Claims

What is claimed:

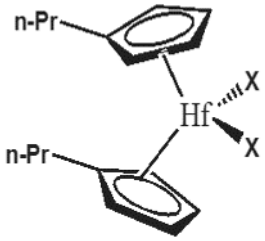
1. A method for controlling a polymerization reaction, the method comprising:

determining an instantaneous density model for a gas-phase activated metallocene complex polymerization, wherein the instantaneous density model incorporates:

a hydrogen concentration for the activated metallocene complex gas-phase polymerization and comonomer concentration for the gas-phase activated metallocene complex polymerization; and

utilizing the instantaneous density model to monitor the polymerization reaction to determine if a threshold instantaneous density is reached.

2. The method of claim 1, wherein the activated metallocene complex of the gas-phase activated metallocene complex polymerization is provided by activating a metallocene complex represented by Formula I:



Formula I

wherein each n-Pr is n-propyl, and each X is independently CH_3, Cl, Br, or F.

3. The method of claim 1, wherein the instantaneous density incorporates instantaneous process conditions determined from a mass balance in-between analyzer updates.

4. The method of claim 1, where the threshold instantaneous density is determined from a stickiness model.

5. The method of claim 1, where the threshold instantaneous density is determined from a stickiness model using instantaneous process conditions determined from a mass balance in-between analyzer updates.

6. The method of claim 1, where the threshold instantaneous density is a preset value.

7. The method of claim 1, comprising killing the polymerization reaction when the threshold instantaneous density is reached.

8. The method of claim 7, wherein killing the polymerization reaction includes slowing and/or stopping the polymerization reaction.

9. The method of claim 7, wherein killing the polymerization reaction includes injecting a kill material into a polymerization reactor.

10. The method of claim 9, wherein the kill material is carbon monoxide.