Direct Synthesis of Polyethylene Thermoplastic Elastomers Using Hybrid Bulky Acenaphthene-Based α-Diimine Ni(II) Catalysts

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1. Spectra Data

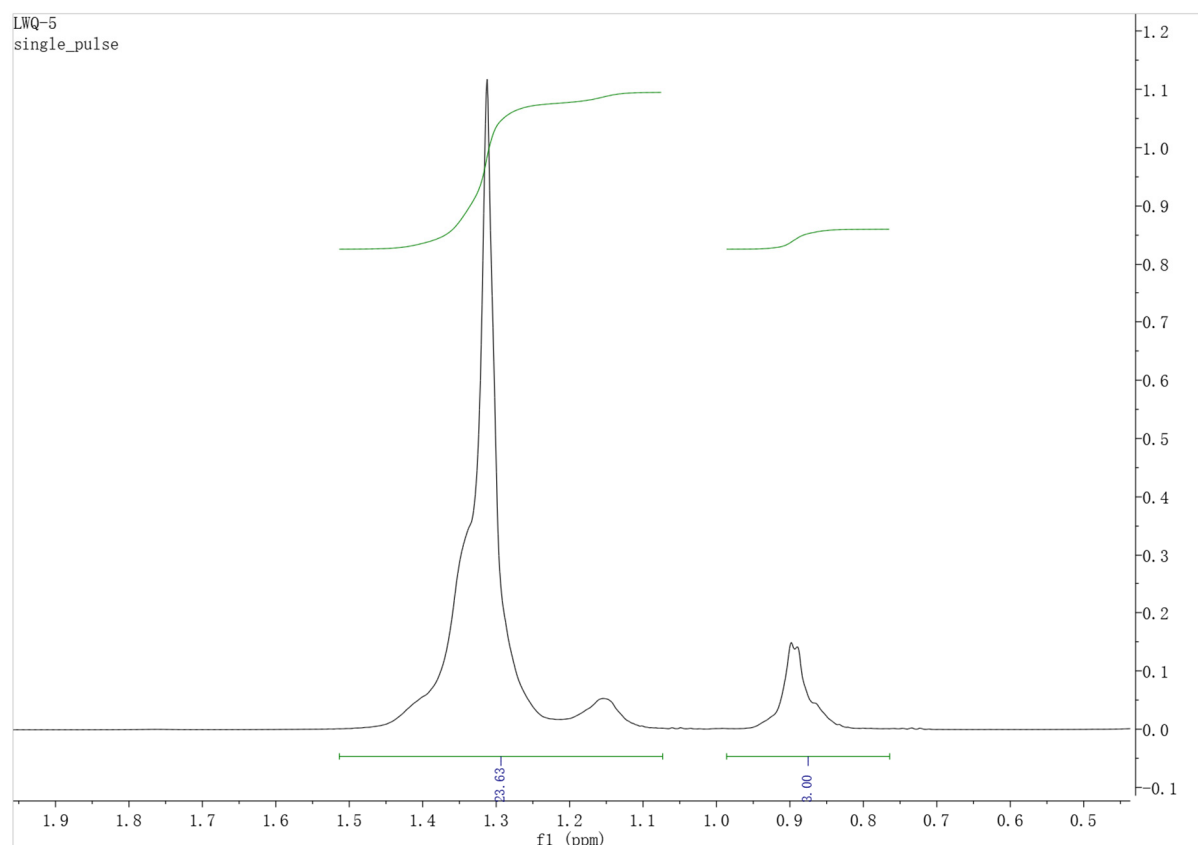### 1.1 ^{1}H NMR of Representative Polyethylene.

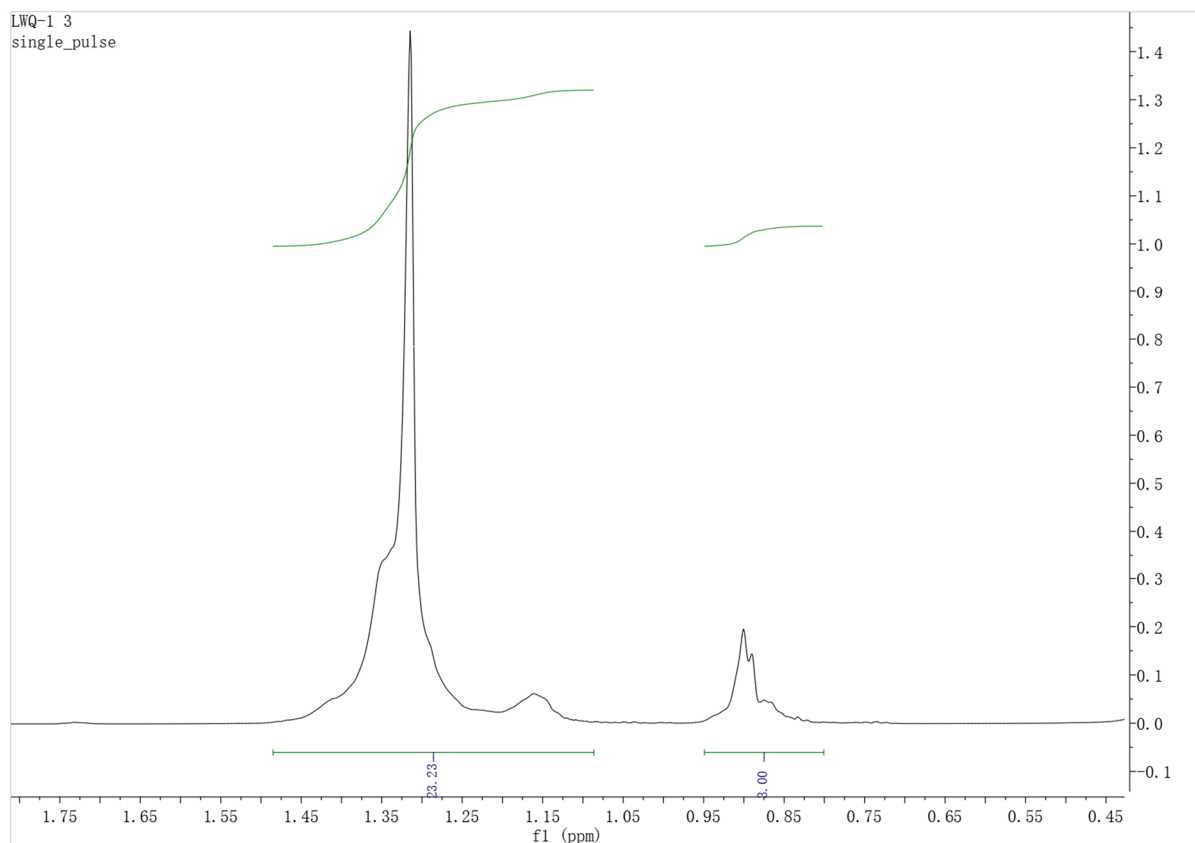**Figure S1.** ^{1}H NMR spectrum of the polymer from table 1, entry 4 (d[6]-benzene, 70 °C).

Figure S2. ^{1}H NMR spectrum of the polymer from table 1, entry 5 (d[6]-benzene, 70 °C).

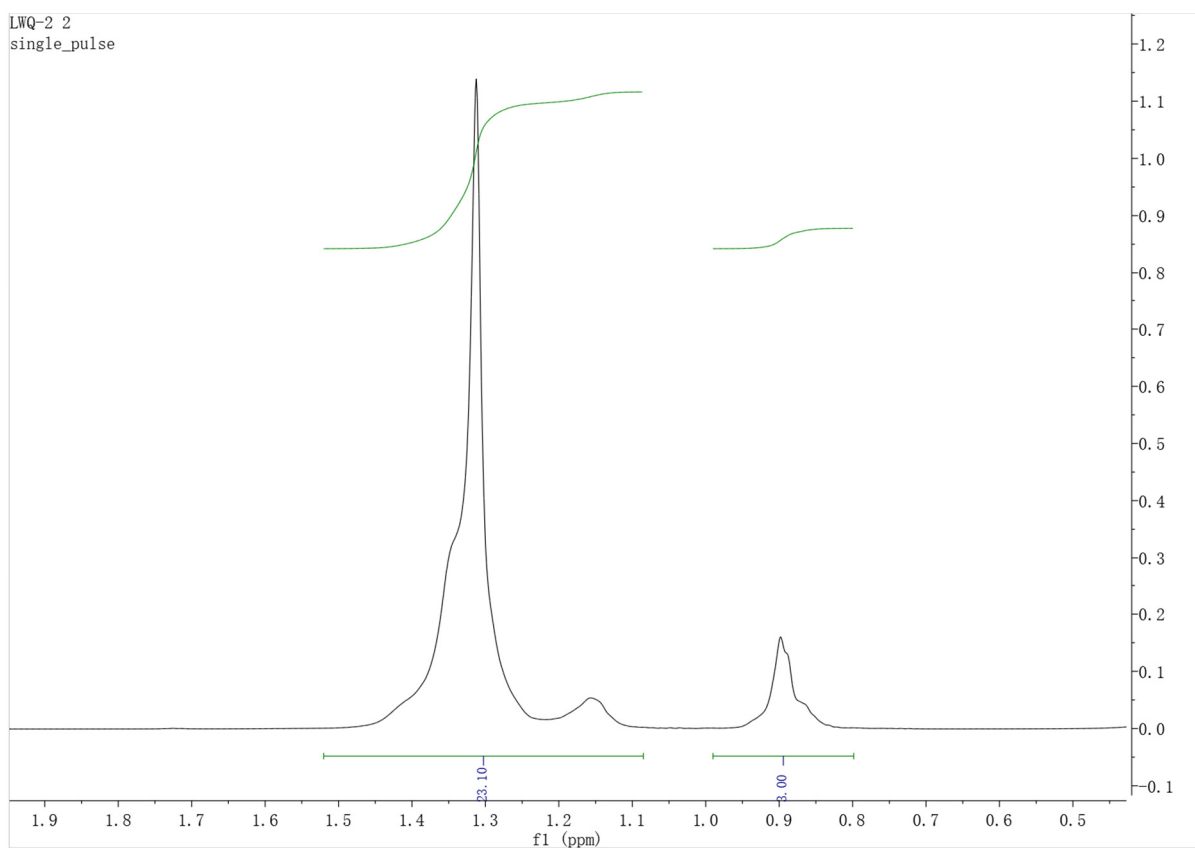**Figure S3.** ^{1}H NMR spectrum of the polymer from table 1, entry 6 (d[6]-benzene, 70 °C).

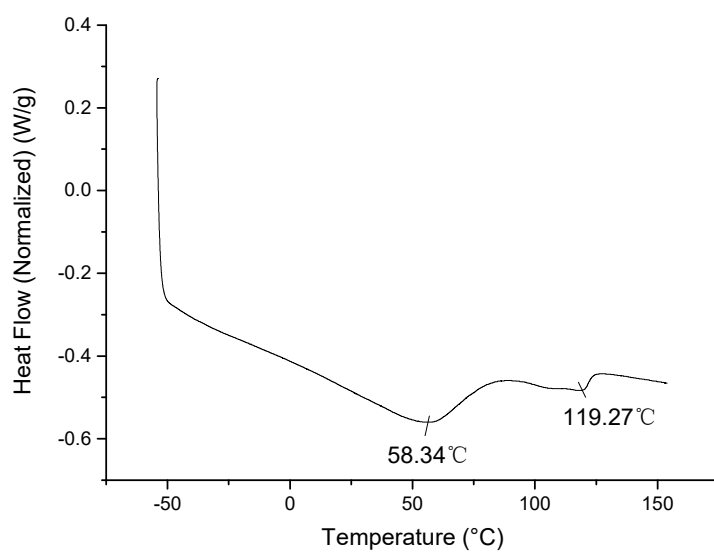## 1.2 DSC and GPC of Representative Polyethylenes.

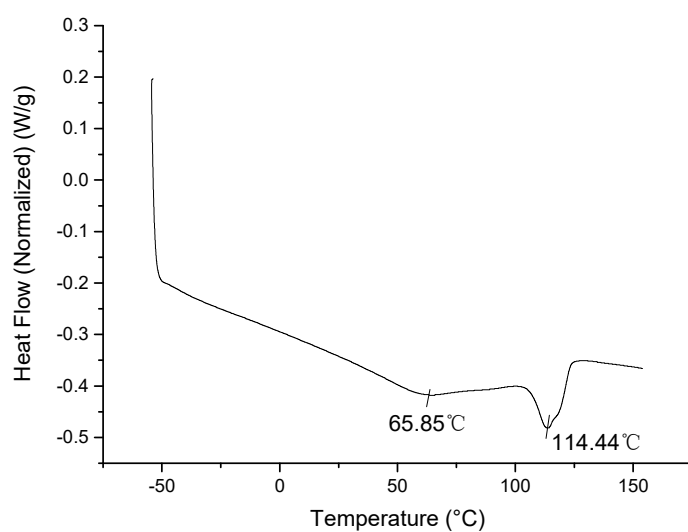**Figure S4.** DSC of the polymer from table 1, entry 1.

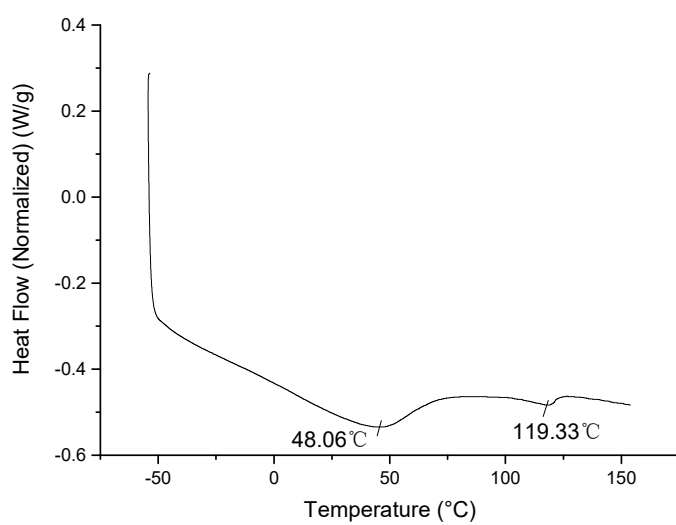**Figure S5.** DSC of the polymer from table 1, entry 2.
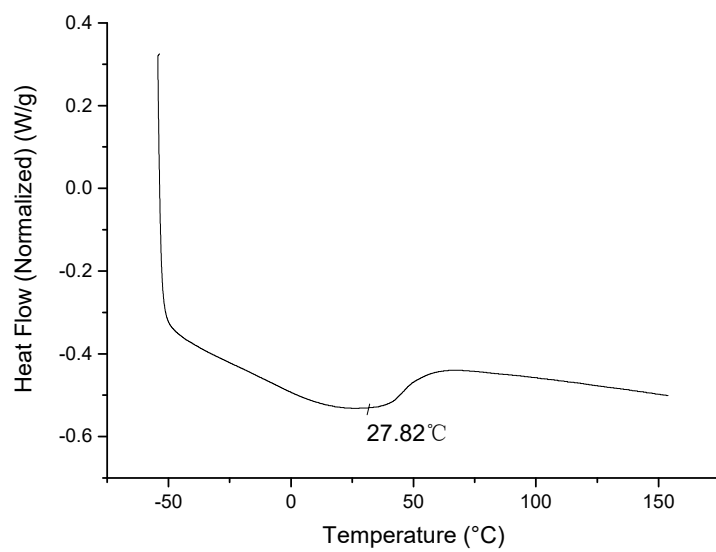
Figure S6. DSC of the polymer from table 1, entry 3.

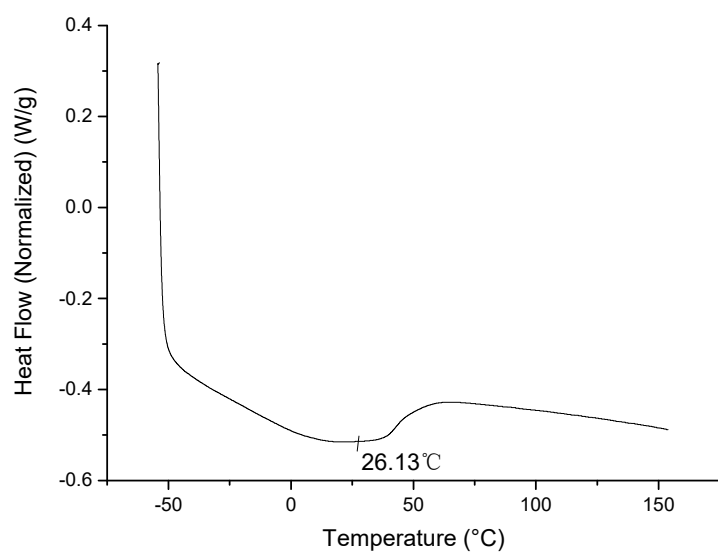

Figure S7. DSC of the polymer from table 1, entry 4.

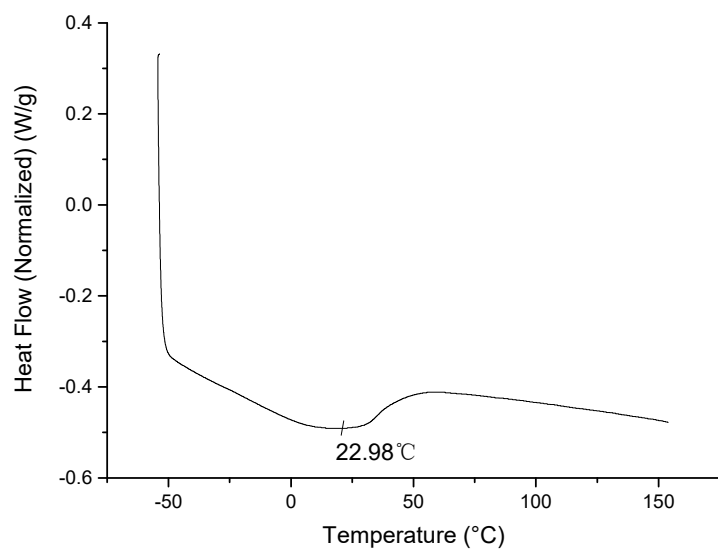**Figure S8.** DSC of the polymer from table 1, entry 5.

Figure S9. DSC of the polymer from table 1, entry 6.

MW Averages

Mp: 255739   Mn: 195932   Mv: 312451   Mw: 356133
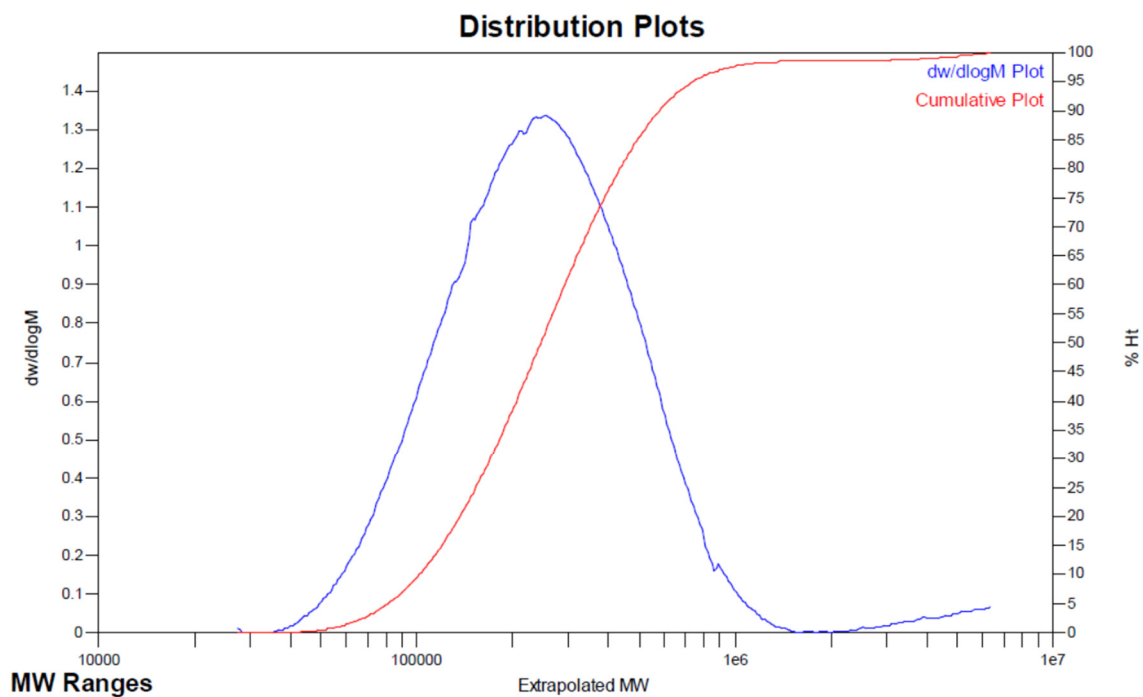Mz: 1287861   Mz+1: 3893975   PD: 1.8176

Figure S10. GPC of the polymer from table 1, entry 1.

MW Averages

Mp: 555004   Mn: 335343   Mv: 579452   Mw: 624788
Mz: 1000112   Mz+1: 1422377   PD: 1.8631
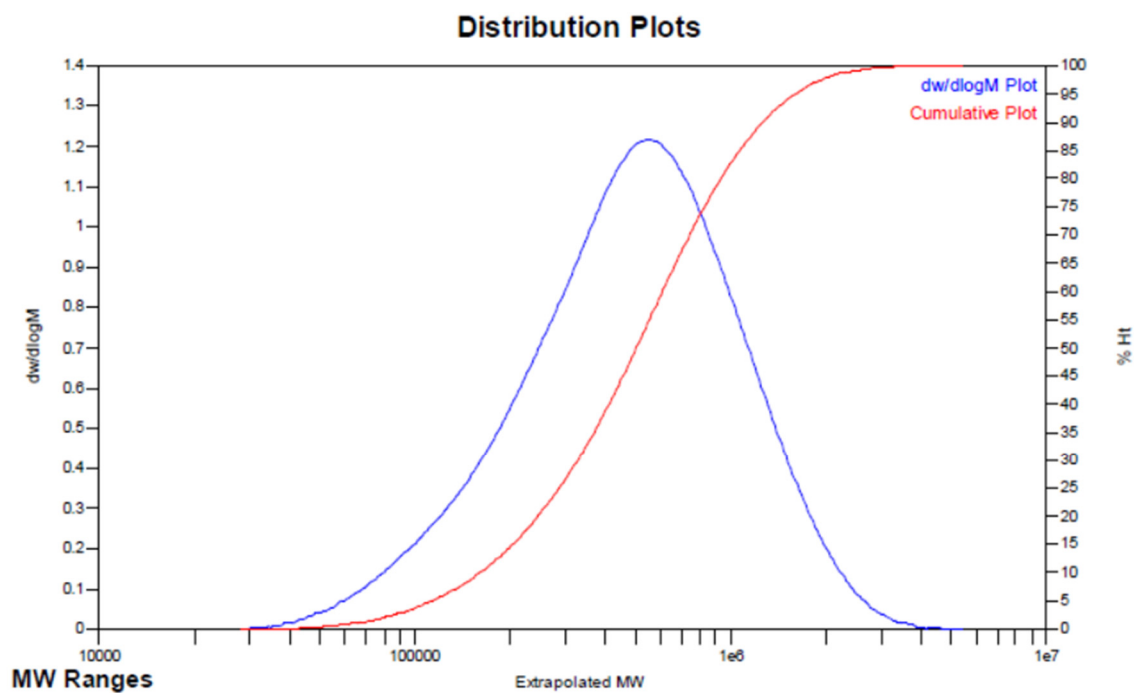

Figure S11. GPC of the polymer from table 1, entry 4.

MW Averages

Mp: 626661   Mn: 352439   Mv: 642506   Mw: 706062

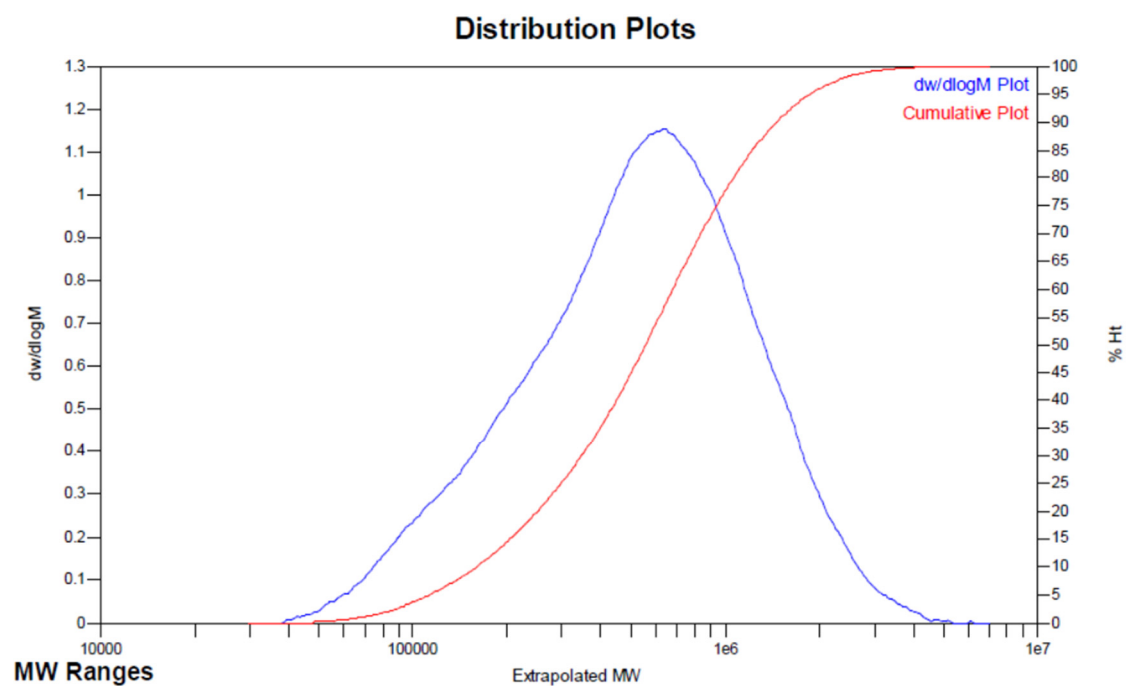Mz: 1190872   Mz+1: 1749169   PD: 2.0034

Figure S12. GPC of the polymer from table 1, entry 7.

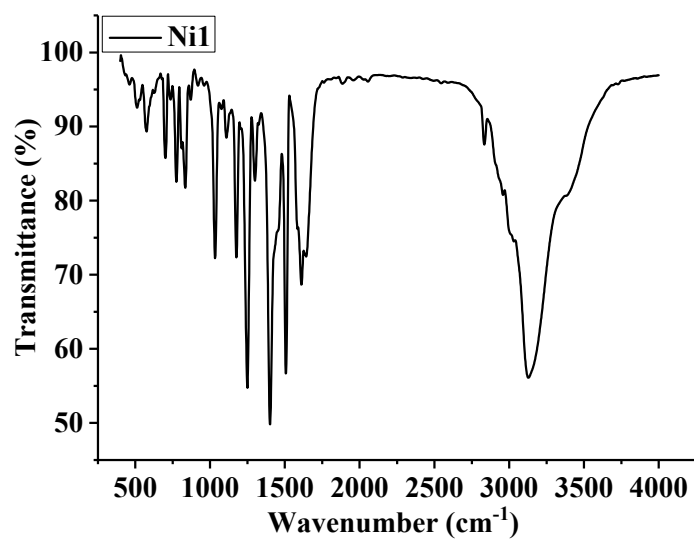## 1.3 Infrared Spectra of the Complexes.
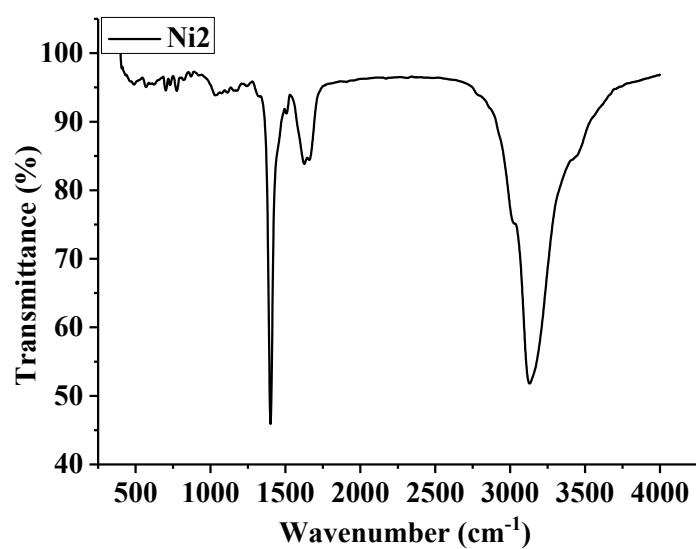

Figure S13. IR of the complex **Ni1**.
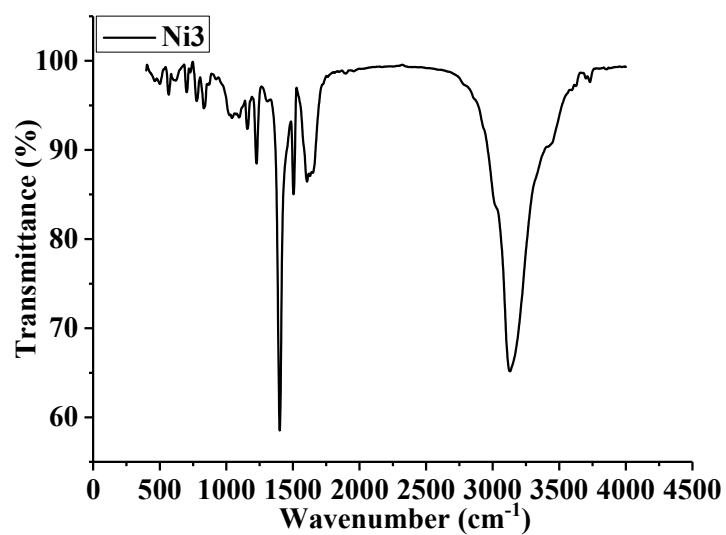
Figure S14. IR of the complex **Ni2**.

Figure S15. IR of the complex **Ni3**.

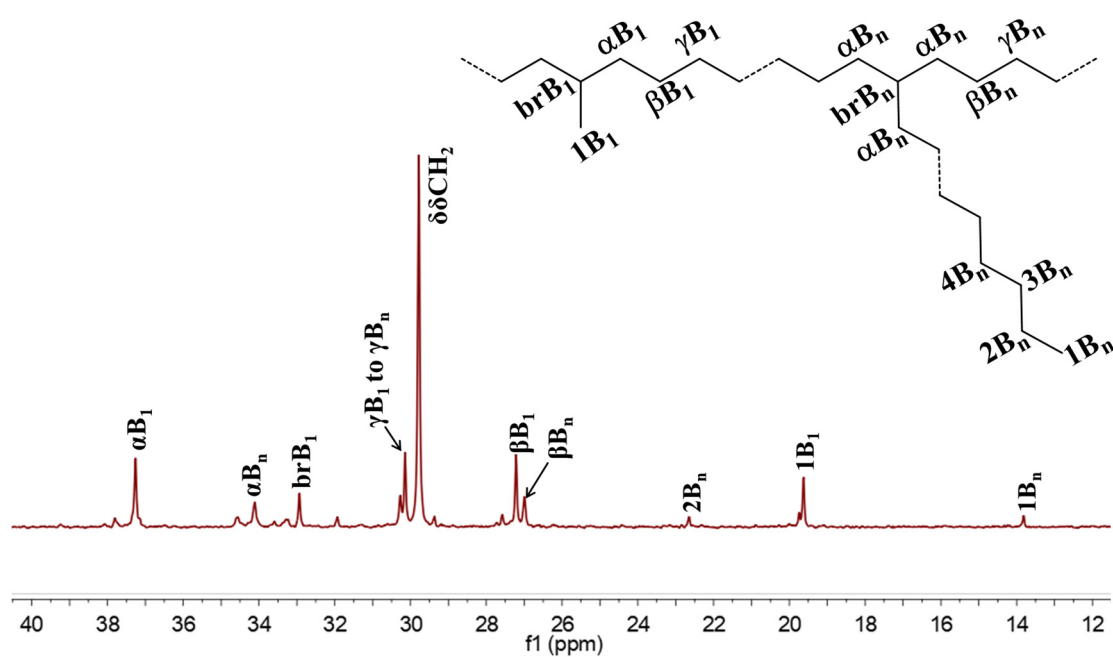## 1.4 ^{13}C NMR of Representative Polyethylene.

Figure S16. ^{13}C NMR spectrum of the polymer from table 1, entry 7 (d^6-benzene, 70 ^{o}C).