

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:

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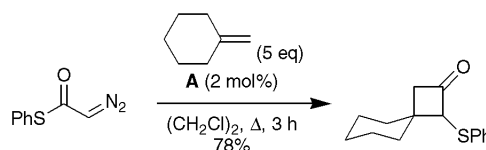
The journals regularly covered by the abstractors are:

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

Rhodium(II) Acetate

Catalyst

The title reagent catalyses the thia-Wolff rearrangement of α -diazo thiol esters to generate phenylthio-substituted ketenes for the preparation of cyclobutanones, cyclobutenones, and β -lactams.



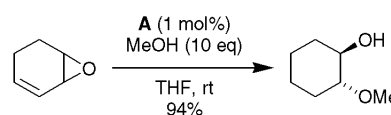
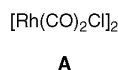
M. D. Lawlor, T. W. Lee, R. L. Danheiser
J. Org. Chem. **2000**, *65*, 4375.

18 examples (yields 14-96%) are reported.

Tetracarbonyldi- μ -chlorodirhodium(I)

Catalyst

The title reagent catalyses the ring opening of vinyl epoxides with alcohols and aromatic amines under neutral conditions at room temperature.



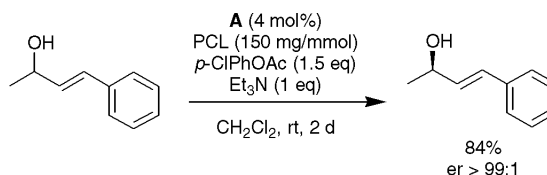
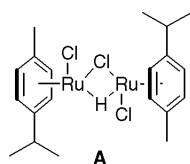
K. Fagnou, M. Lautens *Org. Lett.* **2000**, *2*, 2319.

19 examples (yields 55-94%) are reported.

(*p*-Cymene)ruthenium(II) Complex

Catalyst

Reagent **A** catalyses an enzyme-metal combination reaction developed for the dynamic kinetic resolution of allylic alcohols.

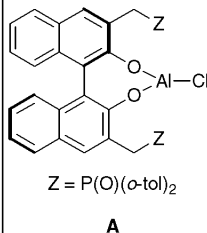


D. Lee, E. A. Huh, M.-J. Kim, H. M. Jung, J. H. Koh, J. Park *Org. Lett.* **2000**, *2*, 2377.

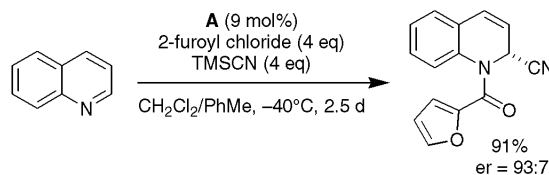
11 examples (yields 84-92%, %ee = 95->99%) are reported.

3,3'-Bis(di-*o*-tolylphosphino)-2,2'-bis(methoxymethyl)-1,1'-binaphthol**Catalyst**

The aluminium derivative **A** of the title compound catalyses the asymmetric Reissert-type reaction of quinoline and isoquinoline derivatives.

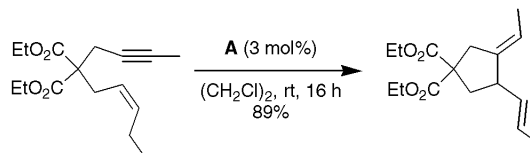


M. Takamura, K. Funabashi, M. Kanai, M. Shibasaki *J. Am. Chem. Soc.* **2000**, *122*, 6327.

**Rhodium-bisphosphinite (Rh-BICPO)****Catalyst**

The title catalyst promotes enyne cycloisomerisation to afford 1,4-dienes. The catalyst is prepared from [Rh(BICPO)Cl]₂ (1.5 mol%) and AgSbF₆ (3 mol%) in the presence of substrate.

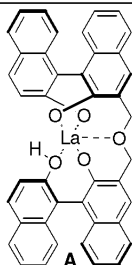
Rh-BICPO
A



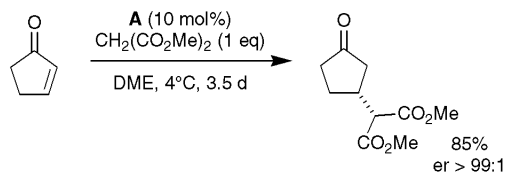
P. Cao, B. Wang, X. Zhang *J. Am. Chem. Soc.* **2000**, *122*, 6490.

La-linked-BINOL Complex**Catalyst**

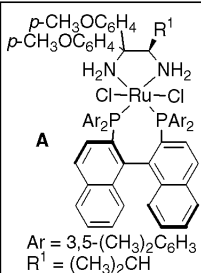
The title reagent is a stable, storable and reusable complex used to catalyse the asymmetric Michael reaction.



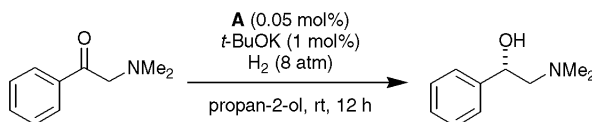
Y. S. Kim, S. Matsunaga, J. Das, A. Sekine, T. Ohshima, M. Shibasaki *J. Am. Chem. Soc.* **2000**, *122*, 6506.

**trans-RuCl₂[(*R*)-xybinap][(*R*)-daipen]****Catalyst**

The title reagent catalyses the asymmetric hydrogenation of amino ketones.

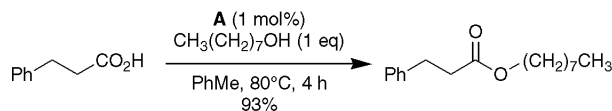


T. Ohkuma, D. Ishii, H. Takeno, R. Noyori *J. Am. Chem. Soc.* **2000**, *122*, 6510.

**Diphenylammonium Trifluoromethanesulfonate (DPAT)****Catalyst**

The title reagent catalyses the esterification of carboxylic acids and transesterification of carboxylic esters.

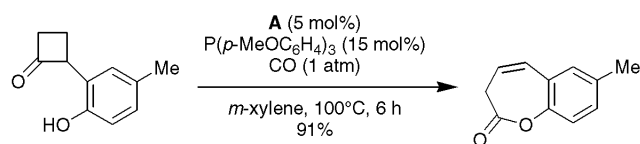
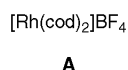
Ph₂NH⁺HOTf
A



K. Wakasugi, T. Misaki, K. Yamada, Y. Tanabe *Tetrahedron Lett.* **2000**, *41*, 5249.

Bis(cyclooctadiene)rhodium Tetrafluoroborate**Catalyst**

The title reagent catalyses the C-C bond cleavage of cyclobutanone in the preparation of lactones.

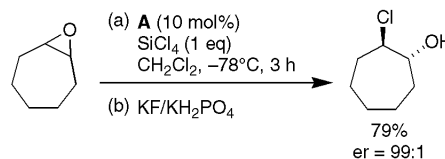
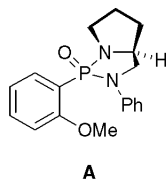


M. Murakami, T. Tsuruta, Y. Ito *Angew. Chem. Int. Ed.* **2000**, *39*, 2484.

5 examples (yields 77-92%) are reported.

ortho-Methoxyphenyldiazaphosphonamide**Catalyst**

The title reagent is used for the catalytic asymmetric ring opening of various *meso* epoxides.

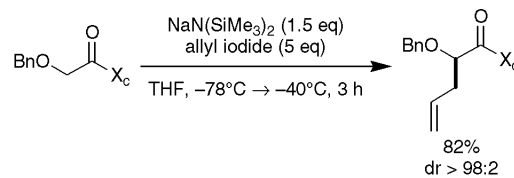
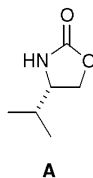


J. M. Brunel, O. Legrand, S. Reymond, G. Buono *Angew. Chem. Int. Ed.* **2000**, *39*, 2554.

8 examples (yields 41-85%, %ee = 12-99%) are reported.

4-Isopropyl-2-oxazolidinone**Chiral Auxiliary**

Reagent **A** is used as a chiral auxiliary in the diastereoselective alkylation of glycolate oxazolidinones.

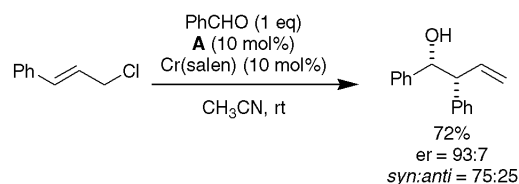
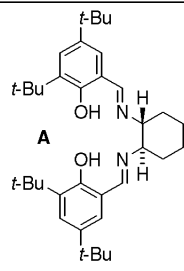


M. T. Crimmins, K. A. Emmitte, J. D. Katz *Org. Lett.* **2000**, *2*, 2165.

10 examples (yields 41-88%, %de = 96%) are reported.

(R,R)-N,N'-Bis(3,5-di-tert-butylsalicylidene)-1,2-cyclohexanediamine (Salen)**Ligand**

The title ligand acts as a chiral activator in the enantioselective addition of chiral organochromium reagents to aromatic aldehydes. Alteration to the amount of the salen ligand employed switches the diastereoselectivity from *anti* to *syn*.

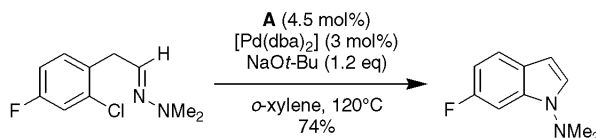
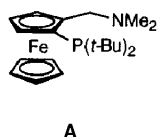


M. Bandini, P. G. Cozzi, A. Umani-Ronchi *Angew. Chem. Int. Ed.* **2000**, *39*, 2327.

9 examples (yields 25-72%, 60:40 ≤ *syn:anti* ≤ 75:25, %ee_{syn} = 58-90%) are reported.

2-(Dimethylaminomethyl)-1-(di-tert-butylphosphanyl)ferrocene**Ligand**

The title ligand is used in palladium-catalysed intramolecular cyclisations of *o*-chloroarylacetaldehyde *N,N*-dimethylhydrazones to *N*-dimethylaminoindoles.

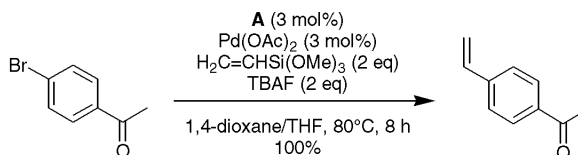
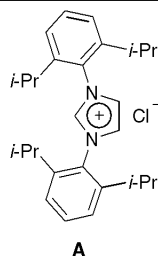


M. Watanabe, T. Yamamoto, M. Nishiyama *Angew. Chem. Int. Ed.* **2000**, *39*, 2501.

9 examples (yields 30-75%) are reported.

1,3-Bis(2,6-diisopropylphenyl)imidazol-2-ylidene (IPr.HCl)**Ligand**

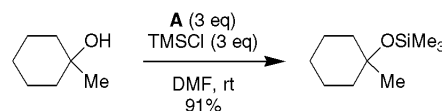
Ligand **A** is used in combination with Pd(OAc)₂ to mediate cross coupling reactions of aryl halides with phenyl- or vinyltrimethoxysilane.



11 examples (yields 19-100%) are reported.

H. M. Lee, S. P. Nolan *Org. Lett.* **2000**, *2*, 2053.**Magnesium****Reagent**

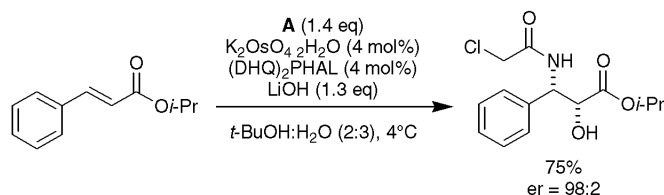
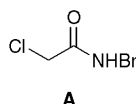
The title reagent promotes the *O*-silylation of aliphatic alcohols to afford the corresponding trimethylsilyl ethers.

Mg
A

11 examples (yields 77-99%) are reported.

I. Nishiguchi, Y. Kita, M. Watanabe, Y. Ishino, T. Ohno, H. Maekawa *Synlett* 1025. **α -Chloro-*N*-bromoacetamide****Reagent**

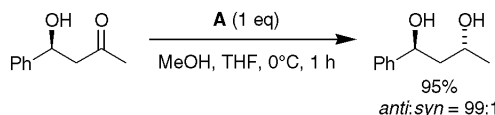
The title reagent is used as a nitrogen source in the catalytic asymmetric aminohydroxylation of olefins. Moreover, it is a useful amine-protecting group, being readily removed by thiourea.



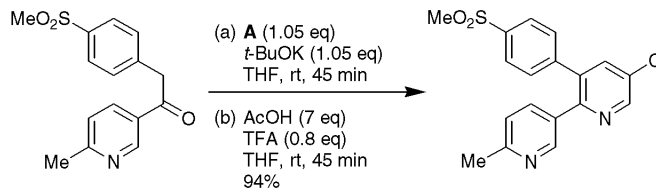
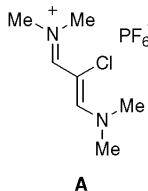
4 examples (yields 40-77%, %ee = 50-97%) are reported.

Z. P. Demko, M. Bartsch, K. B. Sharpless *Org. Lett.* **2000**, *2*, 2221.**Samarium Diiodide****Reagent**

The title reagent is used for the electron-transfer reduction of β -alkoxy ketones to afford *anti*-1,3-diol monoethers.

SmI₂
A13 examples (yields 0, 30-99%, 75:25 \leq *anti:syn* \leq 99:1) are reported.G. E. Keck, C. A. Wager *Org. Lett.* **2000**, *2*, 2307.***N,N*-Dimethyl-2-chlorotrimethinium Hexafluorophosphate****Reagent**

The title reagent is used for the annulation of ketones and aldehydes to afford trisubstituted pyridines.



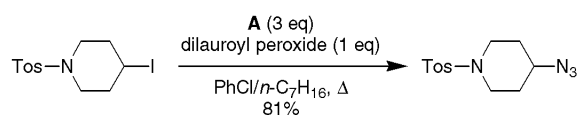
9 examples (yields 38-94%) are reported.

J.-F. Marcoux, E. G. Corley, K. Rossen, P. Pye, J. Wu, M. A. Robbins, I. W. Davies, R. D. Larsen, P. J. Reider *Org. Lett.* **2000**, *2*, 2339.

Reagent

Ethanesulfonyl azide

The title reagent is used in the radical azidation of alkyl iodides and dithiocarbonates.



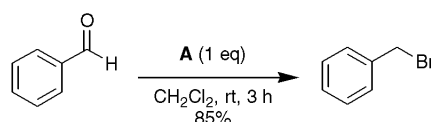
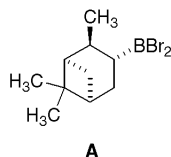
C. Ollivier, P. Renaud *J. Am. Chem. Soc.* **2000**, *122*, 6496.

12 examples (yields 24-85%) are reported.

Reagent

Isopinocampheylboron Dibromide

The title reagent is used for the reductive bromination of aldehydes.



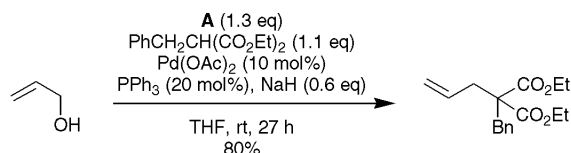
G. W. Kabalka, Z. Wu, Y. Ju *Tetrahedron Lett.* **2000**, *41*, 5161.

12 examples (yields 65-87%) are reported.

Reagent

Triethylborane

The title reagent promotes the Pd(0)-catalysed allylation of active methylene compounds with a variety of allylic alcohols.



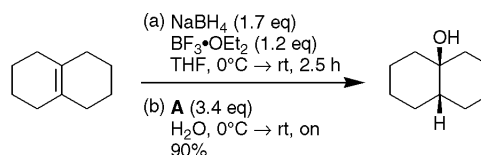
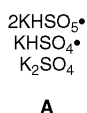
Y. Tamaru, Y. Horino, M. Araki, S. Tanaka, M. Kimura *Tetrahedron Lett.* **2000**, *41*, 5705.

13 examples (yields 35-84%) are reported.

Reagent

Oxone®

The title reagent is used for the oxidation of carbon-boron bonds to afford the corresponding alcohol.



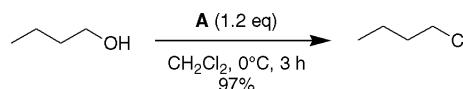
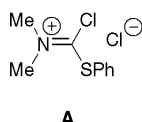
D. H. Brown Ripin, W. Cai, S. J. Brenek *Tetrahedron Lett.* **2000**, *41*, 5817.

6 examples (yields 50-95%) are reported.

(Chlorophenylthiomethylene)dimethylammonium Chloride (CPMA)

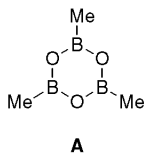
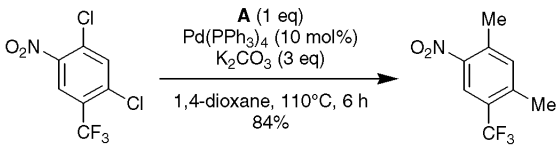
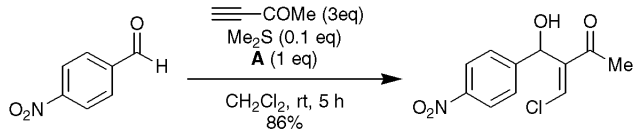
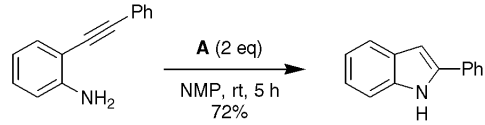
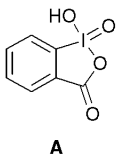
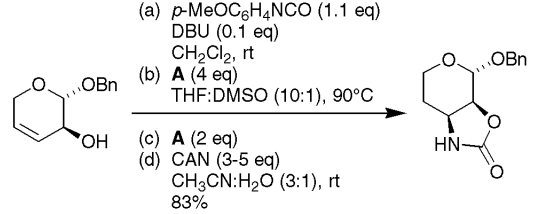
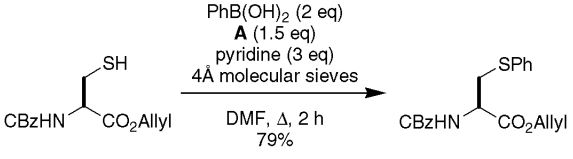
Reagent

The title reagent is used for the selective chlorination and bromination of primary alcohols.



L. Gomez, F. Gellibert, A. Wagner, C. Mioskowski *Tetrahedron Lett.* **2000**, *41*, 6049.

18 examples (yields 85-97%) are reported.

		<i>Reagent</i>
Trimethylboroxine (TMB)		
<p>The title reagent converts acyl halides to the corresponding toluenes by Suzuki-Miyaura coupling.</p> <p>M. Gray, I. P. Andrews, D. F. Hook, J. Kitteringham, M. Voyle <i>Tetrahedron Lett.</i> 2000, <i>41</i>, 6237.</p>	 <p>A</p>	 <p>9 examples (yields 55-95%) are reported.</p>
Titanium Tetrachloride		
<p>The title reagent is used for the synthesis of α-halomethylene aldols and β-Halo-α-(hydroxyalkyl)acrylates using the chalcogeno-Baylis-Hillman reaction.</p> <p>T. Kataoka, H. Kinoshita, S. Kinoshita, T. Iwamura, S. Watanabe <i>Angew. Chem. Int. Ed.</i> 2000, <i>39</i>, 2358.</p>	<p>TiCl₄</p> <p>A</p>	 <p>19 examples (yields 5-89%) are reported.</p>
Potassium <i>tert</i>-Butoxide		
<p>Use of the title reagent with the polar solvent <i>N</i>-methylpyrrolidinone (NMP) allows smooth preparation of various indoles and azaindoles by a 5-<i>endo-dig</i> cyclisation.</p> <p>A. L. Rodriguez, C. Koradin, W. Dohle, P. Knochel <i>Angew. Chem. Int. Ed.</i> 2000, <i>39</i>, 2488.</p>	<p><i>t</i>-BuOK</p> <p>A</p>	 <p>9 examples (yields 61-90%) are reported.</p>
<i>o</i>-Iodoxybenzoic Acid (IBX)		
<p>The title reagent mediates the synthesis of amino sugar derivatives from allylic alcohols and aryl isocyanates.</p> <p>K. C. Nicolaou, P. S. Baran, Y. Zhong, J. A. Vega <i>Angew. Chem. Int. Ed.</i> 2000, <i>39</i>, 2525.</p>	 <p>A</p>	 <p>11 examples (yields 66-83%) are reported.</p>
Copper(II) Acetate		
<p>The title reagent mediates the cross-coupling of aryl boronic acids and alkyl thiols.</p> <p>P. S. Herradura, K. A. Pendola, R. K. Guy <i>Org. Lett.</i> 2000, <i>2</i>, 2019.</p>	<p>Cu(OAc)₂</p> <p>A</p>	 <p>18 examples (yields 0-88%) are reported.</p>