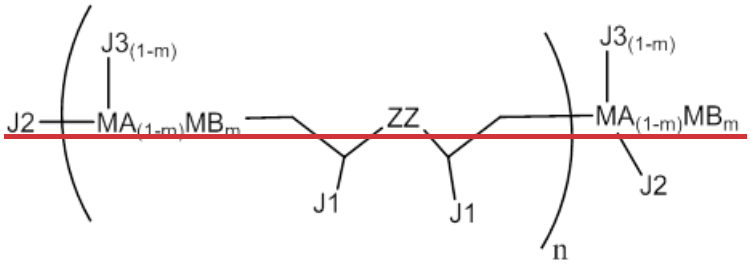
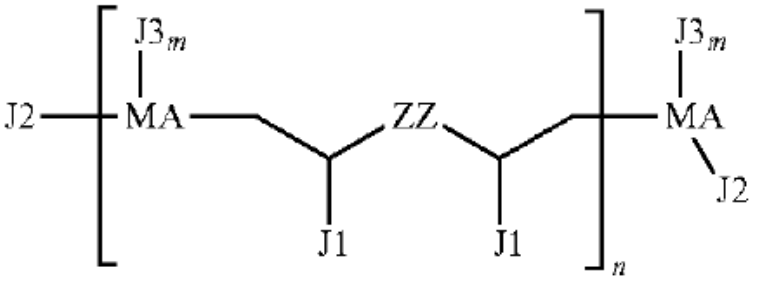
What is claimed is:

1. A process for preparing a composition comprising: (a) combining a linking group, an organometallic compound, a co-catalyst, a solvent, and a first catalyst precursor, and (b) obtaining a final solution comprising the composition,

wherein the solvent is an aromatic solvent, and

wherein the composition has the formula (I):





(I),

wherein:

each MA independently is Al, B, ~~or~~ Ga, Zn, or Mg;

when MA is Al, B, or Ga, then m is 1;

when MA is Zn or Mg, then m is 0;

~~each MB is Zn or Mg;~~

~~m is a number from 0 to 1;~~

n is a number from 1 to 100;

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, or mixtures thereof; and

ZZ is a linear or branched C_{4-100} hydrocarbyl group that optionally includes at least one heteroatom, and wherein ZZ may be aliphatic or aromatic,

wherein the composition comprises a single derivative of the linking group, and

wherein the linking group is an alpha-omega diene.

2. The process of claim 1, wherein the organometallic compound comprises a trivalent metal, a divalent metal, or a mixture of a trivalent metal and a divalent metal.

3. The process of claim 1 or claim 2, wherein the solvent is toluene.

4. 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 the reaction product of at least one catalyst precursor, at least one co-catalyst, and the composition having the formula (I) prepared by the process of claim 1 or claim 2.

5. 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 the reaction product of a second catalyst precursor, a co-catalyst, and the composition having the formula (I) prepared by the process of claim 1 or claim 2, and

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

6. A polymer composition obtained by the process of claim 3~~ or claim 4~~.