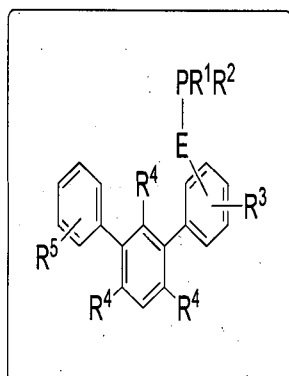
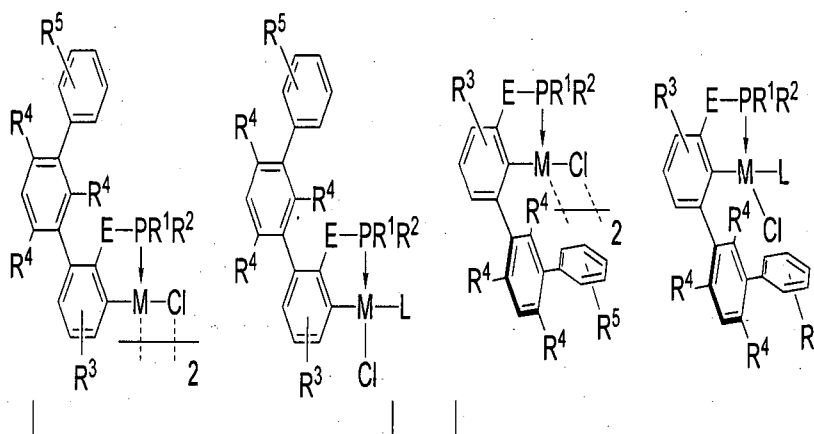


A*STAR Ligand Set

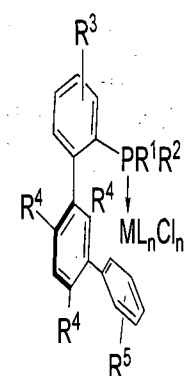
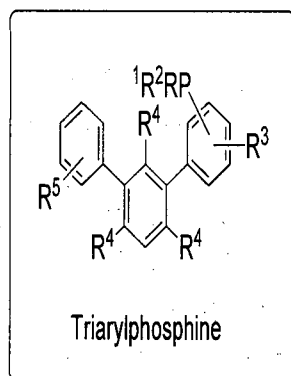


A*STAR Catalyst Examples



ortho-metallated 1,2-regioisomer

ortho-metallated 1,3-regioisomer



M-phosphine complex

R^1 = alkyl, cycloalkyl, aryl, heteroaryl, E-alkyl, E-cycloalkyl, E-aryl (E = O, S, NR'_2 , P, SiR'_2 , AsR'_2 , CR'_2)

R^2 = alkyl, cycloalkyl, aryl, heteroaryl, E-alkyl, E-cycloalkyl, E-aryl (E = B, O, N, S, Si)

R^3 = H, alkyl, cycloalkyl, haloalkyl, halogen, E-alkyl, E-cycloalkyl, (E = O, N, S, Si)

R^4 = H, alkyl, cycloalkyl, haloalkyl, E-alkyl, E-cycloalkyl, (E = O, N, S, Si)

R^5 = H, alkyl, cycloalkyl, haloalkyl, halogen, E-alkyl, E-cycloalkyl, (E = O, N, S, Si)

R' = H, alkyl, alkenyl, alkynyl, OH, alkoxy, aryl, heteroaryl

L = PR^6_3 , $P(OR)^6_3$ (R^6 = alkyl, cycloalkyl, aryl, heteroaryl), heteroaryl

M = Group 8, 9, 10, 11 transition metals

n = 0 - 6

Figure 1

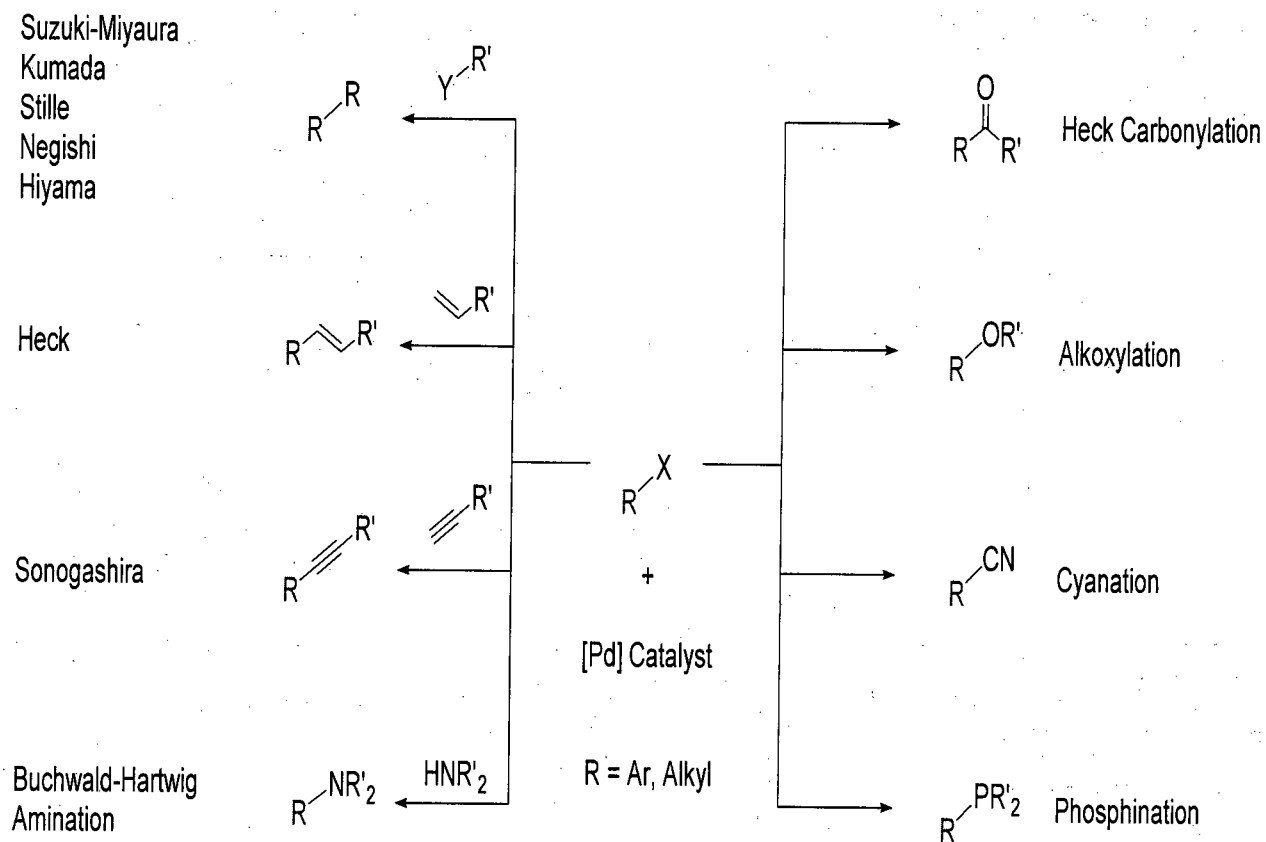


Figure 2

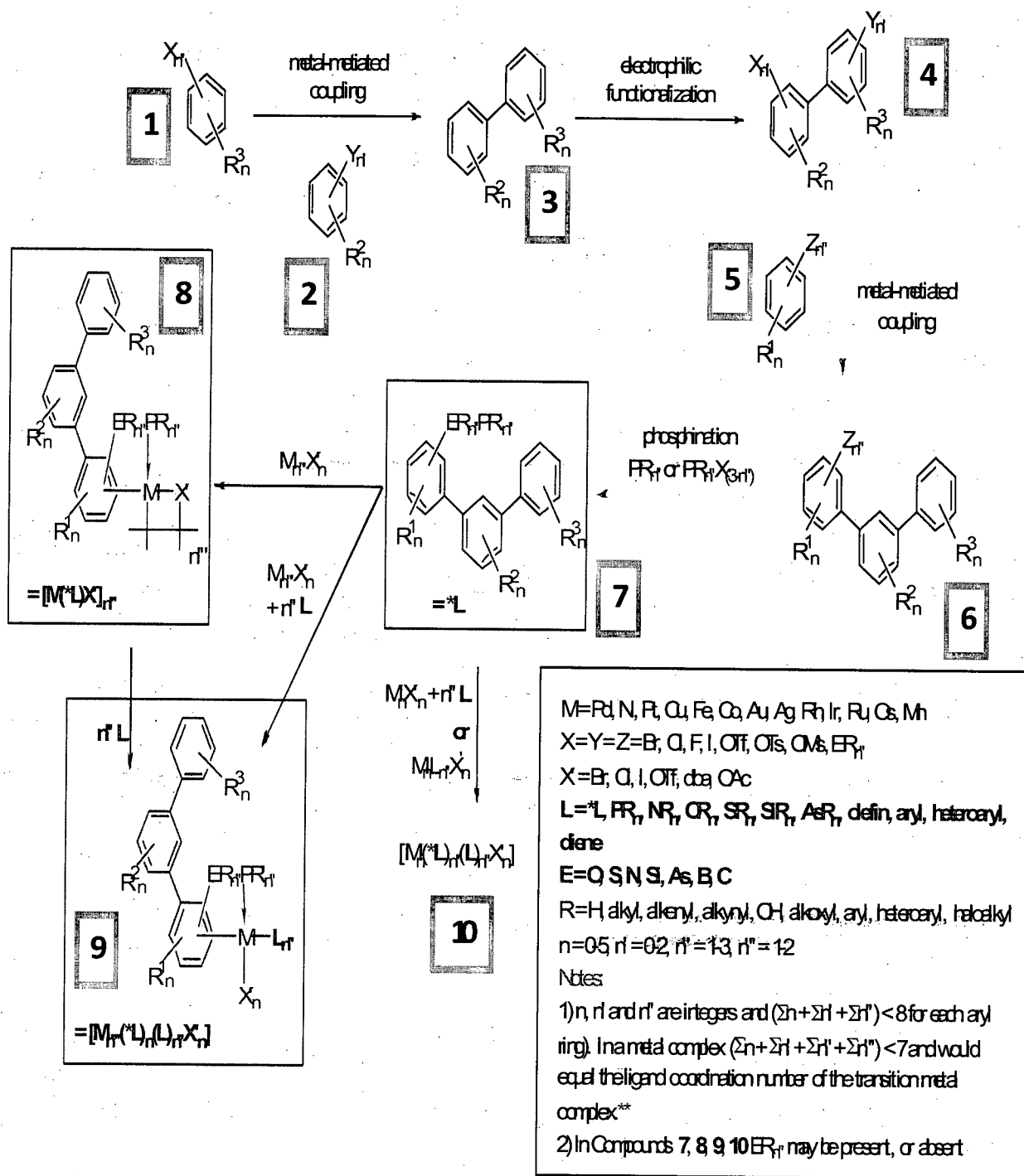


Figure 3

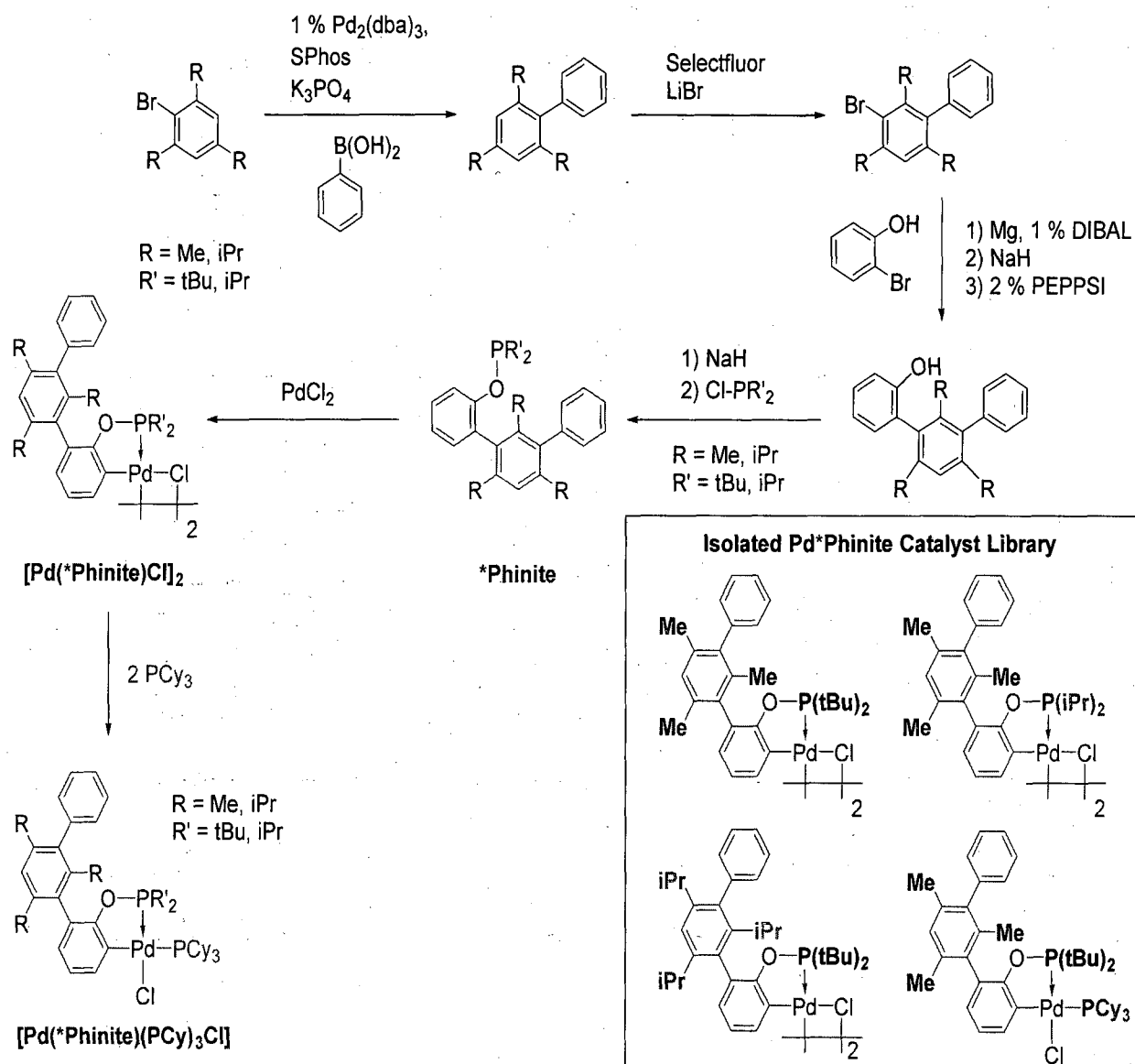


Figure 4

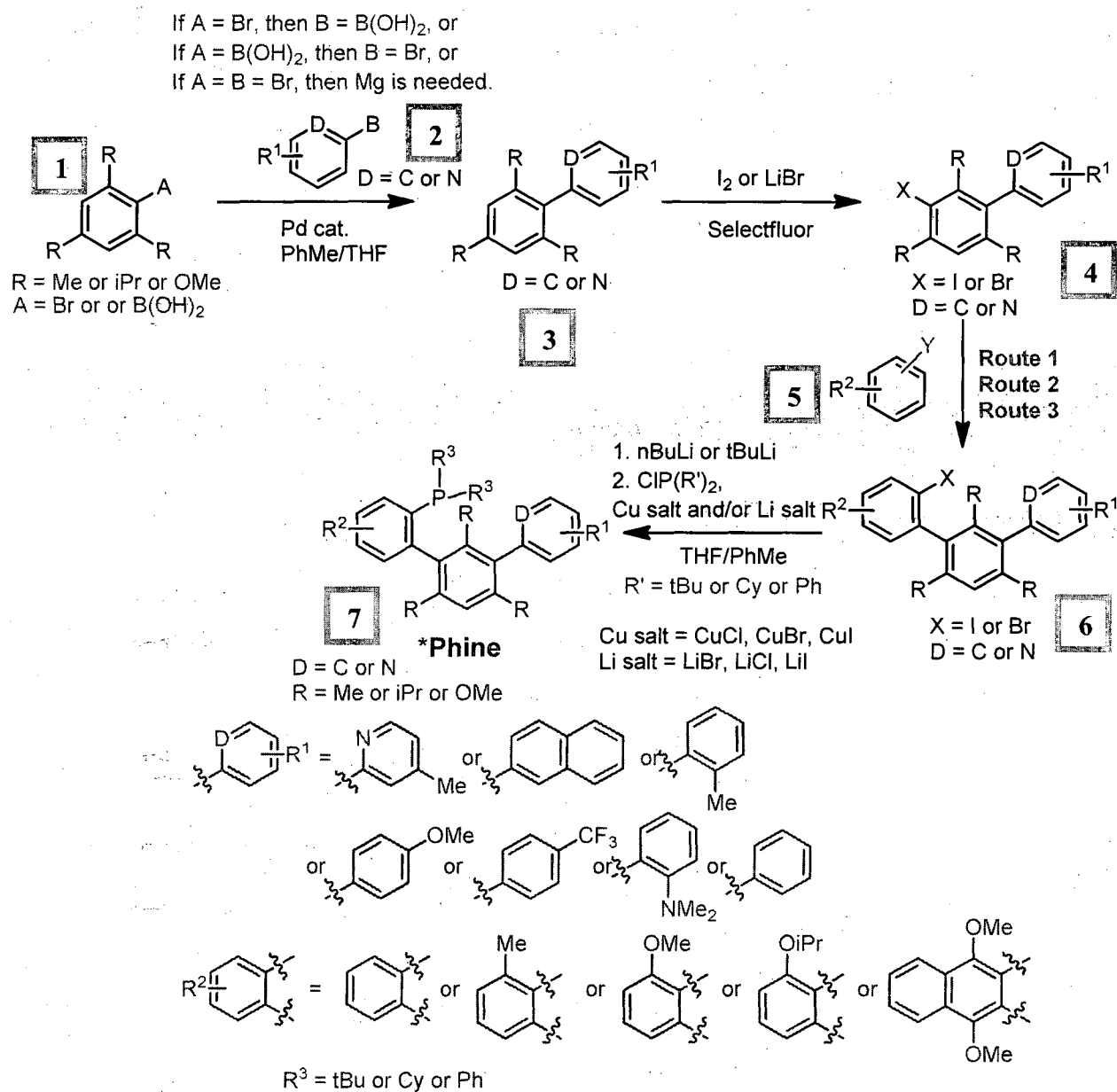


Figure 5

6/11

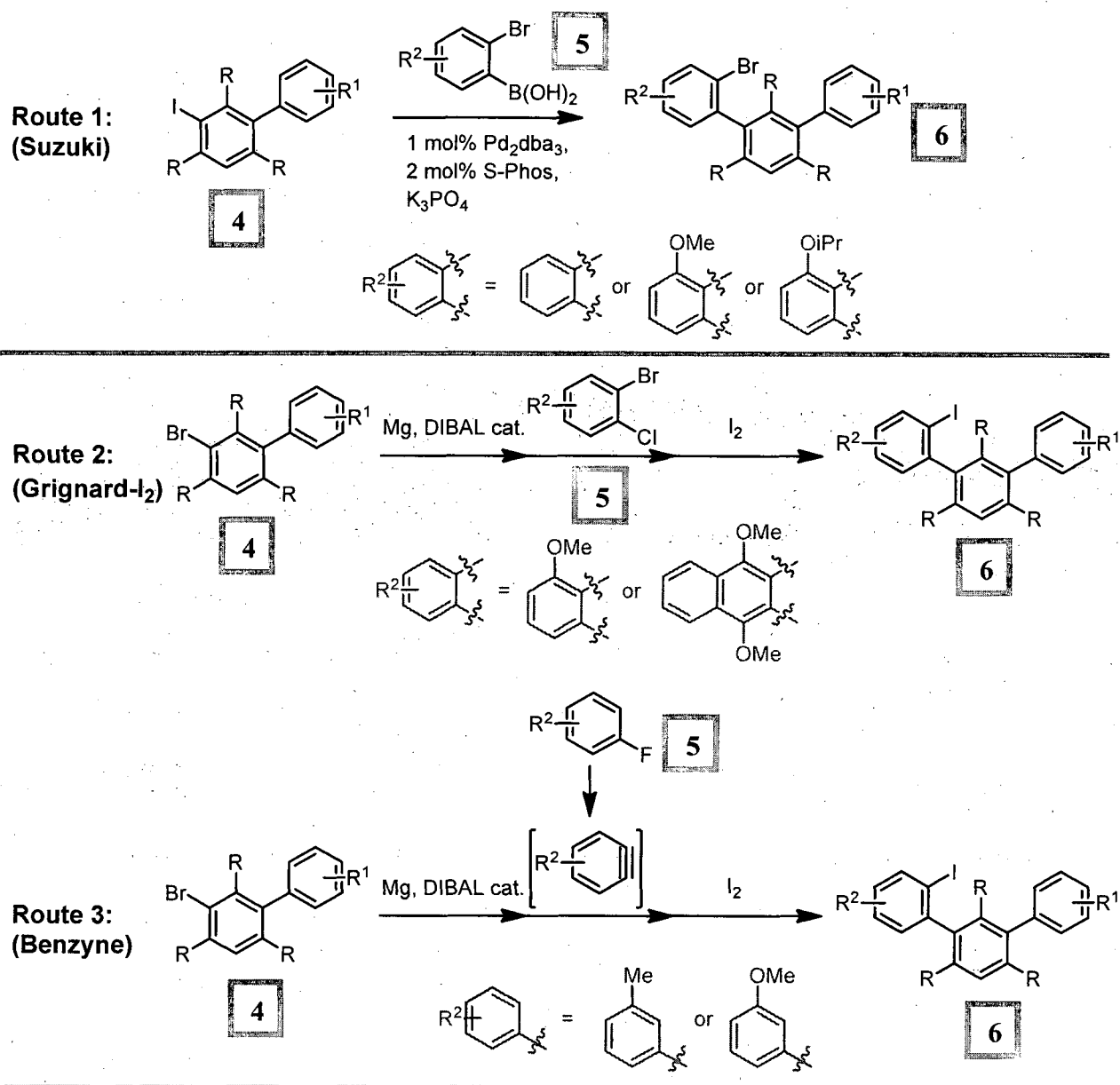


Figure 6

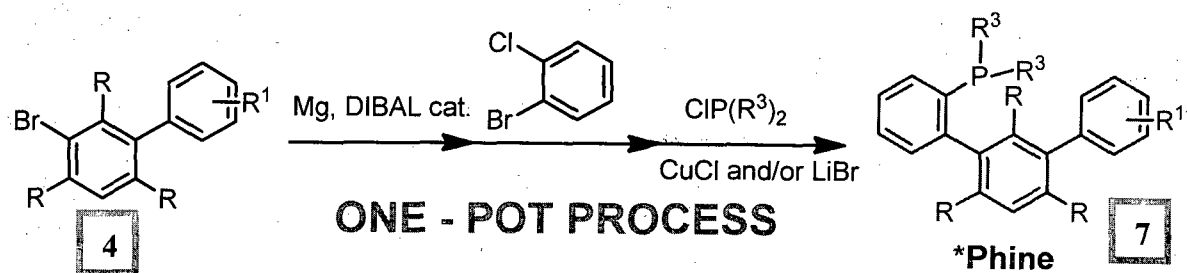


Figure 7

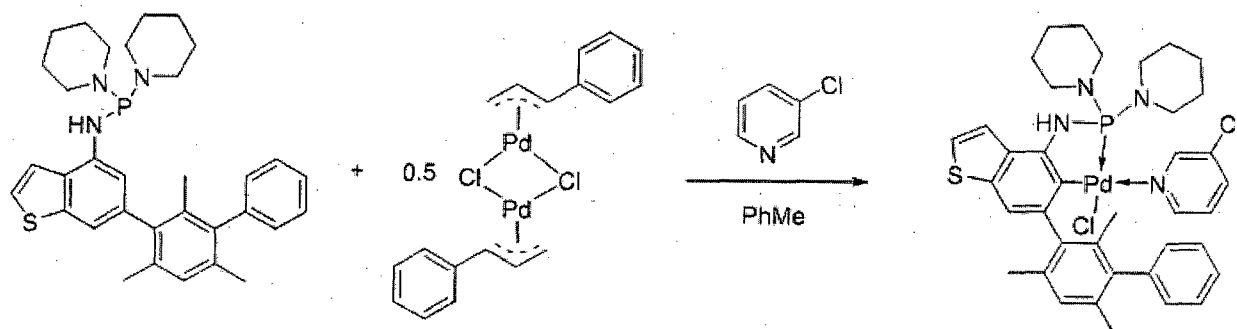
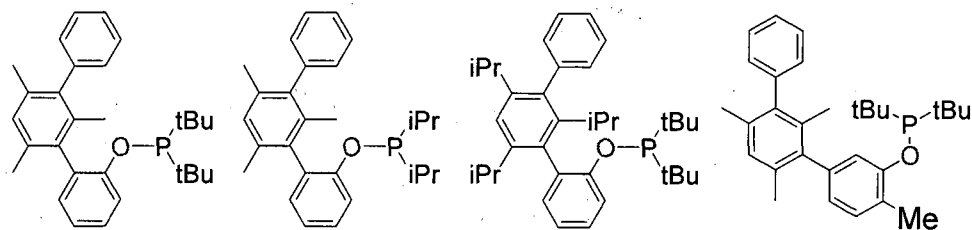
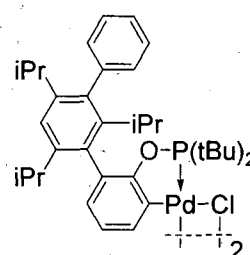
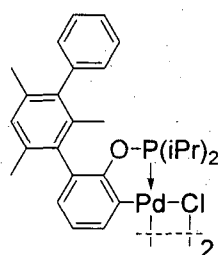
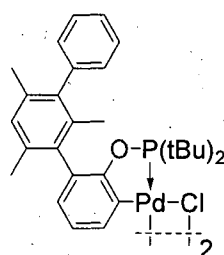
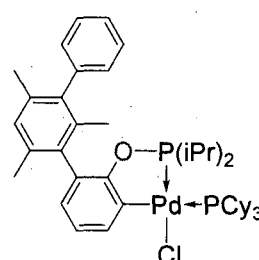
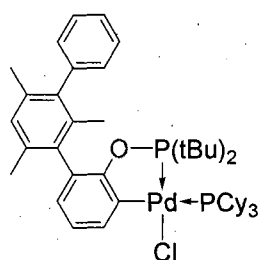
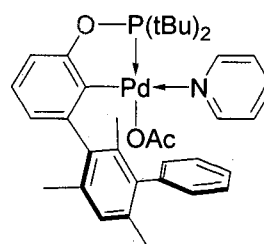
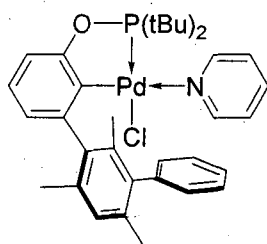
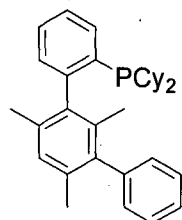
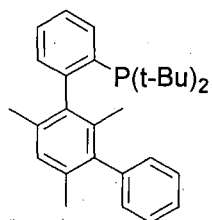
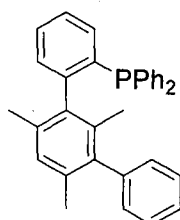
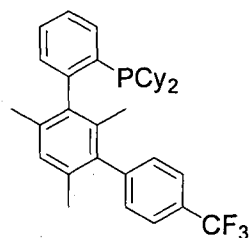
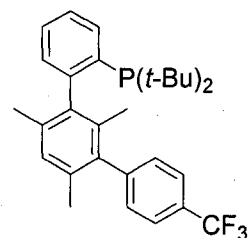
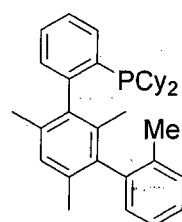
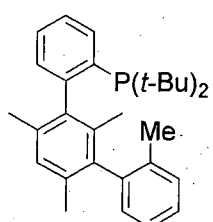
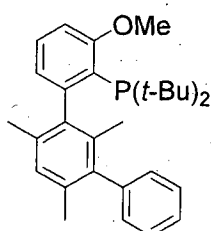
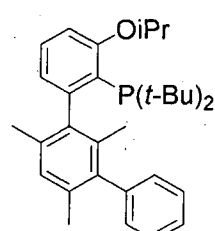
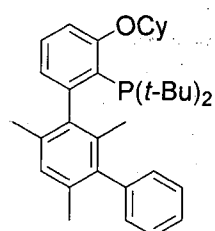
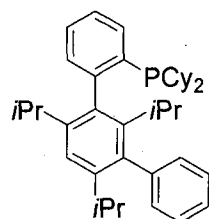
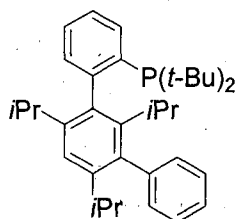
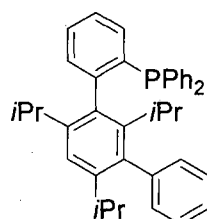
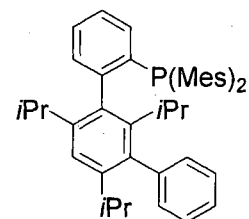
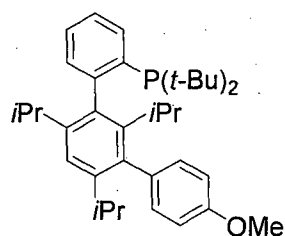
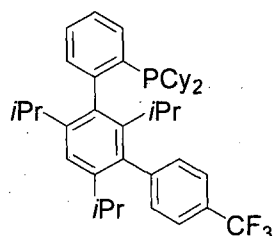
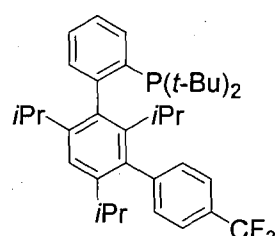
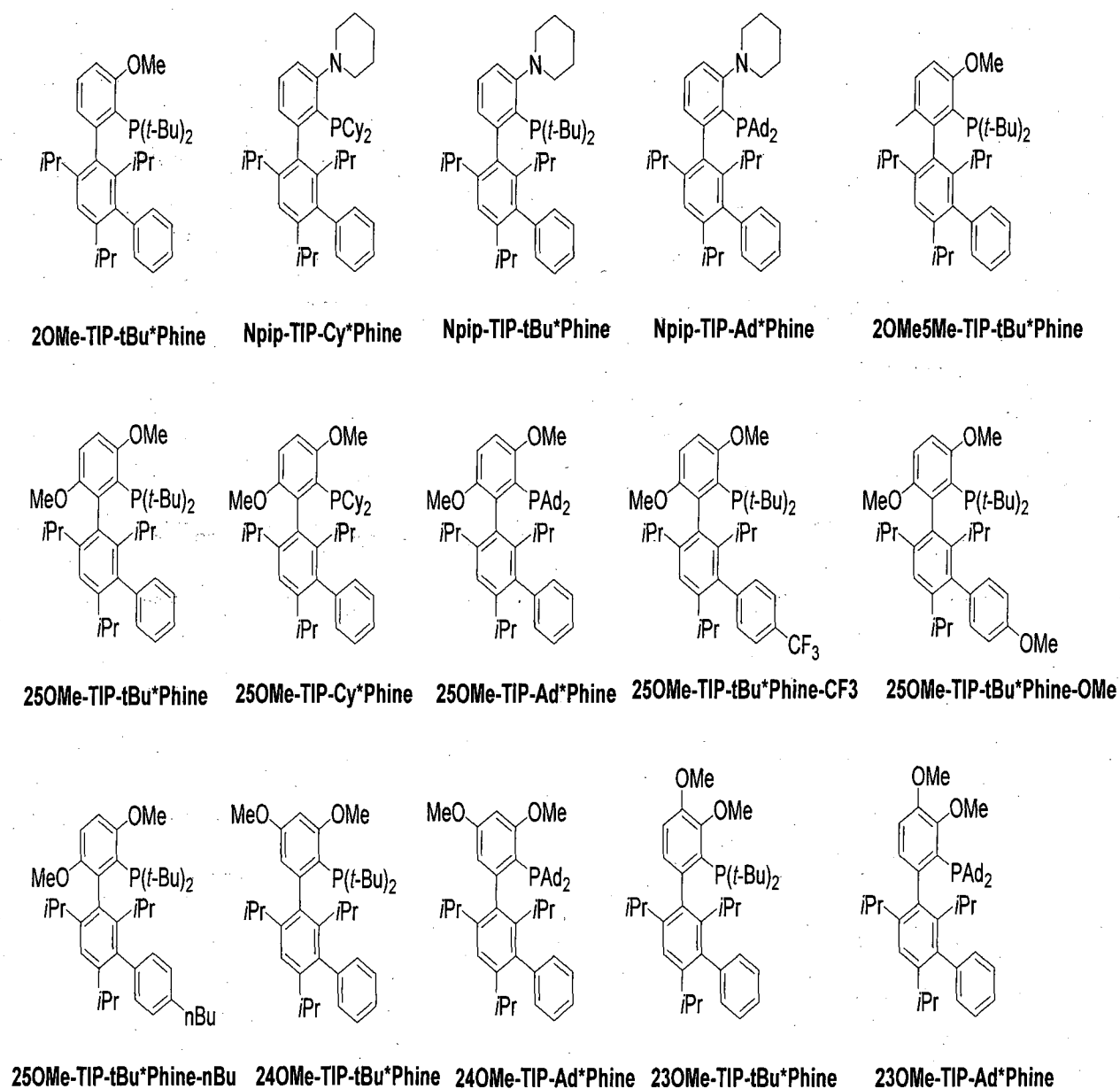
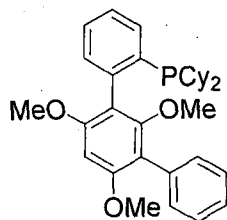
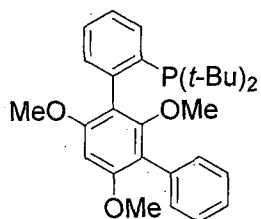
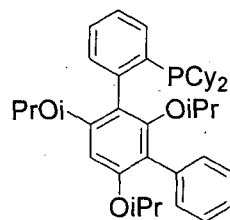
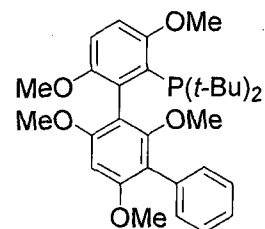


Figure 8

Phinite Ligands and Precatalysts****1,2-tBu*Phinite*1,2-iPr*Phinite****1,2-tBu*Phinite-TIP****1,3-tBu*Phinite****[Pd(1,2-tBu*Phinite)Cl]₂****[Pd(1,2-iPr*Phinite)Cl]₂****[Pd(1,2-tBu*Phinite-TIP)Cl]₂****Pd(1,2-tBu*Phinite)(PCy₃)Cl****Pd(1,2-iPr*Phinite)(PCy₃)Cl****Pd(1,3-tBu*Phinite)(py)Cl****Pd(1,3-tBu*Phinite)(py)OAc****Figure 9**

Mesityl Series**Cy*Phine****tBu*Phine****Ph*Phine****Cy*Phine-CF3****tBu*Phine-CF3****Cy*Phine-Me****tBu*Phine-Me****OMe-tBu*Phine****OPr-tBu*Phine****OCy-tBu*Phine****TIP Series****TIP-Cy*Phine****TIP-tBu*Phine****TIP-Ph*Phine****TIP-Mes*Phine****TIP-tBu*Phine-OMe****TIP-Cy*Phine-CF3****TIP-tBu*Phine-CF3****Figure 10a**

Modified TIP Series**Figure 10b**

TOM/TOP Series**TOM-Cy*Phine****TOM-tBu*Phine****TOP-Cy*Phine****25OMe-TOM-tBu8Phine****Figure 10c**