CLAIMS:

1. A process comprising:

passing a homogeneous single-site catalyst to a solution polymerization reactor in the form of a suspension in an aliphatic hydrocarbon;

contacting the catalyst with one or more α-olefin monomers; and

recovering a polyolefin;

wherein the concentration of the homogeneous single-site catalyst in the aliphatic hydrocarbon solvent is from greater than 0.8 mmole/liter to less than 3.0 mmole/liter.

2. A polymerization process comprising:

passing a homogeneous single-site catalyst into a catalyst feed line of a solution phase polymerization reactor wherein the catalyst is suspended in an aliphatic hydrocarbon solvent;

combining the homogenous single-site catalyst and a carrier solvent or gas in the catalyst feed line;

contacting the homogeneous single-site catalyst and one or more α-olefin monomers; and

recovering a polyolefin;

wherein the homogeneous single-site catalyst in the catalyst feed line is at a concentration in the aliphatic hydrocarbon solvent from greater than 0.8 mmole/liter to less than 3.0 mmole/liter.

3. The process of claim 1, further comprising passing an activator into the reactor, wherein the activator is also suspended in an aliphatic hydrocarbon solvent.

4. The process of claim 3, wherein the activator suspended in the aliphatic hydrocarbon solvent is at a concentration within a range from 0.8 mmole/liter to 80 mmole/liter in the aliphatic hydrocarbon solvent.

5. The process of claim 1, wherein the homogeneous single-site catalyst suspended in the aliphatic hydrocarbon solvent is at a concentration within a range from 0.8 mmole/liter to 2.0 mmole/liter in the aliphatic hydrocarbon solvent.

6. The process of claim 1, wherein the homogeneous single-site catalyst is suspended in an aliphatic hydrocarbon solvent, wherein the aliphatic hydrocarbon solvent is a C_4 to C_{14} aliphatic hydrocarbon solvent.

7. The process of claim 1, wherein the homogeneous single-site catalyst is a C_2 symmetric bis-cyclopentadienyl metallocene, or a C_s symmetric bis-cyclopentadienyl metallocene.

8. The process of claim 1, wherein the homogeneous single-site catalyst is alkylated.

9. The process of claim 1, comprising contacting the homogeneous single-site catalyst and α-olefin monomers at a temperature greater than 50°C.

10. The process of claim 1, wherein the α-olefin monomers are selected from the group consisting of ethylene, propylene, and combinations thereof.

11. The process of claim 1, wherein the polyolefin is free of aromatic hydrocarbon.

12. A process comprising:

passing a homogeneous single-site catalyst to a solution polymerization reactor in the form of a suspension in a C_4 to C_{14} aliphatic hydrocarbon solvent;

contacting the catalyst with one or more α-olefin monomers; and

recovering a polyolefin;

wherein the concentration of the homogeneous single-site catalyst is greater than 0.8 mmole/liter.