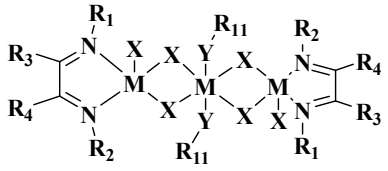
We claim:

1. A method for preparing an olefin-polar monomer copolymer, comprising copolymerizing an olefin and a polar monomer in the presence of a catalyst and optionally a chain transfer agent to produce the olefin-polar monomer copolymer,

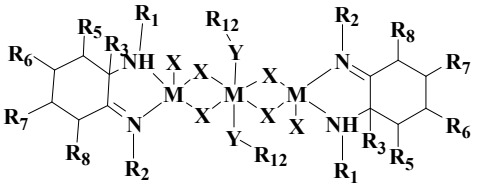
wherein, the catalyst comprises a main catalyst and optionally a cocatalyst, the main catalyst comprises a diimine-metal complex represented by Formula I:



Formula I

wherein, $R_1$ and $R_2$ are each independently a C1-C30 hydrocarbyl with or without a substituent Q; $R_3$ and $R_4$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 hydrocarbyl with or without a substituent Q, and adjacent $R_3$ and $R_4$ groups are optionally joined to form a ring or ring system; each $R_{11}$ is independently a C1-C20 hydrocarbyl with or without a substituent Q; each Y is independently a Group VIA non-metal atom; each M is independently a Group VIII metal; each X is independently selected from the group consisting of halogen, C1-C10 hydrocarbyl with or without a substituent Q and C1-C10 hydrocarbyloxy with or without a substituent Q, or

an amino-imine metal complex represented by Formula I' :



Formula I'

wherein, $R_1$ and $R_2$ are each independently a C1-C30 hydrocarbyl with or without a substituent Q; each $R_3$ is independently selected from the group consisting of hydrogen and C1-C20 hydrocarbyl with or without a substituent Q; $R_5$ to $R_8$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, and C1-C20 hydrocarbyl with or without a substituent Q, and $R_5$ to $R_8$ groups are optionally joined to form a ring or ring system; each $R_{12}$ is independently a C1-C20 hydrocarbyl with or without a substituent Q; each Y is independently a Group VIA non-metal atom; each M is independently a Group VIII metal; each X is independently selected from the group consisting of halogen, C1-C10 hydrocarbyl with or without a substituent Q and C1-C10 hydrocarbyloxy with or without a substituent Q,

preferably, the polar monomer is a vinyl monomer carrying one or more

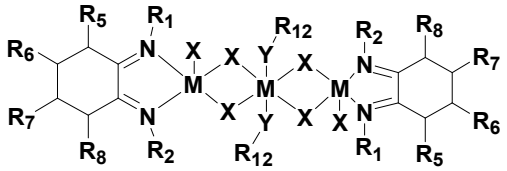
hydroxy groups and/or one or more carboxy group, and

wherein the substituent Q is selected from the group consisting of halogen, hydroxy, C1-C10 alkyl, halogenated C1-C10 alkyl, C1-C10 alkoxy and halogenated C1-C10 alkoxy.

2. The method as claimed in claim 1, having at least one of the following features:

- the polar monomer is a vinyl monomer carrying one or more hydroxy groups, or the polar monomer is a vinyl monomer carrying one or more carboxy groups;

- the main catalyst comprises a diimine metal complex represented by Formula Ib:

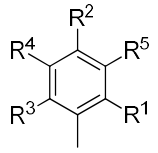


Formula Ib

wherein, $R_1$ and $R_2$ are each independently a C1-C30 hydrocarbyl with or without a substituent Q; $R_5$-$R_8$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 hydrocarbyl with or without a substituent Q, and $R_5$-$R_8$ are optionally joined to form a ring or ring system; each $R_{12}$ is independently a C1-C20 hydrocarbyl with or without a substituent Q; each Y is independently a Group VIA nonmetal atom; each M is independently a Group VIII metal; each X is independently selected from the group consisting of halogen, C1-C10 hydrocarbyl with or without a substituent Q and C1-C10 hydrocarbyloxy with or without a substituent Q.

3. The method as claimed in claim 2, having at least one of the following features:

- $R_1$ and $R_2$ are independently selected from the group consisting of C1-C20 alkyl with or without a substituent Q and C6-C20 aryl with or without a substituent Q, preferably $R_1$ and/or $R_2$ are/is a group represented by Formula A:



Formula A

wherein $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 alkyl with or without a substituent Q, C2-C20 alkenyl with or without a substituent Q, C2-C20 alkynyl with or without a substituent Q, C1-C20 alkoxy with or without a substituent Q, C2-C20 alkenoxy with or without a substituent Q, C2-C20 alkynoxy with or without a substituent Q, C6-C20 aryl with or

without a substituent Q, C6-C20 aryloxy with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q, C7-C20 aralkoxy with or without a substituent Q, C7-C20 alkaryl with or without a substituent Q and C7-C20 alkaryloxy with or without a substituent Q, and $R^1$-$R^5$ are optionally joined to form a ring or ring system;

preferably, $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C10 alkyl with or without a substituent Q, C2-C10 alkenyl with or without a substituent Q, C2-C10 alkynyl with or without a substituent Q, C1-C10 alkoxy with or without a substituent Q, C2-C10 alkenoxy with or without a substituent Q, C2-C10 alkynoxy with or without a substituent Q, C6-C15 aryl with or without a substituent Q, C6-C15 aryloxy with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q, C7-C15 aralkoxy with or without a substituent Q, C7-C15 alkaryl with or without a substituent Q and C7-C15 alkaryloxy with or without a substituent Q;

- each M is independently selected from the group consisting of nickel and palladium;

- each Y is independently selected from the group consisting of O and S;

- each X is independently selected from the group consisting of halogen, C1-C10 alkyl with or without a substituent Q and C1-C10 alkoxy with or without a substituent Q, preferably from the group consisting of halogen, C1-C6 alkyl with or without a substituent Q and C1-C6 alkoxy with or without a substituent Q;

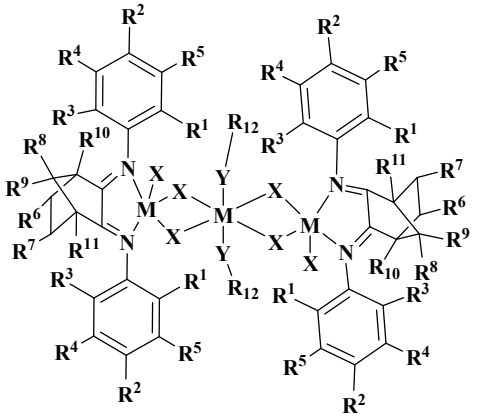
- each $R_{12}$ is independently a C1-C20 alkyl with or without a substituent Q, preferably a C1-C10 alkyl with or without a substituent Q, and more preferably a C1-C6 alkyl with or without a substituent Q; and

- the substituent Q is selected from the group consisting of halogen, hydroxy, C1-C6 alkyl, halogenated C1-C6 alkyl, C1-C6 alkoxy and halogenated C1-C6 alkoxy;

preferably, the C1-C6 alkyl is selected from the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, n-pentyl, isopentyl, n-hexyl, isohexyl and 3,3-dimethylbutyl;

preferably, the C1-C6 alkoxy is selected from the group consisting of methoxy, ethoxy, n-propoxy, iso-propoxy, n-butoxy, iso-butoxy, n-pentoxy, iso-pentoxy, n-hexoxy, iso-hexoxy and 3,3-dimethylbutoxy.

4. The method as claimed in claim 2 or 3, wherein the diimine metal complex is represented by Formula IIIb:



Formula IIIb

wherein, $R^1$-$R^{11}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 alkyl with or without a substituent Q, C2-C20 alkenyl with or without a substituent Q, C2-C20 alkynyl with or without a substituent Q, C1-C20 alkoxy with or without a substituent Q, C2-C20 alkenoxy with or without a substituent Q, C2-C20 alkynoxy with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C6-C20 aryloxy with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q, C7-C20 aralkoxy with or without a substituent Q, C7-C20 alkaryl with or without a substituent Q and C7-C20 alkaryloxy with or without a substituent Q,

M, X, Y and $R_{12}$ are as defined in claim 2.

5. The method as claimed in any one of claims 2 to 4, wherein in the diimine metal complex, $R^1$-$R^{11}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C10 alkyl with or without a substituent Q, C2-C10 alkenyl with or without a substituent Q, C2-C10 alkynyl with or without a substituent Q, C1-C10 alkoxy with or without a substituent Q, C2-C10 alkenoxy with or without a substituent Q, C2-C10 alkynoxy with or without a substituent Q, C6-C15 aryl with or without a substituent Q, C6-C15 aryloxy with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q, C7-C15 aralkoxy with or without a substituent Q, C7-C15 alkaryl with or without a substituent Q and C7-C15 alkaryloxy with or without a substituent Q;

preferably, $R^1$-$R^{11}$ are each independently selected from the group consisting of hydrogen, C1-C10 alkyl, halogenated C1-C10 alkyl, C1-C10 alkoxy, halogenated C1-C10 alkoxy and halogen, more preferably from the group consisting of hydrogen, C1-C6 alkyl, halogenated C1-C6 alkyl, C1-C6 alkoxy, halogenated C1-C6 alkoxy and halogen.

6. The method as claimed in any one of claims 2 to 5, wherein the diimine metal

complex is selected from the group consisting of:

1) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=methyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

2) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=ethyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

3) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$ =isopropyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

4) the diimine metal complex represented by Formula III, wherein $R^1$-$R^3$ =methyl, $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

5) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$ =methyl, $R^2$=Br, $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

6) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=F, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

7) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=Cl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

8) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=Br, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

9) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=methyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

10) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=ethyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

11) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$ =isopropyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

12) the diimine metal complex represented by Formula III, wherein $R^1$-$R^3$ =methyl, $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

13) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$ =methyl, $R^2$=Br, $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

14) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=F, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

15) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=Cl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

16) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=Br, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$= $R^{11}$=methyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

17) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=methyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$=methyl, $R^{11}$=bromomethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

18) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=ethyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$=methyl, $R^{11}$=bromomethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

19) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$ =isopropyl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$=methyl, $R^{11}$=bromomethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

20) the diimine metal complex represented by Formula III, wherein $R^1$-$R^3$ =methyl, $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$=methyl, $R^{11}$=bromomethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

21) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$ =methyl, $R^2$=Br, $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$=methyl, $R^{11}$=bromomethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

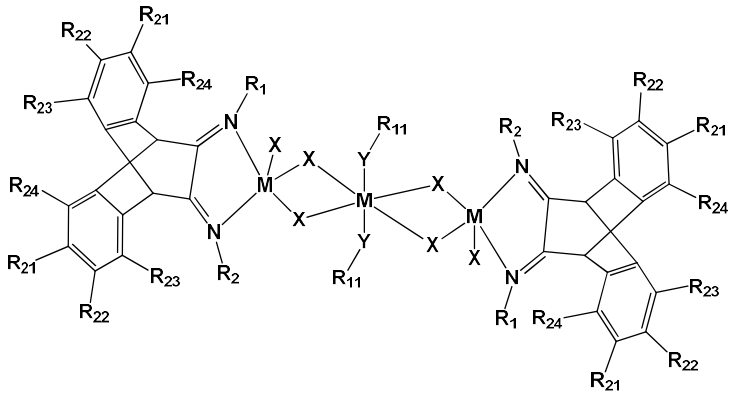
22) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=F, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$=methyl, $R^{11}$=bromomethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

23) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=Cl, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$=methyl, $R^{11}$=bromomethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

24) the diimine metal complex represented by Formula III, wherein $R^1$= $R^3$=Br, $R^2$= $R^4$-$R^7$ = $R^{10}$=H, $R^8$= $R^9$=methyl, $R^{11}$=bromomethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br.

7. The method as claimed in claim 1, having at least one of the following features:

- the polar monomer is a vinyl monomer carrying one or more hydroxy groups, or the polar monomer is a vinyl monomer carrying one or more carboxy groups;
- the main catalyst comprises a diimine metal complex represented by Formula Ic:




Formula Ic

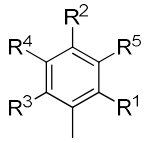
wherein, $R_{21}$-$R_{24}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 hydrocarbyl with or without a substituent Q and C1-C20 hydrocarbyloxy with or without a substituent Q, and $R_{21}$-$R_{24}$ are optionally joined to form a ring or ring system;

$R_1$, $R_2$, $R_{11}$, Y, M and X are as defined in claim 1.

8. The method as claimed in claim 7, having at least one of the following

features:

- $R_1$ and $R_2$ are independently selected from the group consisting of C1-C20 alkyl with or without a substituent Q and C6-C20 aryl with or without a substituent Q, preferably $R_1$ and/or $R_2$ are/is a group represented by Formula A:




Formula A

wherein, $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 alkyl with or without a substituent Q, C2-C20 alkenyl with or without a substituent Q, C2-C20 alkynyl with or without a substituent Q, C1-C20 alkoxy with or without a substituent Q, C2-C20 alkenoxy with or without a substituent Q, C2-C20 alkynoxy with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C6-C20 aryloxy with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q, C7-C20 aralkoxy with or without a substituent Q, C7-C20 alkaryl with or without a substituent Q and C7-C20 alkaryloxy with or without a substituent Q, and $R^1$-$R^5$ are optionally joined to form a ring or ring system;

preferably, $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C10 alkyl with or without a substituent Q, C2-C10 alkenyl with or without a substituent Q, C2-C10 alkynyl with or without a substituent Q, C1-C10 alkoxy with or without a substituent Q, C2-C10 alkenoxy with or without a substituent Q, C2-C10 alkynoxy with or without a substituent Q, C6-C15 aryl with or without a substituent Q, C6-C15 aryloxy with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q, C7-C15 aralkoxy with or without a substituent Q, C7-C15 alkaryl with or without a substituent Q and C7-C15 alkaryloxy with or without a substituent Q;

- each M is independently selected from the group consisting of nickel and palladium;

- each Y is independently selected from the group consisting of O and S;

- each X is independently selected from the group consisting of halogen, C1-C10 alkyl with or without a substituent Q and C1-C10 alkoxy with or without a substituent Q, preferably from the group consisting of halogen, C1-C6 alkyl with or without a substituent Q and C1-C6 alkoxy with or without a substituent Q;

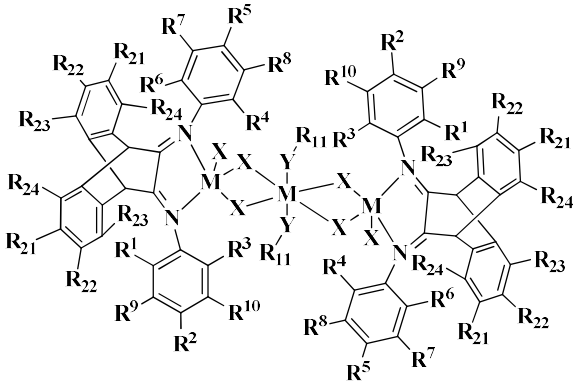
- each $R_{11}$ is independently a C1-C20 alkyl with or without a substituent Q, preferably a C1-C10 alkyl with or without a substituent Q, more preferably a C1-C6 alkyl with or without a substituent Q; and

- the substituent Q is selected from the group consisting of halogen, hydroxy, C1-C6 alkyl, halogenated C1-C6 alkyl, C1-C6 alkoxy and halogenated C1-C6 alkoxy,

preferably, the C1-C6 alkyl is selected from the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, n-pentyl, isopentyl, n-hexyl, isohexyl and 3,3-dimethylbutyl;

preferably, the C1-C6 alkoxy is selected from the group consisting of methoxy, ethoxy, n-propoxy, iso-propoxy, n-butoxy, iso-butoxy, n-pentoxy, iso-pentoxy, n-hexoxy, iso-hexoxy and 3,3-dimethylbutoxy.

9. The method as claimed in claim 7 or 8, wherein the diimine metal complex has a structure represented by Formula IIIc:



Formula IIIc

wherein, $R^1$-$R^{10}$, $R_{21}$-$R_{24}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 alkyl with or without a substituent Q, C2-C20 alkenyl with or without a substituent Q, C2-C20 alkynyl with or without a substituent Q, C1-C20 alkoxy with or without a substituent Q, C2-C20 alkenoxy with or without a substituent Q, C2-C20 alkynoxy with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C6-C20 aryloxy with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q, C7-C20 aralkoxy with or without a substituent Q, C7-C20 alkaryl with or without a substituent Q and C7-C20 alkaryloxy with or without a substituent Q, and $R^1$-$R^{10}$ are optionally joined to form a ring or ring system, $R_{21}$-$R_{24}$ are optionally joined to form a ring or ring system;

$R_{11}$, Y, M and X are as defined in claim 7.

10. The method as claimed in any one of claims 7 to 9, wherein in the diimine metal complex, $R^1$-$R^{10}$, $R_{21}$-$R_{24}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C10 alkyl with or without a substituent Q, C2-C10 alkenyl with or without a substituent Q, C2-C10 alkynyl with or without a substituent Q, C1-C10 alkoxy with or without a substituent Q, C2-C10 alkenoxy with or without a substituent Q, C2-C10 alkynoxy with or without a substituent Q, C6-C15 aryl

with or without a substituent Q, C6-C15 aryloxy with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q, C7-C15 aralkoxy with or without a substituent Q, C7-C15 alkaryl with or without a substituent Q and C7-C15 alkaryloxy with or without a substituent Q;

preferably, $R^1$-$R^{10}$, $R_{21}$-$R_{24}$ are each independently selected from the group consisting of hydrogen, C1-C10 alkyl, halogenated C1-C10 alkyl, C1-C10 alkoxy, halogenated C1-C10 alkoxy and halogen, more preferably from the group consisting of hydrogen, C1-C6 alkyl, halogenated C1-C6 alkyl, C1-C6 alkoxy, halogenated C1-C6 alkoxy and halogen.

11. The method as claimed in any one of claims 7 to 10, wherein the diimine metal complex is selected from the group consisting of:

1) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

2) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

3) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

4) the complex represented by Formula IIIc, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

5) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

6) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

7) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

8) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

9) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

10) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

11) the complex represented by Formula IIIc, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

12) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

13) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

14) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=$R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

15) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

16) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

17) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

18) the complex represented by Formula IIIc, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

19) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

20) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

21) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

22) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

23) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

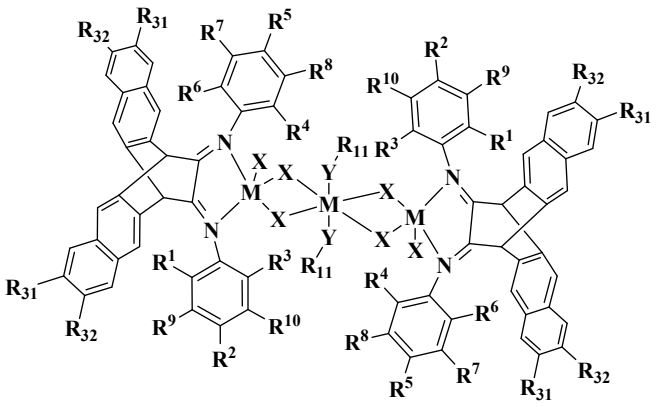
24) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

25) the complex represented by Formula IIIc, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

26) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

27) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

28) the complex represented by Formula IIIc, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_{23}$=$R_{24}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;



(IIIc')

29) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

30) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

31) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

32) the complex represented by Formula (IIIc'), wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

33) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

34) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

35) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

36) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

37) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

38) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

39) the complex represented by Formula (IIIc'), wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

40) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

41) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl,

$R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

42) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

43) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H $R_{31}$=$R_{32}$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

44) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

45) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

46) the complex represented by Formula (IIIc'), wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

47) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

48) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

49 The complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

50) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

51) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

52) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

53) the complex represented by Formula (IIIc'), wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

54) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

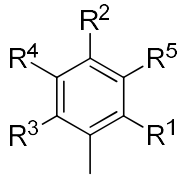
55) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

56) the complex represented by Formula (IIIc'), wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br.

12. The method as claimed in claim 1, wherein the polar monomer is a vinyl monomer carrying one or more hydroxy groups, or the polar monomer is a vinyl monomer carrying one or more carboxy groups, and wherein the main catalyst comprises the amino-imine metal complex represented by Formula I'.

13. The method as claimed in claim 1, wherein the amino-imine metal complex has at least one of the following features:

- $R_1$ and $R_2$ are independently selected from the group consisting of C1-C20 alkyl with or without a substituent Q and C6-C20 aryl with or without a substituent Q, preferably $R_1$ and/or $R_2$ are/is a group represented by Formula A:




Formula A

wherein, $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 alkyl with or without a substituent Q, C2-C20 alkenyl with or without a substituent Q, C2-C20 alkynyl with or without a substituent Q, C1-C20 alkoxy with or without a substituent Q, C2-C20 alkenoxy with or without a substituent Q, C2-C20 alkynoxy with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C6-C20 aryloxy with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q, C7-C20 aralkyloxy with or without a substituent Q, C7-C20 alkaryl with or without a substituent Q and C7-C20 alkaryloxy with or without a substituent Q, and $R^1$-$R^5$ are optionally joined to form a ring or ring system;

preferably, $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C10 alkyl with or without a substituent Q, C2-C10 alkenyl with or without a substituent Q, C2-C10 alkynyl with or without a substituent Q, C1-C10 alkoxy with or without a substituent Q, C2-C10 alkenoxy with or without a substituent Q, C2-C10 alkynoxy with or without a substituent Q, C6-C15 aryl with or without a substituent Q, C6-C15 aryloxy with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q, C7-C15 aralkoxy with or without a substituent Q, C7-C15 alkaryl with or without a substituent Q and C7-C15 alkaryloxy with or without a substituent Q;

- each M is independently selected from the group consisting of nickel and palladium;

- each Y is independently selected from the group consisting of O and S;

- each X is independently selected from the group consisting of halogen, C1-C10 alkyl with or without a substituent Q and C1-C10 alkoxy with or without a substituent Q, preferably from the group consisting of halogen, C1-C6 alkyl with or without a substituent Q and C1-C6 alkoxy with or without a substituent Q;

- each $R_{12}$ is independently a C1-C20 alkyl with or without a substituent Q,

preferably a C1-C10 alkyl with or without a substituent Q, more preferably a C1-C6 alkyl with or without a substituent Q;

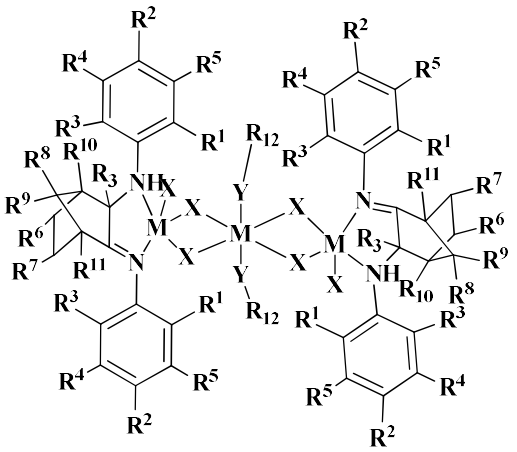
- each $R_3$ is selected from the group consisting of C1-C20 alkyl with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q and C7-C20 alkaryl with or without a substituent Q; preferably, each $R_3$ is selected from the group consisting of C1-C10 alkyl with or without a substituent Q, C6-C10 aryl with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q and C7-C15 alkaryl with or without a substituent Q; and more preferably, each $R_3$ is a C1-C6 alkyl with or without a substituent Q;

- the substituent Q is selected from the group consisting of halogen, hydroxy, C1-C6 alkyl, halogenated C1-C6 alkyl, C1-C6 alkoxy and halogenated C1-C6 alkoxy;

preferably, the C1-C6 alkyl is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, n-pentyl, isopentyl, n-hexyl, isohexyl and 3,3-dimethylbutyl;

preferably, the C1-C6 alkoxy is selected from methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy, isobutoxy, n-pentoxy, isopentoxy, n-hexyloxy, isohexyloxy and 3,3-dimethylbutoxy.

14. The method as claimed in claim 12 or 13, wherein the amino-imine metal complex is represented by Formula III':



Formula III'

wherein, $R^1$-$R^{11}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 alkyl with or without a substituent Q, C2-C20 alkenyl with or without a substituent Q, C2-C20 alkynyl with or without a substituent Q, C1-C20 alkoxy with or without a substituent Q, C2-C20 alkenoxy with or without a substituent Q, C2-C20 alkynoxy with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C6-C20 aryloxy with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q, C7-C20 aralkyloxy with or without a substituent Q, C7-C20 alkaryl with or without a substituent Q and C7-C20 alkaryloxy

with or without a substituent Q;

$R_3$, $R_{12}$, Y, M and X are as defined in claim 12.

15. The method as claimed in claim 14, wherein in the amino-imine metal complex, $R^1$-$R^{11}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C10 alkyl with or without a substituent Q, C2-C10 alkenyl with or without a substituent Q, C2-C10 alkynyl with or without a substituent Q, C1-C10 alkoxy with or without a substituent Q, C2-C10 alkenoxy with or without a substituent Q, C2-C10 alkynoxy with or without a substituent Q, C6-C15 aryl with or without a substituent Q, C6-C15 aryloxy with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q, C7-C15 aralkoxy with or without a substituent Q, C7-C15 alkaryl with or without a substituent Q and C7-C15 alkaryloxy with or without a substituent Q; preferably, $R^1$-$R^{11}$ are each independently selected from the group consisting of hydrogen, C1-C10 alkyl, halogenated C1-C10 alkyl, C1-C10 alkoxy, halogenated C1-C10 alkoxy and halogen, and more preferably from the group consisting of hydrogen, C1-C6 alkyl, halogenated C1-C6 alkyl, C1-C6 alkoxy, halogenated C1-C6 alkoxy and halogen.

16. The method as claimed in any one of claims 12 to 15, wherein the amino-imine metal complex is selected from the group consisting of:

the complex represented by Formula III', wherein $R^1$=$R^3$=isopropyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=methyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=isopropyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=methyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=ethyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=methyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=ethyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=methyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=methyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=methyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=isopropyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=isopropyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=ethyl,

$R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=ethyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=$R^4$=$R^5$=$R^6$=$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=i-Pr, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$-$R^3$=methyl, $R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$-$R^3$=methyl, $R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=Br, $R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$R_3$=$CH_3$, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=Br, $R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=F, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=Cl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=Br, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=ethyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=ethyl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=isopropyl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$-$R^3$=methyl, $R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=$CH_3$, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=Br, $R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=methyl, $R_3$=isopropyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=F, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=isopropyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=Cl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=isopropyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=Br, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$R^{11}$=$CH_3$, $R_3$=isopropyl, $R_{12}$=isobutyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$CH_3$, $R^{11}$=bromomethyl, $R_3$=isopropyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=ethyl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$CH_3$, $R^{11}$=$CH_2Br$, $R_3$=isopropyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=isopropyl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$CH_3$, $R^{11}$=$CH_2Br$, $R_3$=ethyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$-$R^3$=methyl, $R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=$CH_3$, $R^{11}$=$CH_2Br$, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

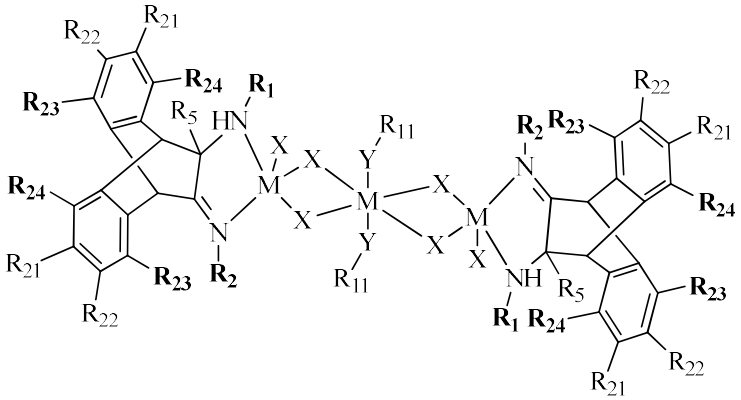
the complex represented by Formula III', wherein $R^1$=$R^3$=methyl, $R^2$=Br, $R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=methyl, $R_3$=ethyl, $R^{11}$=$CH_2Br$, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=F, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=methyl, $R^{11}$=$CH_2Br$, $R_3$=isobutyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=Cl, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=methyl, $R^{11}$=$CH_2Br$, $R_3$=isobutyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br;

the complex represented by Formula III', wherein $R^1$=$R^3$=Br, $R^2$=$R^4$-$R^7$=$R^{10}$=H, $R^8$=$R^9$=methyl, $R^{11}$=$CH_2Br$, $R_3$=isobutyl, $R_{12}$=ethyl, M=Ni, Y=O, X=Br.

17. The method as claimed in claim 12, wherein the amino-imine metal complex has a structure represented by Formula IV':



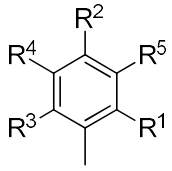
Formula IV'

wherein, $R_1$ and $R_2$ are each independently a C1-C30 hydrocarbyl with or without a substituent Q; $R_{21}$-$R_{24}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 hydrocarbyl with or without a substituent Q and

C1-C20 hydrocarbyloxy with or without a substituent Q, and $R_{21}$-$R_{24}$ are optionally joined to form a ring or ring system, preferably a substituted or unsubstituted benzene ring; each $R_5$ is independently selected from the group consisting of hydrogen and C1-C20 hydrocarbyl with or without a substituent Q; each $R_{11}$ is independently a C1-C20 hydrocarbyl with or without a substituent Q; each Y is independently a Group VIA nonmetal atom; each M is independently a Group VIII metal; each X is independently selected from the group consisting of halogen, C1-C10 hydrocarbyl with or without a substituent Q and C1-C10 hydrocarbyloxy with or without a substituent Q.

18. The method as claimed in claim 17, wherein the amino-imine metal complex has at least one of the following features:

- $R_1$ and $R_2$ are independently selected from the group consisting of C1-C20 alkyl with or without a substituent Q and C6-C20 aryl with or without a substituent Q, preferably $R_1$ and/or $R_2$ are/is a group represented by Formula A:




Formula A

wherein, $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C20 alkyl with or without a substituent Q, C2-C20 alkenyl with or without a substituent Q, C2-C20 alkynyl with or without a substituent Q, C1-C20 alkoxy with or without a substituent Q, C2-C20 alkenoxy with or without a substituent Q, C2-C20 alkynoxy with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C6-C20 aryloxy with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q, C7-C20 aralkyloxy with or without a substituent Q, C7-C20 alkaryl with or without a substituent Q and C7-C20 alkaryloxy with or without a substituent Q, and $R^1$-$R^5$ are optionally joined to form a ring or ring system;

preferably, $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C10 alkyl with or without a substituent Q, C2-C10 alkenyl with or without a substituent Q, C2-C10 alkynyl with or without a substituent Q, C1-C10 alkoxy with or without a substituent Q, C2-C10 alkenoxy with or without a substituent Q, C2-C10 alkynoxy with or without a substituent Q, C6-C15 aryl with or without a substituent Q, C6-C15 aryloxy with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q, C7-C15 aralkoxy with or without a substituent Q, C7-C15 alkaryl with or without a substituent Q and C7-C15 alkaryloxy with or without a substituent Q;

more preferably, $R^1$-$R^5$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C6 alkyl with or without a substituent Q, C2-C6 alkenyl with or without a substituent Q, C2-C6 alkynyl with or without a substituent Q, C1-C6 alkoxy with or without a substituent Q, C2-C6 alkenyloxy with or without a substituent Q, C2-C6 alkynyloxy with or without a substituent Q, C6-C10 aryl with or without a substituent Q, C7-C10 aralkyl group with or without a substituent Q, C7-C10 alkaryl with or without a substituent Q, C6-C10 aryloxy with or without a substituent Q, C7-C10 aralkyloxy with or without a substituent Q, and C7-C10 alkaryloxy with or without a substituent Q;

- each M is independently selected from the group consisting of nickel and palladium;

- each Y is independently selected from the group consisting of O and S;

- each X is independently selected from the group consisting of halogen, C1-C10 alkyl with or without a substituent Q and C1-C10 alkoxy with or without a substituent Q, preferably from the group consisting of halogen, C1-C6 alkyl with or without a substituent Q and C1-C6 alkoxy with or without a substituent Q;

- each $R_{11}$ is independently a C1-C20 alkyl with or without a substituent Q, preferably a C1-C10 alkyl with or without a substituent Q, and more preferably a C1-C6 alkyl with or without a substituent Q;

- each $R_5$ is independently selected from the group consisting of C1-C20 alkyl with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q and C7-C20 alkaryl with or without a substituent Q; preferably, each $R_5$ is independently selected from the group consisting of C1-C10 alkyl with or without a substituent Q, C6-C10 aryl with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q and C7-C15 alkaryl with or without a substituent Q, and more preferably each $R_5$ is a C1-C6 alkyl with or without a substituent Q; and

- the substituent Q is selected from the group consisting of halogen, hydroxy, C1-C6 alkyl, halogenated C1-C6 alkyl, C1-C6 alkoxy and halogenated C1-C6 alkoxy; preferably, the C1-C6 alkyl is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, n-pentyl, isopentyl, n-hexyl, isohexyl and 3,3-dimethylbutyl; preferably, the C1-C6 alkoxy is selected from methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy, isobutoxy, n-pentoxy, isopentoxy, n-hexyloxy, isohexyloxy and 3,3-dimethylbutoxy; preferably, the halogen is selected from fluorine, chlorine, bromine and iodine;

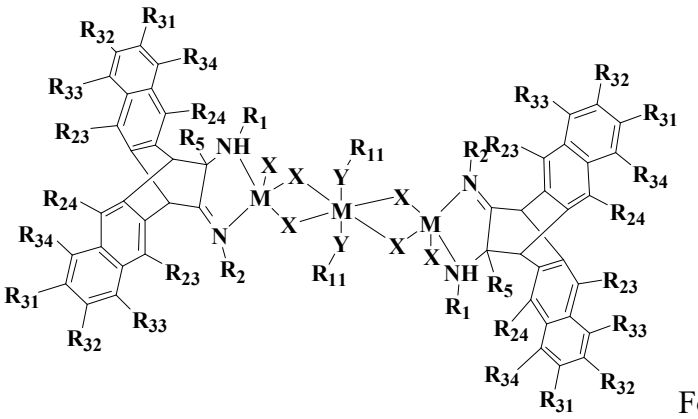
- $R_{21}$-$R_{24}$ are each independently selected from the group consisting of hydrogen,

halogen, hydroxy, C1-C20 alkyl with or without a substituent Q, C2-C20 alkenyl with or without a substituent Q, C2-C20 alkynyl with or without a substituent Q, C1-C20 alkoxy with or without a substituent Q, C2-C20 alkenoxy with or without a substituent Q, C2-C20 alkynoxy with or without a substituent Q, C6-C20 aryl with or without a substituent Q, C7-C20 aralkyl with or without a substituent Q, C7-C20 alkaryl with or without a substituent Q, C6-C20 aryloxy with or without a substituent Q, C7-C20 aralkyloxy with or without a substituent Q and C7-C20 alkaryloxy with or without a substituent Q, and $R_{21}$-$R_{24}$ are optionally joined to form a ring or ring system;

preferably, $R_{21}$-$R_{24}$ are each independently selected from the group consisting of hydrogen, halogen, hydroxy, C1-C10 alkyl with or without a substituent Q, C2-C10 alkenyl with or without a substituent Q, C2-C10 alkynyl with or without a substituent Q, C1-C10 alkoxy with or without a substituent Q, C2-C10 alkenoxy with or without a substituent Q, C2-C10 alkynoxy with or without a substituent Q, C6-C15 aryl with or without a substituent Q, C7-C15 aralkyl with or without a substituent Q, C7-C15 alkaryl with or without a substituent Q, C6-C15 aryloxy with or without a substituent Q, C7-C15 aralkoxy with or without a substituent Q and C7-C15 alkaryloxy with or without a substituent Q;

more preferably, $R_{21}$-$R_{24}$ are each independently selected from the group consisting of hydrogen, C1-C10 alkyl, halogenated C1-C10 alkyl, C1-C10 alkoxy, halogenated C1-C10 alkoxy and halogen, more preferably from the group consisting of hydrogen, C1-C6 alkyl, halogenated C1-C6 alkyl, C1-C6 alkoxy, halogenated C1-C6 alkoxy and halogen.

19. The method as claimed in any one of claims 17 to 18, wherein the amino-imine metal complex has a structure represented by Formula IV'A:

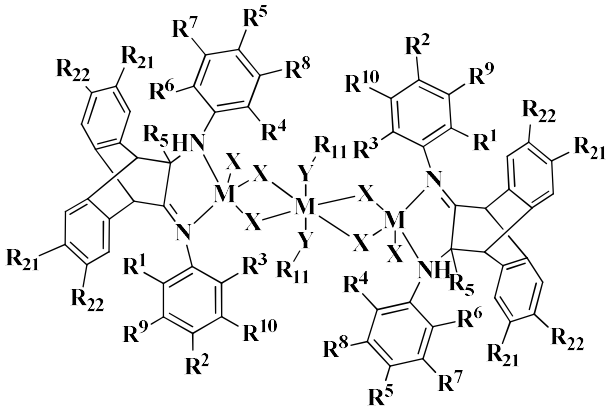


Formula IV'A

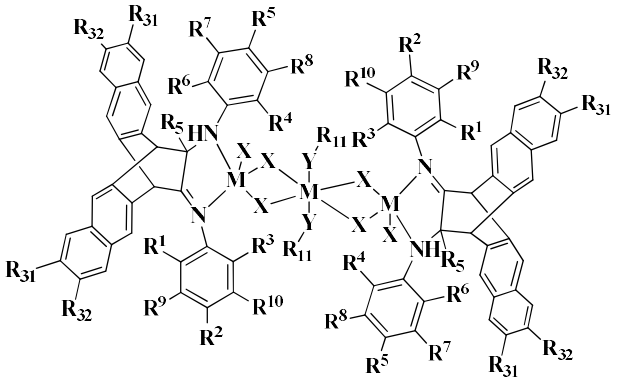
wherein $R_{31}$-$R_{34}$ have the same meanings as $R_{21}$-$R_{24}$ in Formula IV', preferably $R_{33}$ and $R_{34}$ are hydrogen, and $R_1$, $R_2$, $R_5$, $R_{11}$, Y, M and X are as defined for Formula

IV' in claim 17.

20. The method as claimed in any one of claims 17 to 19, wherein the amino-imine metal complex is represented by the following Formula V or V':



Formula V



Formula V'

wherein the individual symbols are as defined above,

preferably, the amino-imine metal complex is selected from the group consisting of:

1) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

2) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

3) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

4) the complex represented by Formula V, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

5) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

6) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

7) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

8) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

9) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

10) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

11) the complex represented by Formula V, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

12) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

13) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

14) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$R_{11}$=ethyl, M=Ni, Y=O, X=Br;

15) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

16) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

17) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

18) the complex represented by Formula V, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

19) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

20) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

21) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{21}$=$R_{22}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

22) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

23) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

24) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl,

$R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

25) the complex represented by Formula V, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

26) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

27) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

28) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

29) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

30) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

31) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

32) the complex represented by Formula V, wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

33) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

34) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

35) the complex represented by Formula V, wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{22}$=H, $R_{21}$=t-butyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

29) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

30) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

31) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

32) the complex represented by Formula V', wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

33) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

34) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

35) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=ethyl, M=Ni, Y=O, X=Br;

36) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

37) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

38) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

39) the complex represented by Formula V', wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

40) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

41) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

42) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=$R_{31}$=$R_{32}$=H, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

43) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H $R_{31}$=$R_{32}$=$R_{11}$=ethyl, $R_5$=$CH_3$, M=Ni, Y=O, X=Br;

44) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, $R_5$=$CH_3$, M=Ni, Y=O, X=Br;

45) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, $R_5$=$CH_3$, M=Ni, Y=O, X=Br;

46) the complex represented by Formula V', wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, $R_5$=$CH_3$, M=Ni, Y=O, X=Br;

47) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, $R_5$=$CH_3$, M=Ni, Y=O, X=Br;

48) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, $R_5$=$CH_3$, M=Ni, Y=O, X=Br;

49) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, $R_5$=$CH_3$, M=Ni, Y=O, X=Br;

50) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=isopropyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=$R_{11}$=ethyl, $R_5$=$CH_3$, M=Ni, Y=O, X=Br;

51) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=ethyl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

52) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=methyl,

$R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

53) the complex represented by Formula V', wherein $R^1$-$R^6$=methyl, $R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

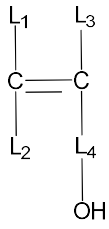
54) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=Br, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

55) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=Cl, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br;

56) the complex represented by Formula V', wherein $R^1$=$R^3$=$R^4$=$R^6$=F, $R^2$=$R^5$=$R^7$-$R^{10}$=H, $R_{31}$=$R_{32}$=ethyl, $R_5$=$CH_3$, $R_{11}$=isobutyl, M=Ni, Y=O, X=Br.

21. The method as claimed in any one of claims 1 to 20, having at least one of the following features:

- the olefin is an olefin, preferably an α-olefin, having 2 to 16 carbon atoms,
- the polar monomer is one or more of olefinic alcohols represented by Formula G:



Formula G

wherein, $L_1$-$L_3$ are each independently selected from the group consisting of H and C1-C30 alkyl with or without a substituent, $L_4$ is a $C_1$-$C_{30}$ alkylene optionally having a pendant group;

preferably, in the copolymer, the content of the structure units derived from the olefinic alcohol represented by Formula G is from 0.4 to 10.0 mol%;

preferably, $L_1$ and $L_2$ are H, $L_3$ is H or a $C_1$-$C_{30}$ alkyl, $L_4$ is a $C_1$-$C_{30}$ alkylene having a pendant group;

more preferably, $L_1$ and $L_2$ are H, $L_3$ is H or a $C_1$-$C_{20}$ alkyl, $L_4$ is a $C_1$-$C_{20}$ alkylene having a pendant group;

still more preferably, $L_1$ and $L_2$ are H, $L_3$ is H or a $C_1$-$C_{10}$ alkyl, $L_4$ is a $C_1$-$C_{10}$ alkylene having a pendant group;

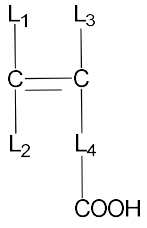
still more preferably, $L_1$ and $L_2$ are H, $L_3$ is H or a $C_1$-$C_{10}$ alkyl, $L_4$ is a $C_1$-$C_6$ alkylene having a pendant group.

22. The method as claimed in claim 21, wherein the substituent in $L_1$-$L_3$ is one or more selected from the group consisting of halogen, $C_1$-$C_{10}$ alkyl, $C_1$-$C_{10}$ alkoxy, $C_6$-$C_{10}$ aryl, cyano and hydroxy; more preferably the substituent in $L_1$-$L_3$ is one or more selected from the group consisting of C1-C6 alkyl, halogen and C1-C6 alkoxy;

the pendant group in $L_4$ is one or more selected from the group consisting of halogen, $C_6$-$C_{20}$ aryl, $C_1$-$C_{20}$ alkyl and $C_1$-$C_{20}$ alkoxy, the $C_6$-$C_{20}$ aryl, $C_1$-$C_{20}$ alkyl and $C_1$-$C_{20}$ alkoxy being optionally substituted by a substituent, which is preferably one or more selected from the group consisting of halogen, $C_1$-$C_{10}$ alkyl, $C_1$-$C_{10}$ alkoxy, $C_6$-$C_{10}$ aryl and hydroxy.

23. The method as claimed in any one of claims 1 to 20, having at least one of the following features:

- the olefin is an olefin, preferably an α-olefin, having 2-16 carbon atoms,
- the polar monomer is an unsaturated carboxylic acid represented by Formula G':



Formula G'

wherein, $L_1$-$L_3$ are each independently selected from the group consisting of H and C1-C30 alkyl with or without a substituent, $L_4$ is a $C_1$-$C_{30}$ alkylene having a pendant group;

preferably, in the copolymer, the content of the structure units derived from the unsaturated carboxylic acid represented by Formula G' is from 0.2 to 15.0 mol%, and more preferably from 0.7 to 10.0 mol%;

preferably, $L_1$ and $L_2$ are H, $L_3$ is H or a $C_1$-$C_{30}$ alkyl, $L_4$ is a $C_1$-$C_{30}$ alkylene having a pendant group;

more preferably, $L_1$ and $L_2$ are H, $L_3$ is H or a $C_1$-$C_{20}$ alkyl, $L_4$ is a $C_1$-$C_{20}$ alkylene having a pendant group;

still more preferably, $L_1$ and $L_2$ are H, $L_3$ is H or a $C_1$-$C_{10}$ alkyl, $L_4$ is a $C_1$-$C_{10}$ alkylene having a pendant group;

still more preferably, $L_1$ and $L_2$ are H, $L_3$ is H or a $C_1$-$C_{10}$ alkyl, $L_4$ is a $C_1$-$C_6$ alkylene having a pendant group.

24. The method as claimed in claim 23, characterized in that the substituent in $L_1$-$L_3$ is one or more selected from the group consisting of halogen, $C_1$-$C_{10}$ alkyl, $C_1$-$C_{10}$ alkoxy, $C_6$-$C_{10}$ aryl, cyano and hydroxy; and more preferably the substituent in $L_1$-$L_3$ is one or more selected from the group consisting of C1-C6 alkyl, halogen and C1-C6 alkoxy;

the pendant group in $L_4$ is one or more selected from the group consisting of halogen, $C_6$-$C_{20}$ aryl, $C_1$-$C_{20}$ alkyl and $C_1$-$C_{20}$ alkoxy, the $C_6$-$C_{20}$ aryl, $C_1$-$C_{20}$ alkyl and

$C_1$-$C_{20}$ alkoxy being optionally substituted by a substituent, which is preferably one or more selected from the group consisting of halogen, $C_1$-$C_{10}$ alkyl, $C_1$-$C_{10}$ alkoxy, $C_6$-$C_{10}$ aryl and hydroxy.

25. The method as claimed in any one of claims 1 to 24, wherein the cocatalyst is selected from the group consisting of organoaluminum compounds and organoboron compounds; the organoaluminum compounds are selected from the group consisting of alkylaluminoxanes, aluminum alkyls and alkyl aluminum halides; the organoboron compounds are selected from the group consisting of aromatic hydrocarbyl boron compounds and borates; the chain transfer agent is selected from the group consisting of aluminum alkyls, magnesium alkyls, boron alkyls and zinc alkyls;

preferably, when the cocatalyst is the organoaluminum compound, a molar ratio of aluminum in the cocatalyst to M in the diimine metal complex is (10-$10^7$):1, preferably (10-100000):1, and more preferably (100-10000):1; when the cocatalyst is the organoboron compound, a molar ratio of boron in the cocatalyst to M in the diimine metal complex is (0.1-1000):1, and preferably (0.1-500):1; and a molar ratio of the chain transfer agent to M in the diimine metal complex is (0.1-5000):1, and preferably (1.0-1,000):1.

26. An olefin-polar monomer copolymer prepared by the method as claimed in any one of claims 1 to 25, which is of spherical and/or spherical-like shape, and/or which has a particle diameter of from 0.1 to 50 mm.