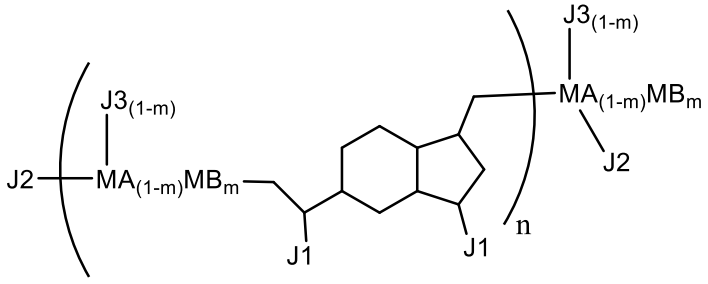
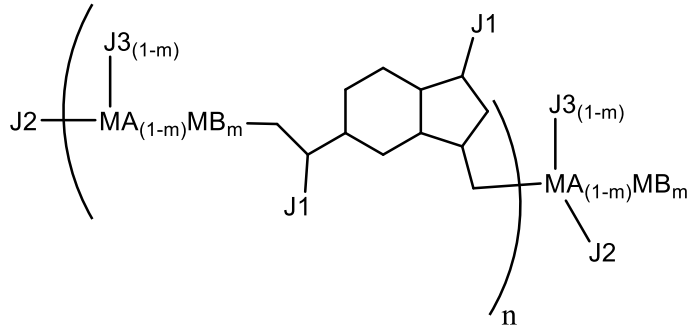
What is claimed is:

1. A composition having the formula (I) or (II):



(I)



(II)

wherein:

each MA is Al, B, or Ga;

each MB is Zn or Mg;

m is a number from 0 to 1;

n is a number from 1 to 100; and

each J1, J2, and J3 is hydrogen or a $C_{1\text{-}20}$ alkyl group, and

wherein J1, J2, and J3 may be the same or different.

2. The composition of claim 1, wherein each J1, J2, and J3 is selected from the group consisting of methyl, ethyl, n-propyl, n-butyl, isobutyl, n-hexyl, isohexyl, n-octyl, isooctyl, and isomers thereof.

3. A catalyst composition comprising a reaction product of at least one catalyst precursor, at least one co-catalyst, and the composition of claim 1 or 2.

4. A polymerization process for preparing a polymer composition comprising:

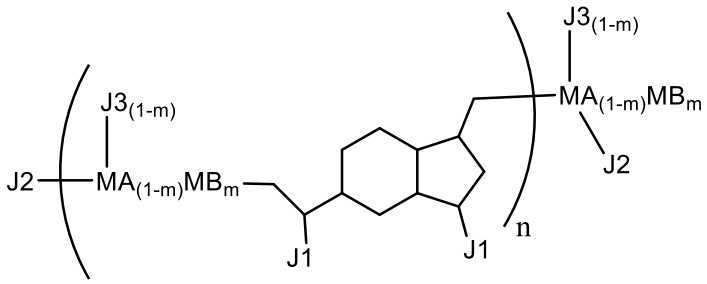
contacting at least one olefin monomer with a catalyst composition;

wherein the catalyst composition comprises a reaction product of a catalyst precursor, a co-catalyst, and the composition of claim 1 or 2.

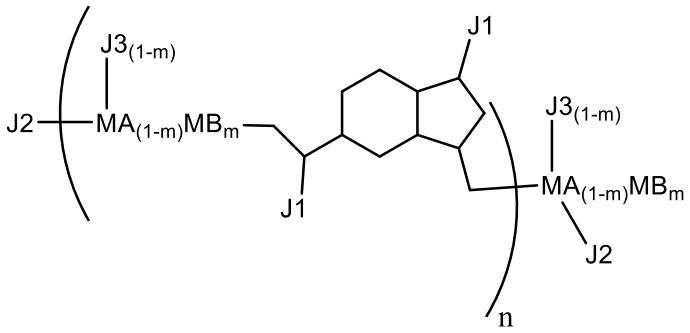
5. A polymer composition obtained by the polymerization process of claim 4.

6. A process for preparing a telechelic functional polymer comprising performing functional group conversion reactions at carbon-metal bonds of the composition of claim 1 or 2.

7. A process for preparing the composition having the formula (I) or (II):



(I)



(II)

wherein:

each MA is Al, B, or Ga;

each MB is Zn or Mg;

m is a number from 0 to 1;

n is a number from 1 to 100; and

each J1, J2, and J3 is hydrogen or a C_{1-20} alkyl group, and

wherein J1, J2, and J3 may be the same or different, the process comprising: (a) combining 1,2,4-trivinylcyclochexane, an organometallic compound, a co-catalyst, a solvent, and a first catalyst precursor, and (b) obtaining a solution comprising the composition represented by formula (I) or (II).

8. The process of claim 7, wherein each J1, J2, and J3 is selected from the group consisting of methyl, ethyl, n-propyl, n-butyl, isobutyl, n-hexyl, isohexyl, n-octyl, isooctyl, and isomers thereof.

9. A polymerization process for preparing a polymer composition, the process comprising:

contacting at least one olefin monomer with a catalyst composition;

wherein the catalyst composition comprises a reaction product of a second catalyst precursor, a co-catalyst, and the composition prepared according to the process of claim 7, and

wherein the second catalyst precursor is the same compound as the first catalyst precursor.