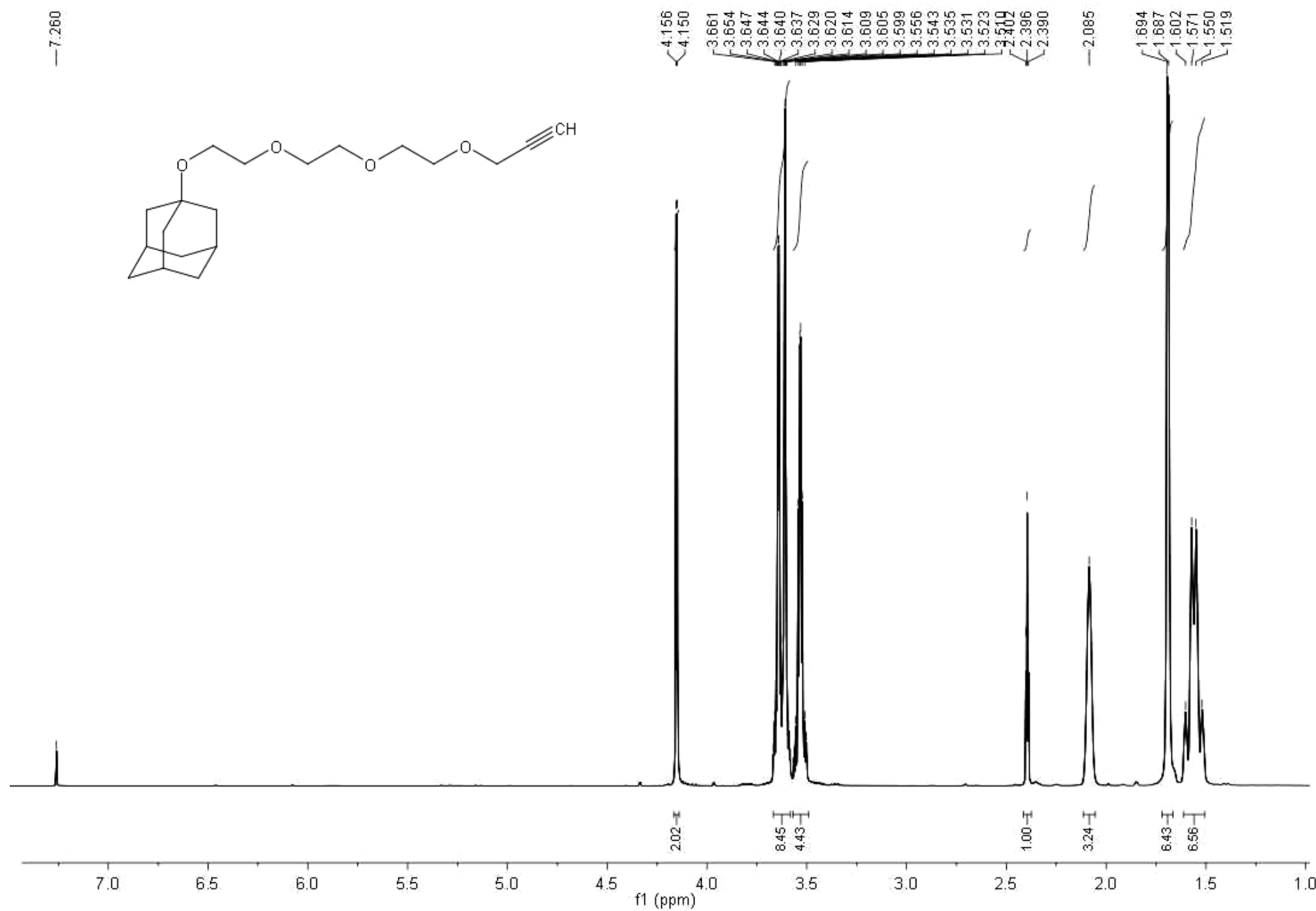
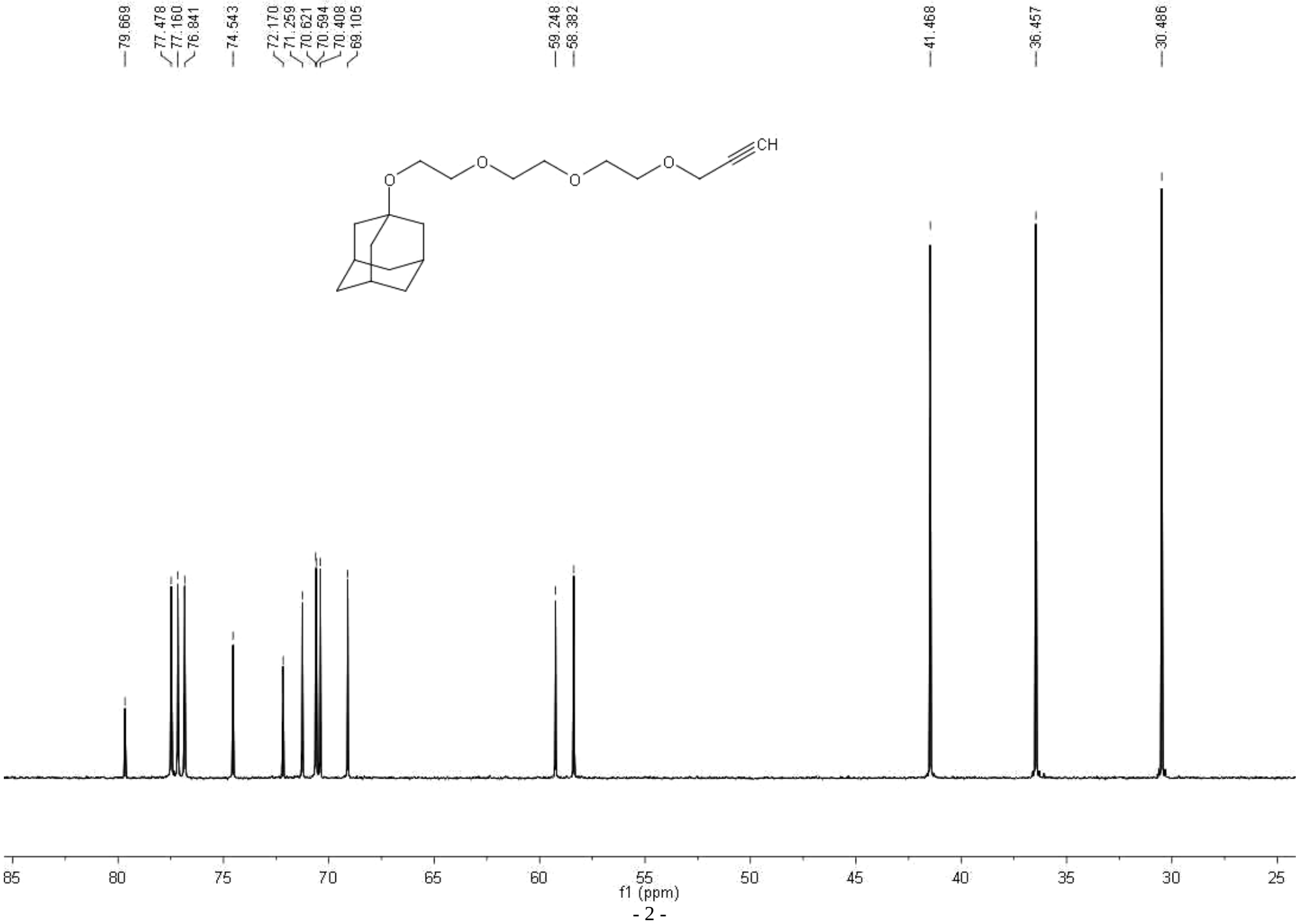


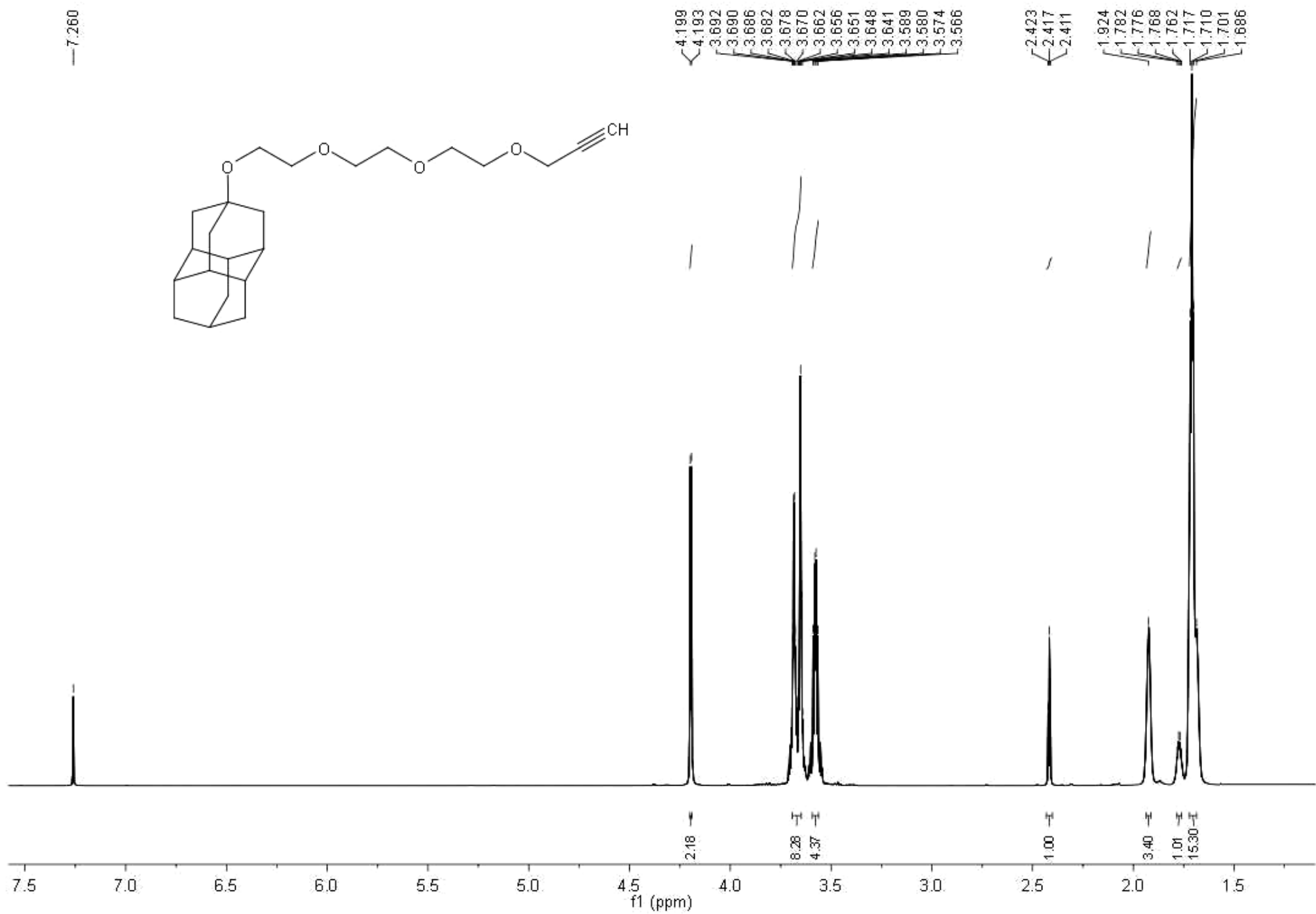
## Supplementary Information of NMR spectra

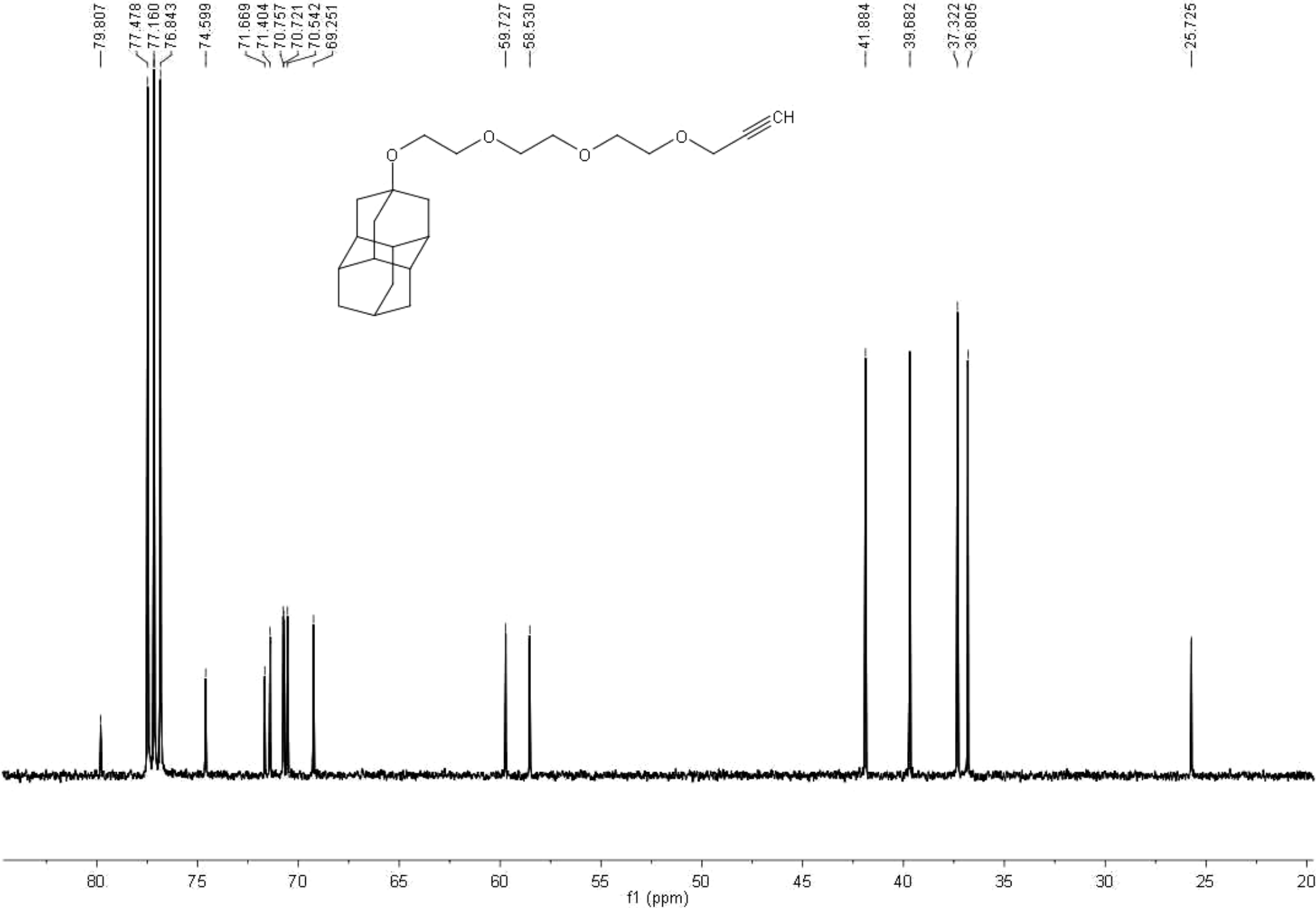
|                                                                                             |    |
|---------------------------------------------------------------------------------------------|----|
| <sup>1</sup> H-NMR (400 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>4a</b> .....       | 1  |
| <sup>13</sup> C-NMR (101 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>4a</b> .....      | 2  |
| <sup>1</sup> H-NMR (400 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>4b</b> .....       | 3  |
| <sup>13</sup> C-NMR (101 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>4b</b> .....      | 4  |
| <sup>1</sup> H-NMR (400 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>4c</b> .....       | 5  |
| <sup>13</sup> C-NMR (101 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>4c</b> .....      | 6  |
| <sup>1</sup> H-NMR (400 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>6a</b> .....       | 7  |
| <sup>13</sup> C-NMR (101 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>6a</b> .....      | 8  |
| <sup>1</sup> H-NMR (400 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>6b</b> .....       | 9  |
| <sup>13</sup> C-NMR (101 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>6b</b> .....      | 10 |
| <sup>1</sup> H-NMR (400 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>6c</b> .....       | 11 |
| <sup>13</sup> C-NMR (101 MHz, CDCl <sub>3</sub> ) spectrum of compound <b>6c</b> .....      | 12 |
| <sup>1</sup> H-NMR (400 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>8a</b> .....  | 13 |
| <sup>13</sup> C-NMR (101 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>8a</b> ..... | 14 |
| <sup>1</sup> H-NMR (400 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>8b</b> .....  | 15 |
| <sup>13</sup> C-NMR (101 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>8b</b> ..... | 16 |
| <sup>1</sup> H-NMR (400 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>8c</b> .....  | 17 |
| <sup>13</sup> C-NMR (101 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>8c</b> ..... | 18 |
| <sup>1</sup> H-NMR (600 MHz, D <sub>2</sub> O) spectrum of compound <b>1a</b> .....         | 19 |
| <sup>31</sup> P-NMR (162 MHz, D <sub>2</sub> O) spectrum of compound <b>1a</b> .....        | 20 |
| <sup>1</sup> H-NMR (600 MHz, D <sub>2</sub> O) spectrum of compound <b>1b</b> .....         | 21 |
| <sup>31</sup> P-NMR (162 MHz, D <sub>2</sub> O) spectrum of compound <b>1b</b> .....        | 22 |
| <sup>1</sup> H-NMR (600 MHz, D <sub>2</sub> O) spectrum of compound <b>1c</b> .....         | 23 |
| <sup>31</sup> P-NMR (162 MHz, D <sub>2</sub> O) spectrum of compound <b>1c</b> .....        | 24 |
| <sup>1</sup> H-NMR (400 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>2a</b> .....  | 25 |
| <sup>13</sup> C-NMR (101 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>2a</b> ..... | 26 |
| <sup>31</sup> P-NMR (162 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>2a</b> ..... | 27 |
| <sup>1</sup> H-NMR (400 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>2b</b> .....  | 28 |
| <sup>13</sup> C-NMR (101 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>2b</b> ..... | 29 |
| <sup>31</sup> P-NMR (162 MHz, Acetone-d <sub>6</sub> ) spectrum of compound <b>2b</b> ..... | 30 |

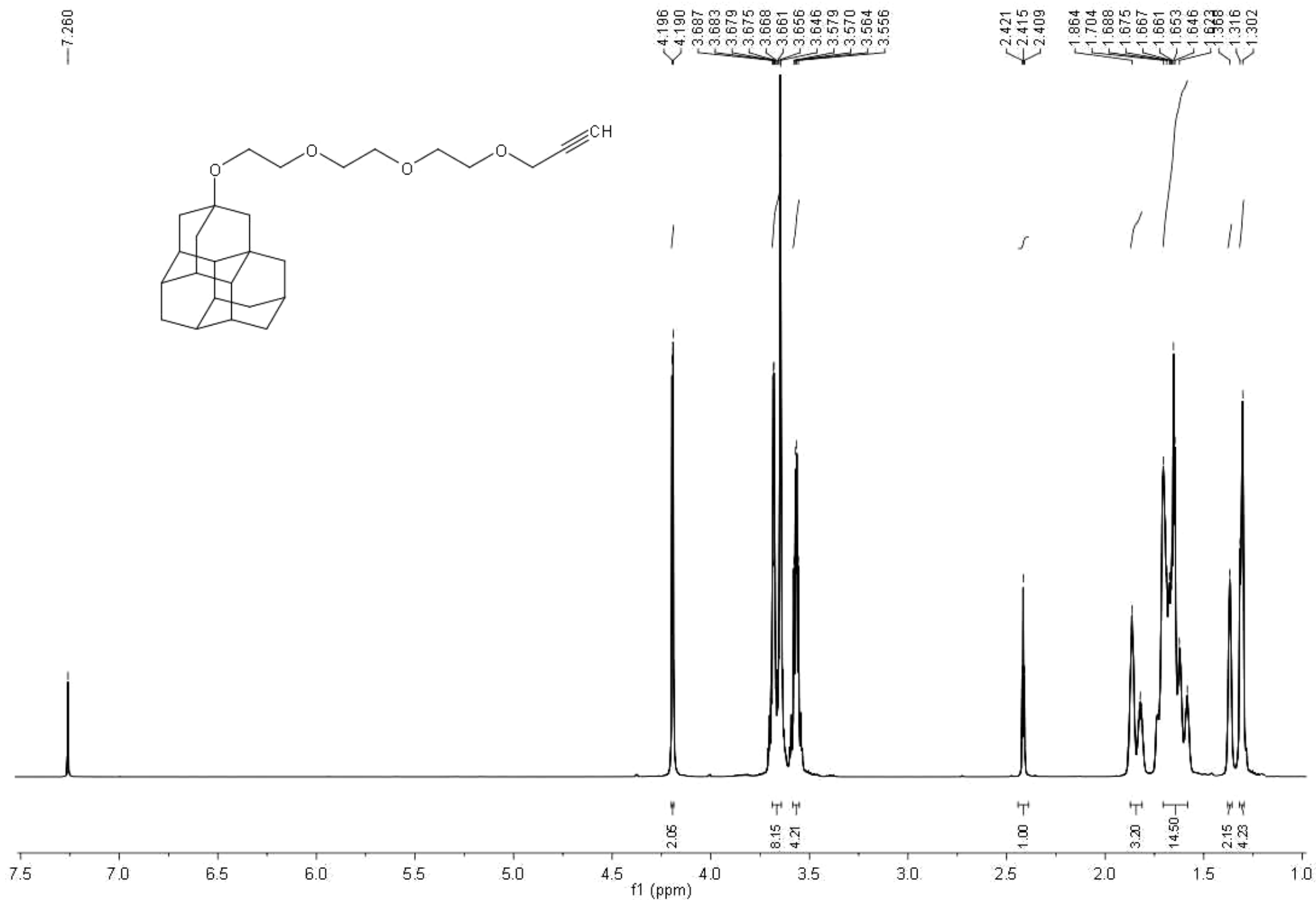
<sup>1</sup>H-NMR (400 MHz, Acetone-d<sub>6</sub>) spectrum of compound **2c** ..... **31**  
<sup>13</sup>C-NMR (101 MHz, Acetone-d<sub>6</sub>) spectrum of compound **2c** ..... **32**  
<sup>31</sup>P-NMR (162 MHz, Acetone-d<sub>6</sub>) spectrum of compound **2c** ..... **33**

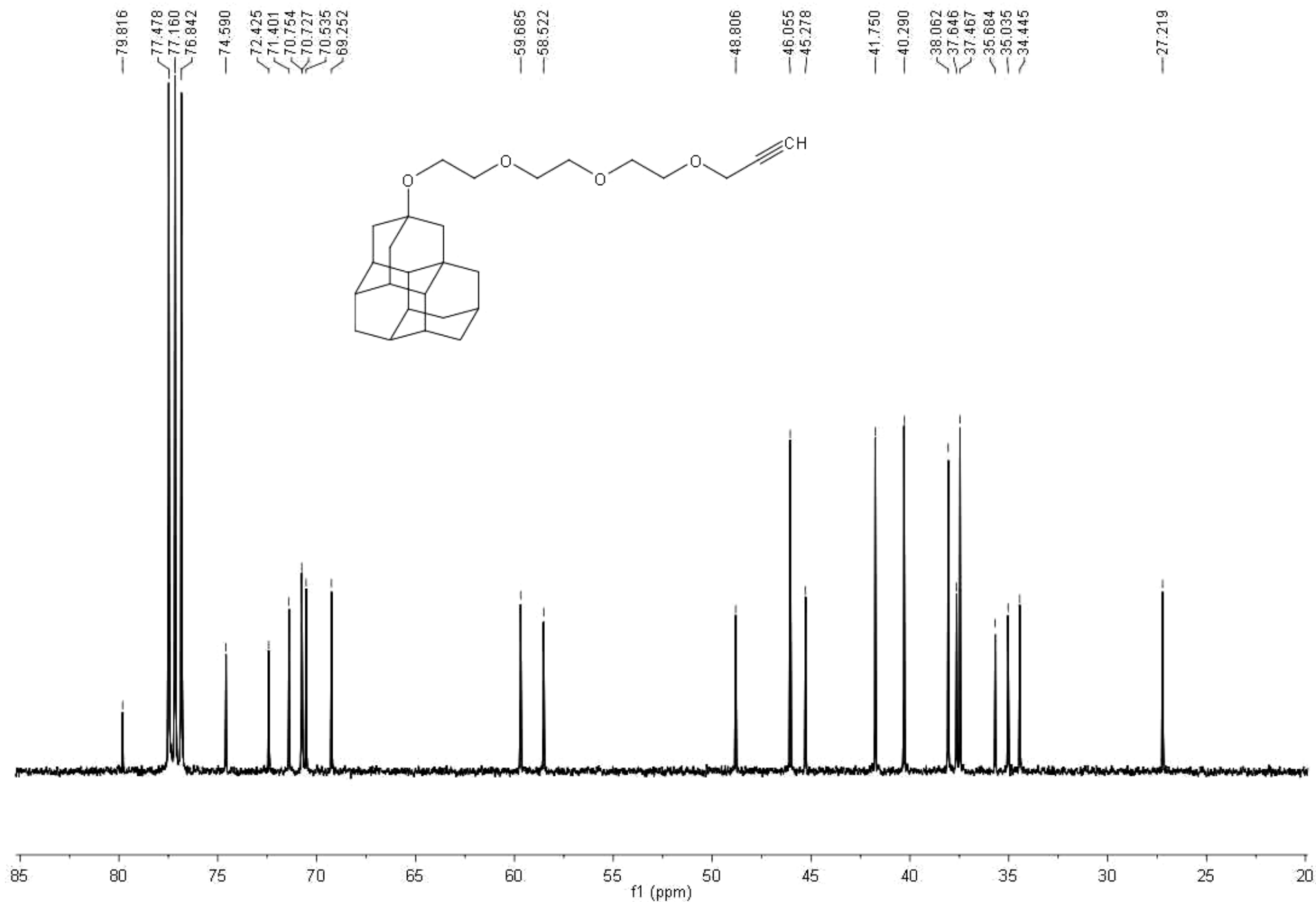


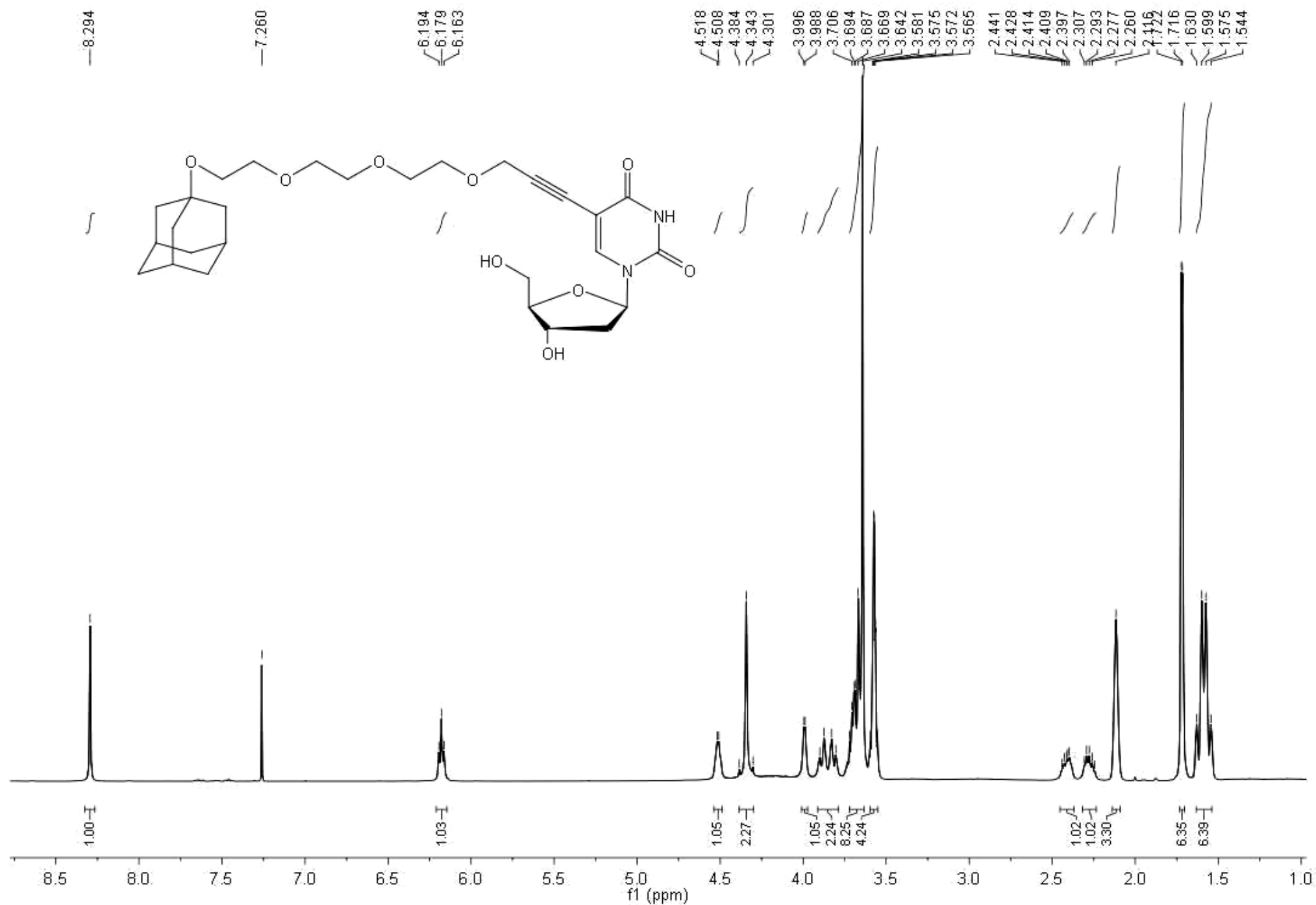


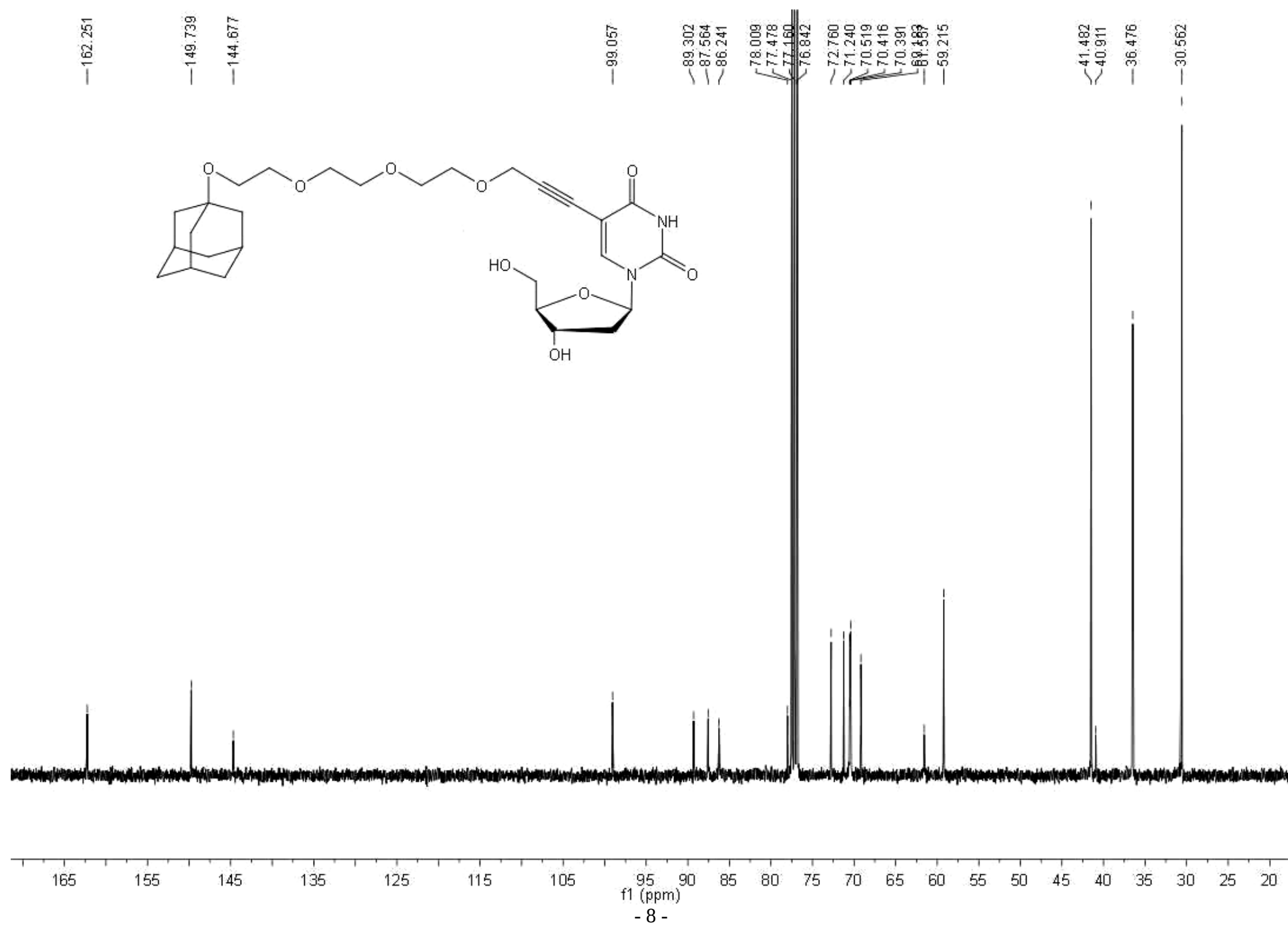


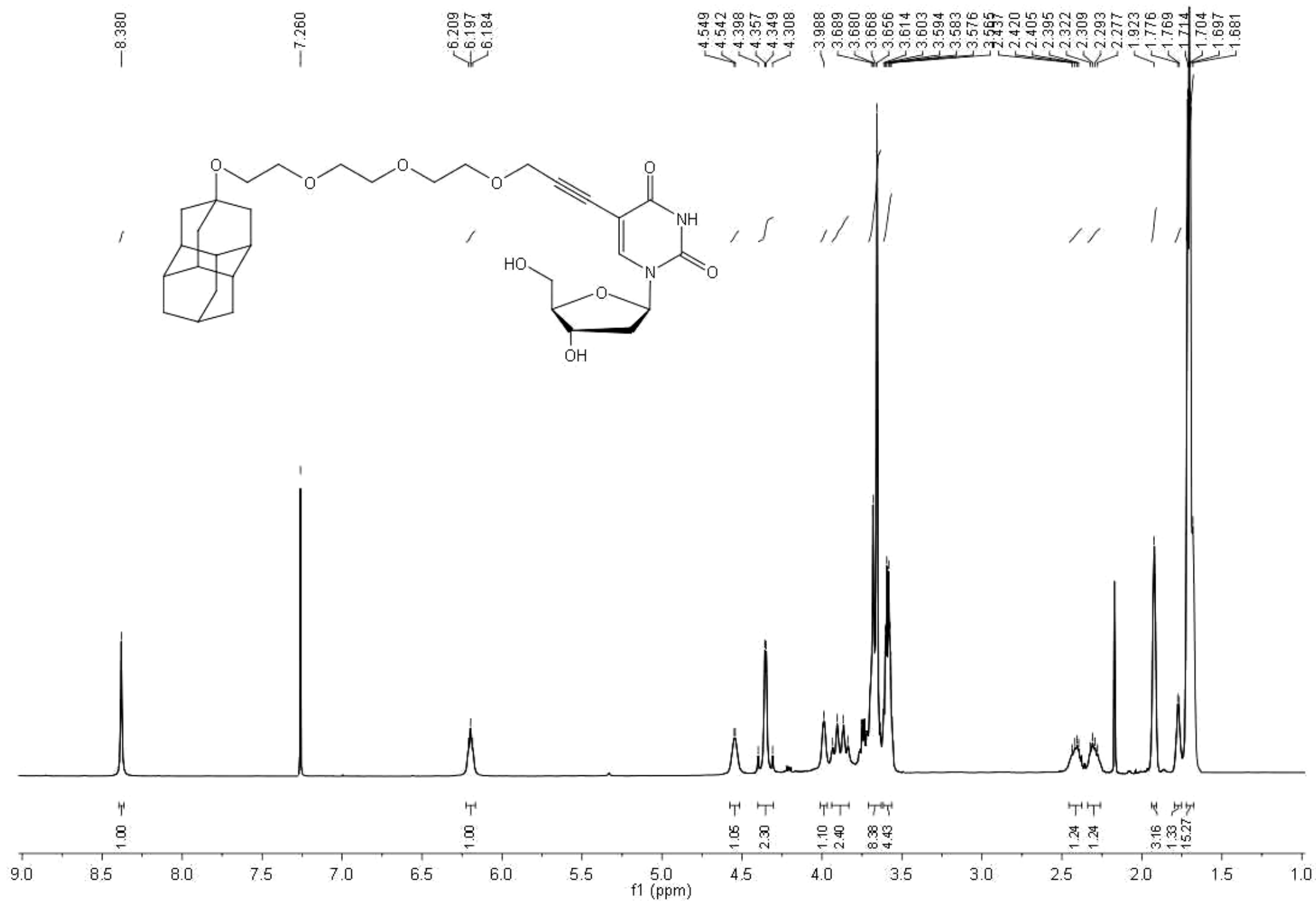


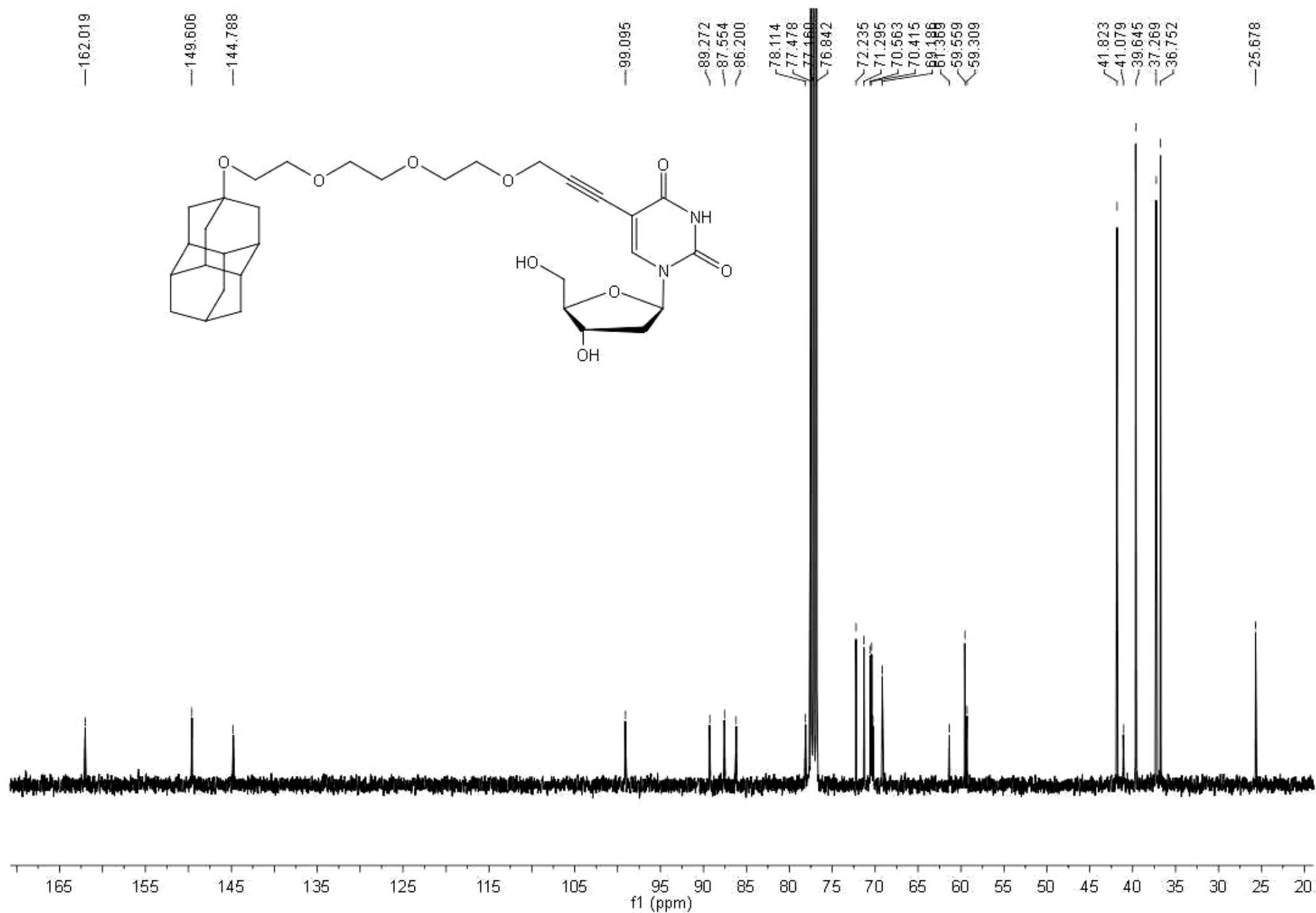


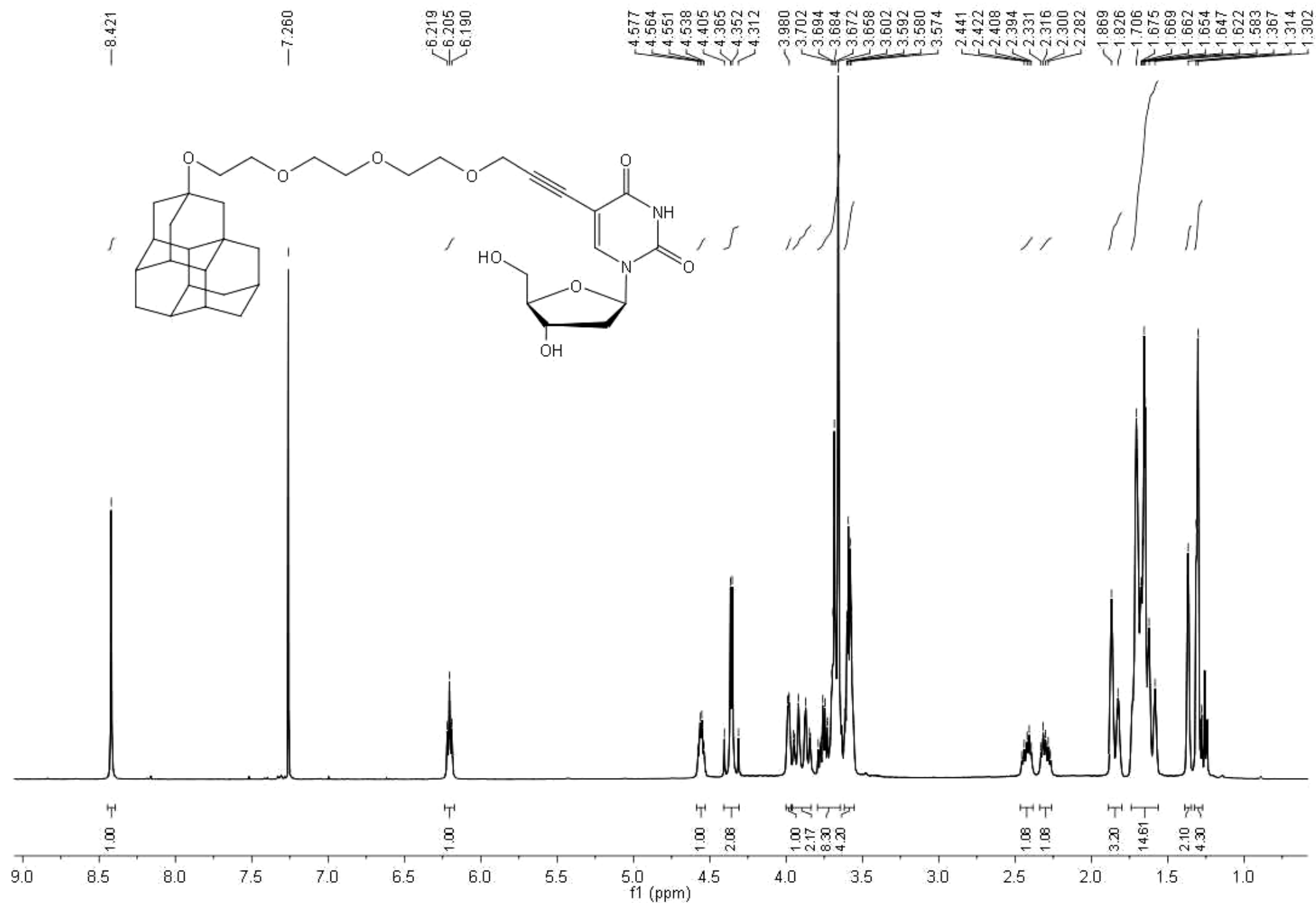


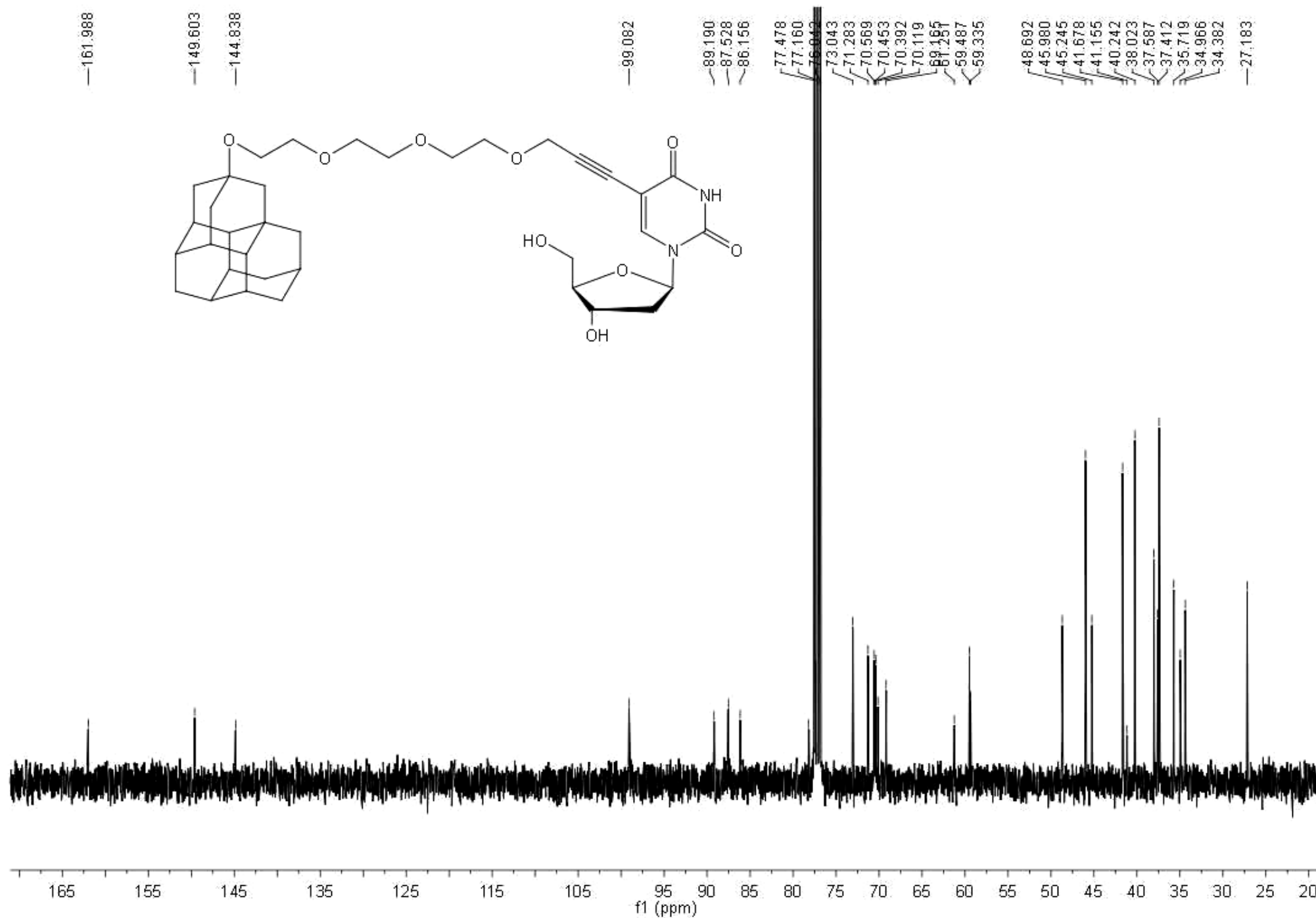


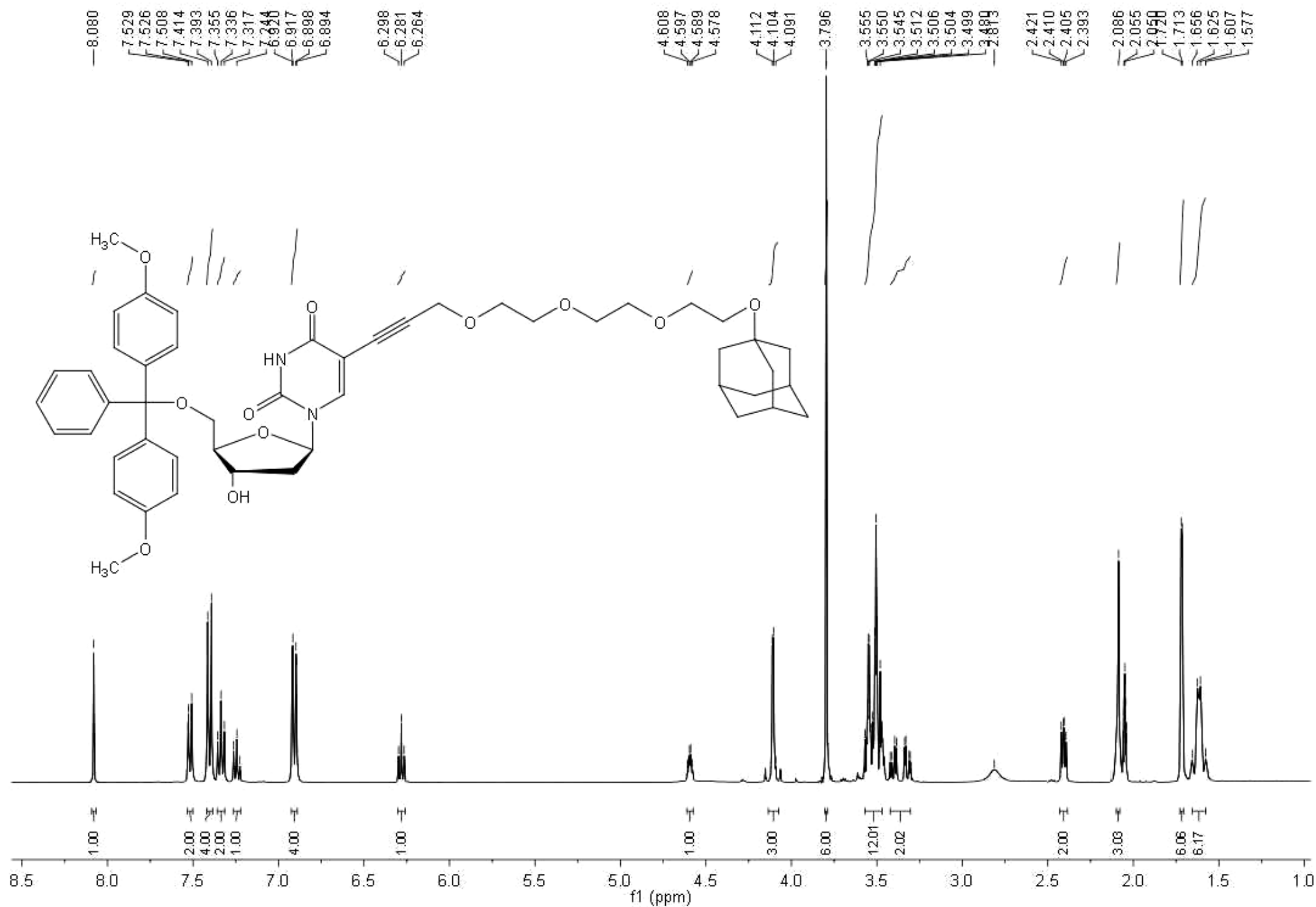


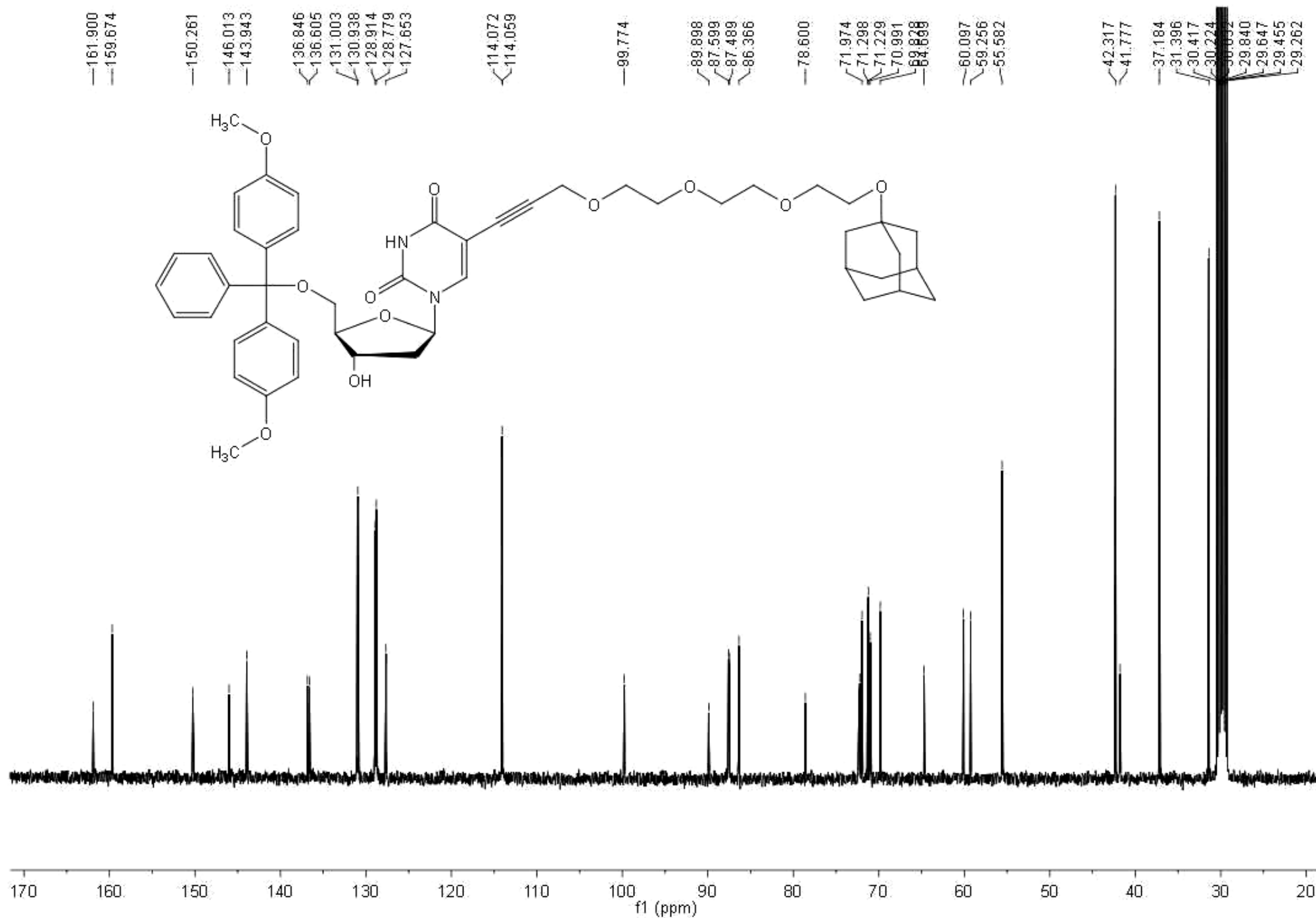


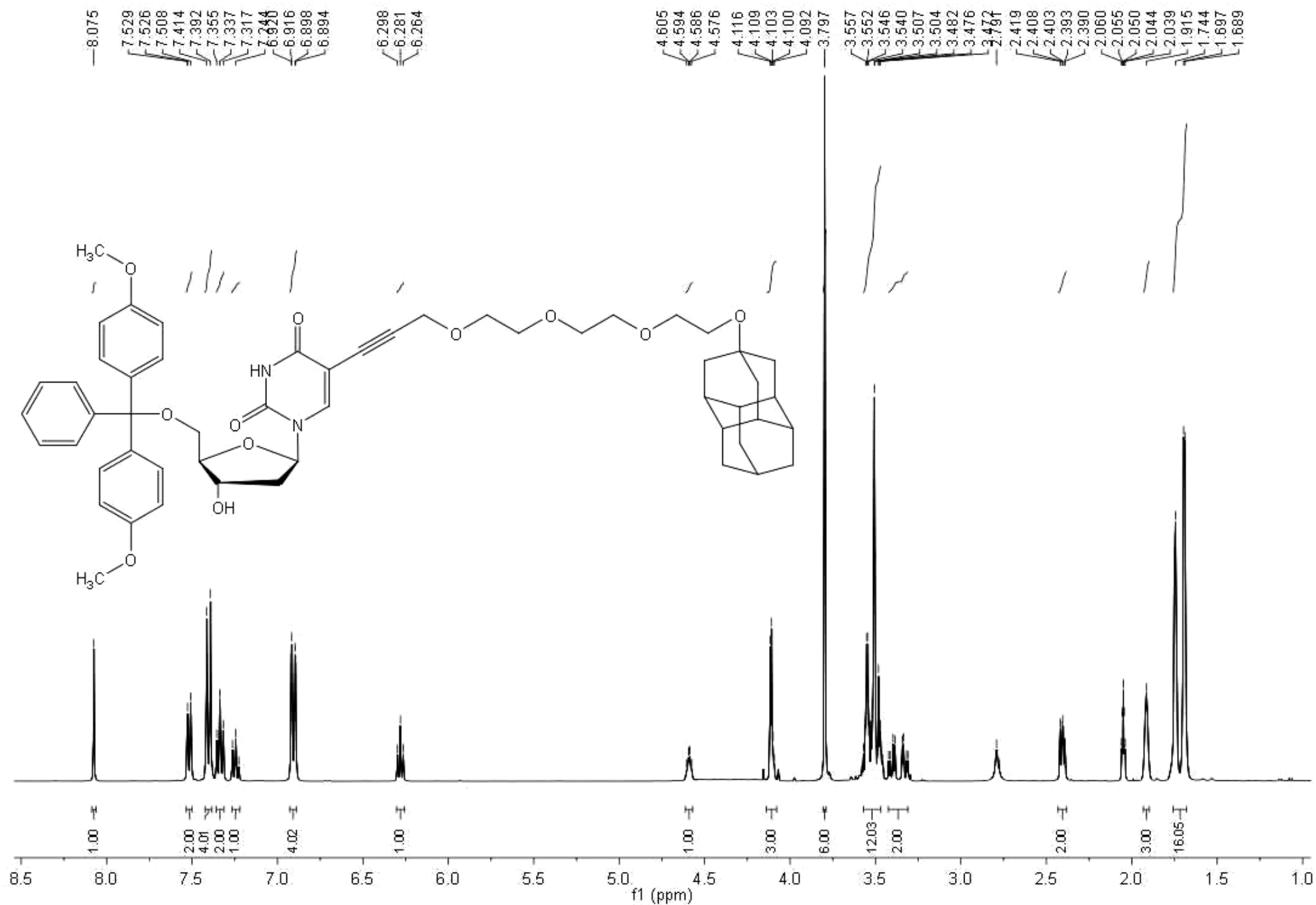


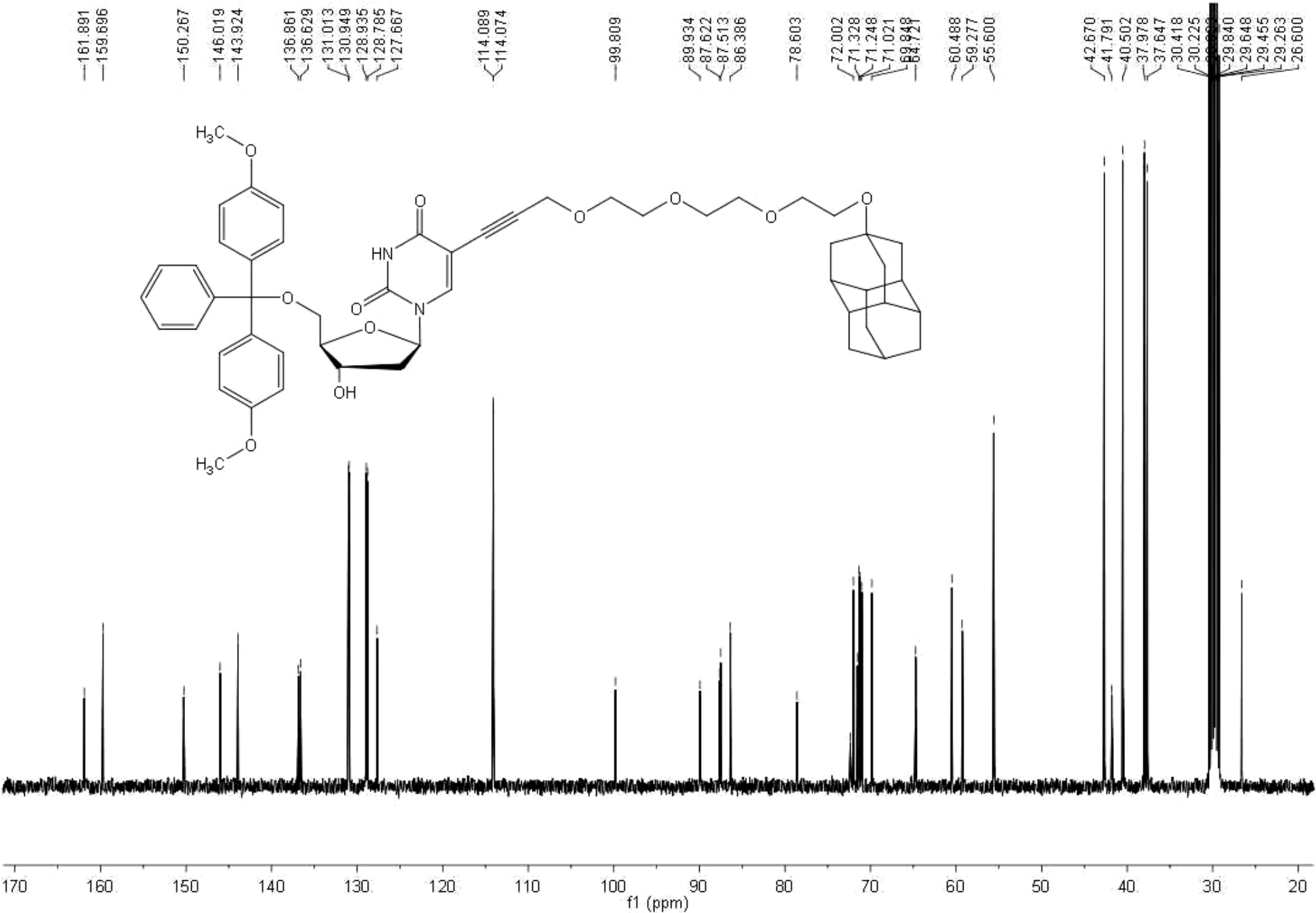


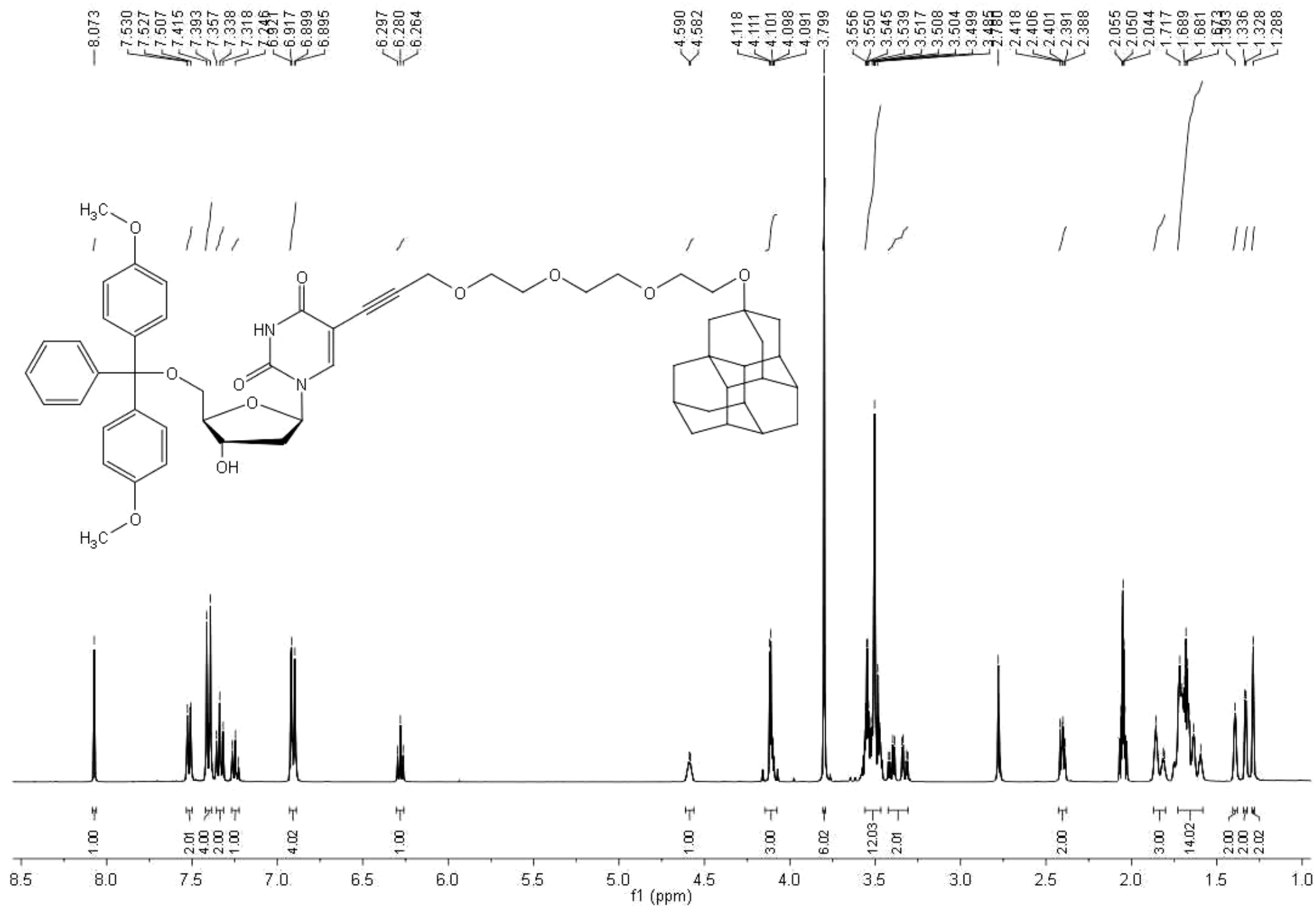


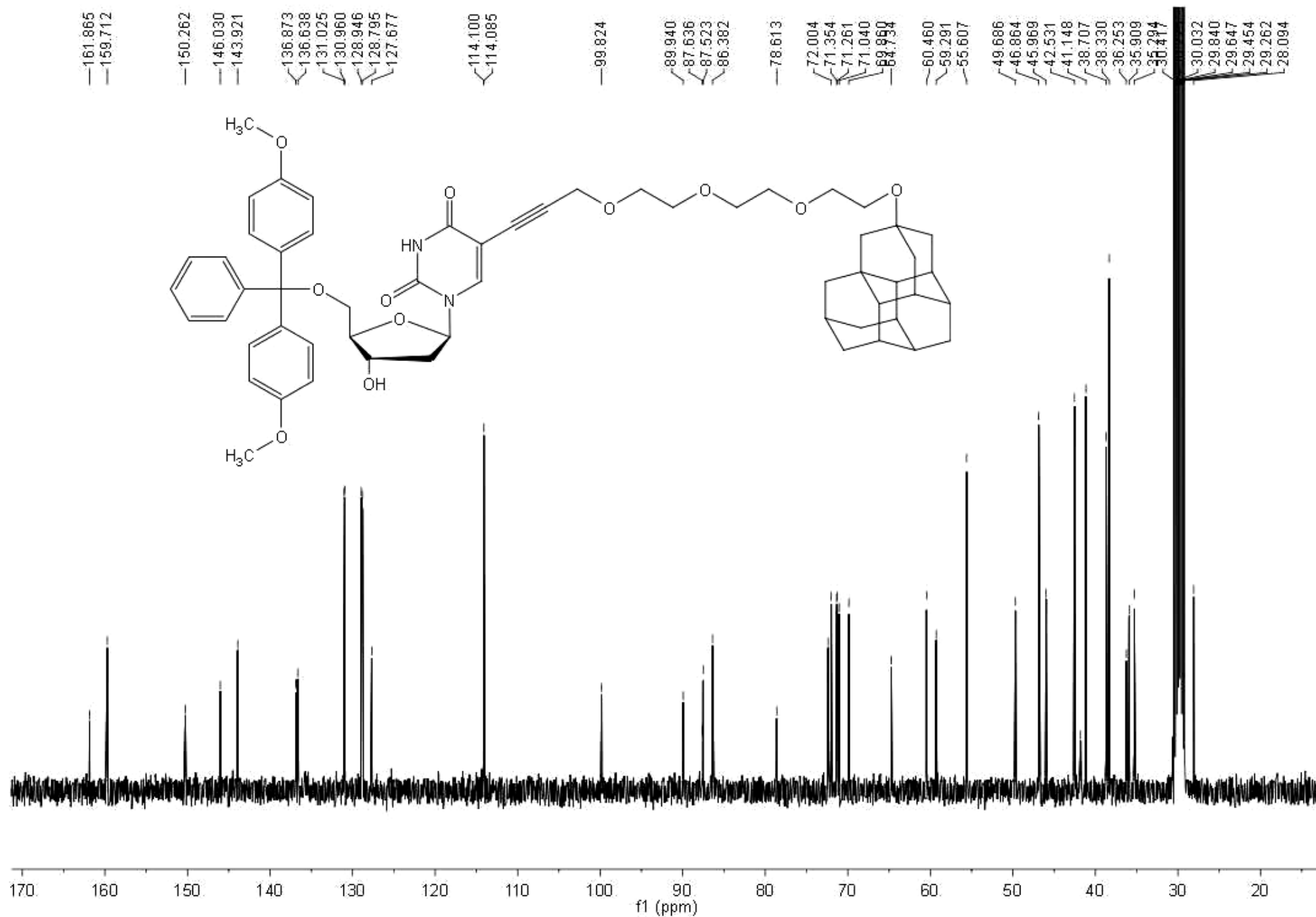


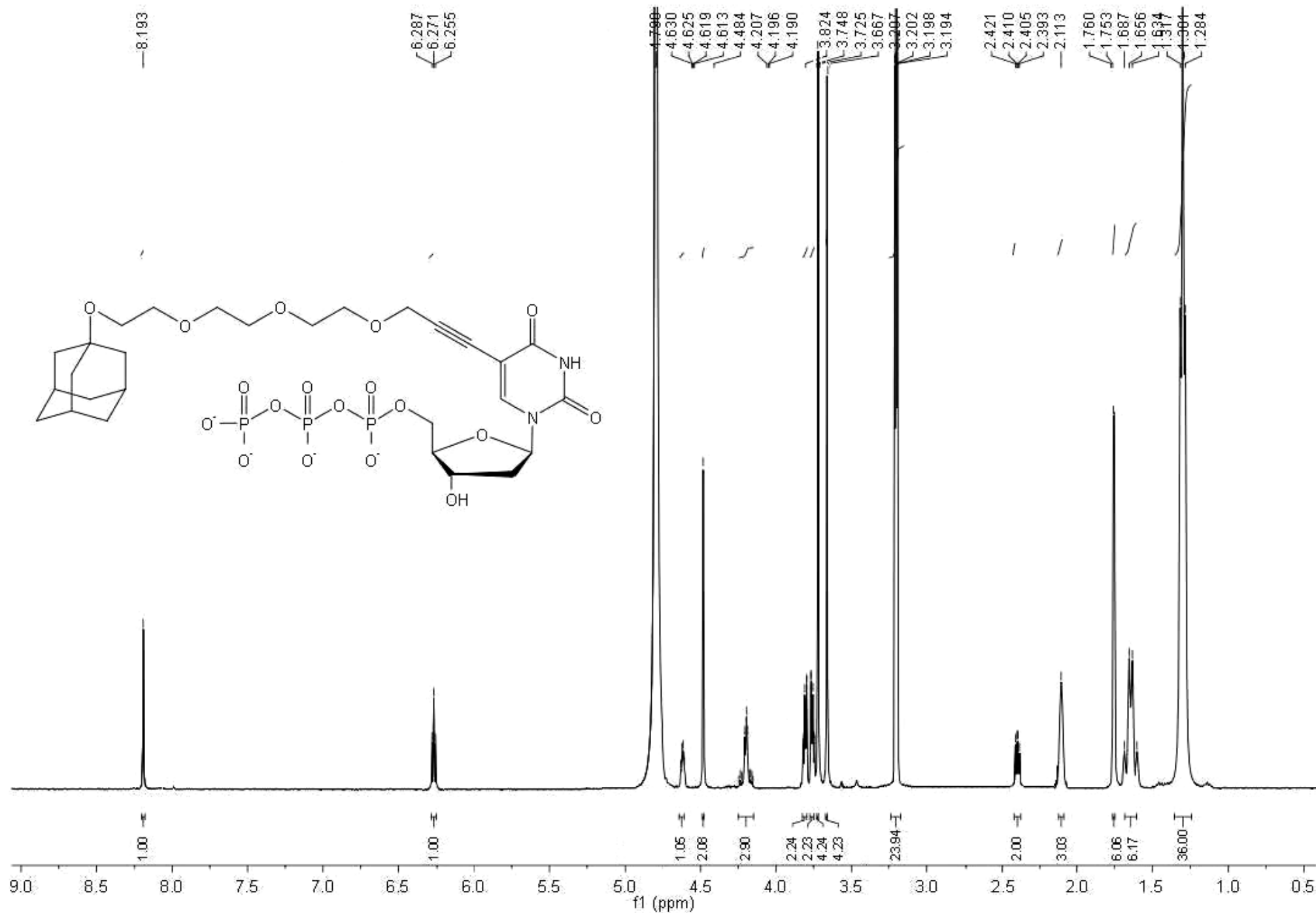


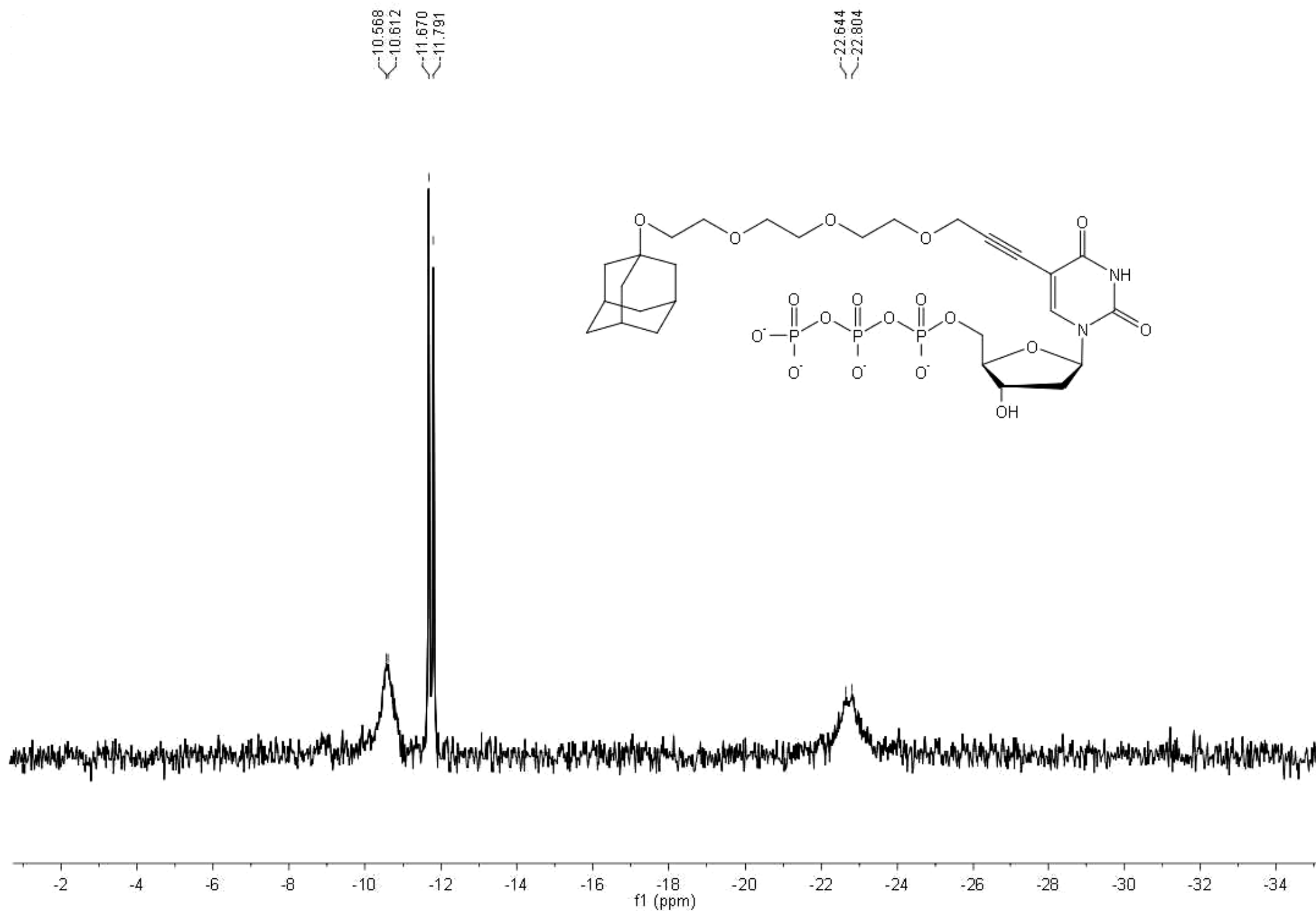


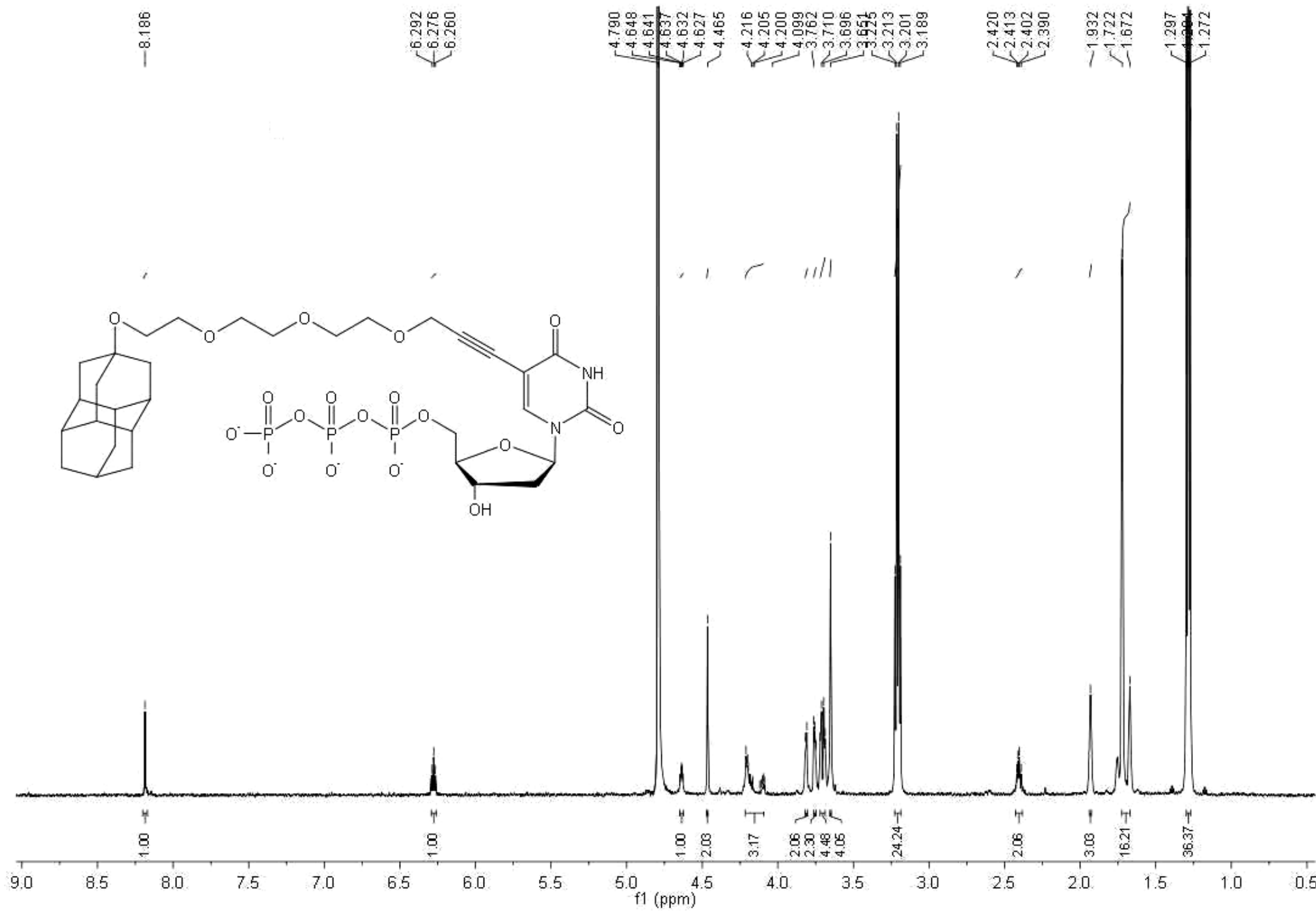












10.738  
10.812  
11.438  
11.520

23.090  
23.146  
23.298

