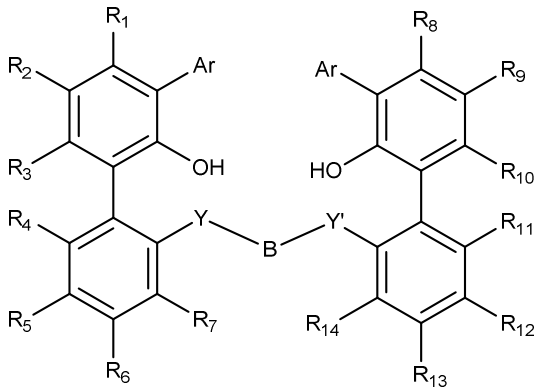
CLAIMS

What is claimed is:

1. A method for preparing a bridged bi-aromatic phenol ligand of formula (I) comprising at least one step of directly di-ortho-lithiating aromatic rings of a bridged protected bi-aromatic diphenol



(I)

wherein each of R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13} and R^{14} is independently selected from the group consisting of hydride, halide, optionally substituted hydrocarbyl, heteroatom-containing optionally substituted hydrocarbyl, alkoxy, aryloxy, silyl, boryl, dialkyl amino, alkylthio, arylthio and seleno; optionally two or more R groups can combine together into ring structures with such ring structures having from 3 to 100 non-hydrogen atoms in the ring; B is a bridging group having from one to 50 non-hydrogen atoms; Y and Y' are independently selected from O, S, NR^a and PR^a wherein R^a is optionally substituted hydrocarbyl; Ar is optionally substituted aryl or heteroaryl.

2. A method according to claim 1 comprising at least one step of aryl coupling.

3. A method according to claim 2 wherein the aryl coupling comprises at least one step of Negishi coupling.

4. A method according to claim 1 comprising the steps of:

a) treating a protected bi-aromatic phenol of formula (II) with a lithiating agent to yield a dilithio protected bi-aromatic phenol of formula (III);

6. A method according to claim 1, wherein the bridging group B is selected from the group consisting of optionally substituted divalent hydrocarbyl and divalent heteroatom containing hydrocarbyl; or

wherein B is selected from the group consisting of optionally substituted divalent alkyl, alkenyl, alkynyl, heteroalkyl, heteroalkenyl, heteroalkynyl, aryl, heteroaryl and silyl; or

wherein B is represented by the general formula—$(QR^{15}_{2-z''})_{z'}$—wherein each Q is either carbon or silicon and each R^{15} may be the same or different from the others such that each R^{15} is selected from the group consisting of hydride and optionally substituted hydrocarbyl and heteroatom containing hydrocarbyl, and optionally two or more R^{15} groups may be joined into a ring structure having from 3 to 50 atoms in the ring structure not counting hydrogen atoms; z' is an integer from 1 to 10; and z'' is 0, 1 or 2; or

wherein B comprises optionally substituted divalent alkyl; or

wherein each of R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13} and R^{14} is independently selected from the group consisting of hydride, and optionally substituted alkyl and aryl; or

wherein Ar is independently selected from the group consisting of optionally substituted phenyl, naphthyl, biphenyl, anthracenyl, and phenanthrenyl; or

wherein Ar is independently selected from the group consisting of thiophene, pyridine, isoxazole, pyrazole, pyrrole, furan or benzo-fused analogues of these rings.

7. A method according to claim 4 wherein PG is selected from methyl, benzyl, substituted benzyl, alkoxymethyl, tetrahydropyranyl, silyl, and allyl.

8. A method according to claim 1 wherein lithiation is performed with an alkyl or aryl lithium compound; or

wherein lithiation is performed with ^{n}BuLi.

9. A method according to claim 4 wherein the zinc compound or the zinc halide comprises zinc (II) chloride; or

wherein the palladium or nickel catalyst comprises a palladium or nickel phosphine compound; or

wherein the palladium phosphine compound comprises bis(tri-tert-butylphosphine)palladium.

10. A ligand of formula (I) or formula (XIV) prepared by a method according to any one of claims 1 to 9.