CLAIMS:

1. A polyethylene comprising ethylene units and α-olefin comonomer units, the polyethylene having the following characteristics:
   a melt index from about 0.1 to about 15 g/10 min as determined by ASTM D1238 under 2.16 kg and at 190°C;
   a density from 0.905 to 0.930 g/cc as determined by ASTM D1505;
   a molecular weight distribution (Mw/Mn) from about 1.5 to about 2.7;
   a Crystallization Elution Fractionation temperature range excluding the first 10% and the last 1% polymer on the temperature scale following the equation: ΔT [°C] $\geq$ -909*density [g/cc] + 863; and
   a lamellar thickness distribution following the equation: F %$\geq$ 510 *(density [g/cc] - 0.905), where F % is the percentage of lamellar thickness greater than 12 nm.

2. The polyethylene of claim 1, wherein the cumulative fraction difference (S-C) between modified SSA and CEF at 70°C is less than 15%, optionally wherein the percentage of lamellar thickness greater than 12 nm (F %) is greater than 10%.

3. The polyethylene of claim 1 or 2, wherein the polyethylene has a density from 0.905 to 0.925 g/cc, preferably wherein the polyethylene has a density from 0.910 to 0.920 g/cc.

4. The polyethylene of any of the preceding claims, wherein the polyethylene has a melt index from about 0.5 to about 5 g/10 min as determined by ASTM D1238 under 2.16 kg and at 190°C.

5. The polyethylene of any of the preceding claims, wherein the α-olefin comonomer comprises hexene.

6. A film comprising the polyethylene of any of the preceding claims.

7. A pellet containing the polyethylene of any of the preceding claims, wherein the pellet contains Zr in an amount less than 0.50 ppm, preferably wherein the pellet contains Zr in an amount from about 0.1 ppm to about 0.4 ppm, more preferably wherein the pellet contains Zr in an amount from about 0.25 ppm to about 0.35 ppm.

8. A polyethylene comprising ethylene units and α-olefin comonomer units, the copolymer

having the following characteristics:

a melt index from about 0.1 to about 15 g/10 min as determined by ASTM D1238 under 2.16 kg and at 190°C;

a density from 0.905 to 0.935 g/cc as determined by ASTM D1505;

a molecular weight distribution (Mw/Mn) from about 1.5 to about 2.7;

a Crystallization Elution Fractionation temperature range excluding the first 10% and the last 1% polymer on the temperature scale following the equation: CEF ΔT [°C] $\geq$ -909*(density [g/cc]) + 863; and

a lamellar thickness distribution following the equation: F %$\geq$ 510 *(density [g/cc] - 0.905), where F % is the percentage of lamellar thickness greater than 12 nm;

wherein the polyethylene is polymerized in the presence of a catalyst composition comprising:

an intermediate composition derived from at least a support, an organoaluminum compound, and an oxygen source;

either (A) $R^2{}_2AlY$, wherein each R^2 independently comprises a hydrocarbyl group having from 1 to about 20 carbons, and Y comprises a halide radical, a pseudo halide radical, an alkoxide radical, an aryloxide radical, an alkyl substituted amide radical, an aryl substituted amide radical, a siloxy radical, a boronoxy radical, a diaryl boronoxy radical, or a halogenated diaryl boronoxy radical, or (B) a combination of (i) and (ii) wherein (i) is a compound having the formula $R^1(X)_n$; wherein R^1 is a hydrocarbyl group having from about 1 to about 20 carbon atoms; n is from 1 to the number of possible substitutions of the hydrocarbyl group and each X is optionally substituted on R^1 and is independently halogen, —$OSi(R^3)_3$, —$N(Si(R^3)_3)_2$, —$N(R^3)_2$; —SR^3; —$P(R^3)_2$; —CN, or —OR^4; wherein each R^3 is independently hydrogen or a hydrocarbyl group having from about 1 to about 20 carbon atoms; each R^4 is independently a hydrocarbyl having from 1 to 20 carbon atoms, wherein when at least one R^3 is a hydrocarbyl group, R^1 and R^3 or R^1 and R^4 are optionally linked together to form a cyclic group; provided that at least one X is not directly bonded to an aryl group; and provided that when X is not halogen, X is bonded to a secondary or tertiary carbon, or a —CH_2-aryl group; and (ii) is a trihydrocarbylaluminum compound having the formula AlR_3, wherein

each R is independently a C_1-C_{20} hydrocarbyl group; and

a transition metal component.

9. The polyethylene of claim 8, wherein the transition metal component comprises a metallocene component, preferably wherein the metallocene component comprises bis(1-butyl-3-methylcyclopentadienyl)zirconium dichloride.

10. The polyethylene of claim 8 or claim 9, wherein the cumulative fraction difference (S-C) between M-SSA and CEF at 70°C is less than 15%, optionally wherein the percentage of lamellar thickness greater than 12 nm (F %) is greater than 10%.

11. The polyethylene of any of claims 8-10, wherein the polyethylene has a density from 0.905 to 0.925 g/cc, preferably wherein the polyethylene has a density from 0.910 to 0.920 g/cc, optionally wherein the polyethylene has a melt index from about 0.5 to about 5 g/10 min as determined by ASTM D1238 under 2.16 kg and at 190°C.

12. The polyethylene of any of claims 8-11, wherein the α-olefin comonomer comprises hexene.

13. A film comprising the polyethylene of any of claims 8-12.

14. A pellet containing the polyethylene of any of claims 8-13, wherein the pellet contains Zr in an amount less than 0.50 ppm, preferably wherein the pellet contains Zr in an amount from about 0.1 ppm to about 0.4 ppm, more preferably wherein the pellet contains Zr in an amount from about 0.25 ppm to about 0.35 ppm.

15. The polyethylene of any of claims 8-13, wherein the polyethylene is produced in a single reactor, optionally wherein the polyethylene is produced using a single catalyst species.