

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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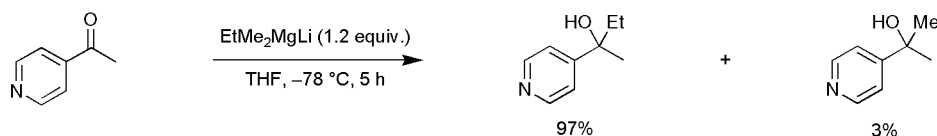
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The journals regularly covered by the abstractors are:

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 and Biomolecular Chemistry
 Organic Letters
 Organometallics
 Synlett
 Synthesis
 Tetrahedron
 Tetrahedron Asymmetry
 Tetrahedron Letters

Alkyl addition to ketones with magnesium ate complexes.
 Hatano, M.; Matsumura, T.; Ishihara, K. *Org. Lett.* **2005**, 7, 573.

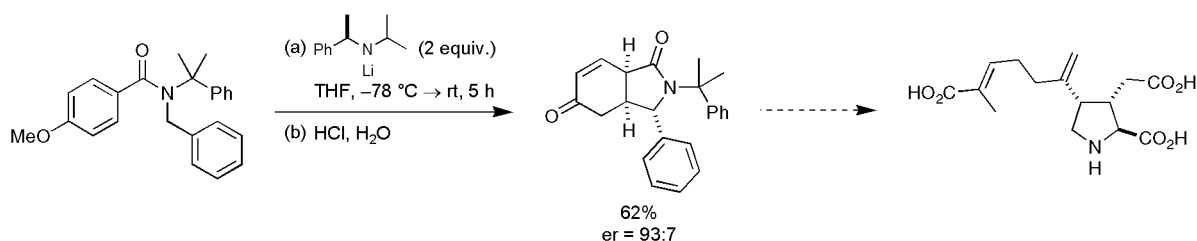
1,2-Addition



R_3MgLi : 12 examples (yields 64–>99%). RMg_2Li : 14 examples (yields 87–>99%).

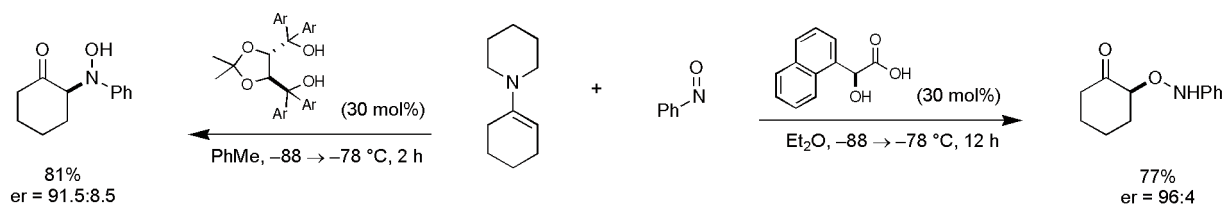
Total synthesis of (–)-Isodomoic acid C.
 Clayden, J.; Knowles, F. E.; Baldwin, I. R. *J. Am. Chem. Soc.* **2005**, 127, 2412.

Annulation



Brønsted acid catalyzed regio- and enantioselective nitroso aldol reaction.
 Momiyama, N.; Yamamoto, H. *J. Am. Chem. Soc.* **2005**, 127, 1080.

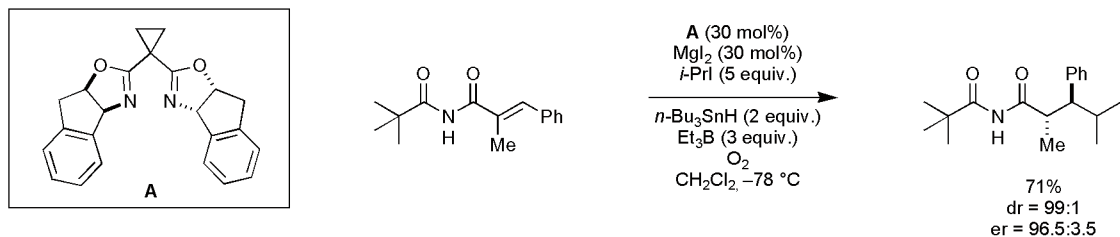
Nitroso Aldol



Ar = 1-naphthalene. 16 examples (yields 4–91%, %ee 65–93%).

Enantioselective radical addition/trapping reactions with α,β -disubstituted unsaturated imides.
Sibi, M. P.; Petrovic, G.; Zimmerman, J. *J. Am. Chem. Soc.* **2005**, *127*, 2390.

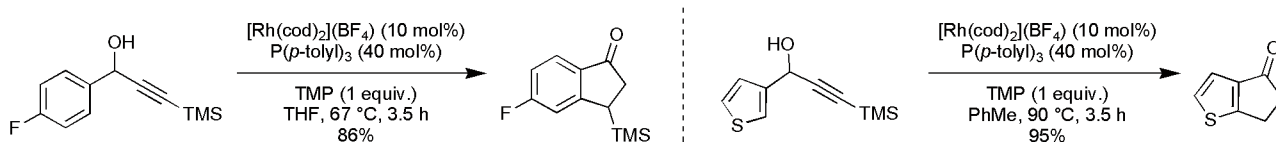
1,4-Addition



Rh(I)-Catalyzed cyclization of 1-arylprop-2-yn-1-ol compounds.

Yamabe, H.; Mizuno, A.; Kusama, H.; Iwasawa, N. *J. Am. Chem. Soc.* **2005**, *127*, 3248.

Annulation

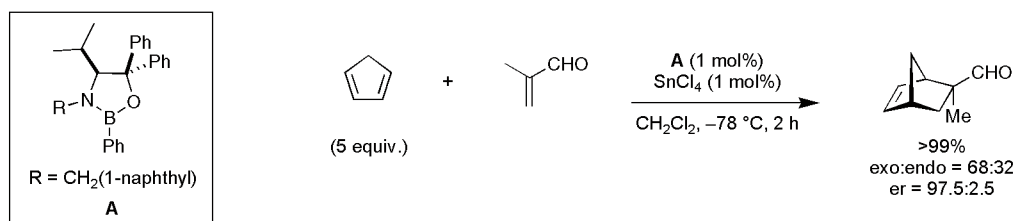


TMP = 2,2,6-tetramethylpiperidine. 10 examples (yields 31-95%).

Enantioselective Diels-Alder reactions catalyzed by a Lewis acid assisted Lewis acid catalyst.

Futatsugi, K.; Yamamoto, H. *Angew. Chem. Int. Ed.* **2005**, *44*, 1484.

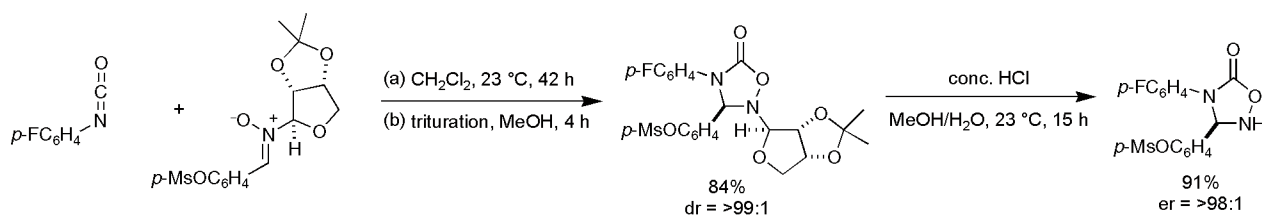
Diels-Alder



1,2,4-Oxadiazolidinones as configurationally stable chiral building blocks.

Ritter, T.; Carreira, E. M. *Angew. Chem. Int. Ed.* **2005**, *44*, 936.

Cycloaddition

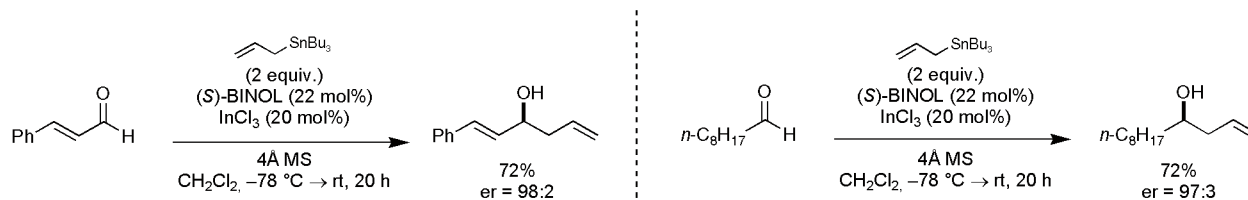


20 examples (yields 69-87%, %de 86->98%).

Catalytic asymmetric allylation of aldehydes via a chiral In(III)-complex.

Teo, Y.-C.; Tan, K.-T.; Loh, T.-P. *Chem. Commun.* **2005**, 1318.

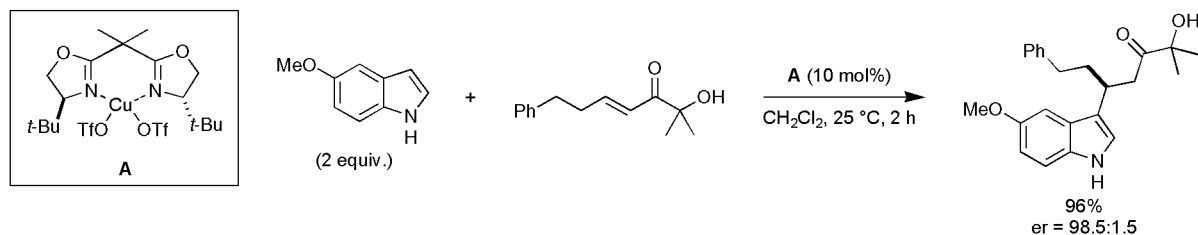
Asymmetric Allylation



7 examples (yields 53-76%, %ee 90-96%).

Cu(II)-Catalyzed enantioselective Friedel–Crafts alkylations of pyrroles and indoles with α '-hydroxy enones. Palomo, C.; Oiarbide, M.; Kardak, B. G.; Garcia, J. M.; Linden, A. *J. Am. Chem. Soc.* **2005**, *127*, 4154.

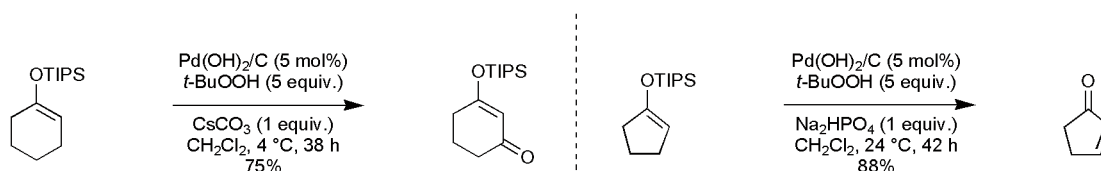
Friedel–Crafts



Pyrroles: 10 examples (yields 80–95%, %ee 68–97%). Indoles: 14 examples (yields 32–96%, %ee 83–98%).

$\text{Pd}(\text{OH})_2/\text{C}$ -Mediated selective oxidation of silyl enol ethers by *tert*-butyl hydroperoxide. Yu, J.-Q.; Wu, H.-C.; Corey, E. J. *Org. Lett.* **2005**, *7*, 1415.

Oxidation

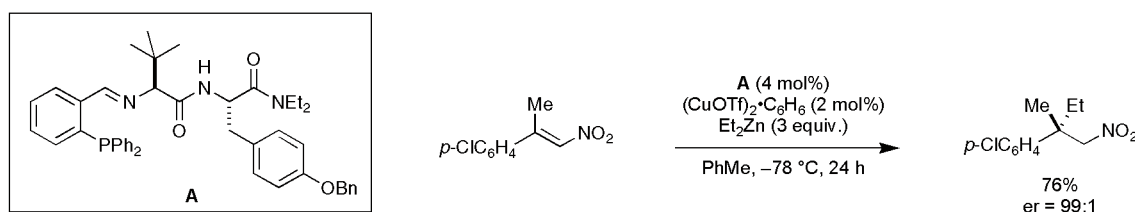


5 examples (yields 62–76%).

6 examples (yields 70–88%).

Cu-Catalyzed asymmetric conjugate additions in the synthesis of nitroalkanes bearing an all-carbon quaternary centre. Wu, J.; Mampreian, D. M.; Hoveyda, A. H. *J. Am. Chem. Soc.* **2005**, *127*, 4584.

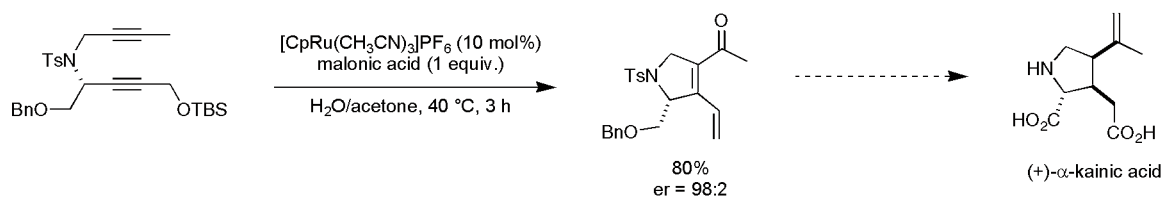
1,4-Addition



15 examples (yields 40–87%, %ee –14–98%).

Ru-Catalyzed cycloisomerizations of diynols and utilisation in the synthesis of (+)- α -kainic acid. Trost, B. M.; Rudd, M. T. *J. Am. Chem. Soc.* **2005**, *127*, 4763.

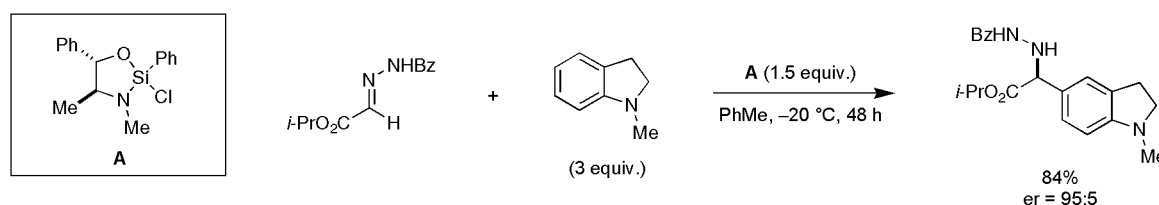
Annulation



34 examples (yields 40–99%).

Enantioselective Friedel–Crafts alkylations with benzoylhydrazones. Shirakawa, S.; Berger, R.; Leighton, J. L. *J. Am. Chem. Soc.* **2005**, *127*, 2858.

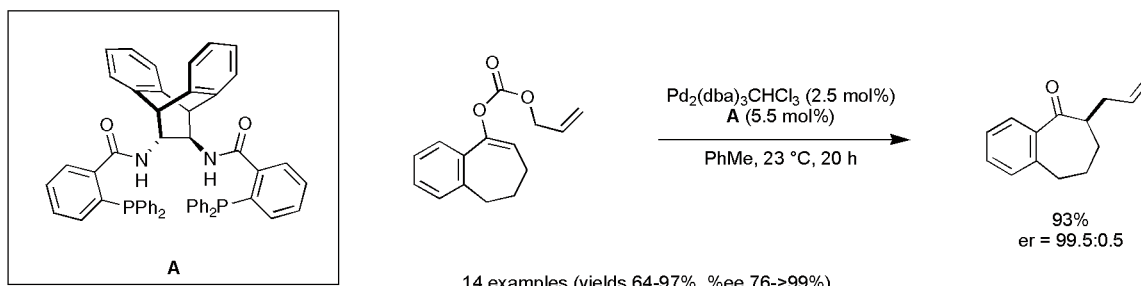
Friedel–Crafts



13 examples (yields 54–92%, %ee 87–95%).

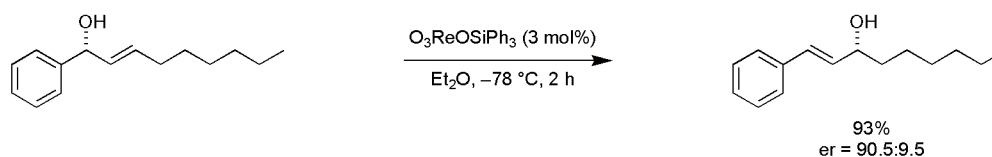
Regio- and enantioselective Pd-catalyzed allylic alkylation of ketones through allyl enol carbonates.
Trost, B. M.; Xu, J. *J. Am. Chem. Soc.* **2005**, *127*, 2846.

Asymmetric Alkylation



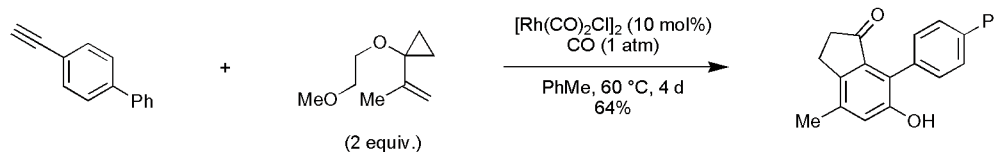
Highly selective 1,3-isomerization of allylic alcohols *via* Re-oxo catalysis.
Morrill, C.; Grubbs, R. H. *J. Am. Chem. Soc.* **2005**, *127*, 2842.

Isomerization



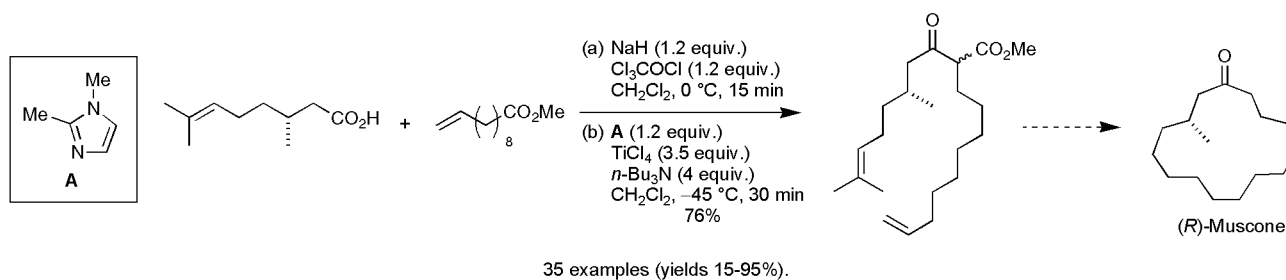
A four-component [5+1+2+1]-cycloaddition of vinylcyclopropanes, alkynes and CO.
Wender, P. A.; Gamber, G. G.; Hubbard, R. D.; Pham, S. M.; Zhang, L. *J. Am. Chem. Soc.* **2005**, *127*, 2836.

[5+1+2+1]-Cycloaddition



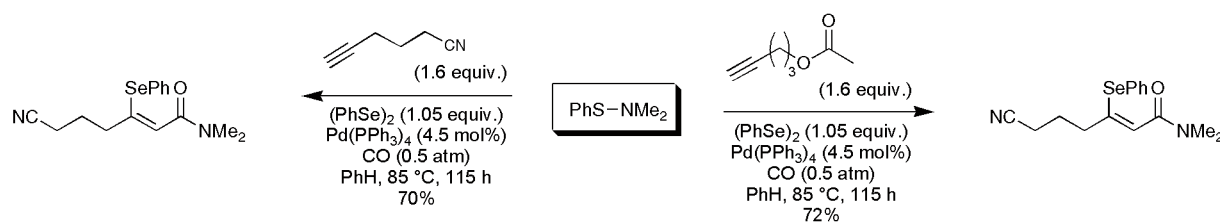
Ti-Crossed-Claisen condensation between esters and acid chlorides or acids: preparation of β -keto esters.
Misaki, T.; Nagase, R.; Matsumoto, K.; Tanabe, Y. *J. Am. Chem. Soc.* **2005**, *127*, 2854.

C-C Bond Formation



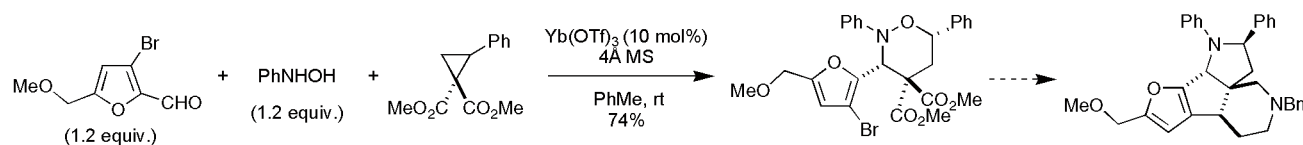
Pd-Catalyzed regio- and stereoselective 4-component coupling reaction.
Knapton, D. J.; Meyer, T. Y. *J. Org. Chem.* **2005**, *70*, 785.

C-C Bond Formation



Synthesis of the tetracyclic core of Nakadomarin A using a nitron/cyclopropane cycloaddition.
Young, I. S.; Williams, J. L.; Kerr, M. A. *Org. Lett.* **2005**, *7*, 953.

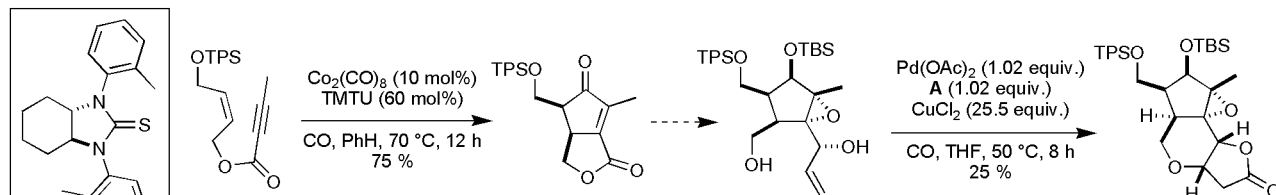
[3+2]-Cycloaddition



8 examples (yields 70-94%).

A highly efficient synthesis of the FGH ring of micrandilactone A. Application of thioureas as ligands in the Co-catalyzed Pauson-Khand reaction and Pd-catalyzed carbonylative annulation.
Tang, Y.; Zhang, Y.; Dai, M.; Luo, T.; Deng, L.; Chen, J.; Yang, Z. *Org. Lett.* **2005**, *7*, 885.

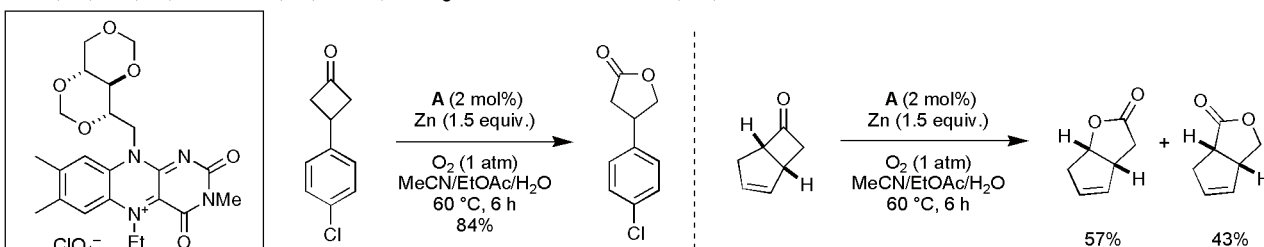
Annulation



TMTU = tetramethyl thiourea.

An aerobic, organocatalytic and chemoselective method for Baeyer-Villiger oxidation.
Imada, Y.; Iida, H.; Murahashi, S.; Naota, T. *Angew. Chem. Int. Ed.* **2005**, *44*, 1704.

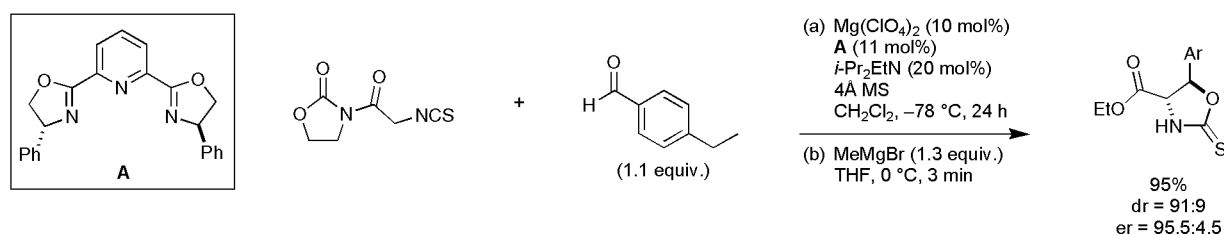
Oxidation



5 examples (yields 78-95%).

Catalytic enantioselective synthesis of protected aryl β -hydroxy- α -amino acids.
Willis, M. C.; Cutting, G. A.; Piccio, V. J.-D.; Durbin, M. J.; John, M. P. *Angew. Chem. Int. Ed.* **2005**, *44*, 1543.

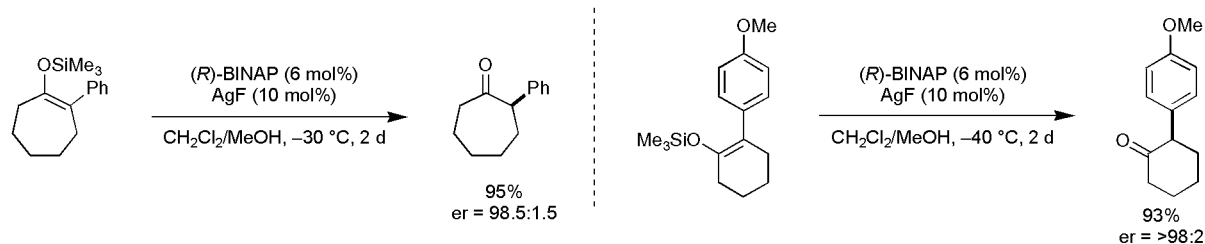
Asymmetric Aldol



11 examples (yields 64-95%, %de 0-86%, %ee 86-95%).

Enantioselective protonation of silyl enolates.
Yanagisawa, A.; Touge, T.; Arai, T. *Angew. Chem. Int. Ed.* **2005**, *44*, 1546.

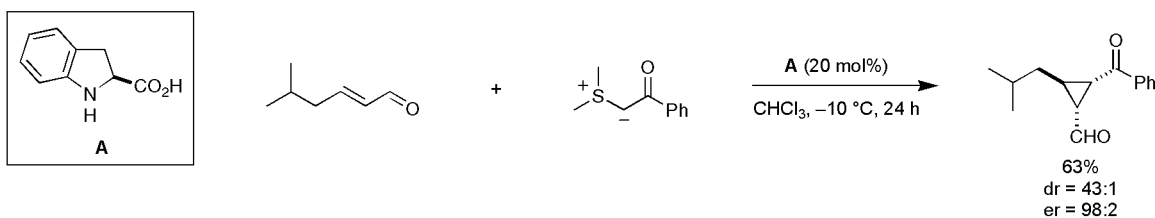
Enantioselective Protonation



10 examples (yields 72-96%, %ee 62->99%).

Enantioselective organocatalytic cyclopropanations.
Kunz, R. K.; MacMillan, D. W. C. *J. Am. Chem. Soc.* **2005**, *127*, 3240.

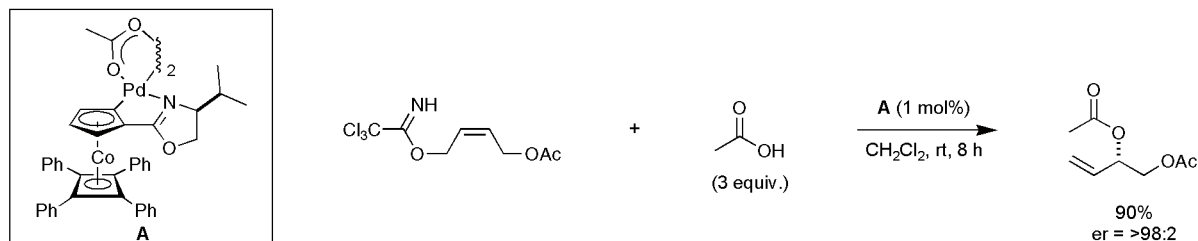
Cyclopropanation



9 examples (yields 63-85%, %de >92-99%, %ee 89-96%).

Catalytic asymmetric synthesis of chiral allylic esters.
Kirsch, S. F.; Overman, L. E. *J. Am. Chem. Soc.* **2005**, *127*, 2866.

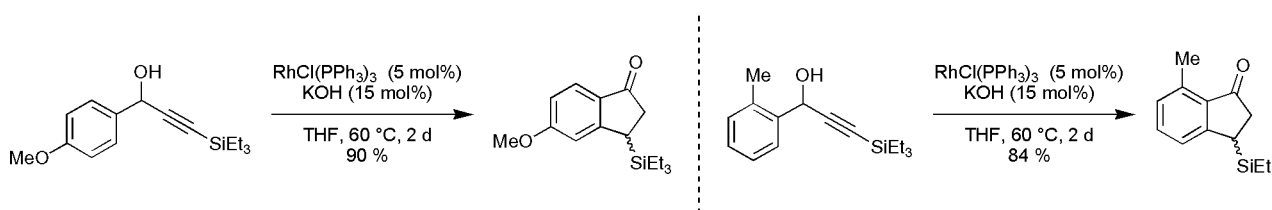
C-O Bond Formation



17 examples (yields 17-100%, %ee 93->99%).

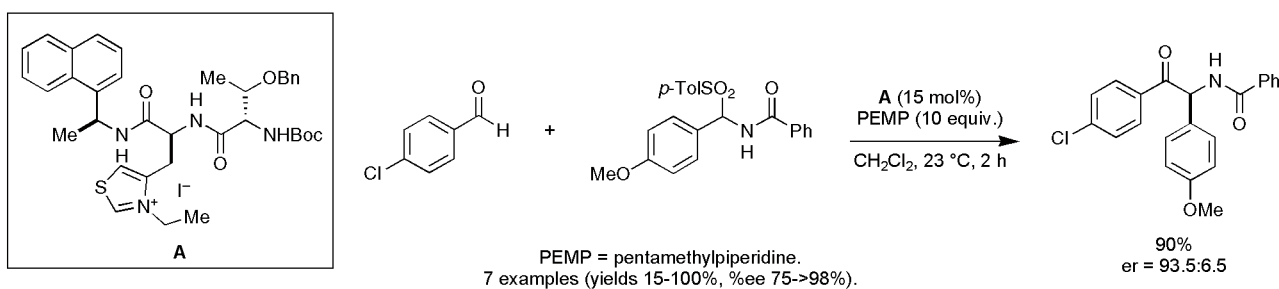
Rh-Catalyzed isomerization of α -arypropargyl alcohols to indanones.
Shintani, R.; Okamoto, K.; Hayashi, T. *J. Am. Chem. Soc.* **2005**, *127*, 2872.

Annulation



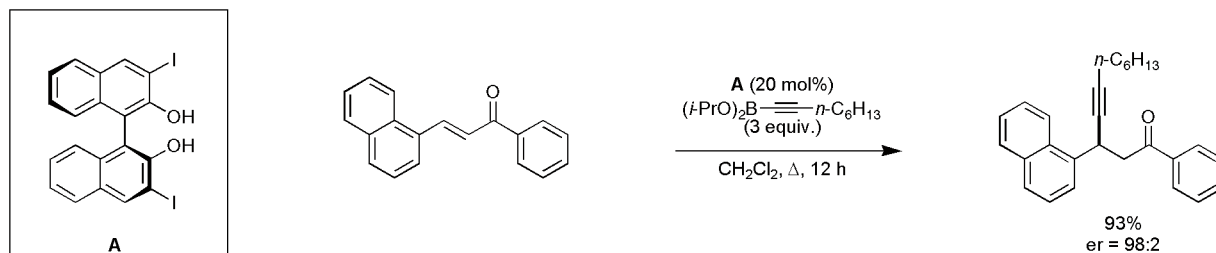
6 examples (yields 74-92%).

Thiazolyalanine-derived catalysts for enantioselective intermolecular aldehyde-imine cross-couplings.
Mennen, S. M.; Gipson, J. D.; Kim, Y. R.; Miller, S. J. *J. Am. Chem. Soc.* **2005**, *127*, 1654.

sp²-sp³ Coupling

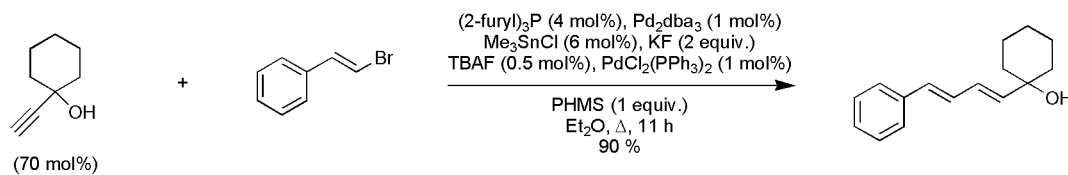
Ligand-catalyzed asymmetric alkynylboration of enones.
Wu, T. R.; Chong, J. M. *J. Am. Chem. Soc.* **2005**, *127*, 3244.

Asymmetric Alkynylboration



8 examples (yields 78-97%, %ee 82-96%).

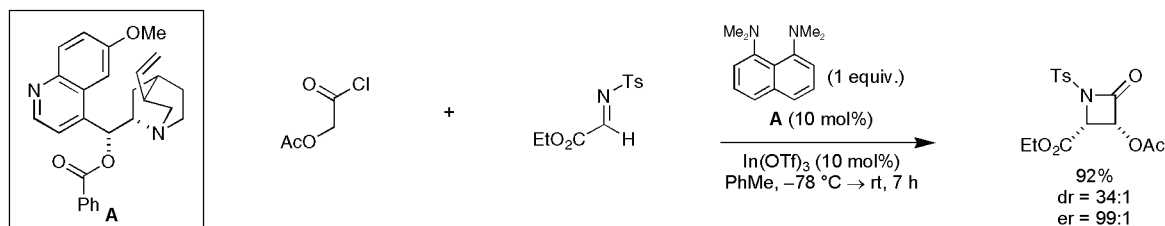
Stille reactions catalytic in tin.
Gallagher, W. P.; Maleczka, R. E. *J. Org. Chem.* **2005**, *70*, 841.

sp²-sp² Coupling

PHMS = polymethylhydrosiloxane. 18 examples (yields 0-90%).

Bifunctional Lewis acid-nucleophile-based asymmetric catalyst for the synthesis of β-lactams.
France, S.; Shah, M. H.; Weatherwax, A.; Wack, H.; Roth, J. P.; Lectka, T. *J. Am. Chem. Soc.* **2005**, *127*, 1206.

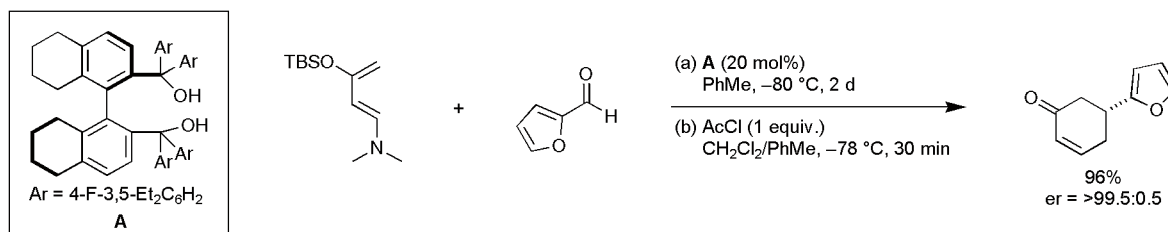
[2+2]-Cycloaddition



8 examples (yields 91-98%, %de 80-96.7%, %ee 96-98%).

Enantioselective biaryl diols as catalysts for the hetero Diels-Alder reaction.
Unni, A. K.; Takenaka, N.; Yamamoto, H.; Rawal, V. H. *J. Am. Chem. Soc.* **2005**, *127*, 1336.

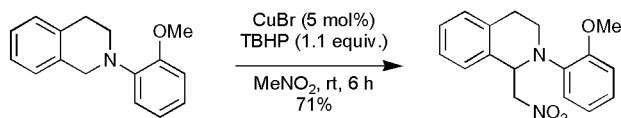
Hetero Diels-Alder



13 examples (yields 42-99%, %ee 84->99%).

A highly efficient Cu-catalyzed nitro-Mannich type reaction.
Li, Z.; Li, C. *J. Am. Chem. Soc.* **2005**, *127*, 3672.

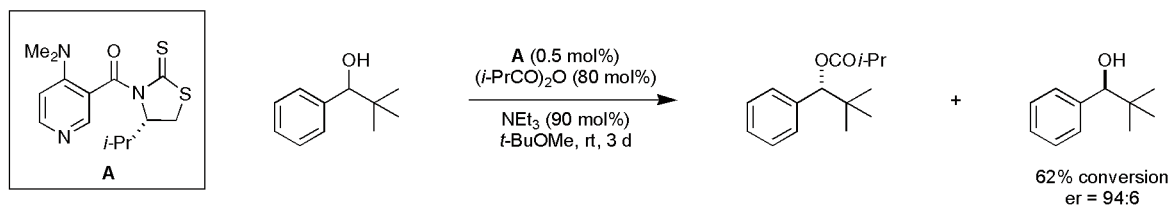
Nitro-Mannich



20 examples (yields 30-75%).

Kinetic resolution of sec-alcohols by a new class of pyridine catalysts having a conformation switch system.
Yamada, S.; Misono, T.; Iwai, Y. *Tetrahedron Lett.* **2005**, *46*, 2239.

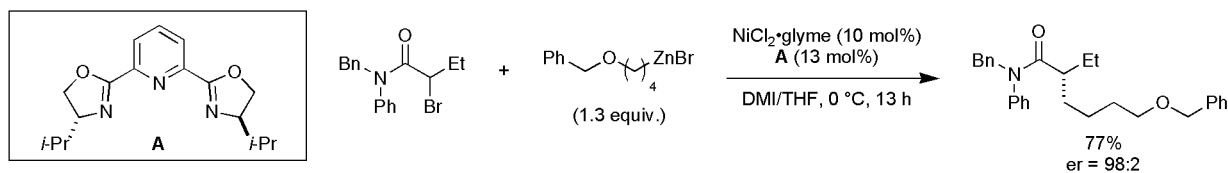
Kinetic Resolution



8 examples (conv. 61-72%, %ee 78-98%).

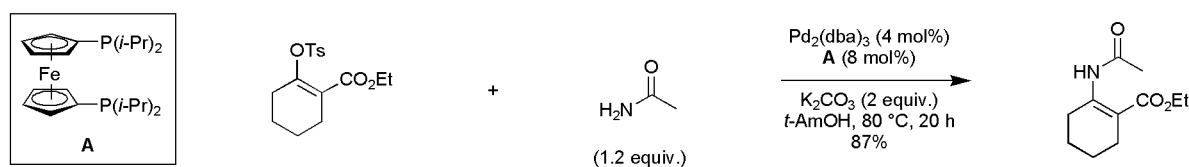
Ni-Catalyzed Negishi couplings of α -bromo amides with organozinc reagents.
Fischer, C.; Fu, G. C. *J. Am. Chem. Soc.* **2005**, *127*, 4594.

sp³-sp³ Coupling



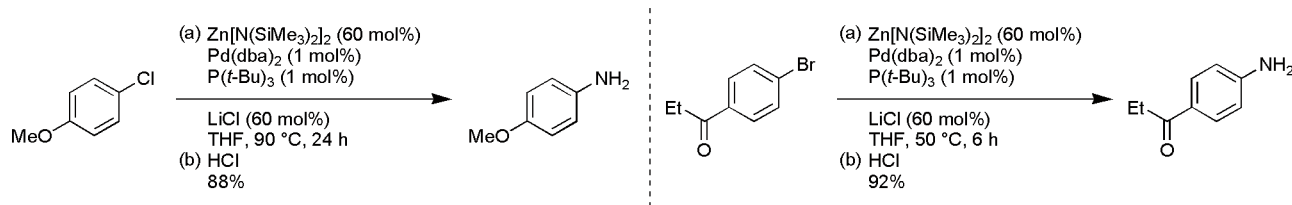
Preparation of enamides *via* Pd-catalyzed amidation of enol tosylates.
Klapars, A.; Campos, K. R.; Chen, C.-Y.; Volante, R. P. *Org. Lett.* **2005**, *7*, 1185.

Amidation

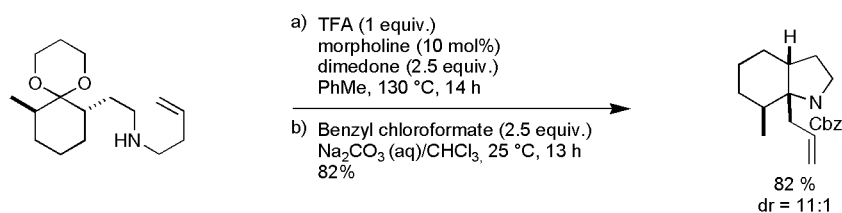


Zinc trimethylsilylamide as a mild ammonia equivalent and base for the amination of aryl halides and triflates.
Lee, D.-Y.; Hartwig, J. F. *Org. Lett.* **2005**, *7*, 1169.

Amination



Stereocontrolled synthesis of angularly substituted 1-azabicyclic rings by cationic 2-aza-Cope rearrangements. **Aza-Cope Rearrangement**
Aron, Z. D.; Overman, L. E. *Org. Lett.* **2005**, *7*, 913.



Organocatalytic and stereoselective synthesis of spiro-pyrrolidone-3,3'-oxoindoles *via* nucleophilic aromatic substitution.
Bella, M.; Kobbelgaard, S.; Jørgensen, K. A. *J. Am. Chem. Soc.* **2005**, *127*, 3670.

Substitution

