Synthesis Alerts is a monthly feature to help readers of Synthesis keep abreast of new reagents, catalysts, ligands, chiral auxiliaries, and protecting groups which have appeared in the recent literature. Emphasis is placed on new developments but established reagents, catalysts etc are also covered if they are used in novel and useful reactions. In each abstract, a specific example of a transformation is given in a concise format designed to aid visual retrieval of information.

Synthesis Alerts is a personal selection by:

Fabrice Anizon, Robert Chow, Derek Johnston, Philip Kocienski, and Sukhjinder Uppal of Glasgow University.

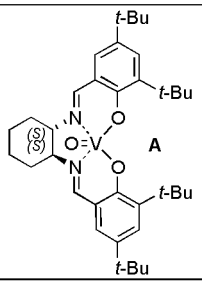
The journals regularly covered by the abstractors are:

Angewandte Chemie International Edition
Bulletin of the Chemical Society of Japan
Chemical Communications
Chemistry A European Journal
Chemistry Letters
Collection Czechoslovak Chemical Communications
European Journal of Organic Chemistry
Helvetica Chimica Acta
Heterocycles
Journal of the American Chemical Society
Journal of Organic Chemistry
Organic Letters
Organometallics
Perkin Transactions 1
Synlett
Synthesis
Tetrahedron
Tetrahedron Asymmetry and Tetrahedron Letters

Article Identifier:
1437-210X,E;2000,0,11,1631,1634,ftx,en;X01100SS.pdf

Chiral (salen)VO Catalyst ***Catalyst***

The title reagent catalyses the asymmetric conversion of aromatic and aliphatic aldehydes into the corresponding trimethylsilyl ethers of cyanohydrins.



Y. N. Belokon, M. North, T. Parsons *Org. Lett.* **2000**, *2*, 1617.

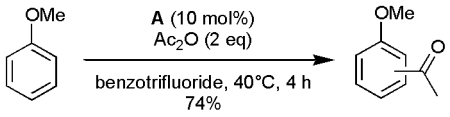
8 examples (%ee = 68-95%) are reported.

Ytterbium Tridecaflide ***Catalyst***

The title reagent is used in a fluorous biphase catalytic Friedel–Crafts acylation of arenes with acid anhydrides. The catalyst is recovered by extraction of the spent acylation reaction mixture with perfluoromethyldecalin.

$Yb[C(SO_2C_6F_{13})_3]_3$

A

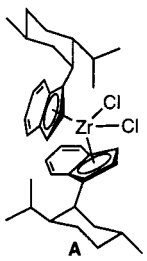


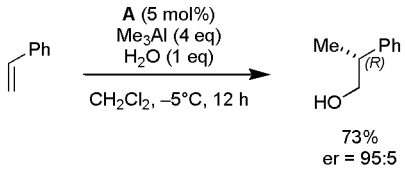
A. G. M. Barrett, D. C. Braddock, D. Catterick, D. Chadwick, J. P. Henschke, R. M. McKinnell *Synlett* **2000**, 847.

1 example (yield 74%) and 2 other ytterbium tris(perfluoroalkanesulfonyl)methide catalysts are reported.

Chiral Zirconocene Catalyst ***Catalyst***

Reagent **A** catalyses the enantioselective methylalumination of terminal alkenes. The reaction is accelerated by the addition of either water or methylaluminoxane.





P. Wipf, S. Ribe *Org. Lett.* **2000**, *2*, 1713.

10 examples (yields 35-94%, %ee = 55-90%) are reported.

$Pd(PhCN)_2Cl_2$ / Tri-*tert*-butylphosphine — *Catalyst*

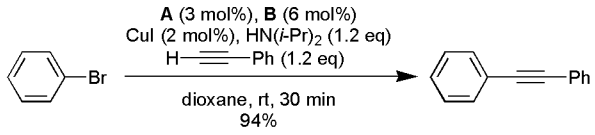
The title reagent pair serves as an efficient and versatile catalyst for Sonagashira reactions of aryl bromides at room temperature.

$Pd(PhCN)_2Cl_2$

A

$P(t\text{-}Bu)_3$

B

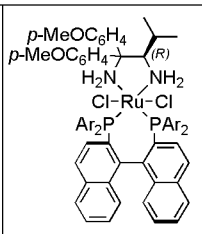


T. Hundertmark, A. F. Littke, S. L. Buchwald, G. C. Fu *Org. Lett.* **2000**, *2*, 1729.

12 examples (yields 63-95%) are reported.

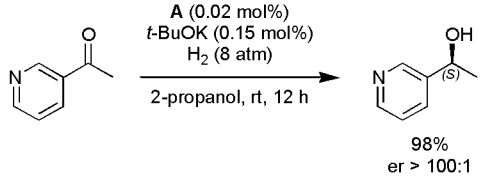
trans-$RuCl_2$[(*R*)-xylbinap][(*R*)-daipen] — *Catalyst*

The title reagent acts as an efficient catalyst for asymmetric hydrogenation of hetero-aromatic ketones.



Ar = 3,5-$(CH_3)_2C_6H_3$

A



T. Ohkuma, M. Koizumi, M. Yoshida, R. Noyori *Org. Lett.* **2000**, *2*, 1749.

14 examples (yields 51, 91-98%, %ee = 91-100%) are reported.

Palladium-Thiourea-1,3-bis(diphenylphosphino)propane complex — *Catalyst*

The title complex catalyses the carbonylative annulation of iodophenol acetates with arylacetylenes to construct the corresponding flavones.

$Pd(Ph_3P)_2Cl_2$

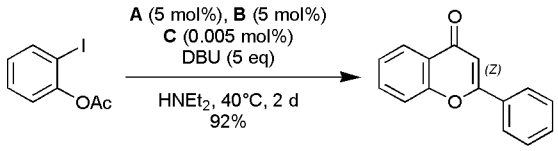
A

H_2NCSNH_2

B

dppp

C



H. Miao, Z. Yang *Org. Lett.* **2000**, *2*, 1765.

8 examples (yields 68-92%) are reported.

Palladium/Carbon-Ethylenediamine — *Catalyst*

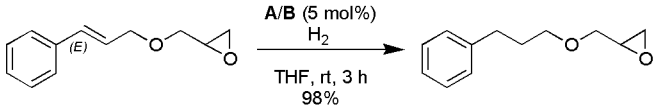
The title reagent pair catalyse the chemoselective hydrogenation of olefin, nitro and azide functions in the presence of epoxides.

Pd/C

A

$H_2NCH_2CH_2NH_2$

B

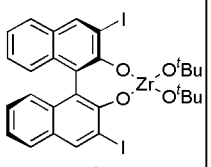


H. Sajiki, K. Hattori, K. Hirota *Chem. Eur. J.* **2000**, *6*, 2200.

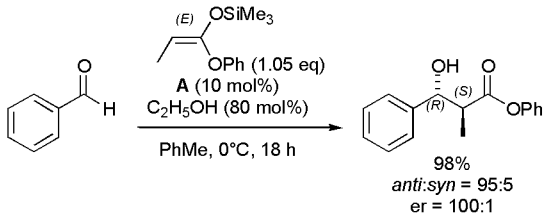
14 examples (yields 85-100%) are reported.

Chiral Zirconium Catalyst — *Catalyst*

The title reagent catalyses the *anti*-selective aldol reaction of silyl enol ethers with aldehydes.



A



H. Ishitani, Y. Yamashita, H. Shimizu, S. Kobayashi *J. Am. Chem. Soc.* **2000**, *122*, 5403.

12 examples (yields 38-98%, %ee = 81-99%) are reported.

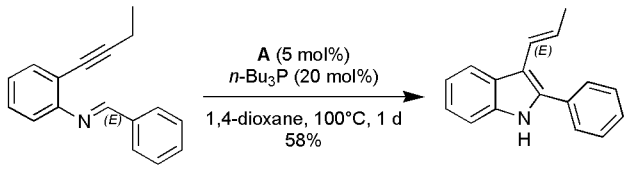
Palladium Acetate

Catalyst

The title reagent in combination with tri-*n*-butylphosphine catalyses the intramolecular cyclisation of alkynes and imines to synthesise indoles.

$Pd(OAc)_2$

A



A. Takeda, S. Kamijo, Y. Yamamoto *J. Am. Chem. Soc.* **2000**, *122*, 5662.

9 examples (yields 55-71%) are reported.

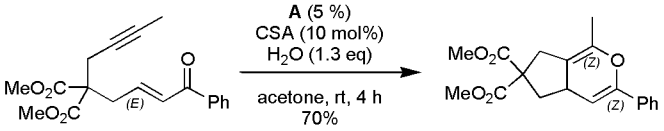
$RuCp(MeCN)_3PF_6$

Catalyst

The title reagent catalyses the hydrative cyclisation and [4+2] cycloadddition of yne-enones to afford pyrans and cyclic diketones.

$RuCp(MeCN)_3PF_6$

A



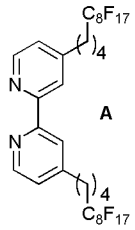
B. M. Trost, R. E. Brown, F. D. Toste *J. Am. Chem. Soc.* **2000**, *122*, 5877.

14 examples (yields 45-89%) are reported.

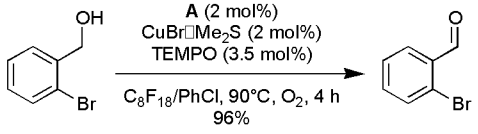
Perflouroalkyl-Substituted 2,2′-Bipyridine

Catalyst

The title reagent is used as a catalyst ligand for the oxidation of various alcohols to aldehydes and ketones under fluorous biphasic conditions.



A



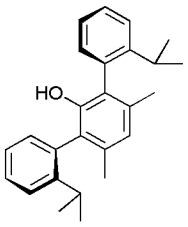
B. Betzemeier, M. Cavazzini, S. Quici, P. Knochel *Tetrahedron Lett.* **2000**, *41*, 4343.

13 examples (yields 31, 69-96%) are reported.

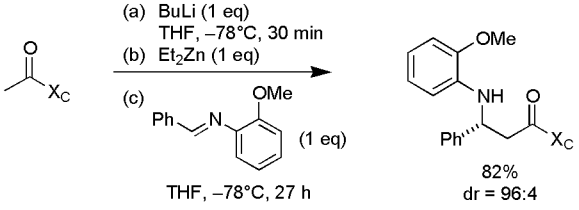
(*R*,*R*)-2,6-Bis(2-isopropylphenyl)-3,5-dimethylphenol

Chiral Auxiliary

The title reagent is an effective chiral auxiliary in asymmetric Mannich-type reactions of certain aldimines



A



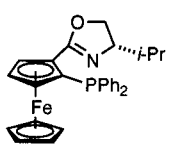
S. Saito, K. Hatanaka, H. Yamamoto *Org. Lett.* **2000**, *2*, 1891.

13 examples (yields 29-82%, %ee = 84-98%) are reported.

2(*S*)-(Diphenylphosphino)-1-[4(*S*)-isopropyl-2-oxazolin-2-yl]ferrocene [(*S*)-*i*-Pr-DIPOF]

Ligand

The title ligand is used in the enantioselective ring opening of oxabicyclic alkenes.



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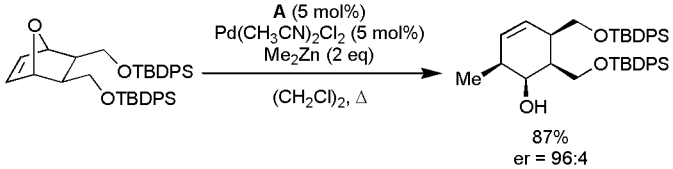


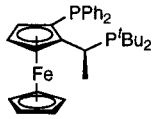
M. Lautens, S. Hiebert, J.-L. Renaud *Org. Lett.* **2000**, *2*, 1971.

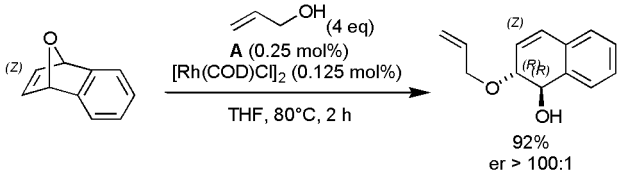
8 examples (yields 19-92%, %ee = 87-95%) are reported.

Diphosphine Ferrocene Ligand

Ligand

The title ligand mediates the rhodium-catalysed asymmetric ring-opening reaction of oxabenzonorbornadienes using alcohol and amine nucleophiles.





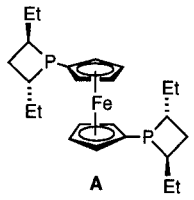
M. Lautens, K. Fagnou, T. Rovis *J. Am. Chem. Soc.* **2000**, *122*, 5650.

16 examples (yields 53-96%, %ee = 45-99%) are reported.

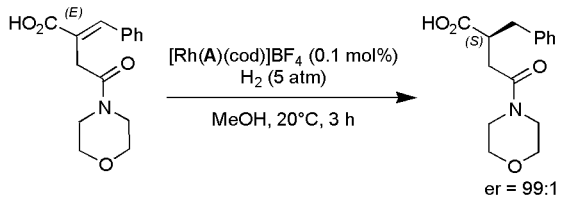
Diphosphetanylferrocene (FerroTANE)

Ligand

The title ligand is used in the enantioselective rhodium-catalysed hydrogenation of itaconate derivatives.



A



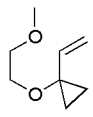
U. Berens, M. J. Burk, A. Gerlach, W. Hems *Angew. Chem. Int. Ed.* **2000**, *39*, 1981.

13 examples (%ee = 88-99%) are reported.

1-(2-Methyoxyethoxy)-1-vinylcyclopropane

Reagent

The title reagent is used as a five-carbon component in metal-catalysed [5+2] cycloadditions to prepare substituted cycloheptenones.



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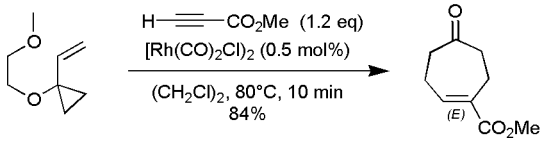


P. A. Wender, A. J. Dyckman, C. O. Husfeld, M. J. C. Scanio *Org. Lett.* **2000**, *2*, 1609.

11 examples (yields 75-97%) are reported.

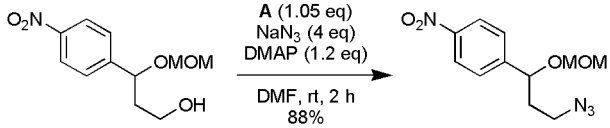
Bis(2,4-dichlorophenyl)chlorophosphate

Reagent

The title reagent is used in a one-pot preparation of alkyl azides from alkanols.

$(Cl_2PhO)_2POCl$

A



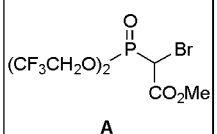
C. Yu, B. Liu, L. Hu *Org. Lett.* **2000**, *2*, 1959.

8 examples (yields 76-92%) are reported.

Bis(2,2,2-trifluoroethyl)bromophosphonoacetate

Reagent

The title reagent is used in the presence of *t*-BuOK and 18-C-6 to prepare (*E*)-α-bromo-acrylates by Horner-Wadsworth-Emmons (HWE) reaction with various aldehydes.



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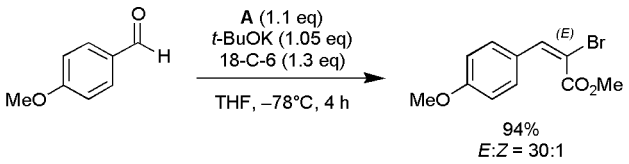

K. Tago, H. Kogen *Org. Lett.* **2000**, *2*, 1975.

12 examples (yields 47-100%, 9:1 ≤ *E*:*Z* ≤ 100:0) are reported.