Claims

1. Process comprising the following process steps:

a) introducing an ethylenically unsaturated compound;

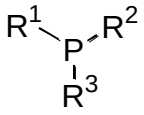
b) adding a monophosphine ligand and a compound which comprises Pd, or adding a complex comprising Pd and a monophosphine ligand;

c) adding an aliphatic alcohol;

d) supplying CO;

e) heating the reaction mixture, the ethylenically unsaturated compound being reacted to form an ester;

where the monophosphine ligand is a compound of formula (**I**)



(**I**),

where

R^1 is selected from -(C_1-C_{12})-alkyl having branched alkyl groups, -O-(C_1-C_{12})-alkyl, -O-(C_6-C_{20})-aryl, -(C_6-C_{20})-aryl, -(C_3-C_{12})-cycloalkyl, -(C_3-C_{12})-heterocycloalkyl, -(C_3-C_{20})-heteroaryl;

R^2 is selected from -(C_6-C_{20})-aryl, -(C_3-C_{12})-cycloalkyl, -(C_3-C_{12})-heterocycloalkyl, -(C_3-C_{20})-heteroaryl;

R^3 is -(C_3-C_{20})-heteroaryl selected from furyl, thienyl, pyrrolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, imidazolyl, pyrazolyl, furazanyl, tetrazolyl, pyridazinyl, pyrimidyl, pyrazinyl, benzofuranyl, indolyl, isoindolyl, benzimidazolyl and isoquinolyl;

and R^1, R^2 and R^3 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, or

wherein the monophosphine ligand is 2-(tert-butyl(phenyl)phosphino)pyridine.

2. Process according to Claim 1,

wherein R^1 is selected from -(C_1-C_{12})-alkyl having branched alkyl groups, -(C_6-C_{20})-aryl, -(C_3-C_{12})-cycloalkyl, -(C_3-C_{20})-heteroaryl.

3. Process according to either of Claims 1 and 2,
wherein R^2 is selected from -(C_6-C_{20})-aryl, -(C_3-C_{12})-cycloalkyl, -(C_3-C_{20})-heteroaryl.

4. Process according to any of Claims 1 to 3,
wherein R^1 and R^2, if they are -(C_3-C_{20})-heteroaryl, are selected from heteroaryl groups having five to ten ring atoms.

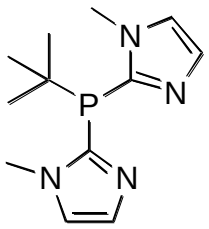
5. Process according to any of Claims 1 to 4,
wherein R^1 and R^2, if they are -(C_3-C_{20})-heteroaryl, are selected from furyl, thienyl, pyrrolyl, imidazolyl, pyridyl, pyrimidyl, indolyl.

6. Process according to any of Claims 1 to 5,
wherein R^3 is selected from heteroaryl groups having five to ten ring atoms.

7. Process according to any of Claims 1 to 6,
wherein R^3 is selected from furyl, thienyl, pyrrolyl, imidazolyl, pyrimidyl, indolyl.

8. Process according to any of Claims 1 to 7,
wherein R^1, R^2 and R^3 may each independently be substituted by one or more substituents selected from -(C_1-C_{12})-alkyl, -(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.

9. Process according to any of Claims 1 to 8,
wherein the monophosphine ligand is selected from compounds of one of the formulae (**1**), (**2**), (**7**) to (**9**) and (**11**) to (**14**):



(**1**),