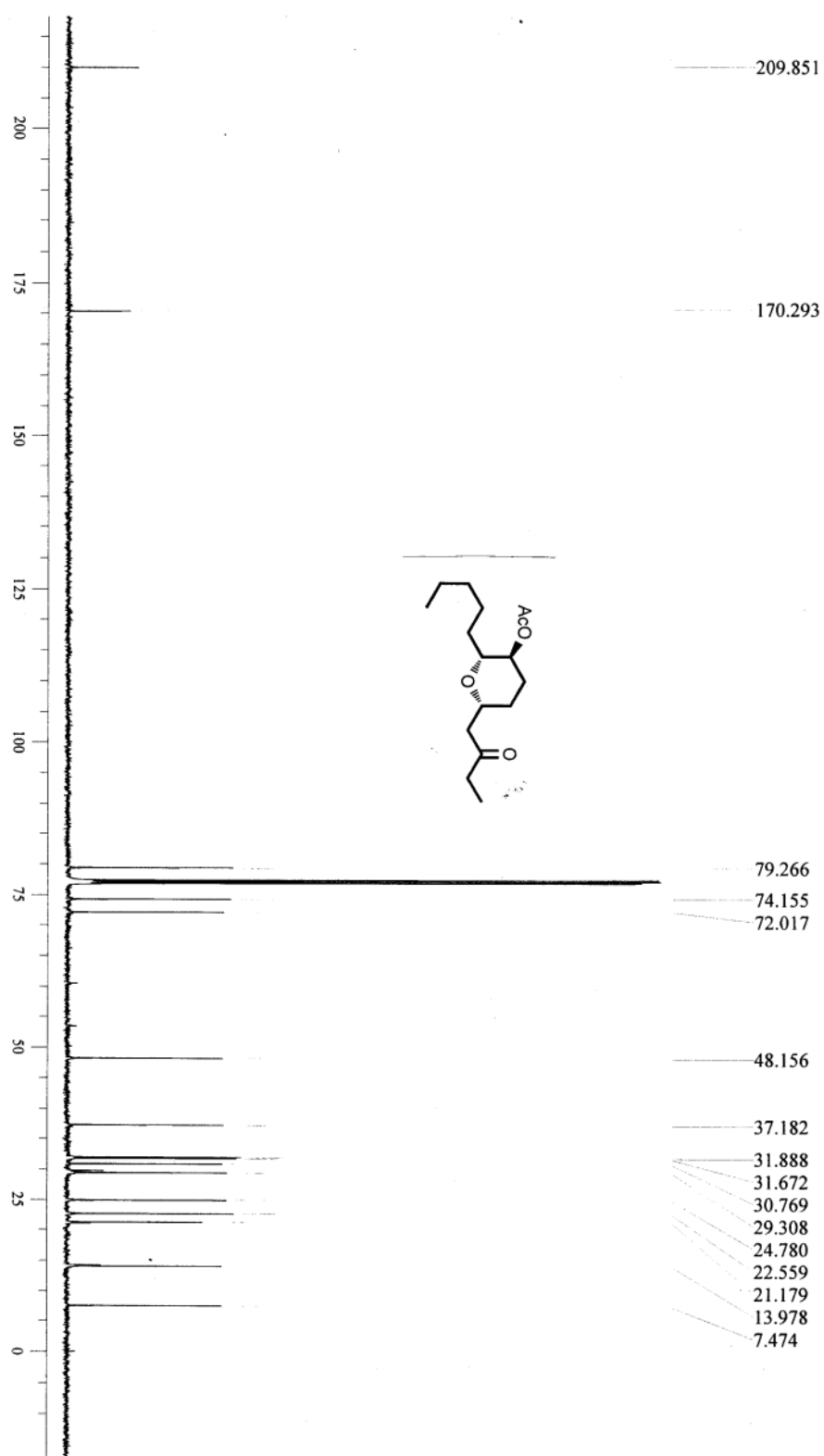


**<sup>13</sup>C NMR Spectrum of Compound 12 (100 MHz, CDCl<sub>3</sub>)**



$^1\text{H}$  NMR Spectrum of Compound 13 (500 MHz,  $\text{CDCl}_3$ )





$^{13}\text{C}$  NMR Spectrum of Compound 13 (125 MHz,  $\text{CDCl}_3$ )