

**Electronic Supporting Information (ESI) for:**

**Aminophosphine Ligands  $R_2P(CH_2)_nNH_2$  and Ruthenium Hydrogenation Catalysts  $RuCl_2(R_2P(CH_2)_nNH_2)_2$**

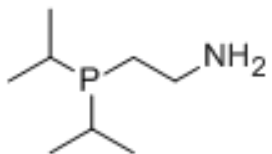
Wenli Jia,<sup>\*a</sup> Xuanhua Chen,<sup>a</sup> Rongwei Guo,<sup>a</sup> Christine Sui-Seng,<sup>a</sup> Dino Amoroso,<sup>a</sup> Alan J. Lough<sup>b</sup> and Kamaluddin Abdur-Rashid<sup>\*a</sup>

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<sup>b</sup> Department of Chemistry, University of Toronto, 80 St. George Street, Toronto, ON M5S 3H6, Canada.

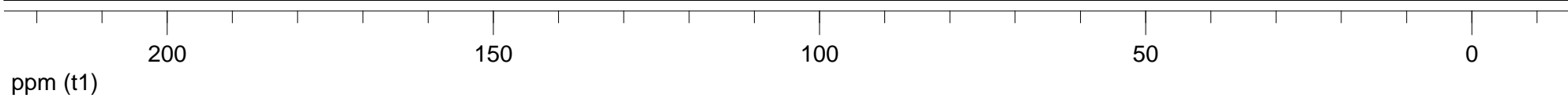
NMR spectra ( $^1H$ ,  $^{13}C$  and  $^{31}P$ ) of the aminophosphine ligands **1-6**.

<sup>13</sup>C NMR  
CDCl<sub>3</sub>  
75 MHz

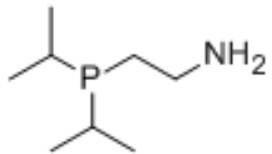


77.865  
77.440  
77.016

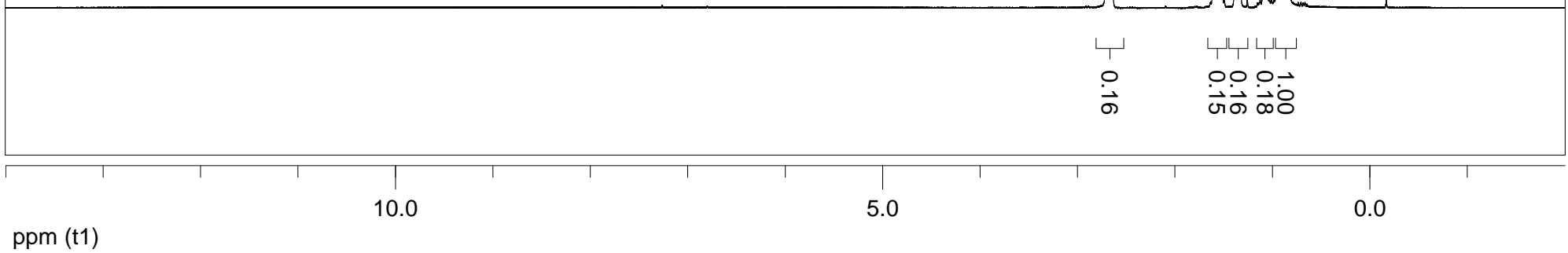
41.622  
41.300  
26.814  
26.580  
23.349  
23.198  
20.251  
20.040  
18.794  
18.674



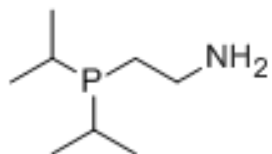
<sup>1</sup>H NMR  
CDCl<sub>3</sub>  
300 MHz



2.718  
2.640  
1.617  
1.609  
1.594  
1.586  
1.570  
1.562  
1.547  
1.539  
1.523  
1.515  
1.352  
1.071  
0.947  
0.923  
0.917  
0.900  
0.894  
0.877  
0.857



<sup>31</sup>P NMR  
CDCl<sub>3</sub>  
121 MHz



-2.042

ppm (t1)

200

150

100

50

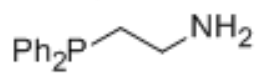
0

-50

$^{13}\text{C}$  NMR

100 MHz

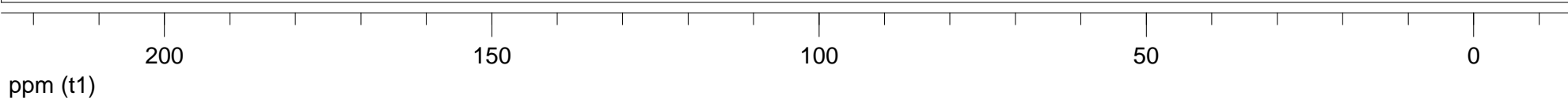
$\text{CDCl}_3$



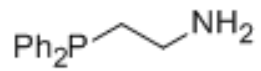
138.714  
138.595  
133.037  
132.853  
128.837  
128.726  
128.661

77.653  
77.334  
77.016

39.720  
39.515  
33.441  
33.321



<sup>1</sup>H NMR  
400 MHz  
CDCl<sub>3</sub>



7.425  
7.419  
7.307  
7.304  
7.300

2.870  
2.851  
2.846  
2.832  
2.828  
2.809  
2.248  
2.232  
2.229  
2.211  
1.177



4.07

1.00

1.04

0.96

10.0

5.0

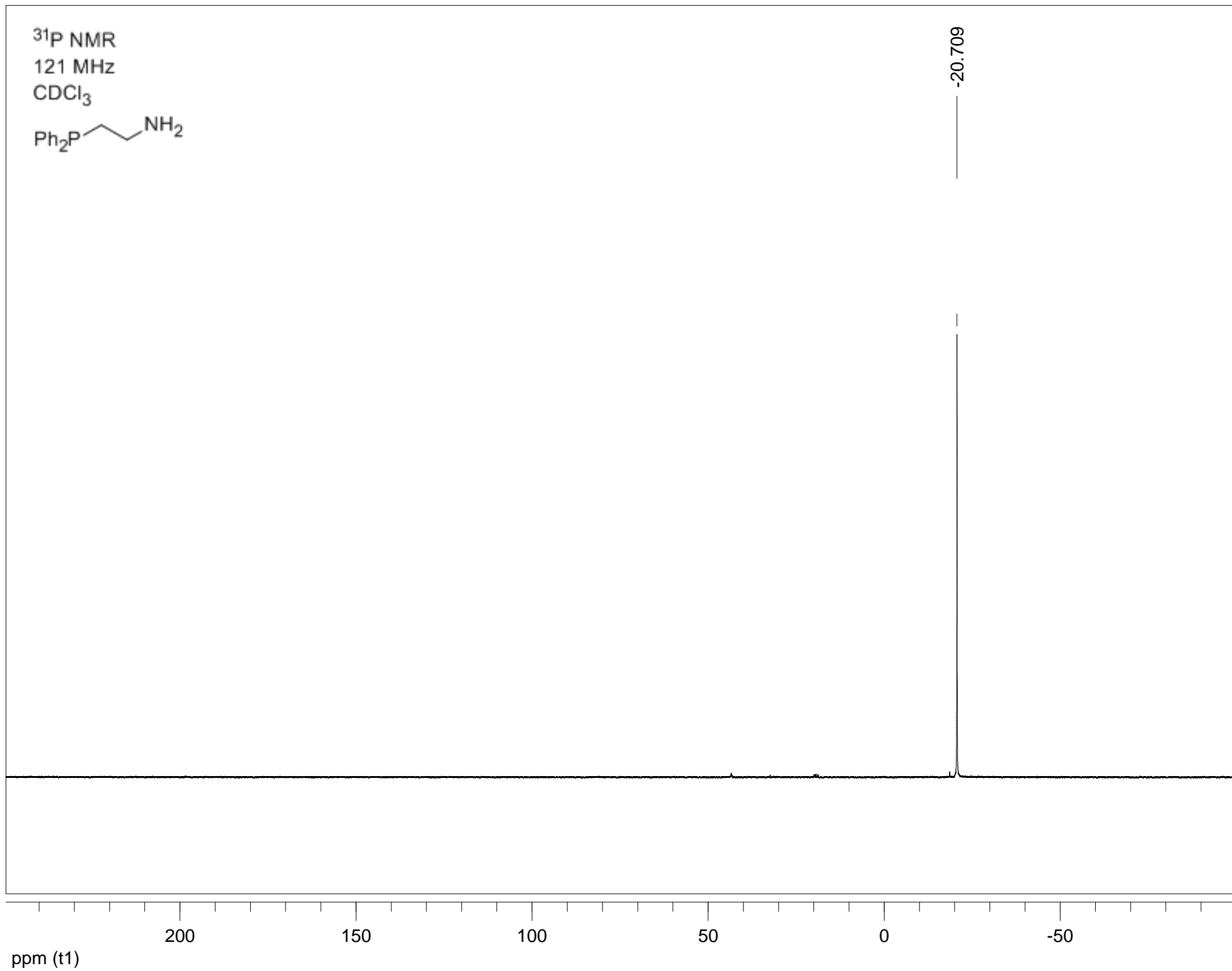
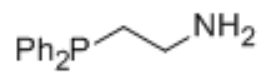
0.0

ppm (t1)

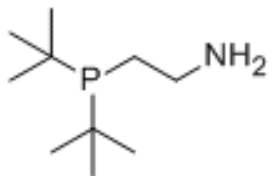
$^{31}\text{P}$  NMR

121 MHz

$\text{CDCl}_3$

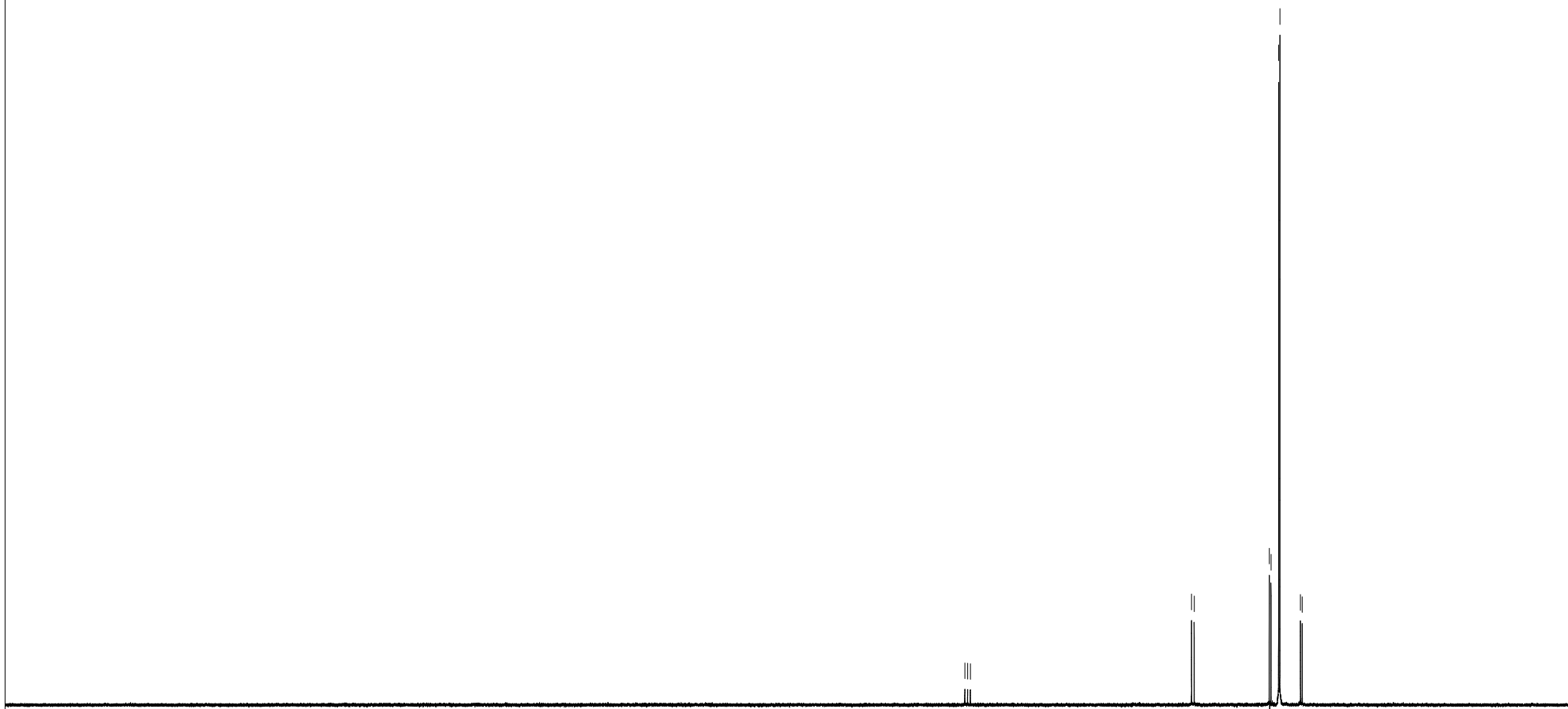


<sup>13</sup>C NMR  
75 MHz  
CDCl<sub>3</sub>



77.870  
77.446  
77.020

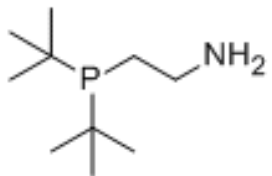
43.113  
42.714  
31.203  
30.946  
29.767  
29.589  
26.423  
26.155



200 150 100 50 0  
ppm (t1)



$^1\text{H}$  NMR  
300 MHz  
 $\text{CDCl}_3$



2.691  
2.666  
1.375  
1.360  
1.083  
0.963  
0.926

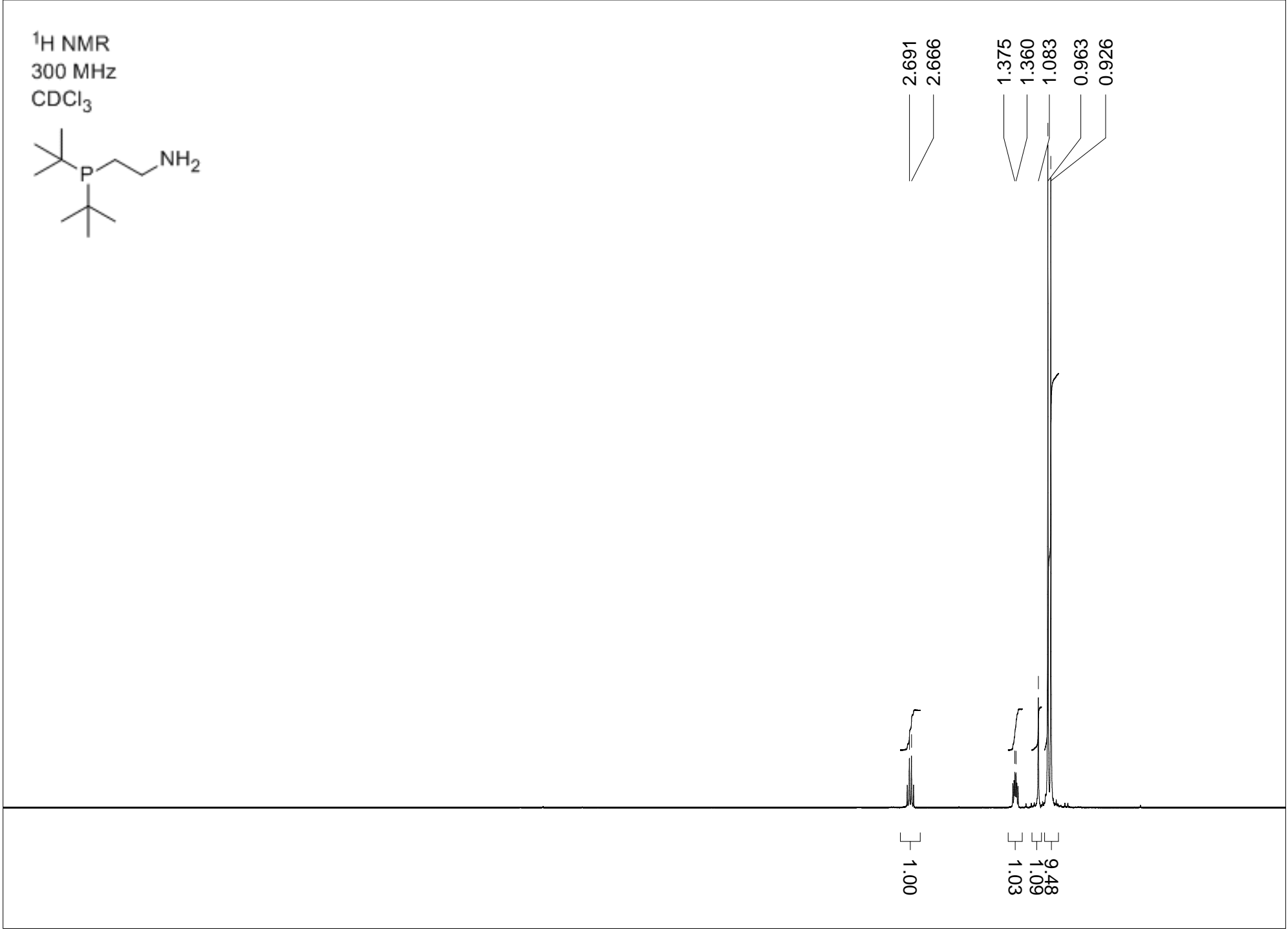
1.00  
1.03  
1.09  
9.48

ppm (t1)

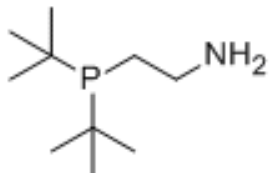
10.0

5.0

0.0



<sup>31</sup>P NMR  
121 MHz  
CDCl<sub>3</sub>



21.222

ppm (t1)

200

150

100

50

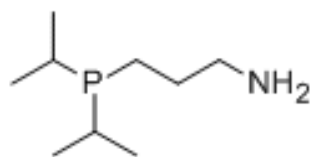
0

-50

$^{13}\text{C}$  NMR

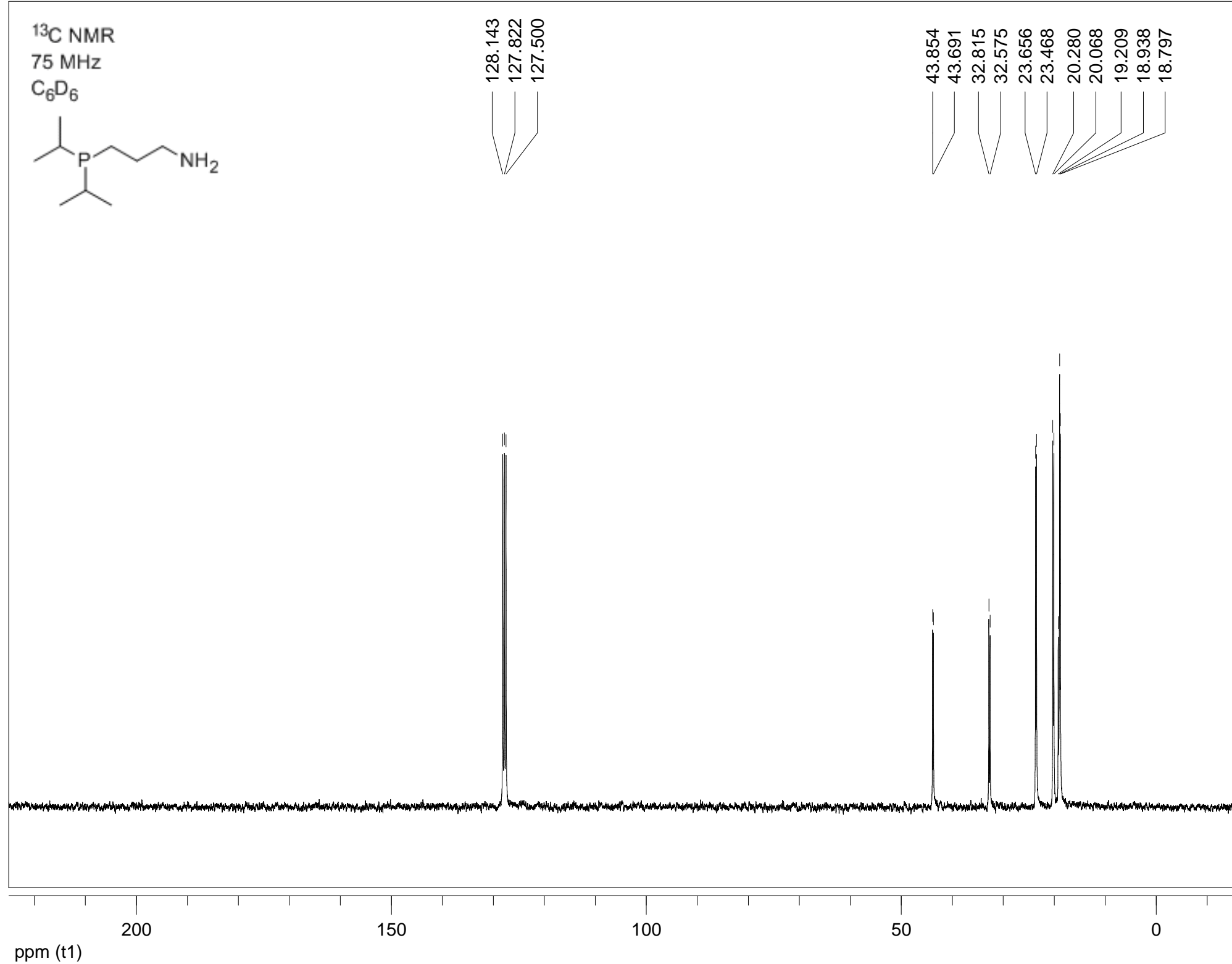
75 MHz

$\text{C}_6\text{D}_6$



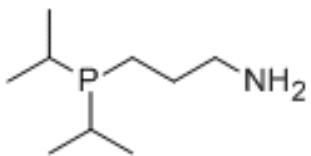
128.143  
127.822  
127.500

43.854  
43.691  
32.815  
32.575  
23.656  
23.468  
20.280  
20.068  
19.209  
18.938  
18.797

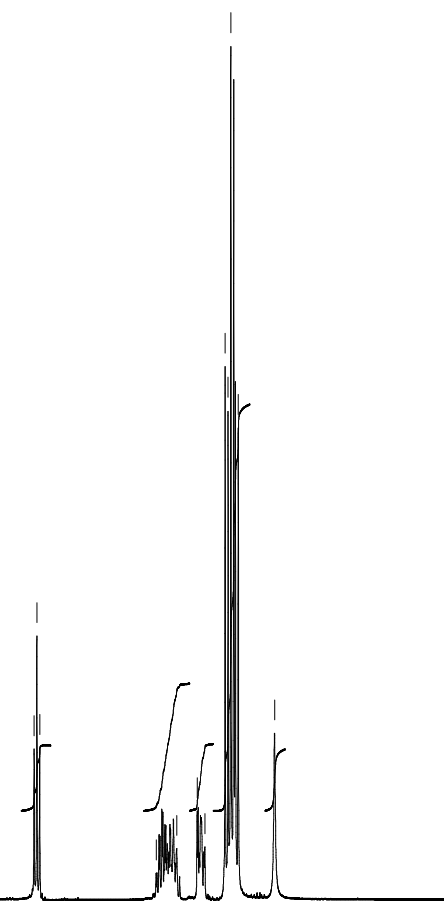


ppm (t1)

<sup>1</sup>H NMR  
300 MHz  
C<sub>6</sub>D<sub>6</sub>



2.538  
2.516  
2.493  
1.554  
1.387  
1.222  
1.160  
0.996  
0.973  
0.951  
0.891  
0.598



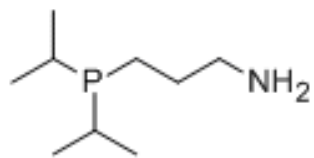
1.00  
2.08  
1.09  
6.62  
1.00

ppm (t1) 10.0

5.0

0.0

<sup>31</sup>P NMR  
121 MHz  
C<sub>6</sub>D<sub>6</sub>



3.621

ppm (t1)

200

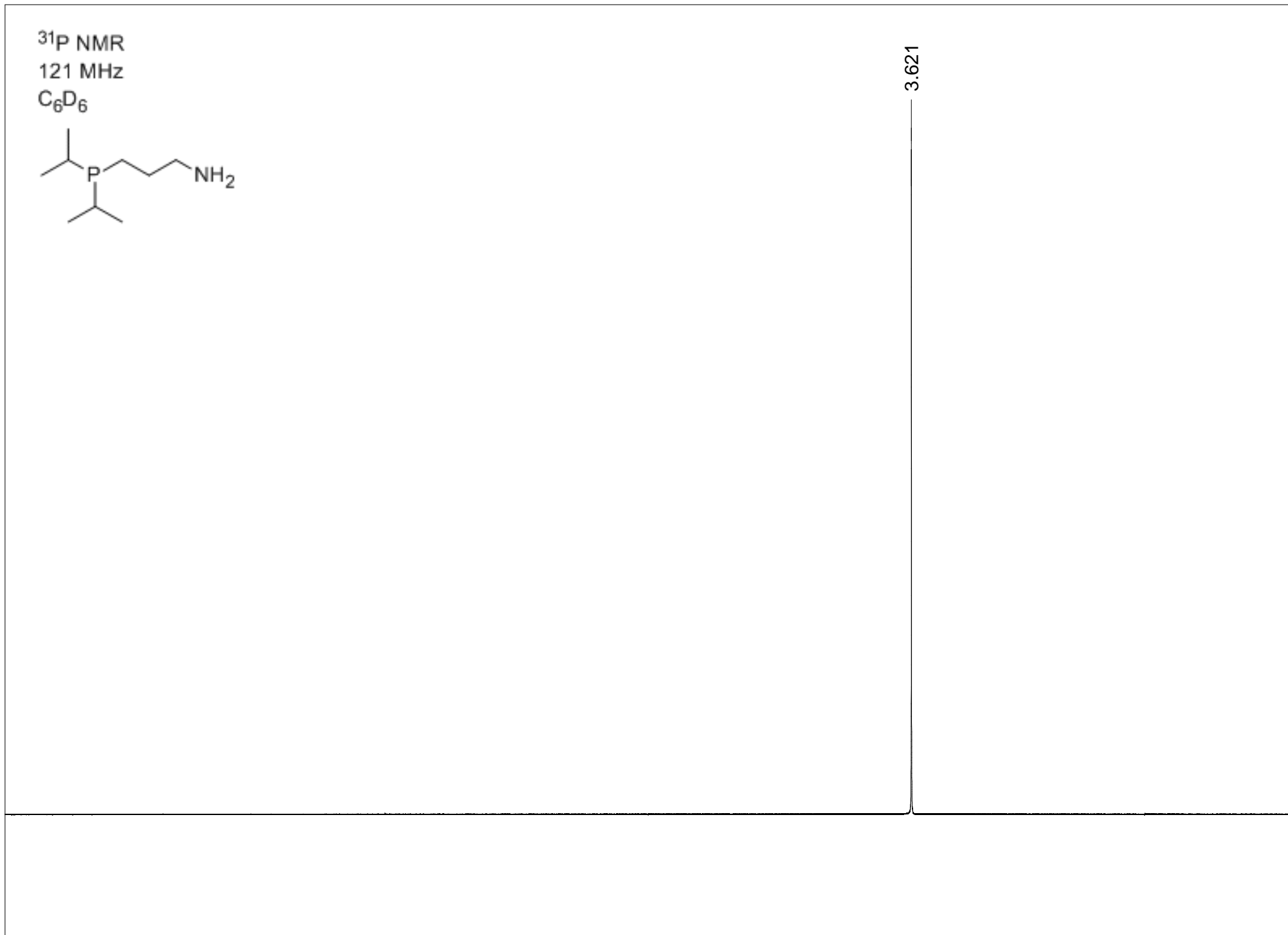
150

100

50

0

-50



<sup>13</sup>C NMR  
100 MHz  
CDCl<sub>3</sub>



139.045  
138.908  
133.014  
132.833  
128.759  
128.661  
128.598

77.657  
77.339  
77.021

43.714  
43.580

30.507  
30.354  
25.626  
25.512

ppm (t1)

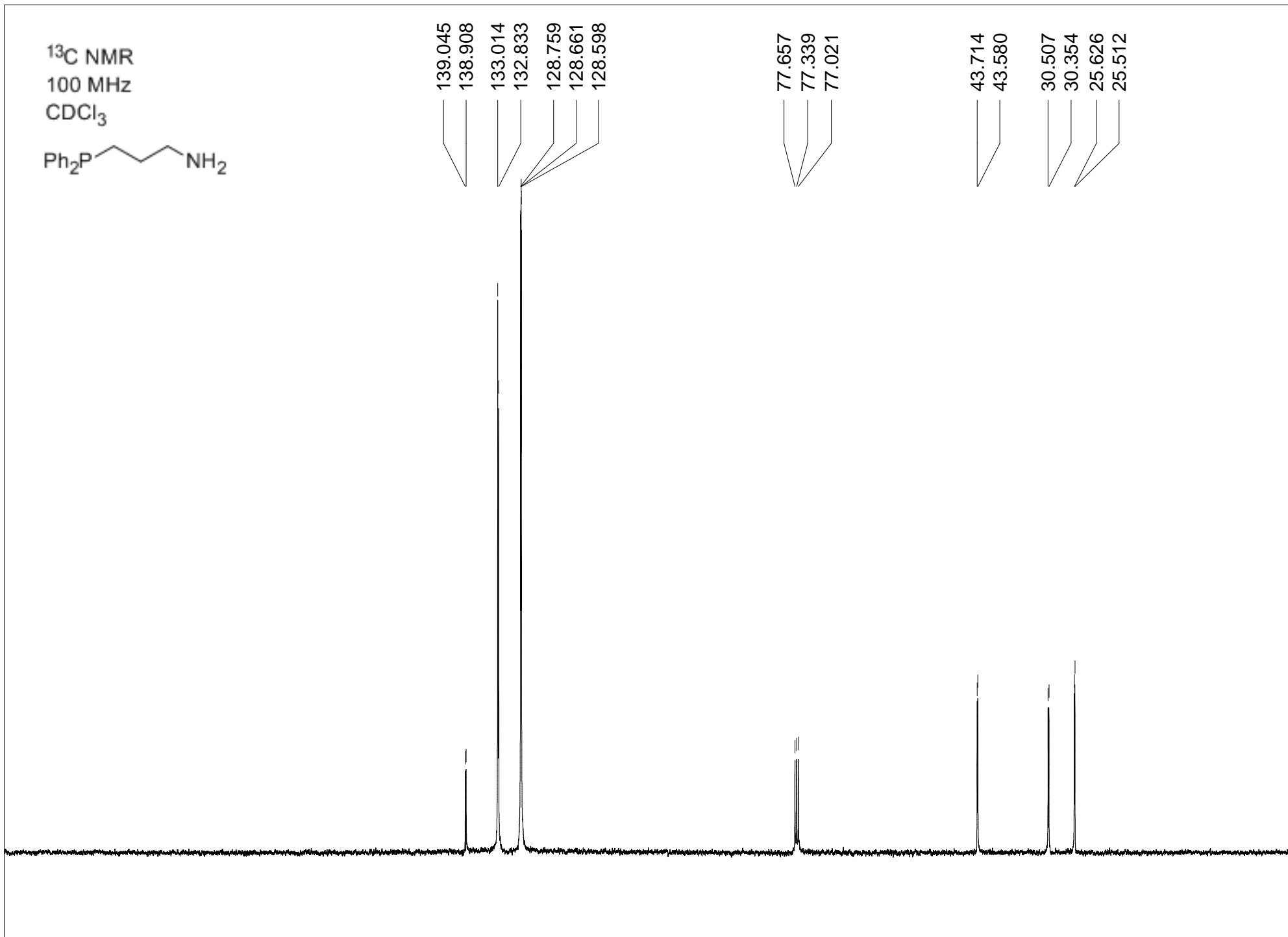
200

150

100

50

0

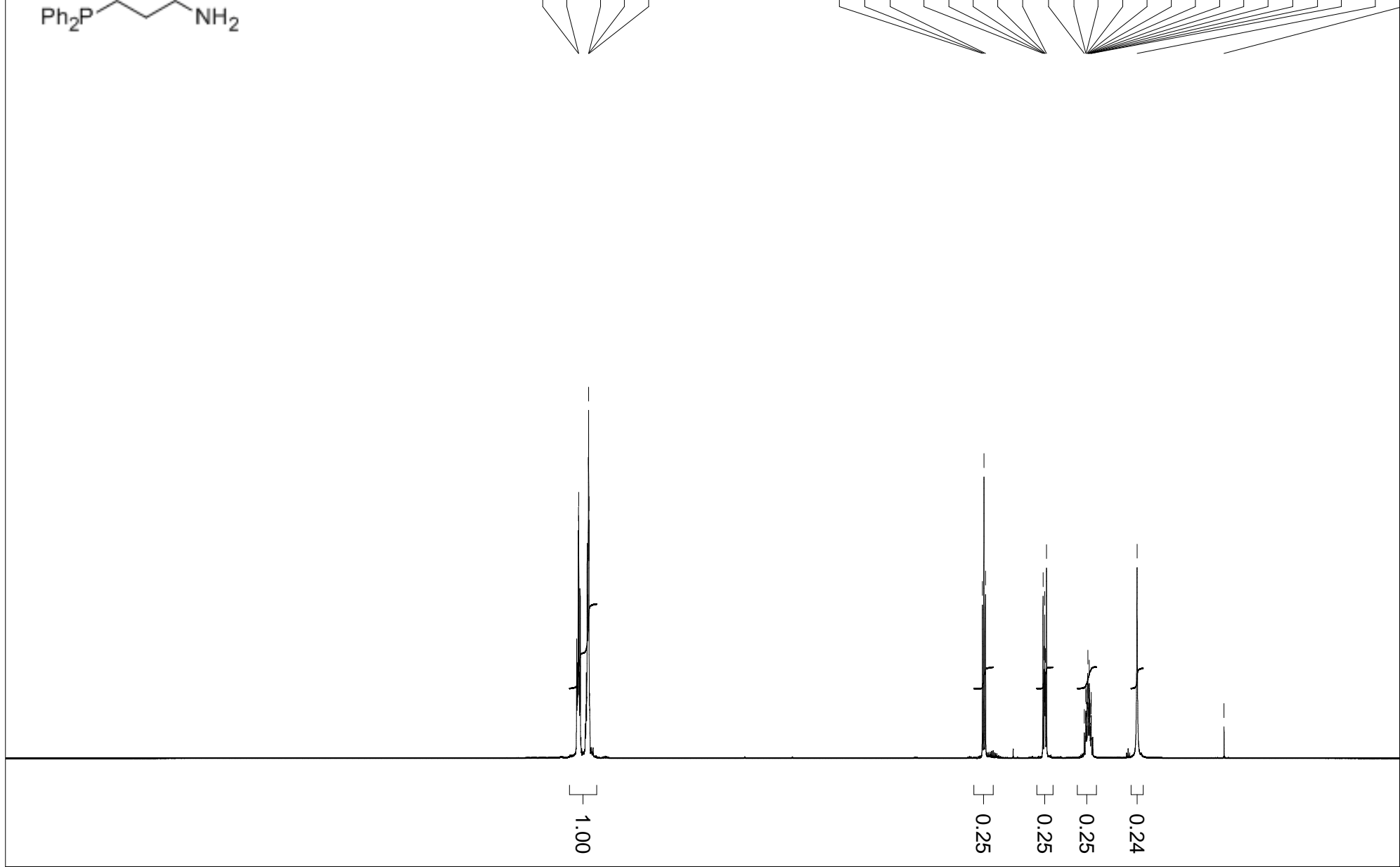


<sup>1</sup>H NMR  
400 MHz  
CDCl<sub>3</sub>



7.417  
7.412  
7.301  
7.298  
7.295

2.775  
2.758  
2.740  
2.080  
2.066  
2.060  
2.052  
2.039  
1.606  
1.588  
1.584  
1.576  
1.570  
1.566  
1.562  
1.557  
1.553  
1.548  
1.539  
1.529  
1.527  
1.000



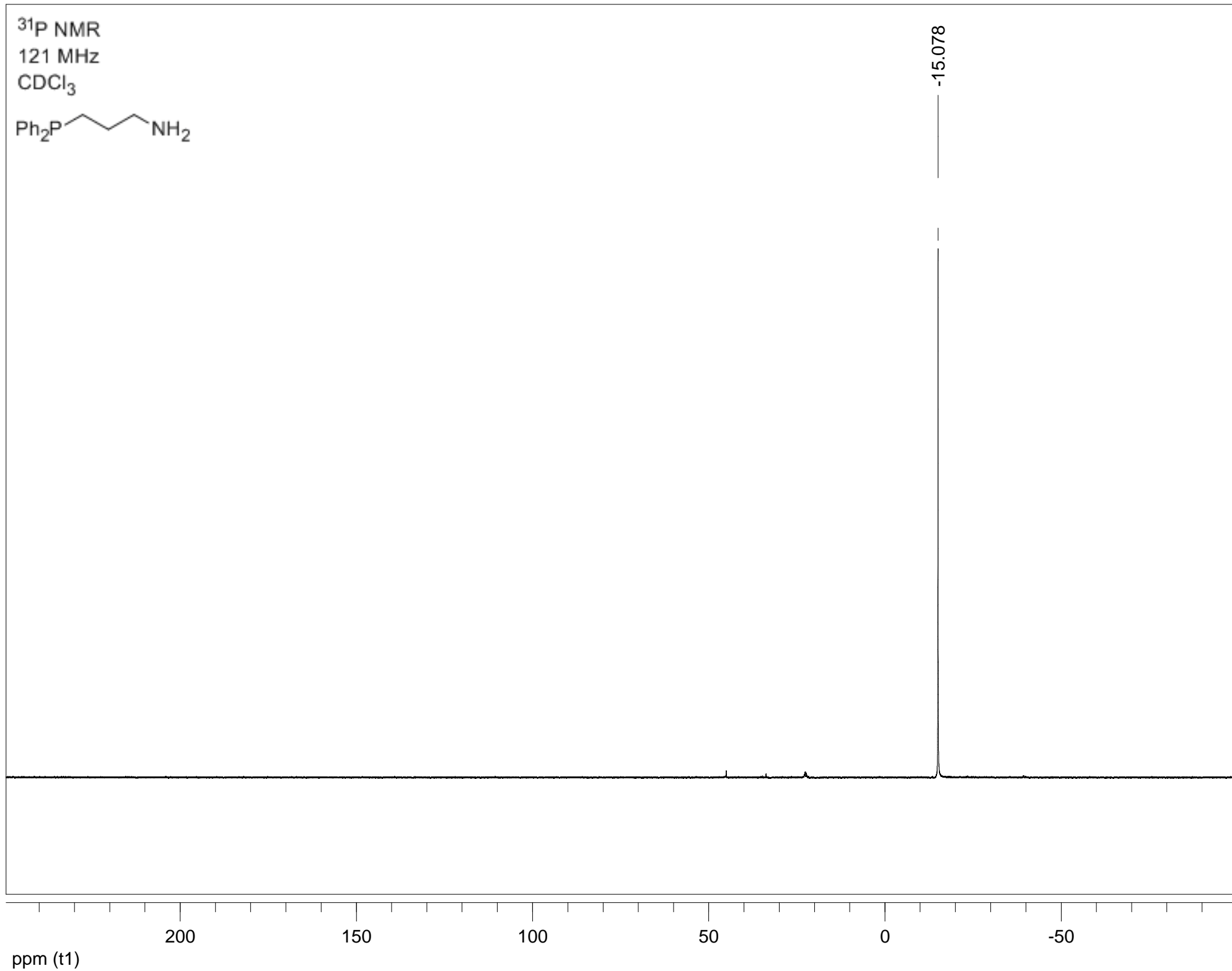
10.0

5.0

0.0

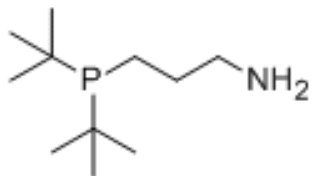
ppm (t1)

<sup>31</sup>P NMR  
121 MHz  
CDCl<sub>3</sub>



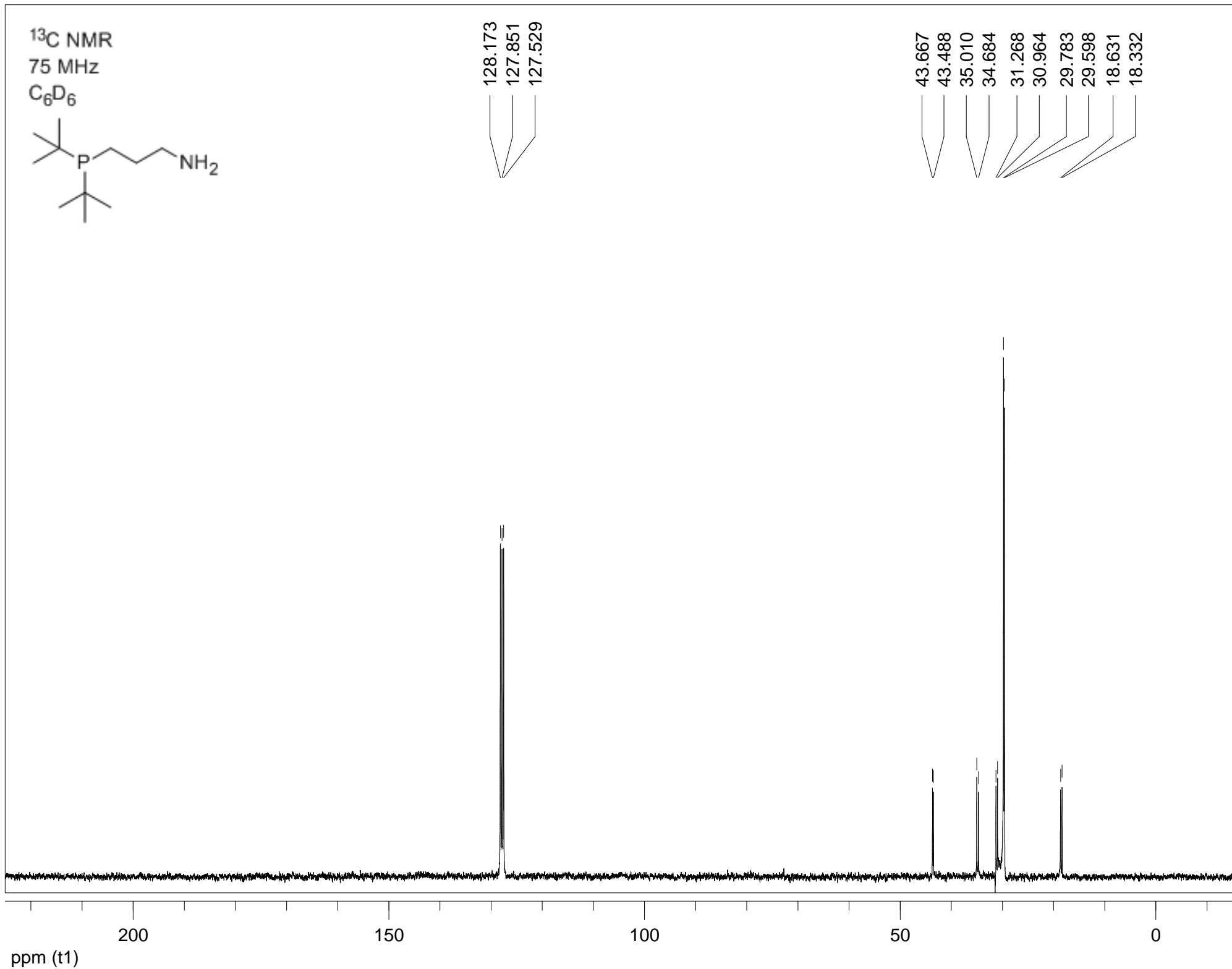


<sup>13</sup>C NMR  
75 MHz  
C<sub>6</sub>D<sub>6</sub>

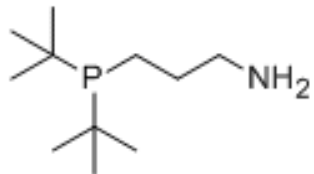


128.173  
127.851  
127.529

43.667  
43.488  
35.010  
34.684  
31.268  
30.964  
29.783  
29.598  
18.631  
18.332



$^1\text{H}$  NMR  
300 MHz  
 $\text{C}_6\text{D}_6$

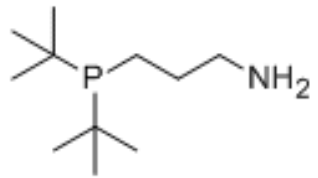


2.594  
2.572  
2.549  
1.302  
1.289  
1.272  
1.261  
1.048  
1.013  
0.539

1.00  
1.01  
1.10  
9.66  
0.96

ppm (t1) 10.0 5.0 0.0

<sup>31</sup>P NMR  
121 MHz  
C<sub>6</sub>D<sub>6</sub>



28.341

ppm (t1)

200

150

100

50

0

-50