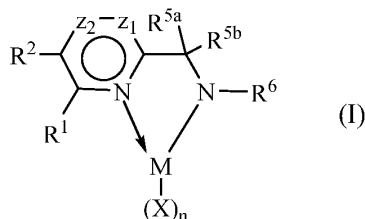


CLAIMS

1. A catalyst system comprising a metal–ligand complex according to formula (I):



where

M is a metal chosen from zirconium or hafnium, the metal having a formal oxidation state of +2, +3, or +4;

each X is a monodentate or bidentate ligand independently chosen from

(C₁–C₄₀)hydrocarbyl, (C₆–C₂₀)aryl, or (C₆–C₂₀)heteroaryl;

n is 2 or 3;

R¹, R², R^{5a}, R^{5b}, and R⁶ are independently chosen from (C₁–C₄₀)hydrocarbyl,

(C₁–C₄₀)heterohydrocarbyl, –Si(R^C)₃, –N(R^N)₂, –OR^C, halogen, or hydrogen;

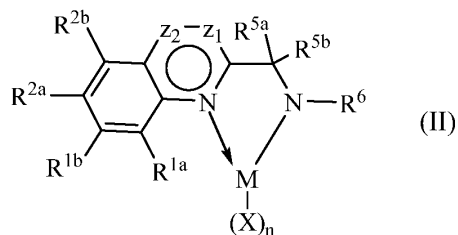
optionally, R¹ and R² are covalently linked to form an aromatic ring;

z₁ and z₂ are independently C(R^Z) or N, wherein each R^Z is –H or (C₁–C₃₀)hydrocarbyl;

provided that at least one of z₁ and z₂ is N; and

each R^C, R^N, and R^P in formula (I) is independently a (C₁–C₃₀)hydrocarbyl.

2. The catalyst system of claim 1, wherein R¹ and R² are covalently linked to form an aromatic ring, and the metal–ligand complex according to formula (II):



where

R^{1a}, R^{1b}, R^{2a}, R^{2b} are independently (C₁–C₃₀)alkyl; and

R^{5a}, R^{5b}, z₁, z₂, X, n, and M are as defined in formula (I).

3. The catalyst system of claim 1 or claim 2, wherein each X is independently benzyl, phenyl, or chloro.
4. The catalyst system of any one of the preceding claims, wherein z_1 is $C(R^Z)$ and z_2 is N, wherein in R^Z is $-H$ or (C_1-C_{30}) hydrocarbyl.
5. The catalyst system of any one of the claims 1 to 3, wherein z_1 is N and z_2 is $C(R^Z)$, wherein in R^Z is $-H$ or (C_1-C_{30}) hydrocarbyl.
6. The catalyst system of any one of the preceding claims, wherein R^6 is a substituted (C_6-C_{40}) aryl or an unsubstituted (C_6-C_{40}) aryl.
7. The catalyst system of any one claims 1 to 5, wherein R^6 is independently selected from phenyl, benzyl, (2,4,6-tri-*iso*-propyl)phenyl, (2,6-di-*iso*-propyl)phenyl, 3,5-di-*tert*-butylphenyl, naphthyl, or cyclopropyl.
8. The catalyst system of any one claims 1 to 5, wherein R^6 is hydrogen; R^{5a} is hydrogen; and R^{5b} is independently chosen from (C_1-C_{40}) hydrocarbyl or (C_1-C_{40}) heterohydrocarbyl.
9. The catalyst system of any one claims 1 to 5, wherein R^6 is hydrogen; R^{5a} is hydrogen; and R^{5b} is independently chosen from phenyl, benzyl, (2,4,6-tri-*iso*-propyl)phenyl, (2,6-di-*iso*-propyl)phenyl, 3,5-di-*tert*-butylphenyl, naphthyl, or cyclopropyl.
10. The catalyst system of any one claims 1 to 7, wherein R^{5a} and R^{5b} are hydrogen.
11. A polymerization process comprising:
polymerizing ethylene and one or more olefins in the presence of a catalyst system under olefin polymerization conditions to form an ethylene-based polymer, the catalyst system comprising a metal-ligand complex according to formula (I) of any one of the preceding claims.
12. A procatalyst according to any structure of this disclosure.