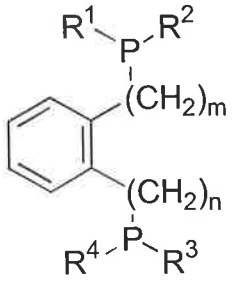
Claims

1. Compound of formula (**I**)



(**I**)

where

m and n are each independently 0 or 1;

R^1 and R^3 are each a -(C_3-C_{20})-heteroaryl radical;

R^2 and R^4 are each independently selected from -(C_1-C_{12})-alkyl, -(C_3-C_{12})-cycloalkyl, -(C_3-C_{12})-heterocycloalkyl, -(C_3-C_{20})-heteroaryl;

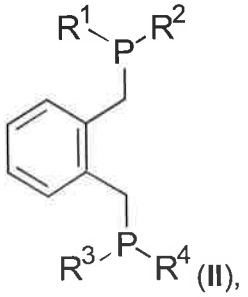
and

R^1, R^2, R^3, R^4, if they are -(C_1-C_{12})-alkyl, -(C_3-C_{12})-cycloalkyl, -(C_3-C_{12})-heterocycloalkyl or -(C_3-C_{20})-heteroaryl,

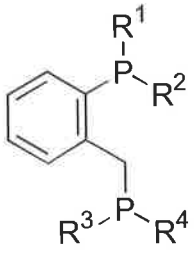
may each independently be substituted by one or more substituents selected from -(C_1-C_{12})-alkyl, -(C_3-C_{12})-cycloalkyl, -(C_3-C_{12})-heterocycloalkyl, -O-(C_1-C_{12})-alkyl, -O-(C_1-C_{12})-alkyl-(C_6-C_{20})-aryl, -O-(C_3-C_{12})-cycloalkyl, -S-(C_1-C_{12})-alkyl, -S-(C_3-C_{12})-cycloalkyl, -COO-(C_1-C_{12})-alkyl, -COO-(C_3-C_{12})-cycloalkyl, -CONH-(C_1-C_{12})-alkyl, -CONH-(C_3-C_{12})-cycloalkyl, -CO-(C_1-C_{12})-alkyl, -CO-(C_3-C_{12})-cycloalkyl, -N-[(C_1-C_{12})-alkyl]$_2$, -(C_6-C_{20})-aryl, -(C_6-C_{20})-aryl-(C_1-C_{12})-alkyl, -(C_6-C_{20})-aryl-O-(C_1-C_{12})-alkyl, -(C_3-C_{20})-heteroaryl, -(C_3-C_{20})-heteroaryl-(C_1-C_{12})-alkyl, -(C_3-C_{20})-heteroaryl-O-(C_1-C_{12})-alkyl, -COOH, -OH, -SO_3H, -NH_2, halogen.

2. Compound according to Claim 1,

of one of the formulae (**II**) and (**III**)



(**II**),



(III).

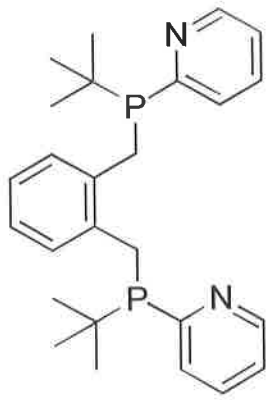
3. Compound according to either of Claims 1 and 2,
where the R^2, R^4, or both the R^2 and R^4 radicals are a -(C_3-C_{20})-heteroaryl radical.

4. Compound according to any of Claims 1 to 3,
where R^2 and R^4 are each independently selected from -(C_1-C_{12})-alkyl, -(C_3-C_{12})-cycloalkyl, -(C_3-C_{12})-heterocycloalkyl.

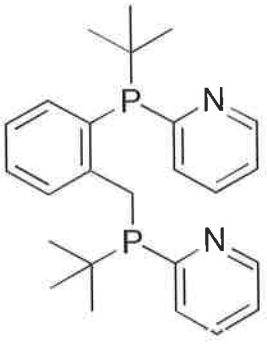
5. Compound according to any of Claims 1 to 4,
where R^2 and R^4 are each independently selected from -(C_1-C_{12})-alkyl.

6. Compound according to any of Claims 1 to 5,
where R^1, R^2, R^3, R^4, if they are a heteroaryl radical, are each independently selected from furyl, thienyl, pyrrolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, imidazolyl, pyrazolyl, furazanyl, tetrazolyl, pyridyl, pyridazinyl, pyrimidyl, pyrazinyl, benzofuranyl, indolyl, isoindolyl, benzimidazolyl, quinolyl, isoquinolyl.

7. Compound according to any of Claims 1 to 6,
of one of the formulae (**1**) and (**18**)



(**1**)



(**18**).

8. Complex comprising Pd and a compound according to any of Claims 1 to 7.

9. Process comprising the following process steps:

a) initially charging an ethylenically unsaturated compound;

b) adding a compound according to any of Claims 1 to 7 and a compound comprising Pd,
or adding a complex according to Claim 8;

c) adding an alcohol;

d) feeding in CO;

e) heating the reaction mixture, with conversion of the ethylenically unsaturated compound to an ester.

10. Process according to Claim 9,
wherein the ethylenically unsaturated compound comprises 2 to 30 carbon atoms and optionally one or more functional groups selected from carboxyl, thiocarboxyl, sulpho, sulphinyl, carboxylic anhydride, imide, carboxylic ester, sulphonic ester, carbamoyl, sulphamoyl, cyano, carbonyl, carbonothioyl, hydroxyl, sulphhydryl, amino, ether, thioether, aryl, heteroaryl or silyl groups and/or halogen substituents.

11. Process according to either of Claims 9 and 10,
wherein the ethylenically unsaturated compound is selected from ethene, propene, 1-butene, *cis*- and/or *trans*-2-butene, isobutene, 1,3-butadiene, 1-pentene, *cis*- and/or *trans*-2-pentene, 2-methyl-1-butene, 3-methyl-1-butene, 2-methyl-2-butene, hexene, tetramethylethylene, heptene, 1-octene, 2-octene, di-n-butene, and mixtures thereof.

12. Process according to any of Claims 9 to 11,
wherein the compound comprising Pd in process step b) is selected from palladium dichloride, palladium(II) acetylacetonate, palladium(II) acetate, dichloro(1,5-

cyclooctadiene)palladium(II), bis(dibenzylideneacetone)palladium, bis(acetonitrile)dichloropalladium(II), palladium(cinnamyl) dichloride.

13. Process according to any of Claims 9 to 12, wherein the alcohol in process step c) is selected from methanol, ethanol, 1-propanol, 1-butanol, 1-pentanol, 1-hexanol, 2-propanol, *tert*-butanol, 3-pentanol, cyclohexanol, phenol, and mixtures thereof.

14. Use of a compound according to any of Claims 1 to 7 or of a complex according to Claim 8 for catalysis of an alkoxycarbonylation reaction.