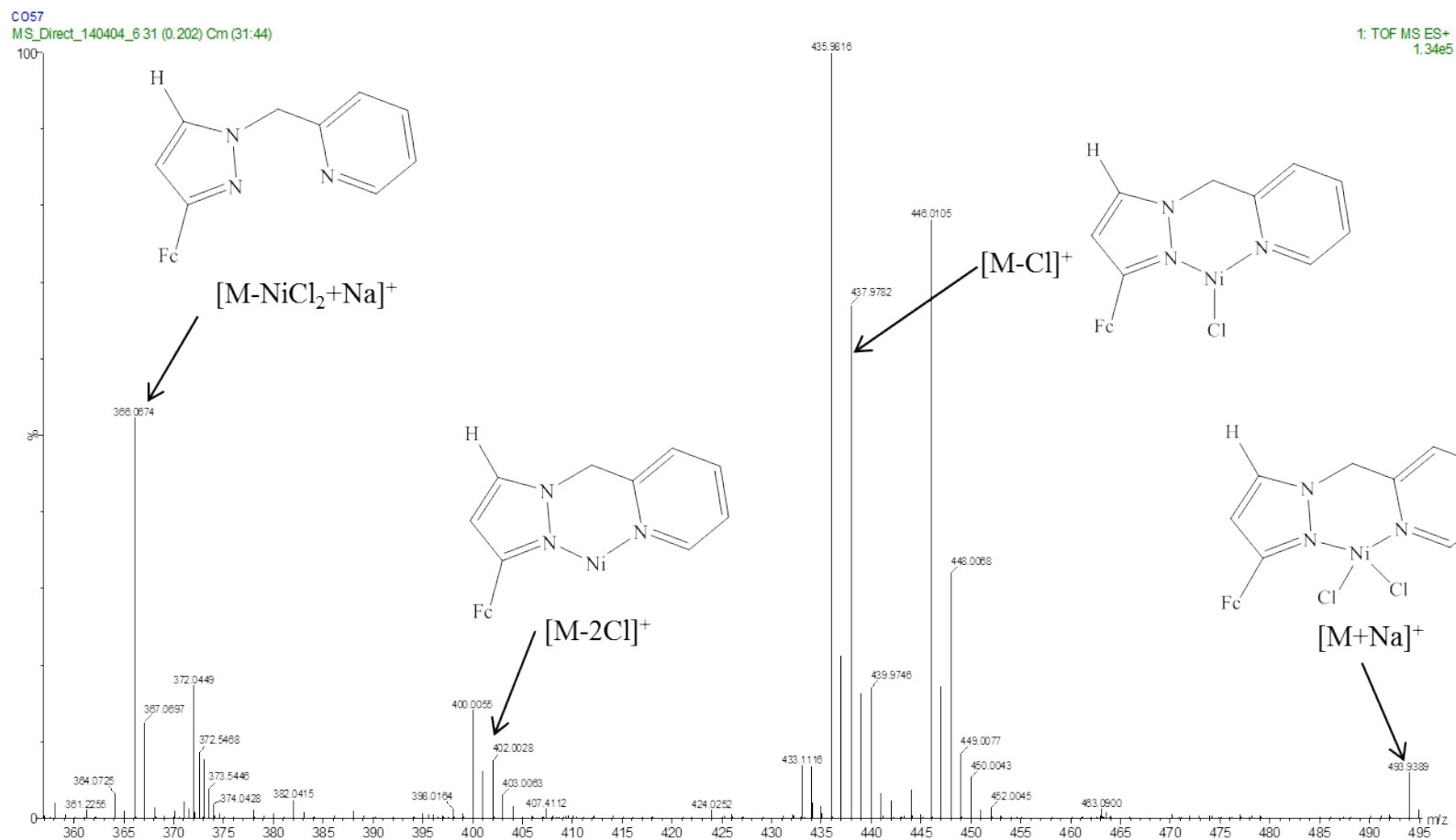
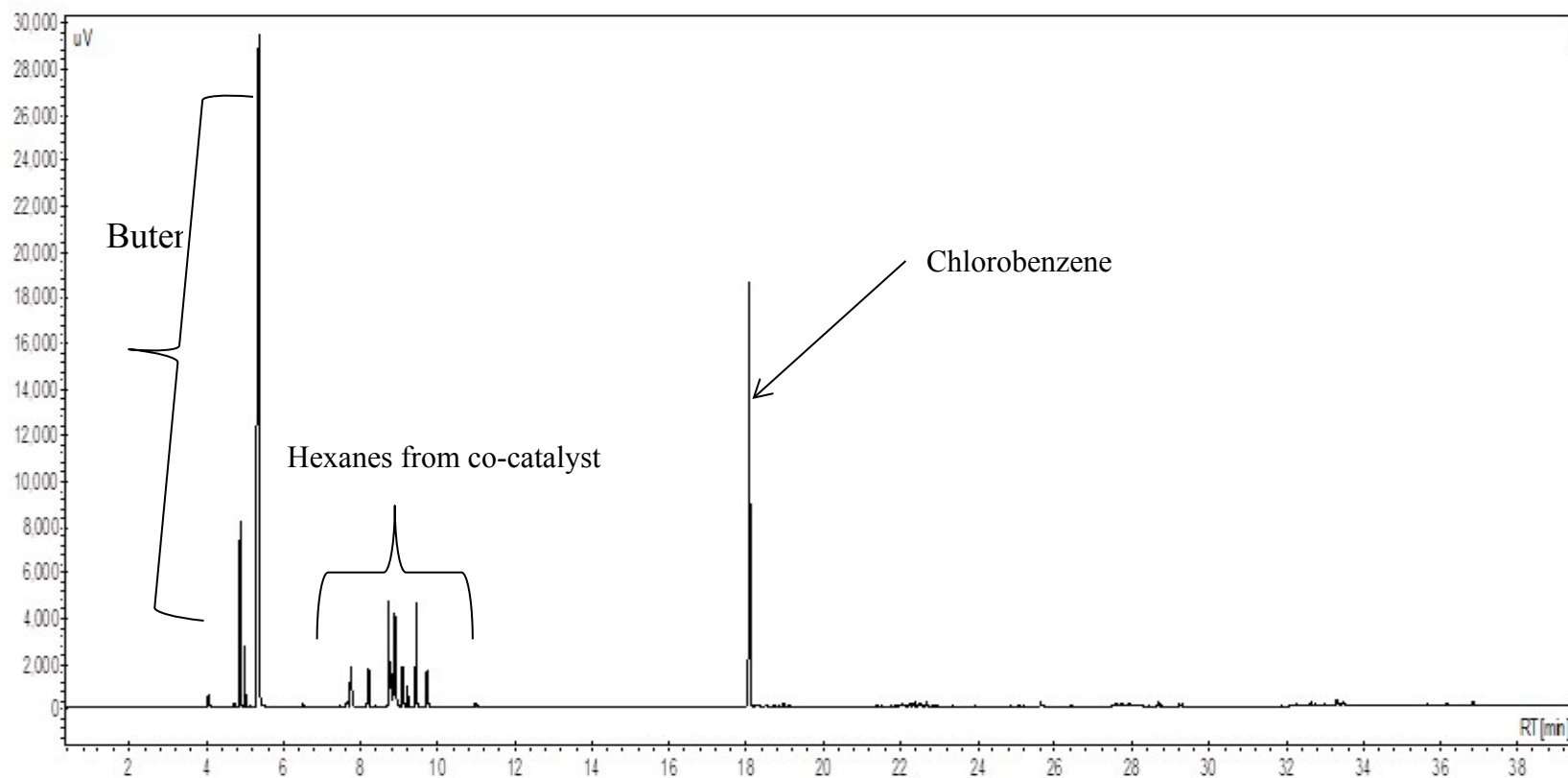


**Table S1:** Crystal data and structure refinement for compounds **3a** and **4a**

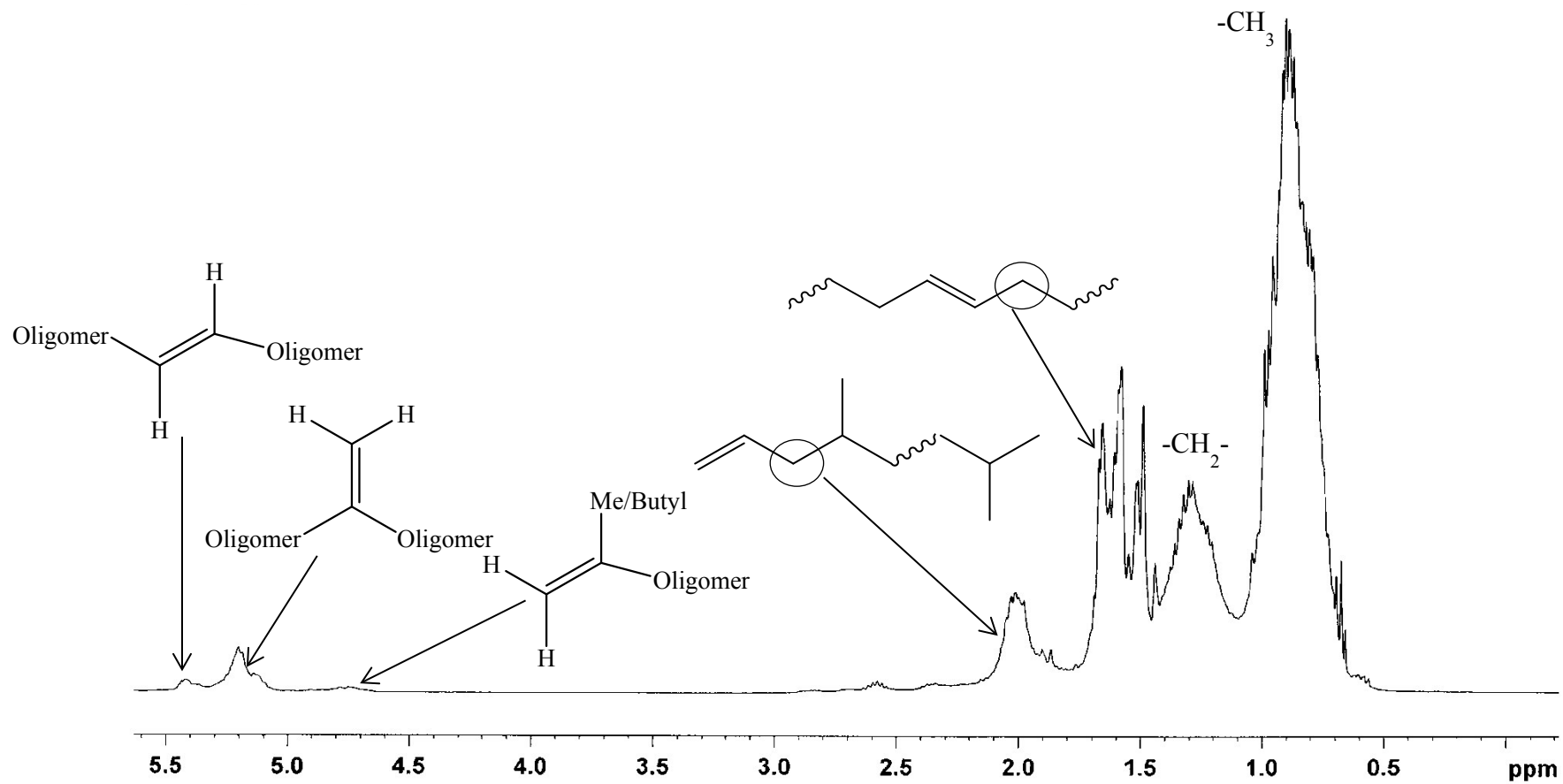
	<b>3a</b>	<b>4a</b>
Empirical formula	C <sub>19</sub> H <sub>19</sub> Br <sub>2</sub> FeN <sub>3</sub> Ni	C <sub>20</sub> H <sub>19</sub> Br <sub>2</sub> FeN <sub>3</sub> Ni
Formula weight	563.75	575.76
Temperature/ K	100(2)	100(2)
Wavelength/Å	1.54178	1.54178 Å
Crystal system	monoclinic	monoclinic
Space group	P2 <sub>1</sub> /c	P2 <sub>1</sub> /c
a/ Å	14.1412(4)	14.2482(3)
b/ Å	9.6921(3)	9.8031(2)
c/ Å	13.6154(4)	14.1378(3)
a/°	90	90
β/°	93.230(1)	96.7930(10)
γ/°	90	90
Volume (Å <sup>3</sup> )	1863.13(10)	1960.86(7)
Z	4	4
Density (Mg/m <sup>3</sup> )	2.010	1.950
Final R indices	R1 = 0.0208,	R1 = 0.0510,
[I>2sigma(I)]	wR2 = 0.0535	wR2 = 0.1294



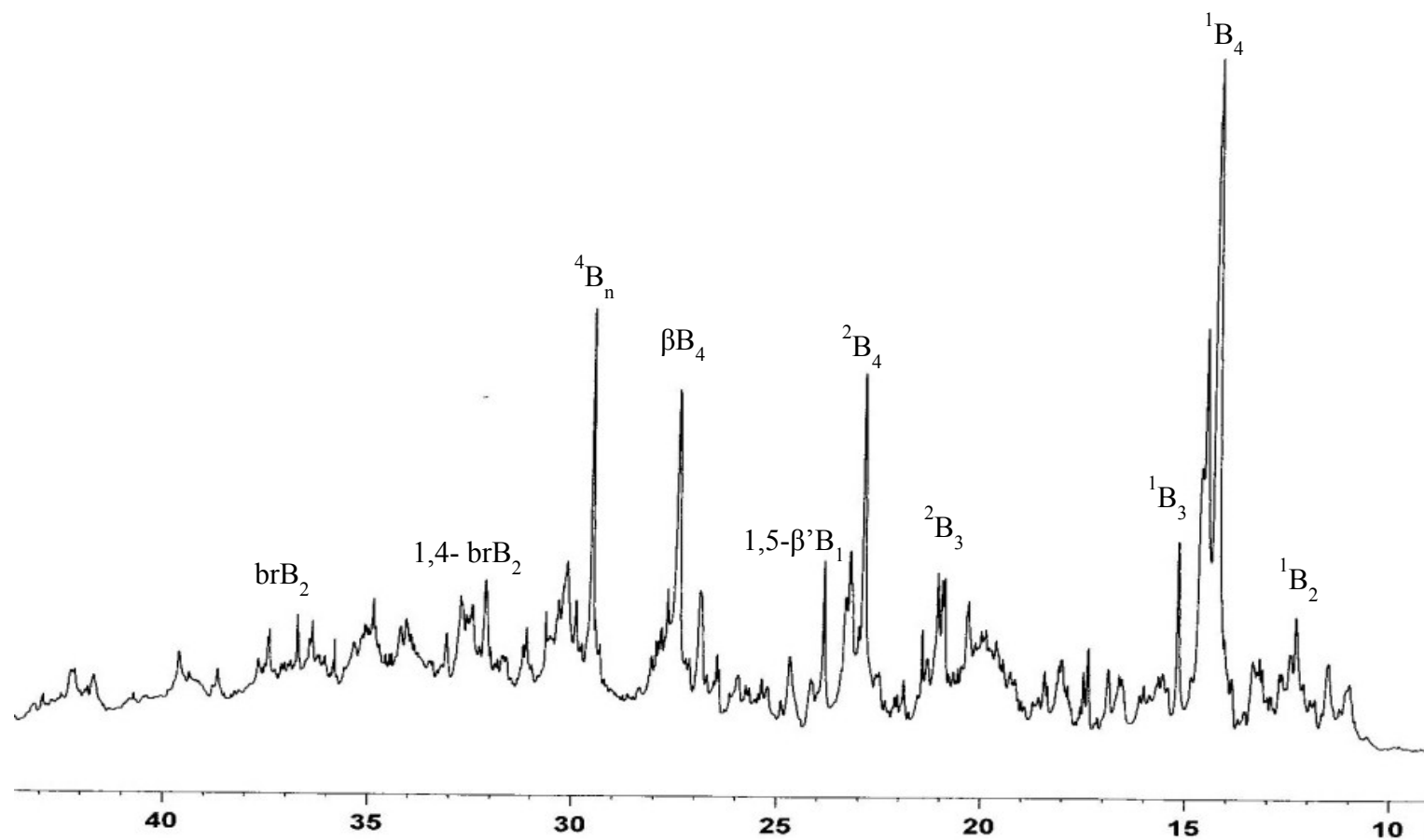
**Figure S1:** Positive ion mass spectrum of complex **7** showing various fragments of the molecule



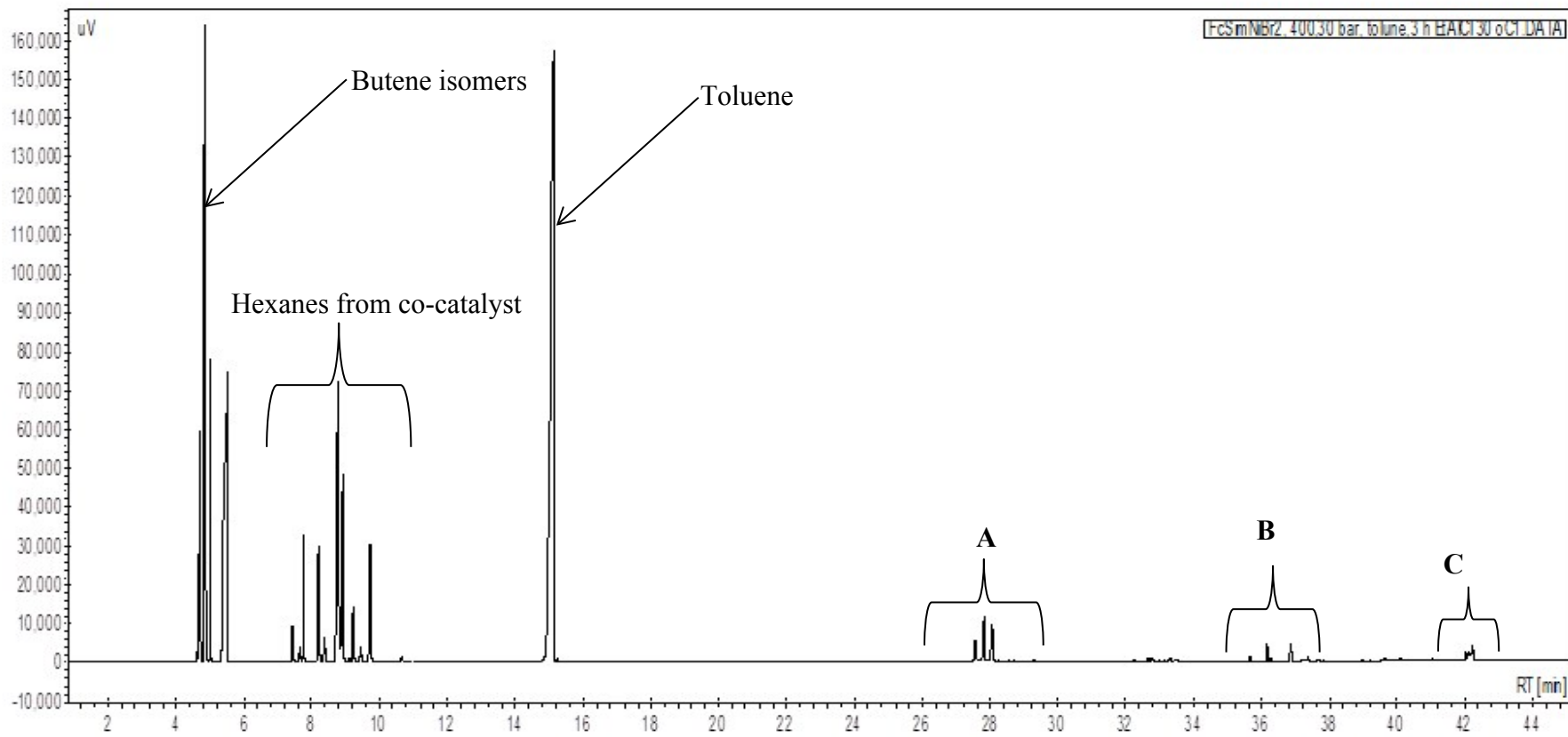
**Figure S2:** A typical GC of ethylene oligomerisation product using pre-catalysts **1-8** with  $\text{EtAlCl}_2$  in chlorobenzene



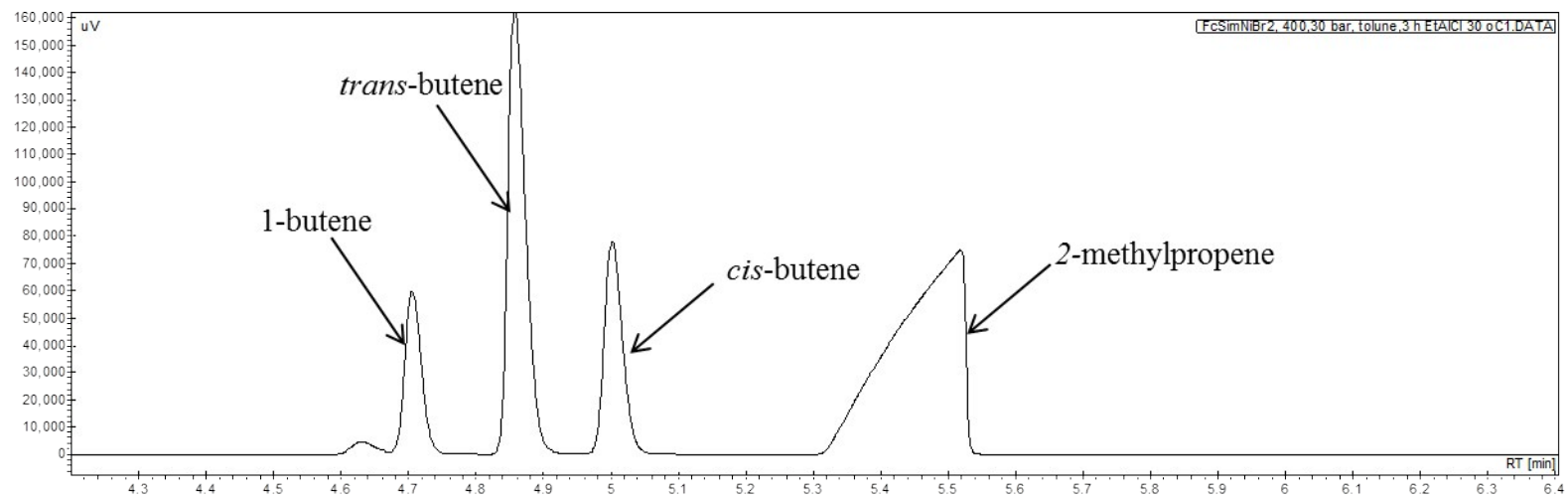
**Figure S3:** A typical  $^1\text{H}$  NMR spectrum of oligomers produced using pre-catalysts **1-8** with  $\text{EtAlCl}_2$  in chlorobenzene run in  $\text{CDCl}_3$  at  $25\text{ }^\circ\text{C}$



**Figure S4:** A typical  $^{13}\text{C}\{^1\text{H}\}$  NMR spectrum of oligomers formed using pre-catalyst **1-8** with  $\text{EtAlCl}_2$  in chlorobenzene run in  $\text{CDCl}_3$  at 25 °C

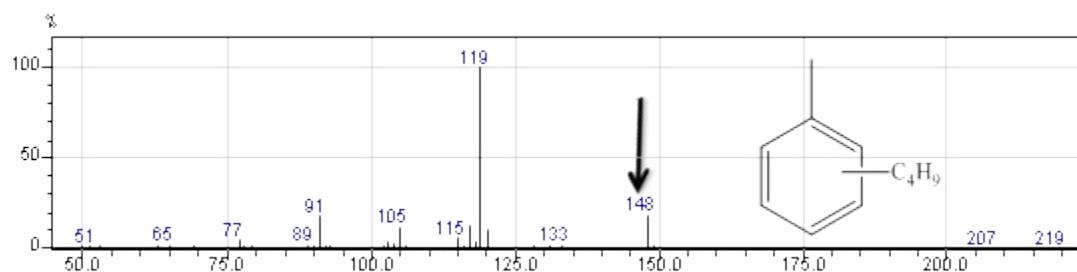


**Figure S5:** A typical GC of ethylene oligomerisation and Friedel-Crafts alkylated toluene using pre-catalysts **2** and **3** with  $\text{EtAlCl}_2$  in toluene. **A** = isomers of mono-butyltoluene, **B** = isomers of di-butyltoluene and **C** = tri-butyltoluene.

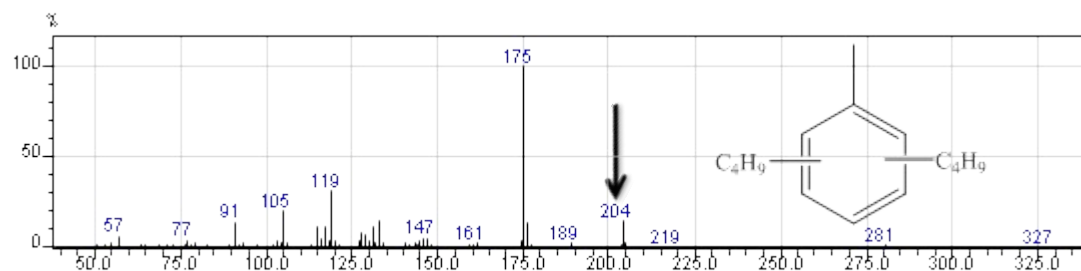


**Figure S6:** GC of the expanded portion of Figure S5 showing isomers of butene synthesized with pre-catalysts **2** and **3**

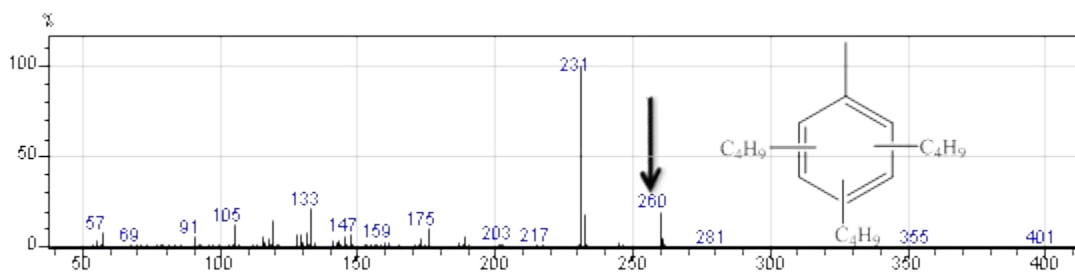
**Mass spectrum at retention time between 27 min and 29 min**



**Mass spectrum at retention time between 35 min and 38 min**



**Mass spectrum at retention time 43 min**



**Figure S7:** EI mass spectra of butyltoluenes prepared using pre-catalysts **2** and **3** with EtAlCl<sub>2</sub> in toluene