

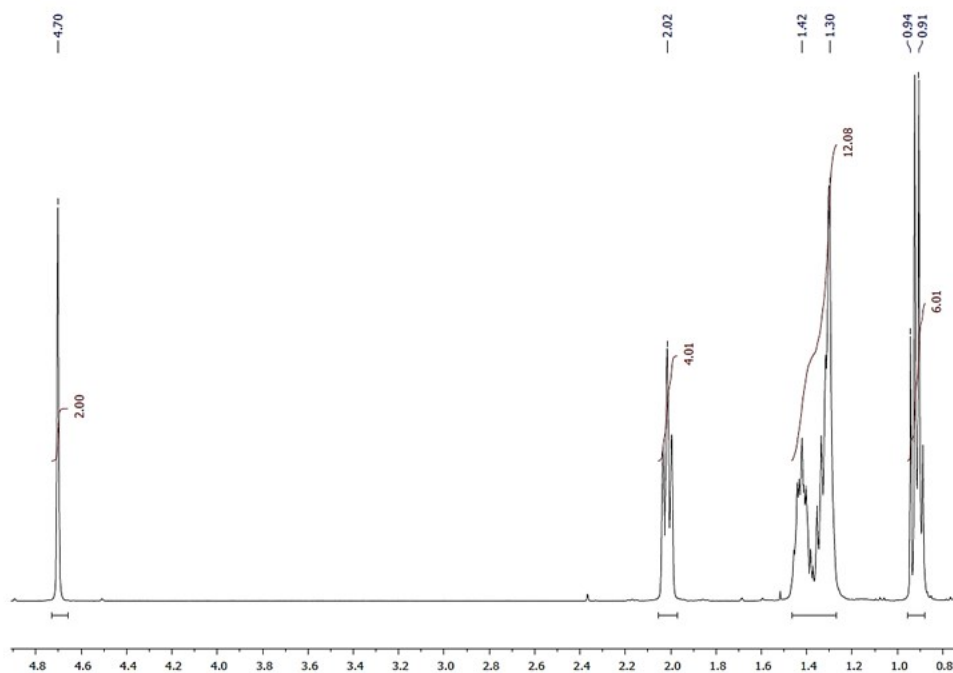
## Supporting Information for:

### Study on the structure-activity relationship of metallocene poly- $\alpha$ -olefin (mPAO) base oil

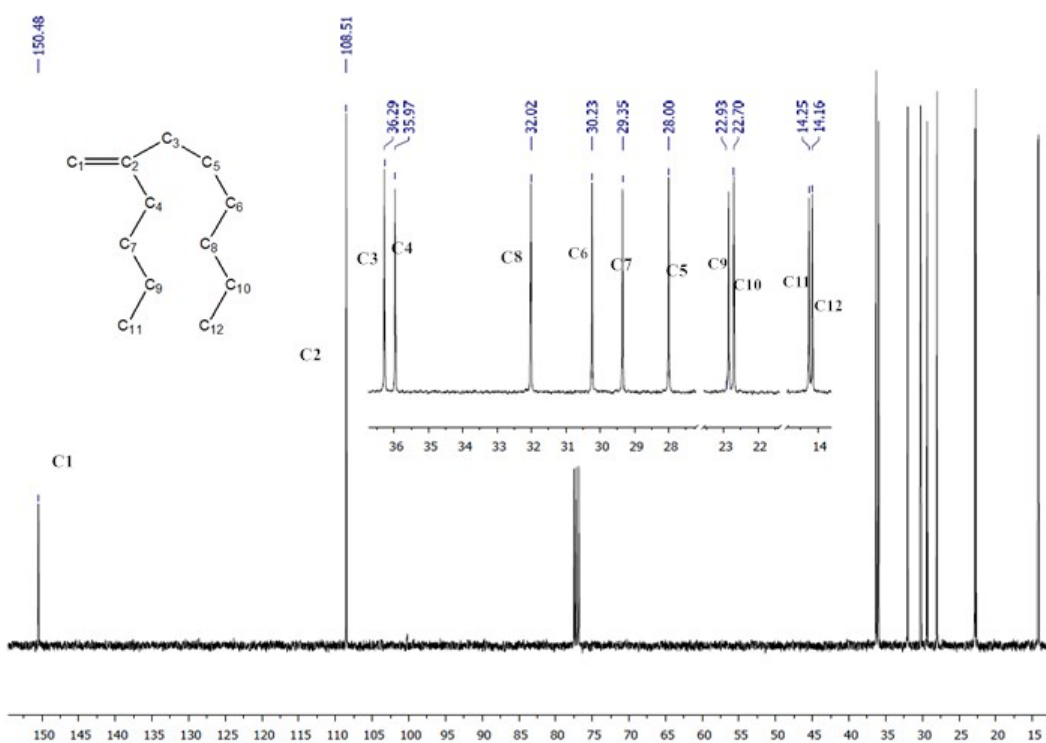
#### **NMR spectra**

<b>1. spectrum of 1-hexene oligomer</b>	<b>2-5</b>
<b>2. spectrum of 1-octene oligomer</b>	<b>6-8</b>
<b>3. spectrum of 1-decene oligomer</b>	<b>9-11</b>
<b>4. spectrum of 1-dodecene oligomer</b>	<b>12-13</b>

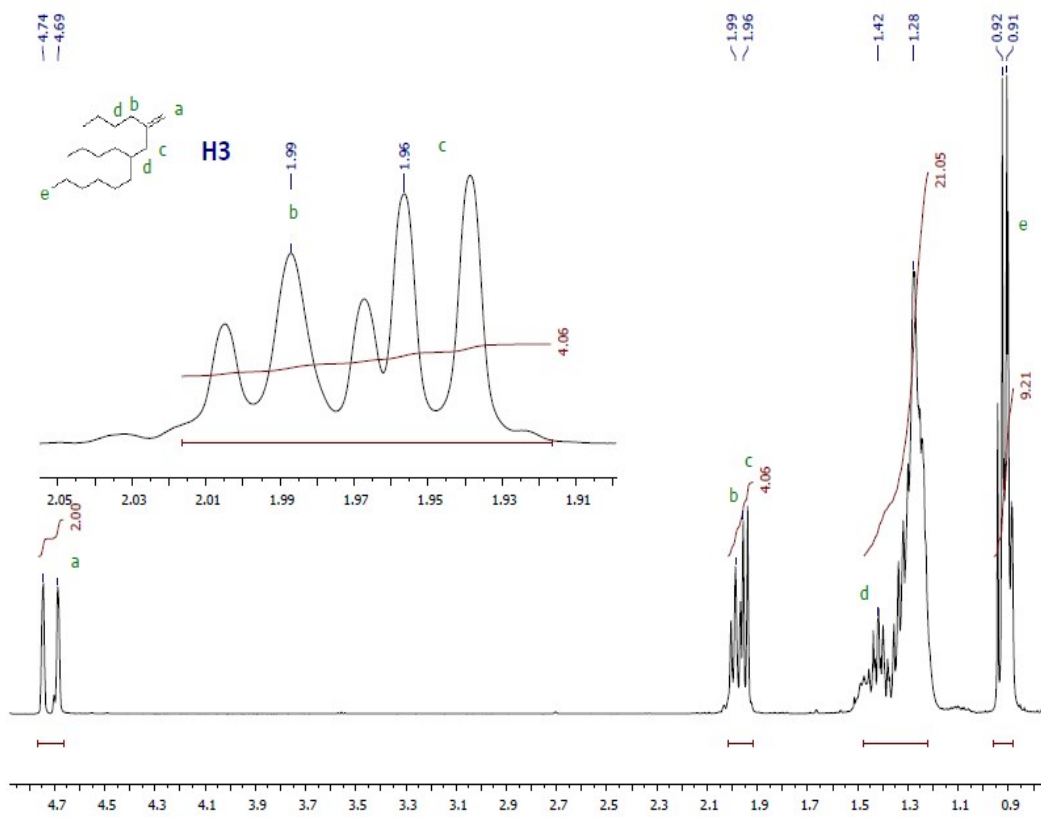
# 1. spectrum of 1-hexene oligomer



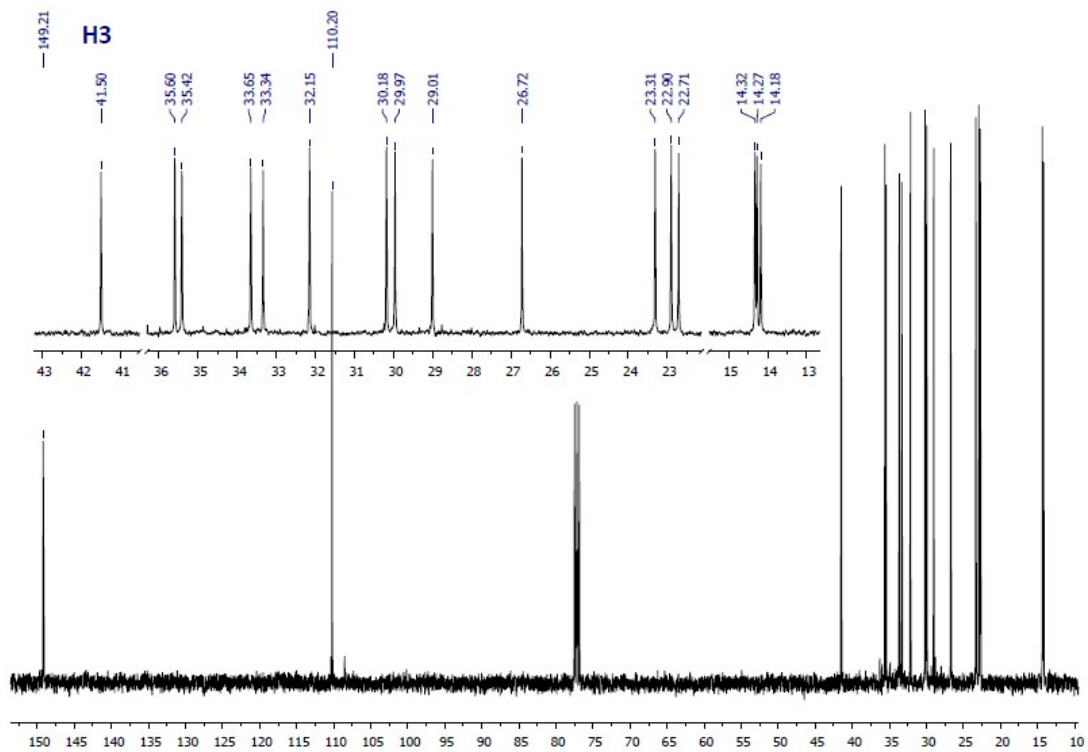
$^1\text{H}$  NMR spectrum of the dimer of 1- $\text{C}_6$



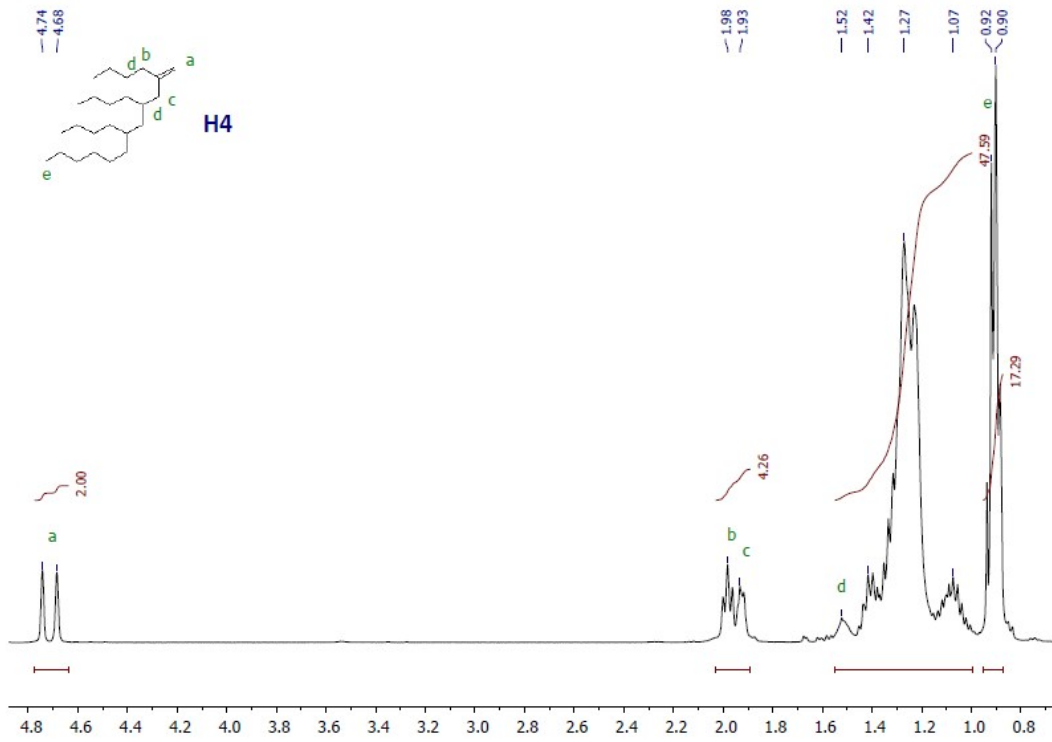
$^{13}\text{C}$  NMR spectrum of the dimer of 1- $\text{C}_6$



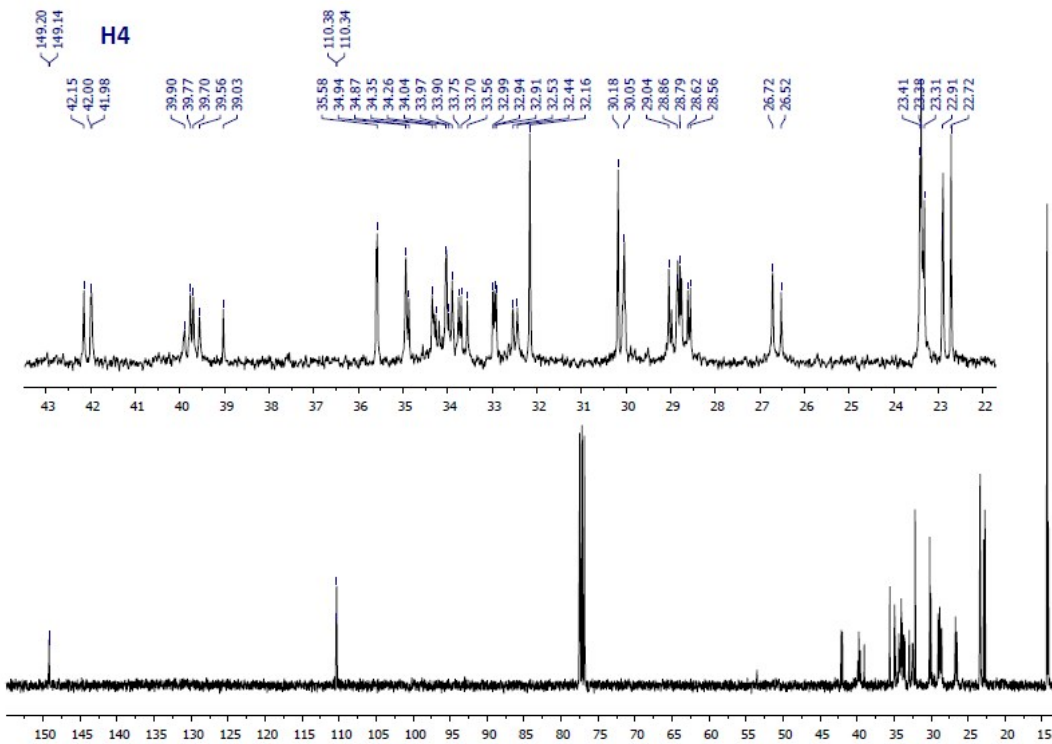
<sup>1</sup>H NMR spectrum of the Timer of 1-C<sub>6</sub>



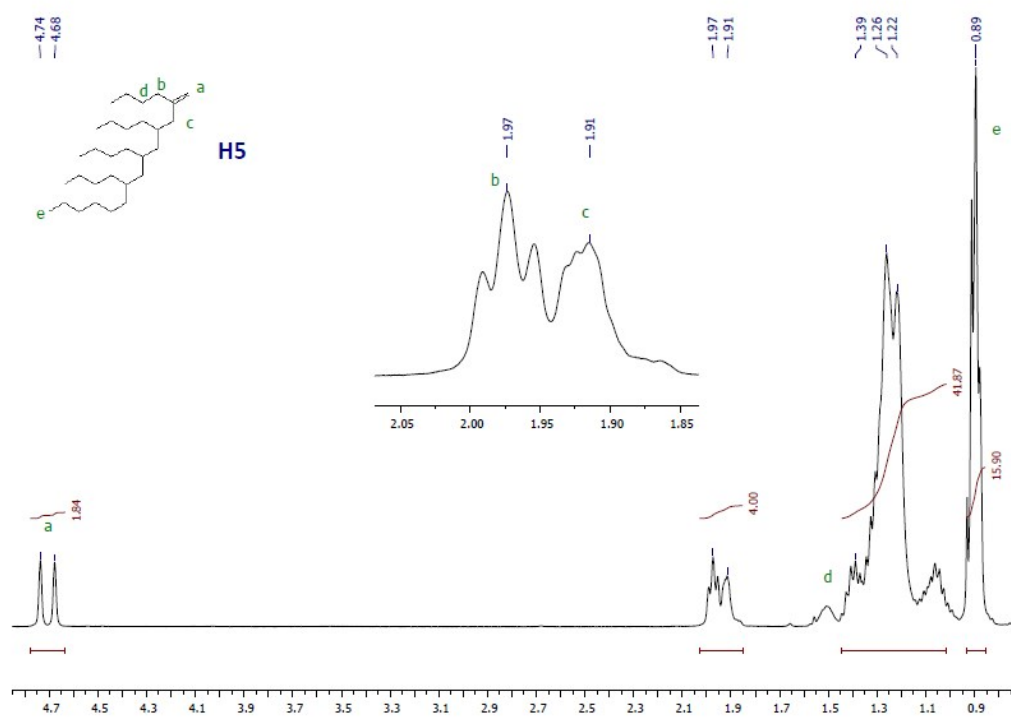
<sup>13</sup>C NMR spectrum of the Timer of 1-C<sub>6</sub>



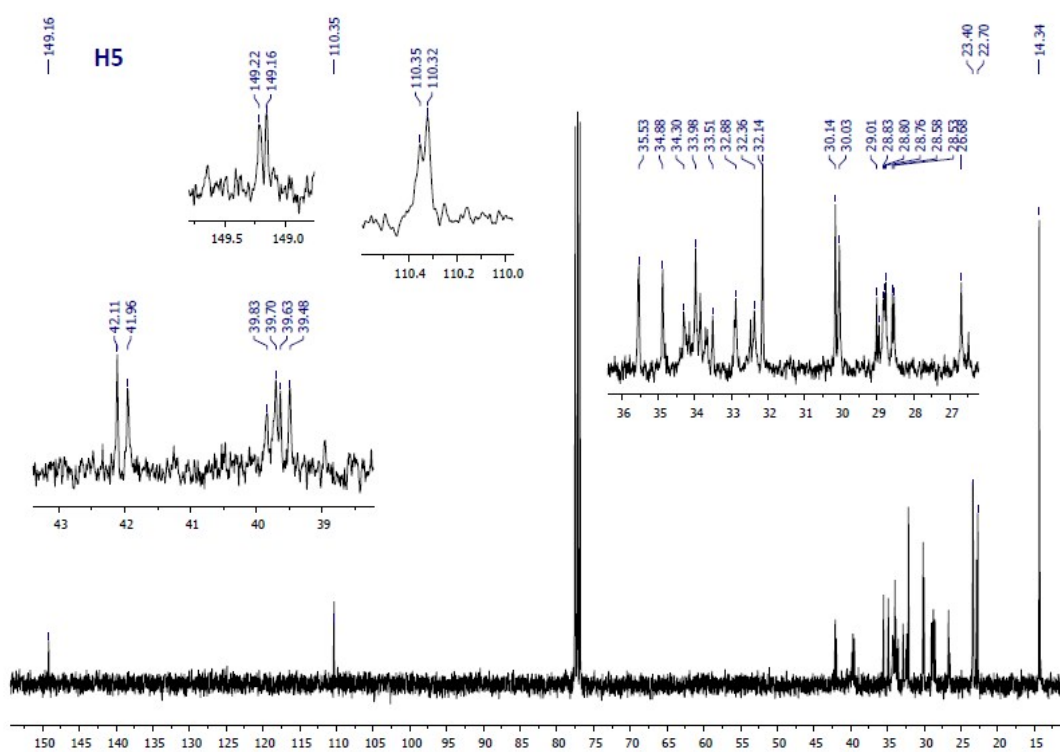
$^1\text{H}$  NMR spectrum of the Tetramer of 1-C<sub>6</sub>



$^{13}\text{C}$  NMR spectrum of the Tetramer of 1-C<sub>6</sub>

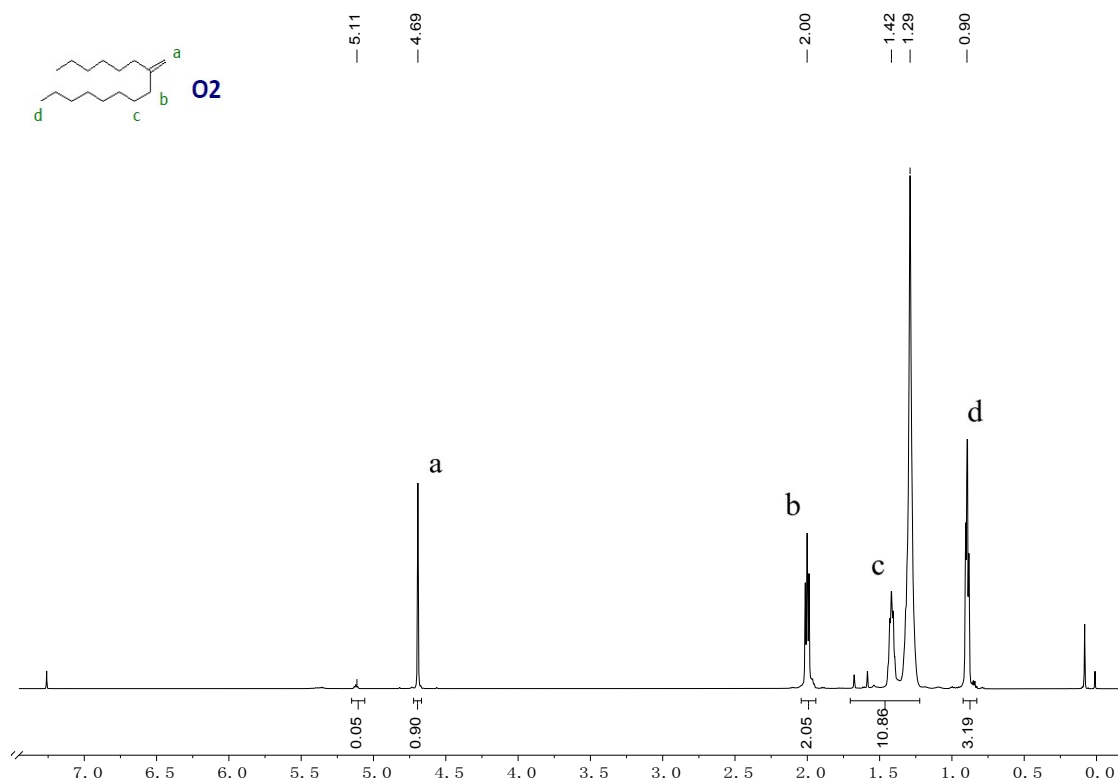


<sup>1</sup>H NMR spectrum of the Pentamer of 1-C<sub>6</sub>

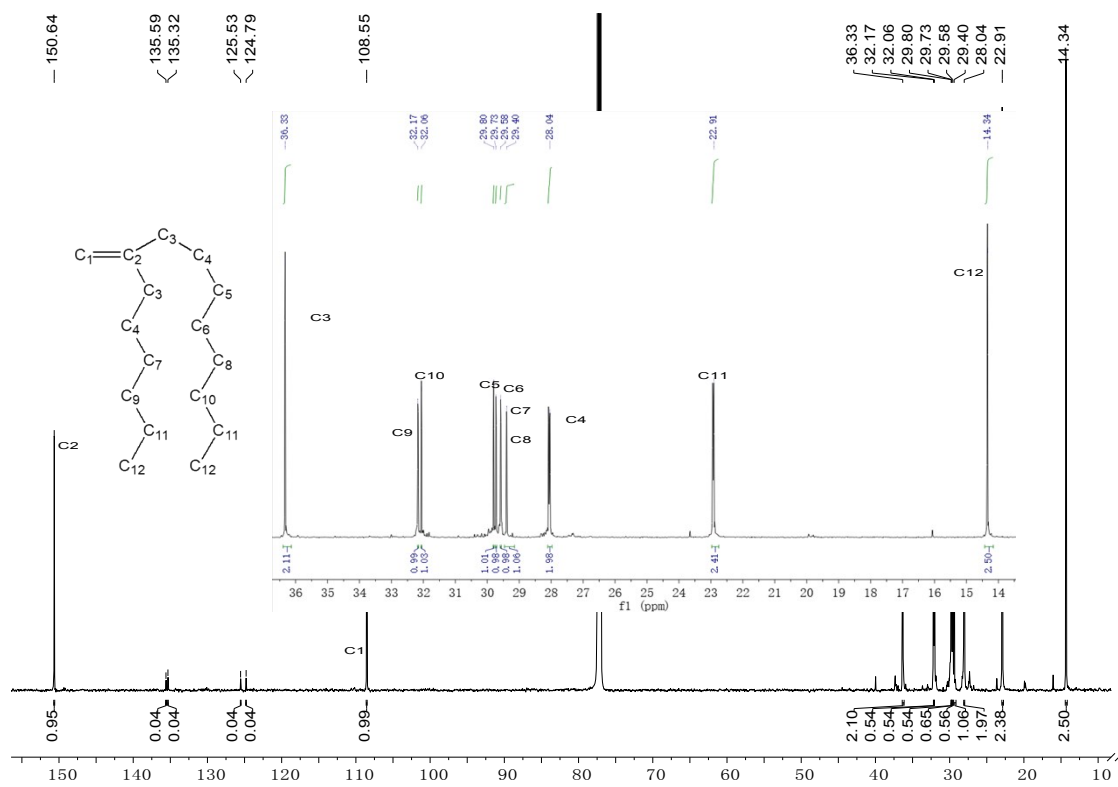


<sup>13</sup>C NMR spectrum of the Pentamer of 1-C<sub>6</sub>

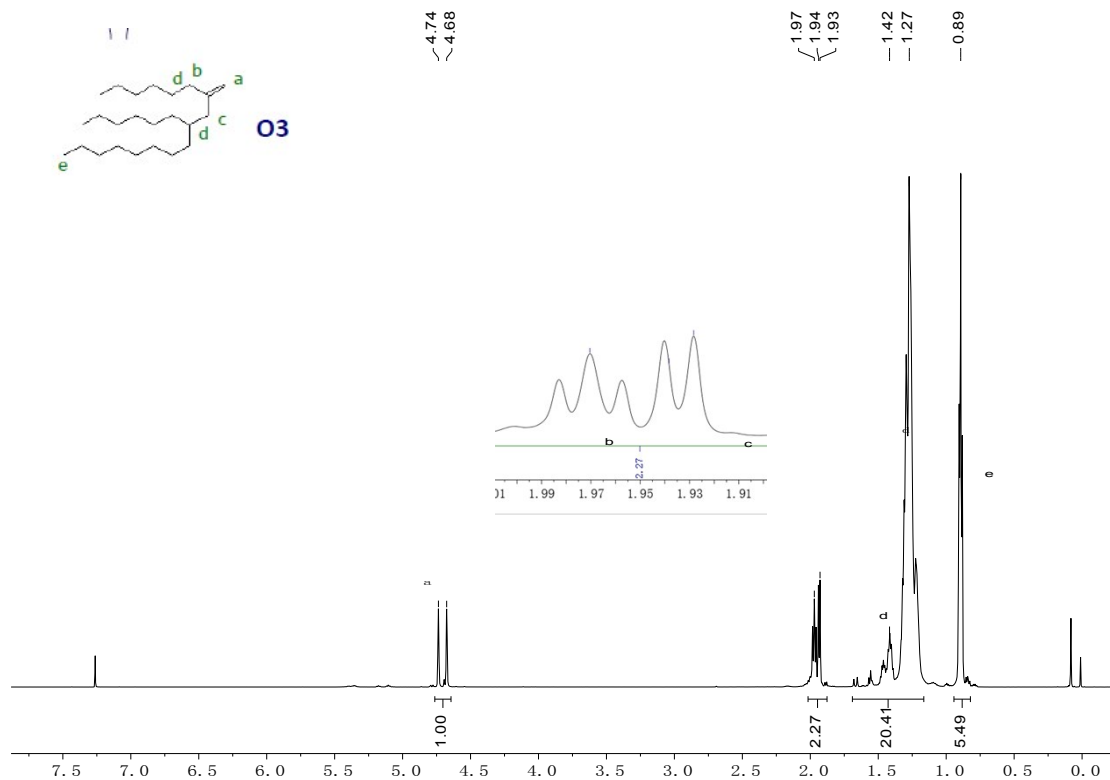
## 2. spectrum of 1-octene oligomer



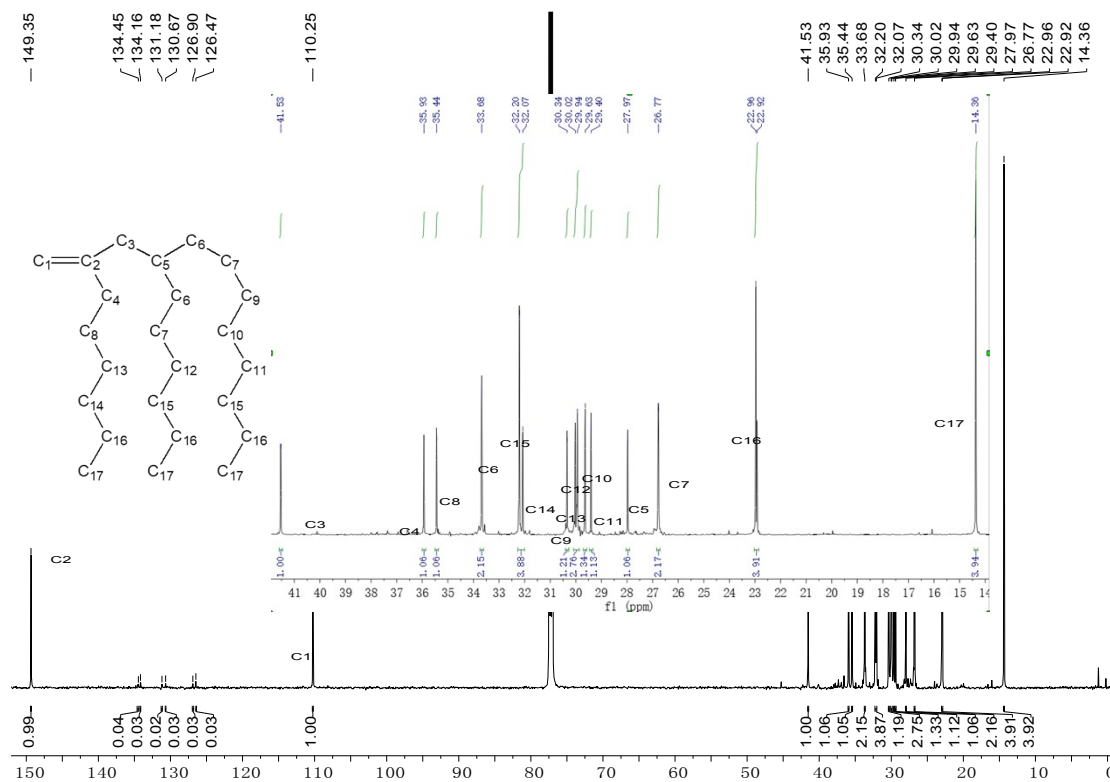
<sup>1</sup>H NMR spectrum of the dimer of 1-C<sub>8</sub>



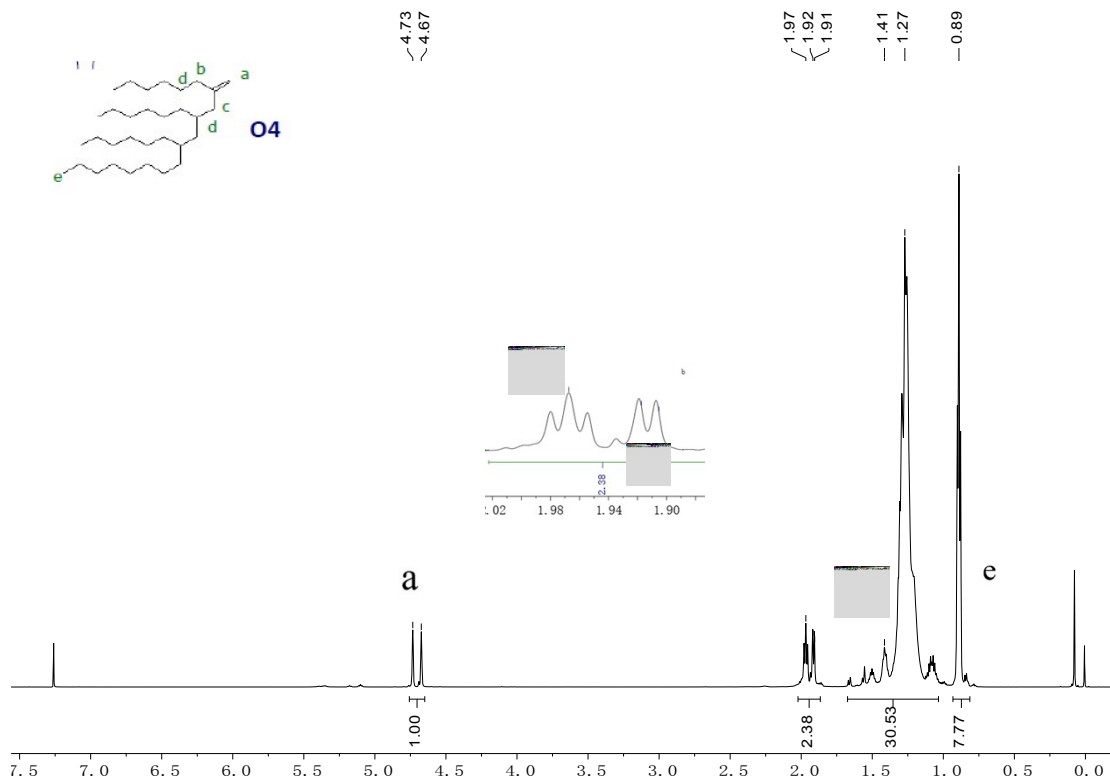
<sup>13</sup>C NMR spectrum of the dimer of 1-C<sub>8</sub>



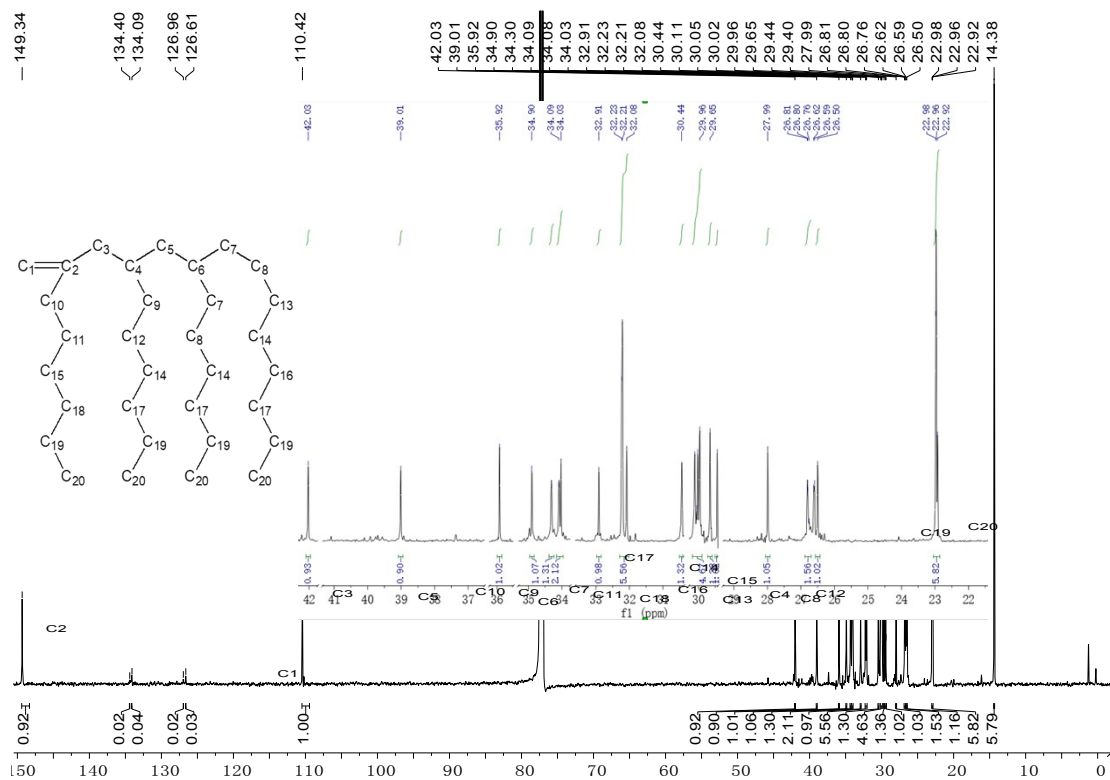
<sup>1</sup>H NMR spectrum of the Timer of 1-C<sub>8</sub>



<sup>13</sup>C NMR spectrum of the Timer of 1-C<sub>8</sub>



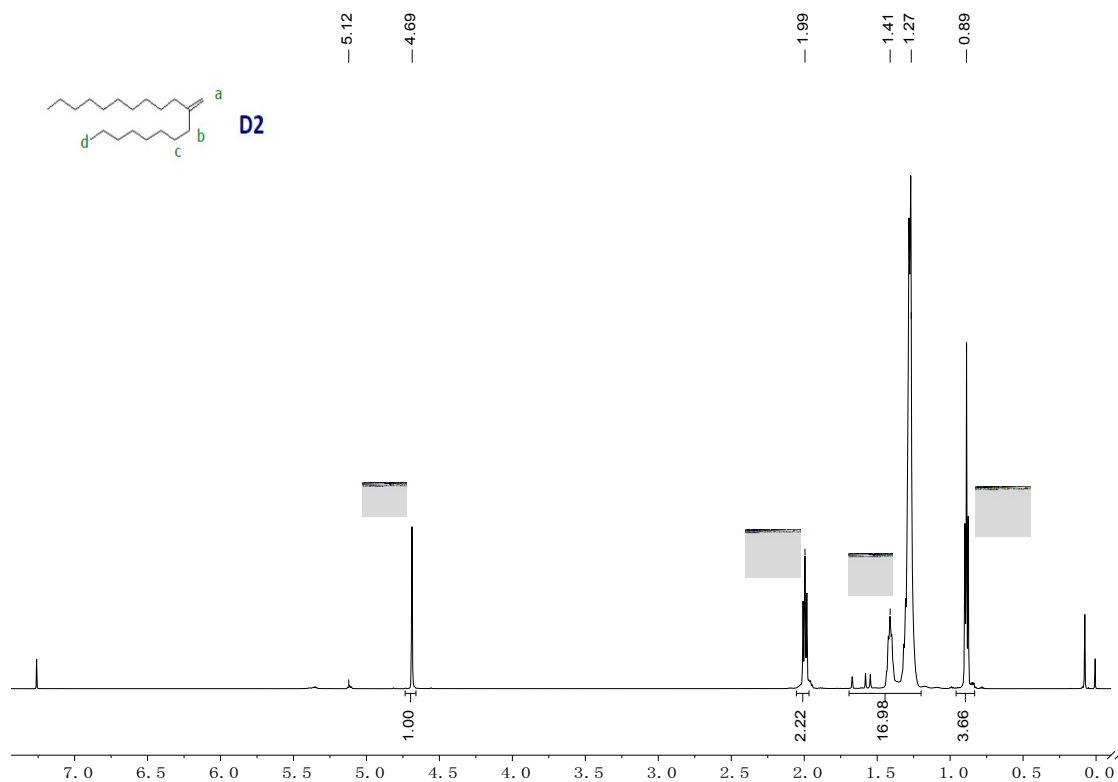
**<sup>1</sup>H NMR spectrum of the Tetramer of 1-C<sub>8</sub>**



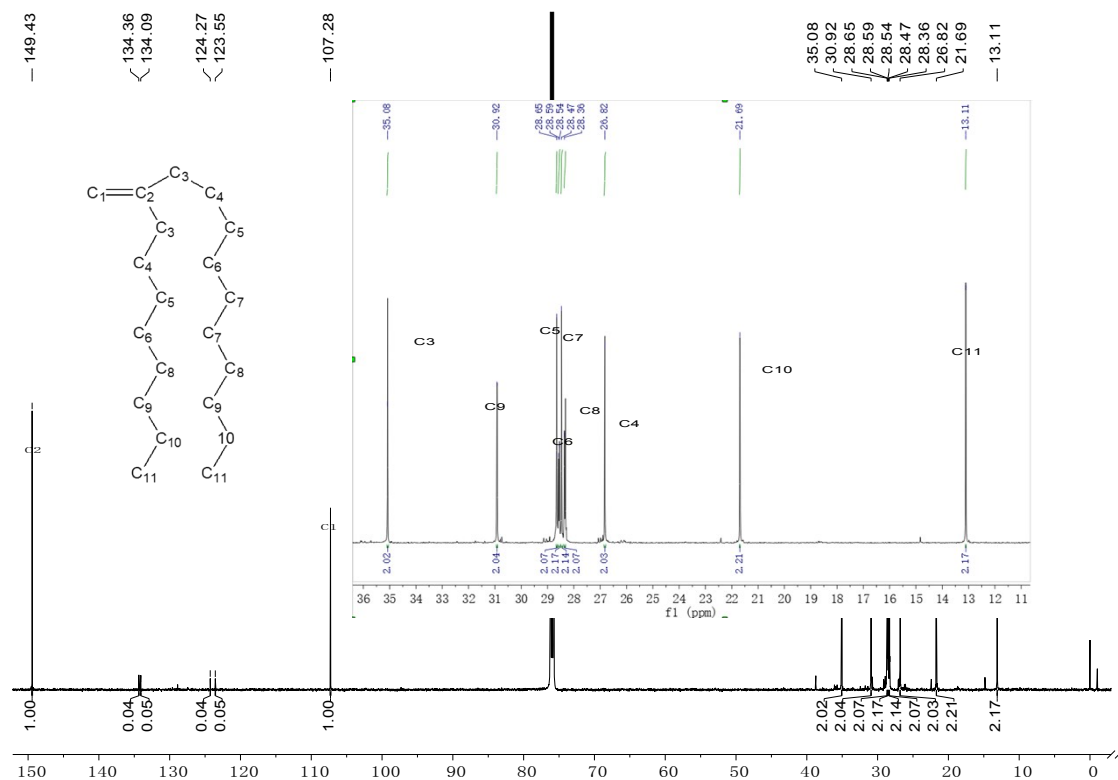
**<sup>13</sup>C NMR spectrum of the Tetramer of 1-C<sub>8</sub>**



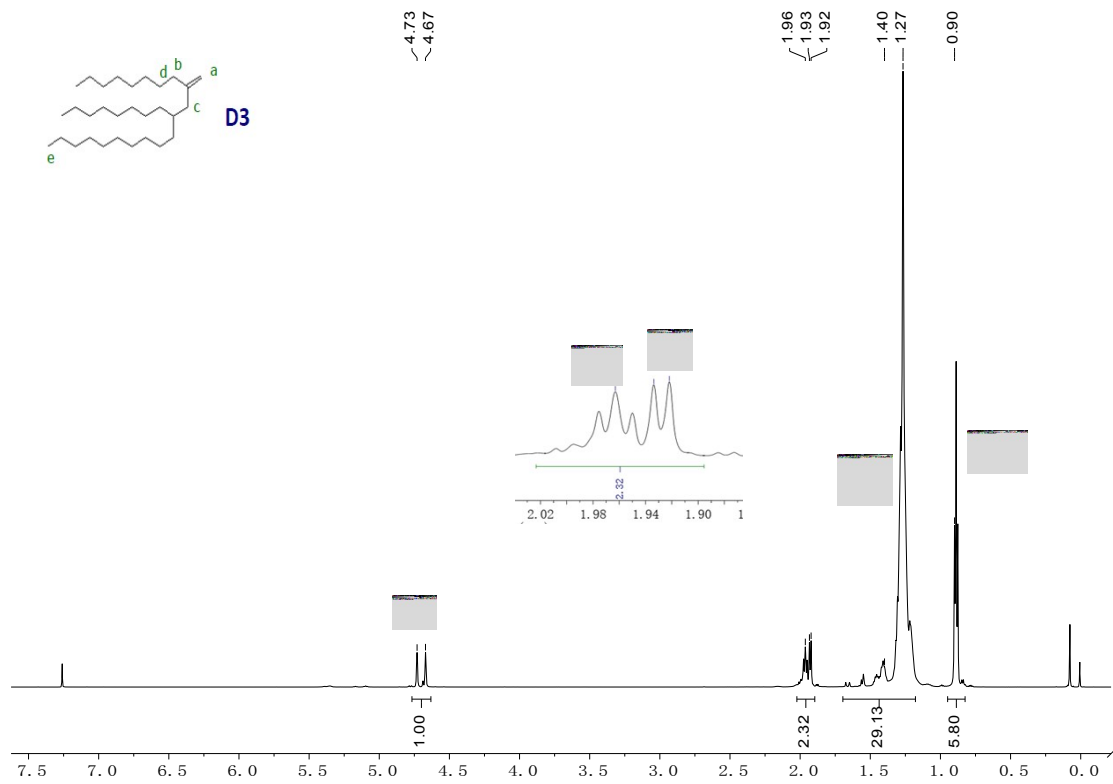
### 3. spectrum of 1-decene oligomer



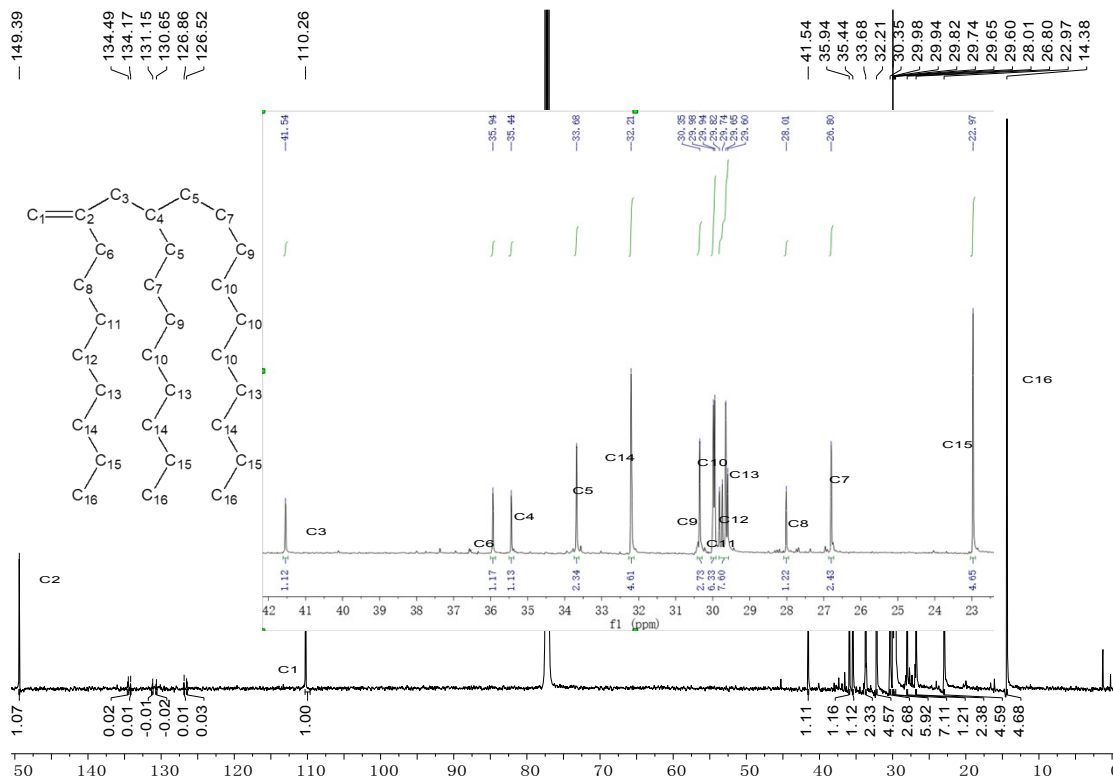
$^1\text{H}$  NMR spectrum of the dimer of 1-C<sub>10</sub>



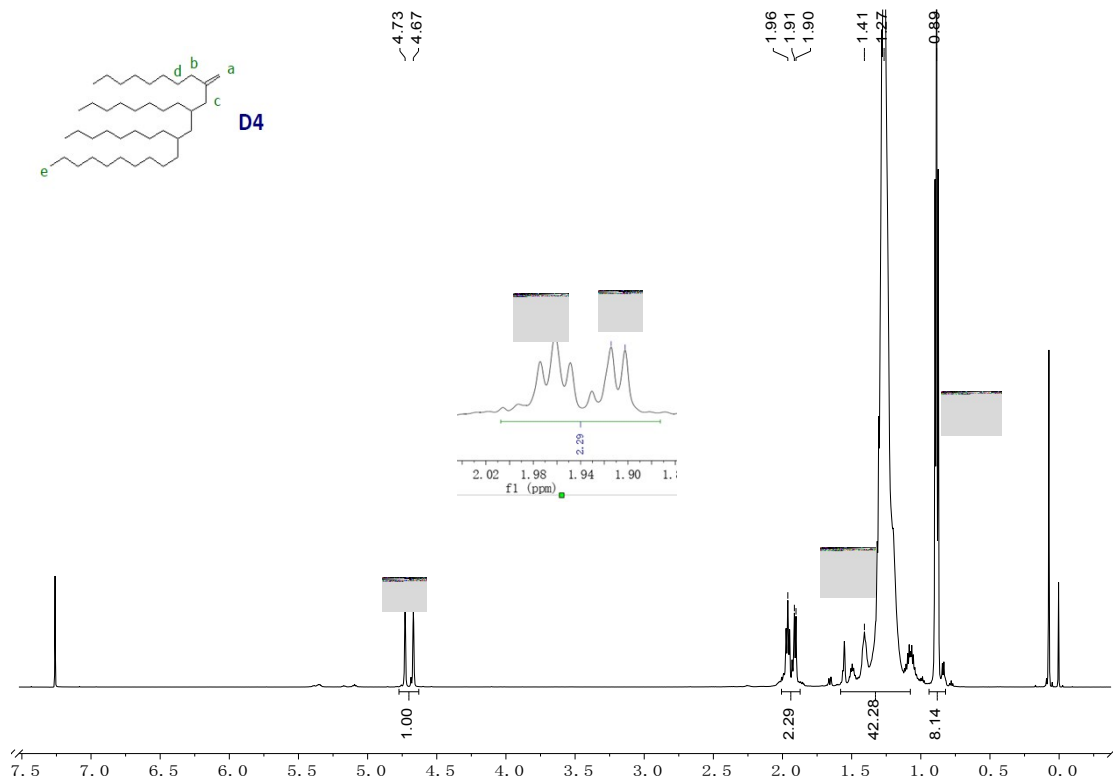
$^{13}\text{C}$  NMR spectrum of the dimer of 1-C<sub>10</sub>



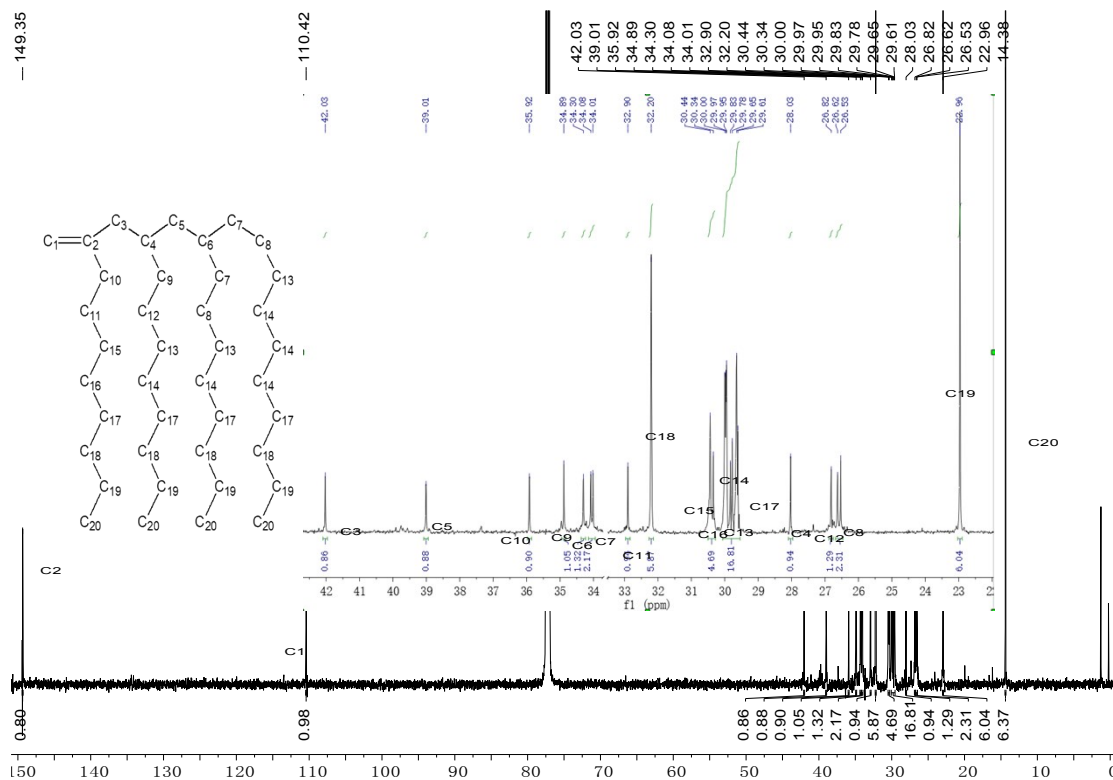
**<sup>1</sup>H NMR spectrum of the Timer of 1-C<sub>10</sub>**



**<sup>13</sup>C NMR spectrum of the Timer of 1-C<sub>10</sub>**

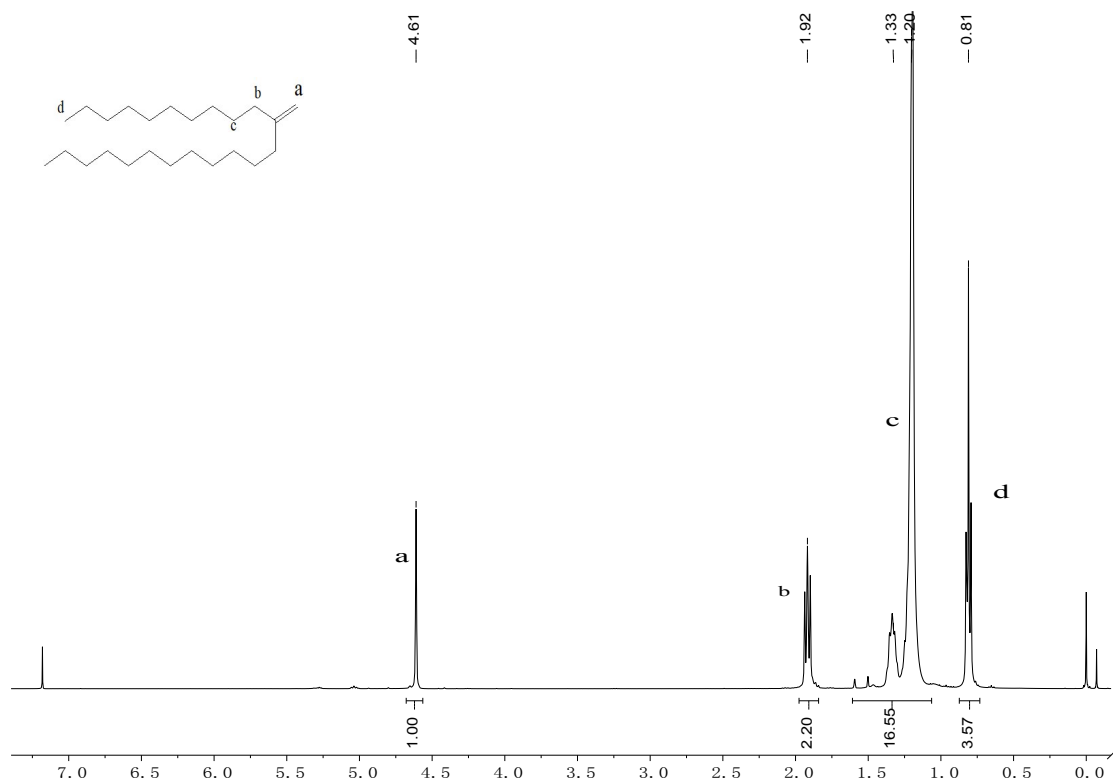


<sup>1</sup>H NMR spectrum of the Tetramer of 1-C<sub>10</sub>

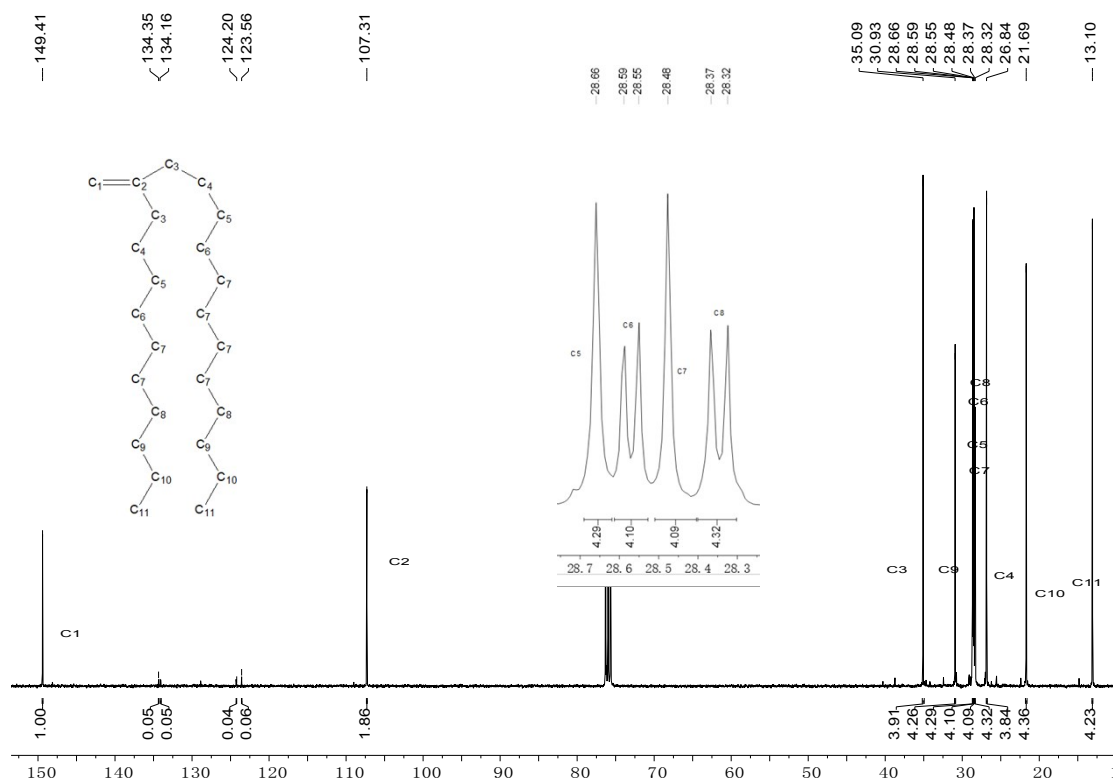


<sup>13</sup>C NMR spectrum of the Tetramer of 1-C<sub>10</sub>

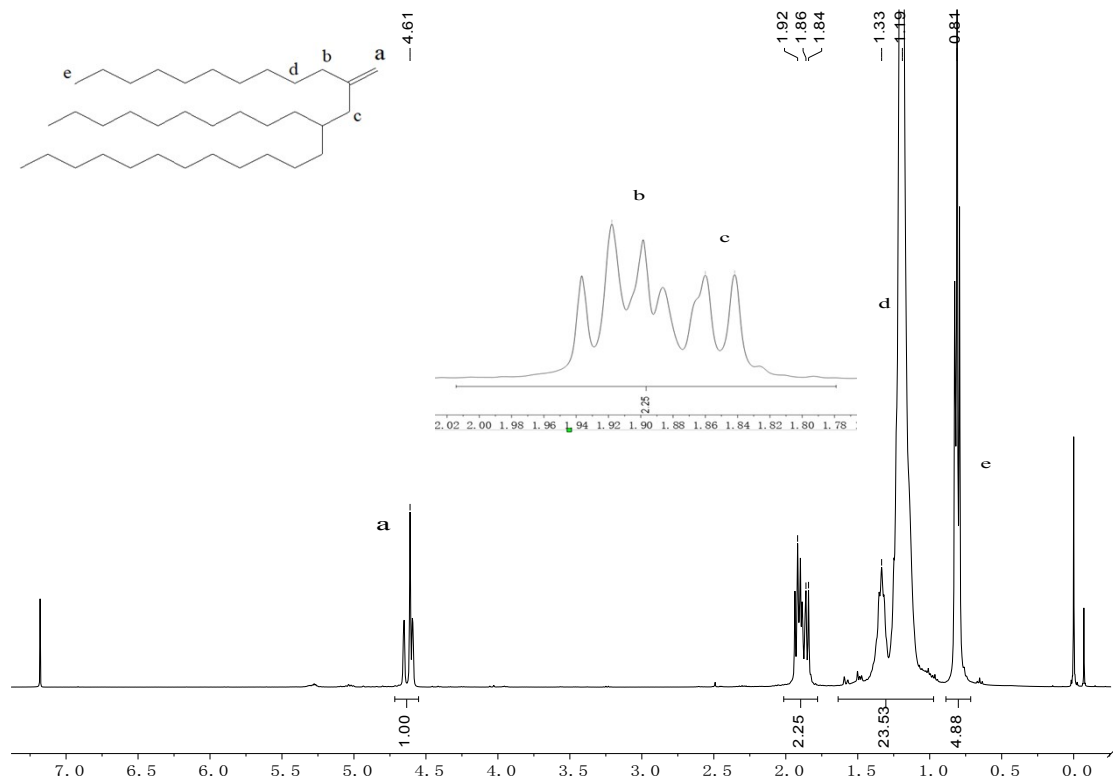
## 4. spectrum of 1-dodecene oligomer



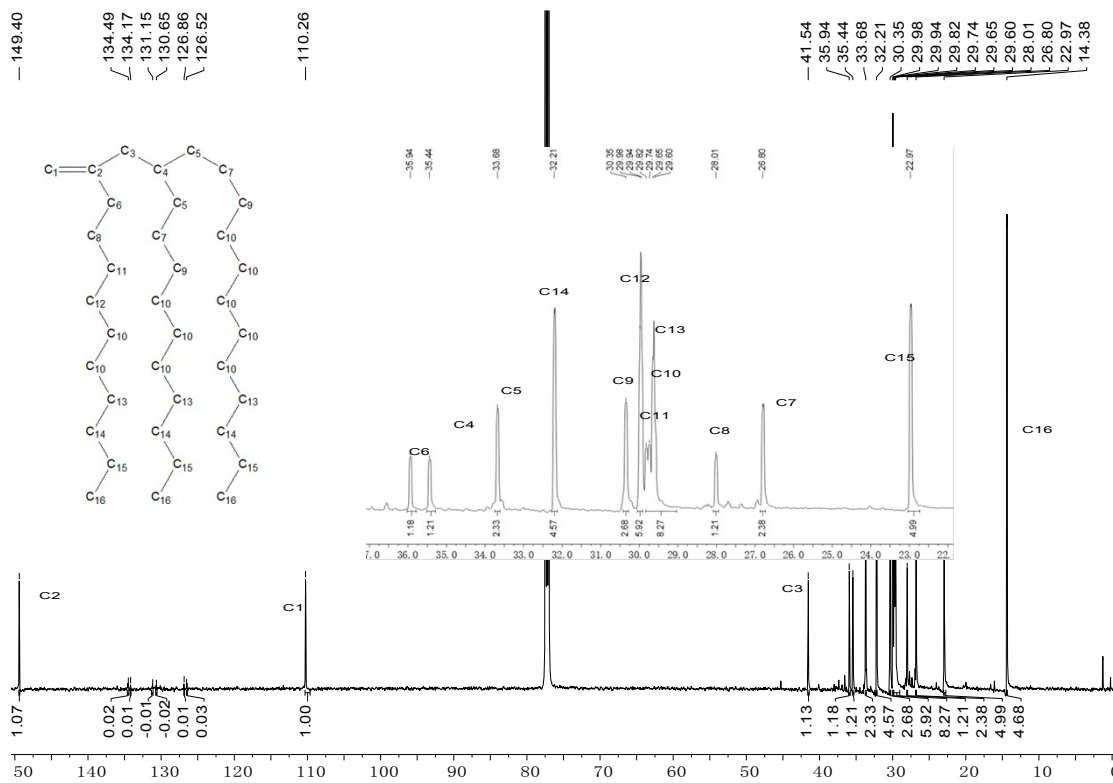
$^1\text{H}$  NMR spectrum of the dimer of 1-C<sub>12</sub>



$^{13}\text{C}$  NMR spectrum of the dimer of 1-C<sub>12</sub>



$^1\text{H}$  NMR spectrum of the Timer of 1- $\text{C}_{12}$



$^{13}\text{C}$  NMR spectrum of the Timer of 1- $\text{C}_{12}$