

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.

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The journals regularly covered by the abstractors are:

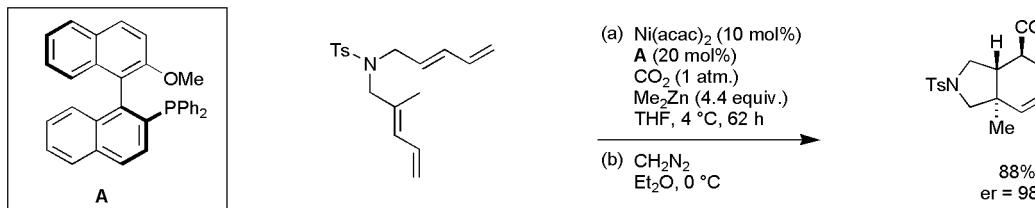
Angewandte Chemie International Edition
Bulletin of the Chemical Society of Japan
Chemical Communications
Chemistry A European Journal
Chemistry Letters
Collection Czechoslovak Chemical Communications
European Journal of Organic Chemistry
Helvetica Chimica Acta
Heterocycles

Journal of the American Chemical Society
Journal of Organic Chemistry
Organic and Biomolecular Chemistry
Organic Letters
Organometallics
Synlett
Synthesis
Tetrahedron
Tetrahedron Asymmetry
Tetrahedron Letters

Annulation

Ni-catalysed asymmetric carboxylative cyclisation of bis-1,3-dienes.

Takimoto, M.; Nakamura, Y.; Kimura, K.; Mori, M. *J. Am. Chem. Soc.* **2004**, 126, 5956.

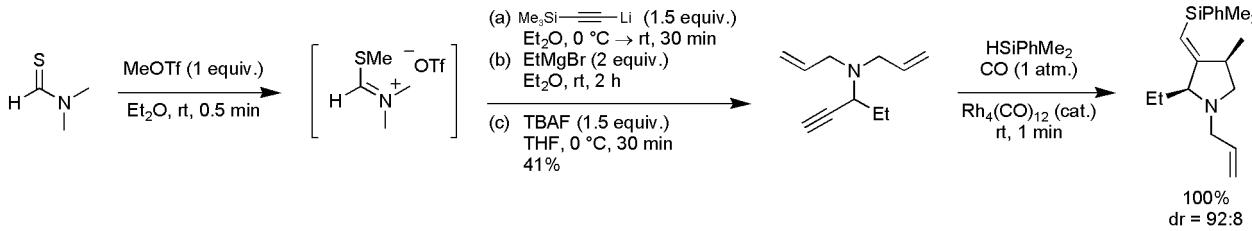


11 examples (yields 57–100%, %ee 90–96%).

Sequential reactions of *in-situ* generated thioiminium salts with organolithium and Grignard reagents.

Murai, T.; Mutoh, Y.; Ohta, Y.; Murakami, M. *J. Am. Chem. Soc.* **2004**, 126, 5968.

C-C Bond Formation

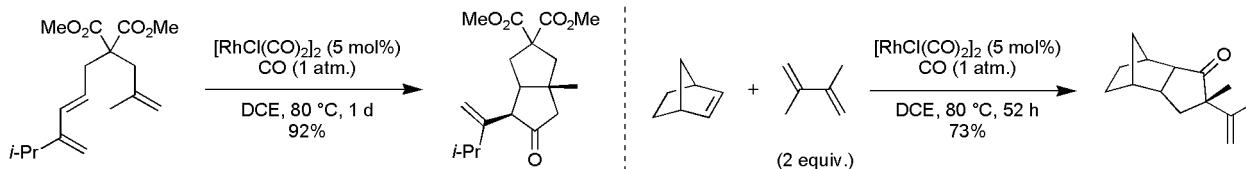


16 examples (yields 41–98%).

Rh(I)-catalyzed [2+2+1] cycloadditions of 1,3-dienes, alkenes and CO.

Wender, P. A.; Croatt, M. P.; Deschamps, N. M. *J. Am. Chem. Soc.* **2004**, 126, 5948.

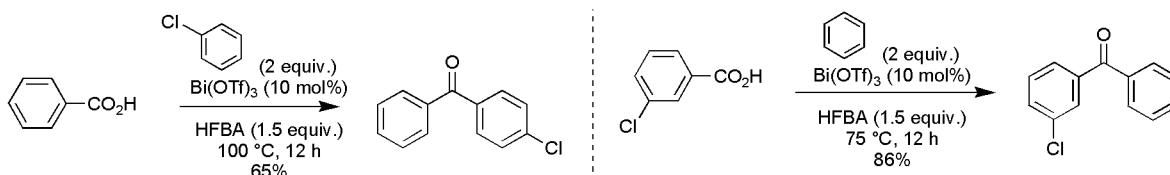
Annulation



10 examples (yields 0–94%). Optimization studies are also reported.

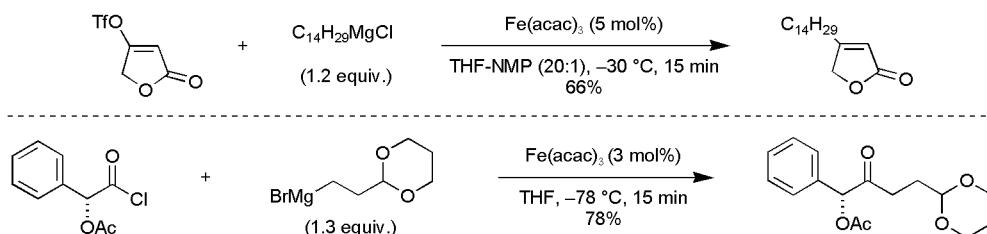
Friedel-Crafts acylation using perfluoroalkanoic anhydride and bismuth or scandium triflate.
Matsushita, Y.; Sugamoto, K.; Matsui, T. *Tetrahedron Lett.* **2004**, *45*, 4723.

Acylation



HFBA = heptafluorobutyric anhydride. 9 examples (yields 12-99%).

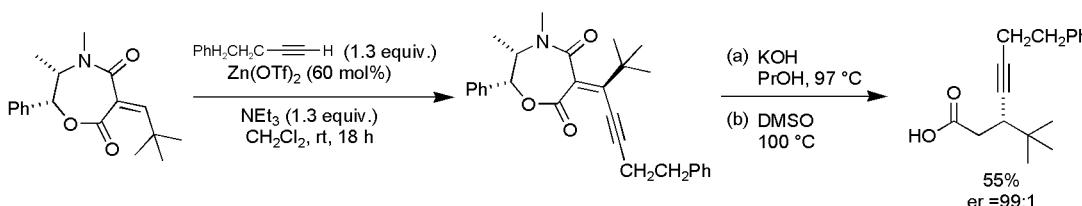
Selective iron-catalyzed cross-coupling reactions of Grignard reagents with enol triflates and acid chlorides.
Scheiper, B.; Bonnekessel, M.; Krause, H.; Fürstner, A. *J. Org. Chem.* **2004**, *69*, 3943.

 sp^2-sp^3 Coupling

Enol triflates (41 examples, yields 45-98%), acid chlorides (28 examples, yields 43-99%), and monoalkylation of dichloroarenes (8 examples, yields 39-83%).

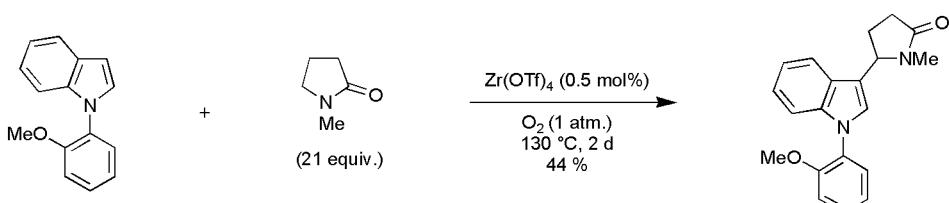
Zinc-catalysed conjugate addition of alkynes.
Knopfel, T. F.; Boyall, D.; Carreira, E. M. *Org. Lett.* **2004**, *6*, 2281.

Asymmetric 1,4-Addition



5 examples (yields 55-82%, %ee 68->98%).

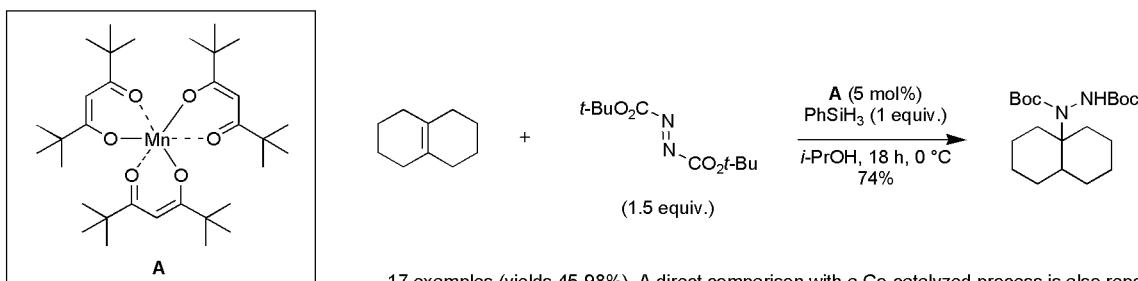
$Zr(OTf)_4$ -catalysed oxidative coupling of lactams with heterocyclic arenes.
Tsuchimoto, T.; Ozawa, Y.; Negoro, R.; Shirakawa, E.; Kawakami, Y. *Angew. Chem. Int. Ed.* **2004**, *43*, 4231.

 sp^2-sp^3 Coupling

12 examples (yields <1-99%).

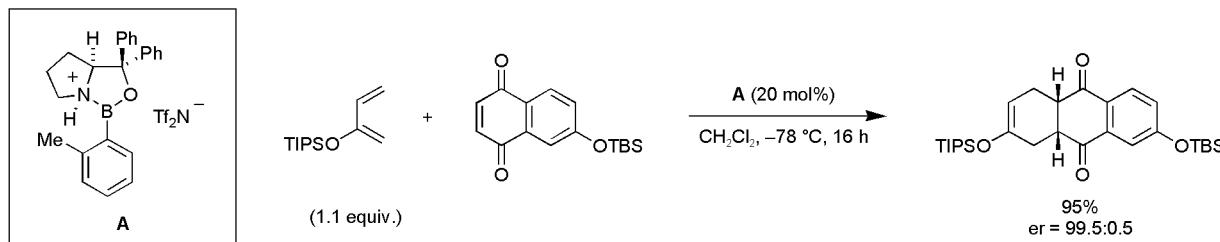
Catalytic hydrohydrazination of alkenes using a simple Mn complex.
Waser, J.; Carreira, E. M. *Angew. Chem. Int. Ed.* **2004**, *43*, 4099.

C-N Bond Formation



17 examples (yields 45-98%). A direct comparison with a Co-catalyzed process is also reported.

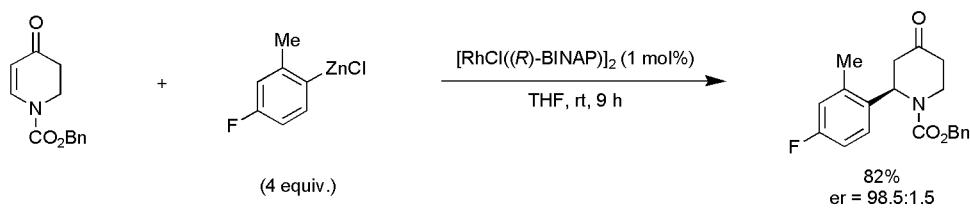
Predictive selection rules for Diels-Alder reactions of unsymmetrical quinones catalysed by a chiral oxazaborolidinium cation. **Diels–Alder**
Ryu, D. H.; Zhou, G.; Corey, E. J. *J. Am. Chem. Soc.* **2004**, *126*, 4800.



A mechanistic model and selection rules for the reaction of mono-, di- and trisubstituted quinones are presented. 15 examples (yields 84–99%, %ee 88–99%).

Rhodium-catalysed asymmetric 1,4-addition of organozinc reagents for the synthesis of 2-aryl-4-piperidones.
Shintani, R.; Tokunaga, N.; Doi, H.; Hayashi, T. *J. Am. Chem. Soc.* **2004**, *126*, 6240.

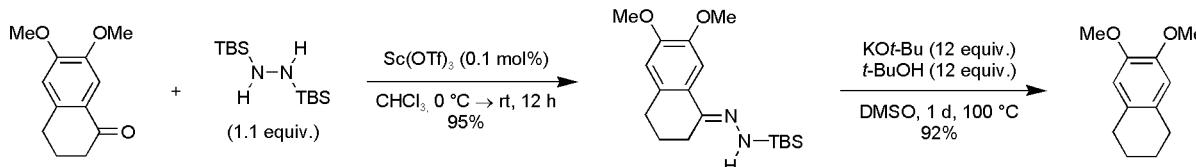
1,4-Addition



8 examples (yields 87–99%, %ee 94–99%).

Preparation of *N*-*tert*-butyldimethylsilylhydrazones and their application in synthesis.
Furrow, M. E.; Myers, A. G. *J. Am. Chem. Soc.* **2004**, *126*, 5436.

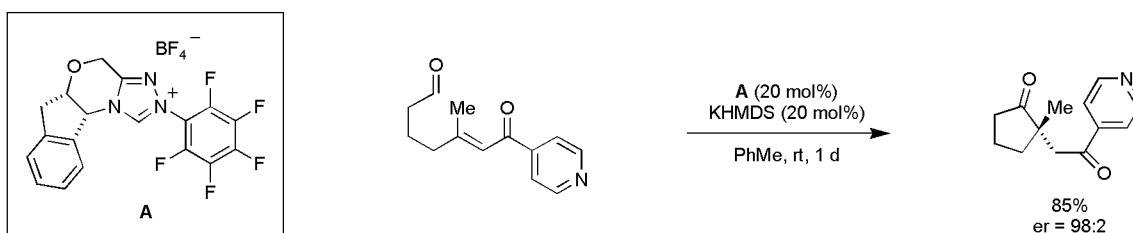
C–N Bond Formation



Synthesis (15 examples, yields 85–95%) and application in reductions, synthesis of vinyl halides and gem-dihalides (25 examples, yields 44–99%).

Enantioselective synthesis of quaternary stereocentres via a catalytic asymmetric Stetter reaction.
Kerr, M. S.; Rovis, T. *J. Am. Chem. Soc.* **2004**, *126*, 8876.

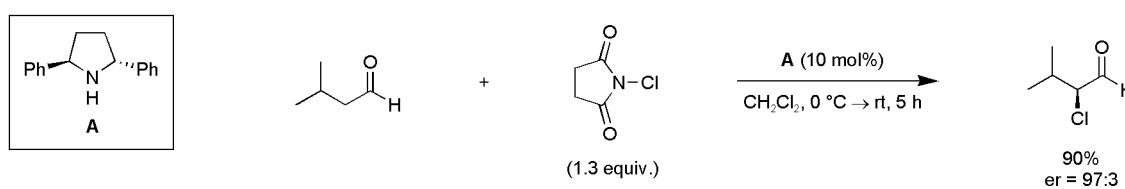
C–C Bond Formation



18 examples (yields 45–96%, %ee 56–99%).

Direct organocatalytic asymmetric α -chlorination of aldehydes.
Halland, N.; Braунton, A.; Bachmann, S.; Marigo, M.; Jørgensen, K. A. *J. Am. Chem. Soc.* **2004**, *126*, 4790.

Asymmetric Chlorination

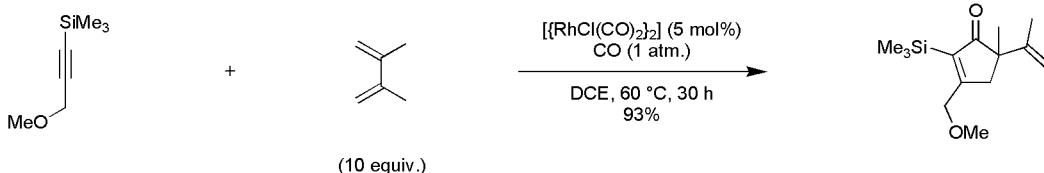


32 examples (yields 30–99%, %ee 5–97%).

An intermolecular dienyl Pauson-Khand reaction.

Wender, P. A.; Deschamps, N. M.; Williams, T. J. *Angew. Chem. Int. Ed.* **2004**, *43*, 3076.

Annulation

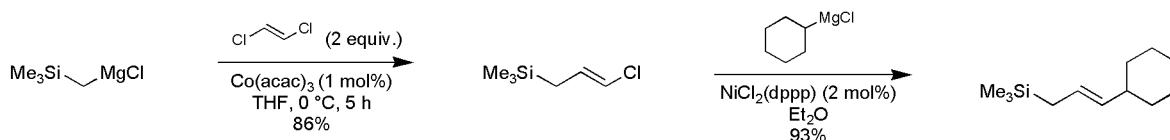


DCE = 1,2-dichloroethane. 31 examples (yields 11-99%).

Synthesis of γ -substituted (*E*)-allylsilanes via a Co-catalysed coupling of R_3SiCH_2MgCl with 1,2-dihalogenoethylene. C-C Bond Formation

Kamachi, T.; Kuno, A.; Matsuno, C.; Okamoto, S. *Tetrahedron Lett.* **2004**, *45*, 4677.

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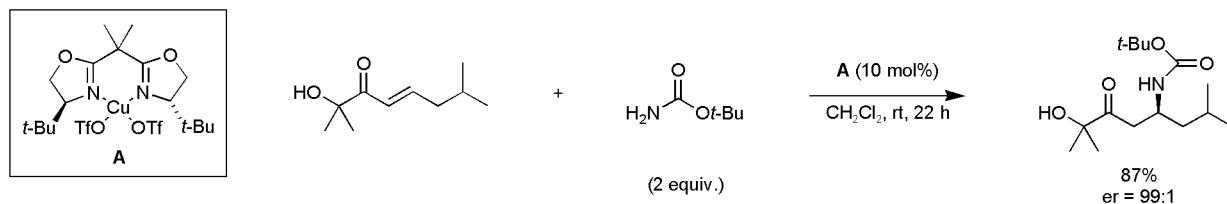


dppp = 1,3-bis(diphenylphosphino)propane. 19 examples (yields 5-95%).

Catalytic enantioselective conjugate addition of carbamates.

Palomo, C.; Oiarbide, M.; Rajkumar, H.; Kelso, M.; Gómez-Bengoa, E.; García, J. M. *J. Am. Chem. Soc.* **2004**, *126*, 9188.

Asymmetric 1,4-Addition

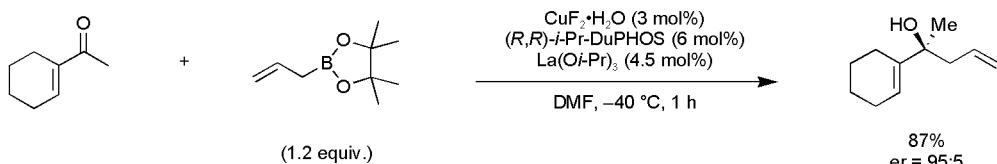


15 examples (yields 49-92%, %ee 83-99%).

Catalytic enantioselective allylboration of ketones.

Wada, R.; Oisaki, K.; Kanai, M.; Shibasaki, M. *J. Am. Chem. Soc.* **2004**, *126*, 8910.

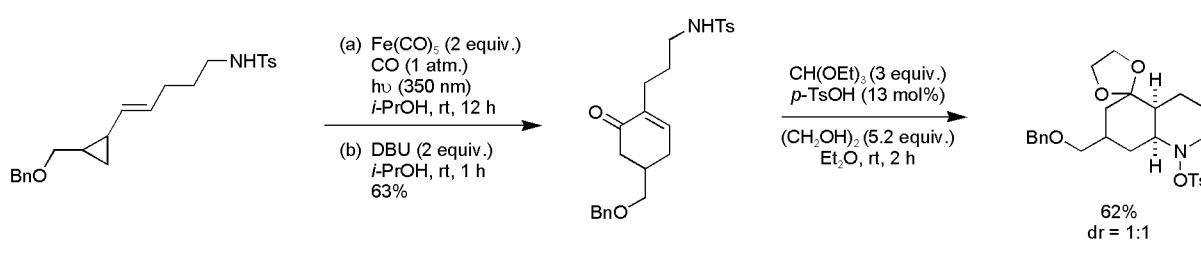
Asymmetric Allylation



14 examples (yields 42-99%, %ee 67-91%). 4 examples for catalytic enantioselective crotylations of ketones (yields 73-94%, %ee 75-93%, %de 24-68%).

Functional group compatibility in $Fe(CO)_5$ -mediated carbonylations of alkenyl cyclopropanes.

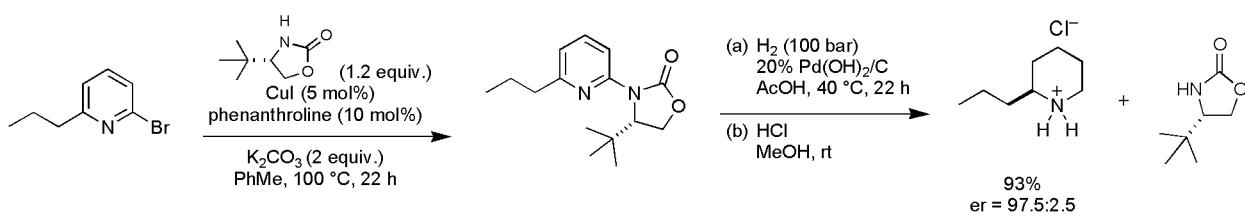
Carbonylation



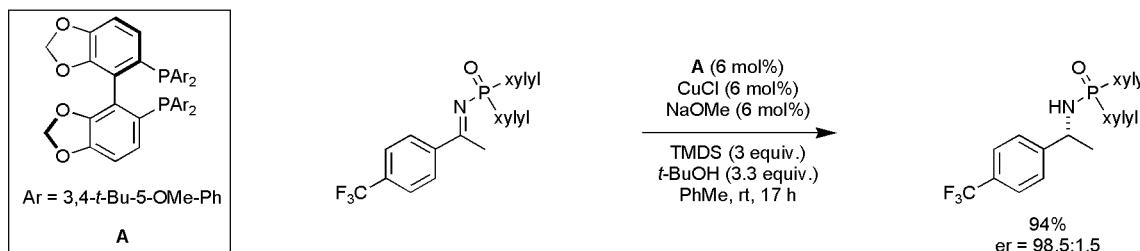
Asymmetric hydrogenation of pyridines.

Glorius, F.; Spielkamp, N.; Holle, S.; Goddard, R.; Lehmann, C. W. *Angew. Chem. Int. Ed.* **2004**, *43*, 2850.

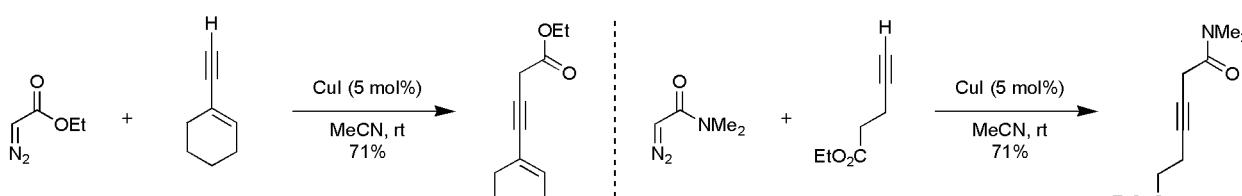
Asymmetric Hydrogenation

Cu(I)-catalysed asymmetric hydrosilylations of imines at ambient temperatures.
Lipshutz, B. H.; Shimizu, H. *Angew. Chem. Int. Ed.* **2004**, *43*, 2228.

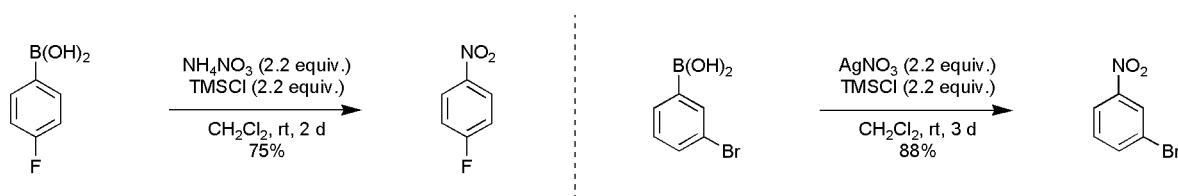
Asymmetric Hydrosilylation

Synthesis of functionalised 3-alkynoates.
Suárez, A.; Fu, G. C. *Angew. Chem. Int. Ed.* **2004**, *43*, 3580.

C-C Bond Formation

*ipso*-Nitration of arylboronic acids with chlorotrimethylsilane-nitrate salts.
Surya Prakash, G. K.; Panja, C.; Mathew, T.; Surampudi, V.; Petasis, N. A.; Olah, G. A. *Org. Lett.* **2004**, *13*, 2205.

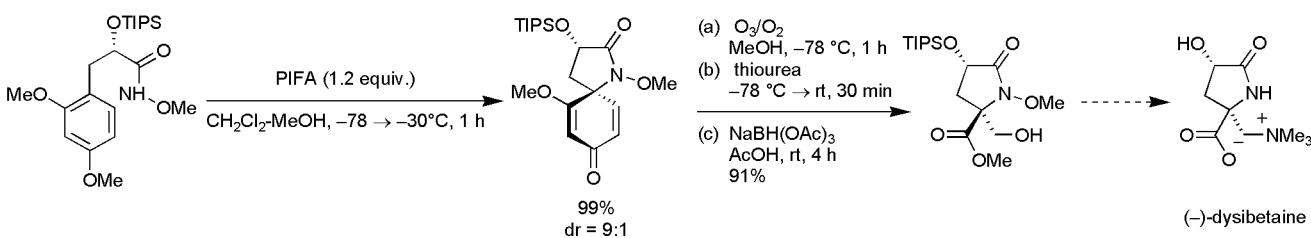
C-N Bond Formation



Effect of different nitrate salts and solvents are also discussed. 9 examples (yields 20-98%).

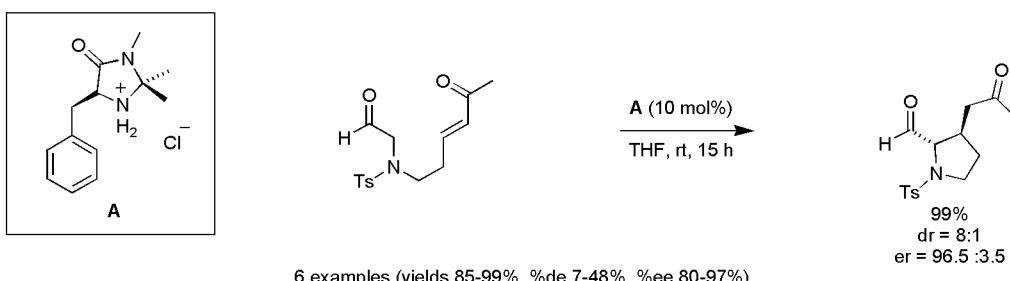
Total synthesis of (-)-dysibetaine via a nitrenium ion cyclisation-dienone cleavage strategy.
Wardrop, D.J.; Burge, M.S. *Chem. Comm.* **2004**, *10*, 1230

Annulation

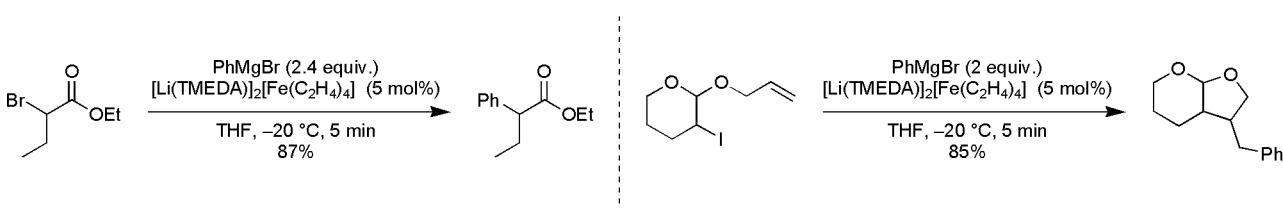


Asymmetric intramolecular Michael reaction.
Hechavarria Fonseca, M. T.; List, B. *Angew. Chem. Int. Ed.* **2004**, 43, 3958.

Asymmetric 1,4-Addition

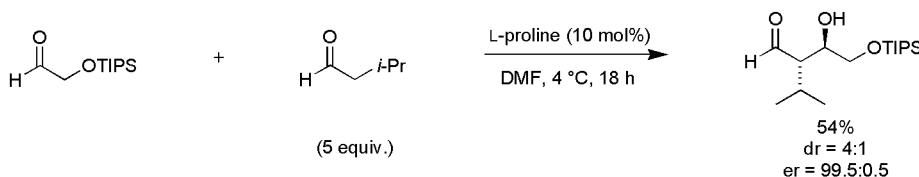


Cross-coupling of alkyl halides with aryl Grignard reagents.
Martin, R.; Fürstner, A. *Angew. Chem. Int. Ed.* **2004**, 43, 3955.

sp²-sp³ Coupling

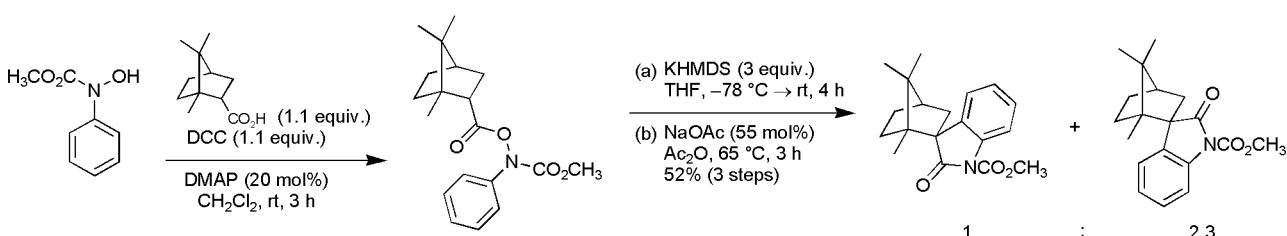
34 examples (yields 67–98%).

Enantioselective organocatalytic Aldol reactions of α -oxyaldehydes.
Northrup, A. D.; Mangion, I. K.; Hettche, F.; MacMillan, D. W. C. *Angew. Chem. Int. Ed.* **2004**, 43, 2152.

Aldol Reaction

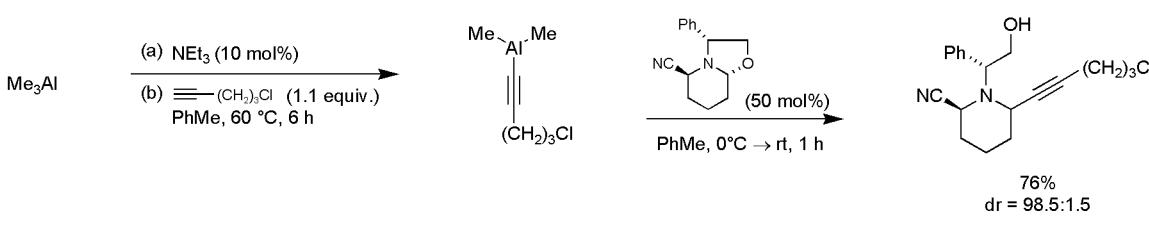
12 examples (yields 33–92%, %de 25–80%, %ee 88–99%).

Spirocyclic oxindole synthesis via a hetero-Claisen rearrangement.
Mao, Z.; Baldwin, S. W. *Org. Lett.* **2004**, 6, 2425.

[3,3]-Sigmatropic Rearrangement

7 examples (yields 52–76%).

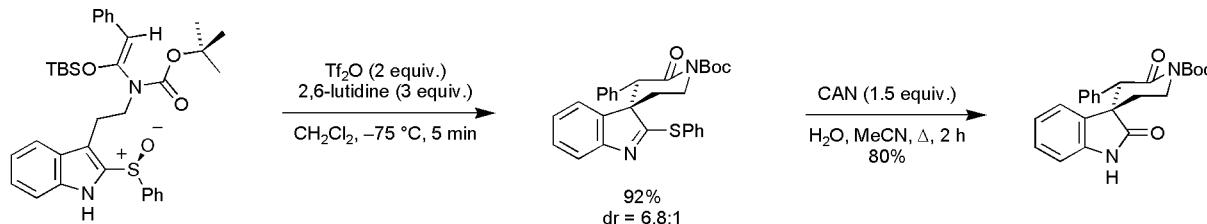
Direct triethylamine-catalysed alummation of terminal alkynes.
Feuvrie, C.; Blanchet, J.; Bonin, M.; Micouin, L. *Org. Lett.* **2004**, 6, 2333.

C–C Bond Formation

13 examples (yields 25–98%).

Oxidative cyclisation of indole derivatives.
Feldman, K. S.; Vidulova, D. B. *Org. Lett.* **2004**, 6, 1869.

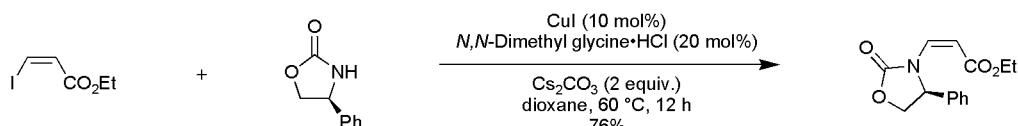
Annulation



CAN = cerium (IV) ammonium nitrate. 5 examples (yields 64-93%).

CuI/N,N-Dimethylglycine-catalysed coupling of vinyl halides with amides or carbamates.
Pan, X.; Cai, Q.; Ma, D. *Org. Lett.* **2004**, 6, 1809.

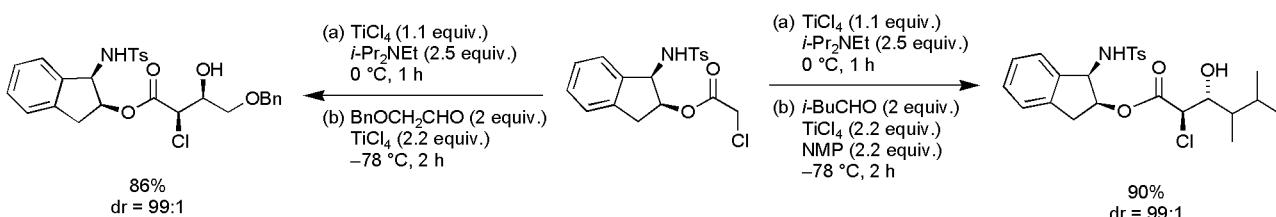
C-N Bond Formation



32 examples (yields 10-85%).

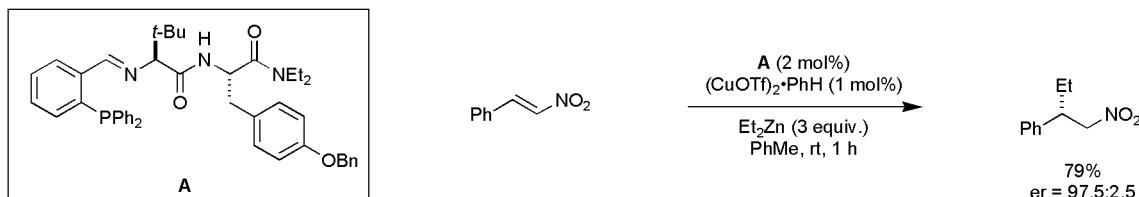
Stereoselective chloroacetate Aldol reactions.
Ghosh, A. K.; Kim, J. *Org. Lett.* **2004**, 6, 2725.

Asymmetric C-C Bond Formation



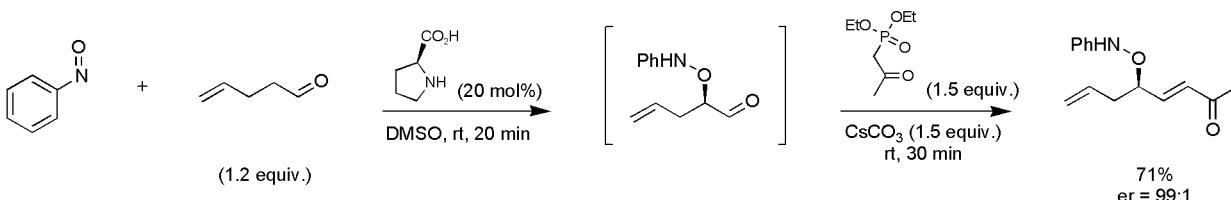
27 examples (yields 15-97%, %de = 48-98%).

Cu-catalysed asymmetric conjugate addition of alkylzinc reagents to aromatic and aliphatic acyclic nitroalkenes. **Asymmetric 1,4-Addition**
Mampreian, D. M.; Hoveyda, A. H. *Org. Lett.* **2004**, 6, 2829.



30 examples (yields 52-84%, %ee 77-95%).

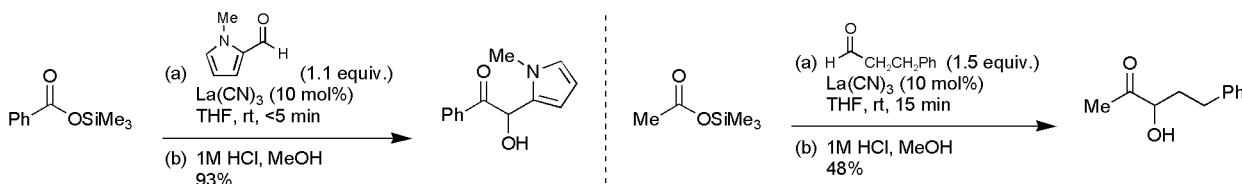
Enantioselective synthesis of allylic alcohols via a sequential aminoxylation-olefination of aldehydes. **Asymmetric C-O Bond Formation**
Zhong, G.; Yu, Y. *Org. Lett.* **2004**, 6, 1637.



8 examples (yields 52-81%, %ee 95-99%).

Lanthanum-catalysed cross silyl benzoin additions.
Bausch, C. C.; Johnson, J. S. *J. Org. Chem.* **2004**, *69*, 4283.

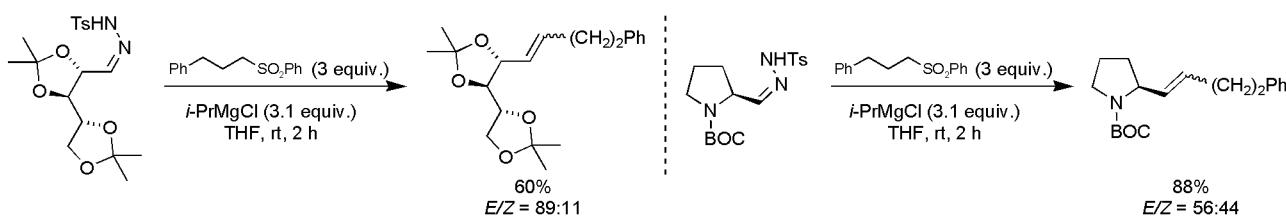
1,2-Addition/Rearrangement



11 examples (yields 48-93%).

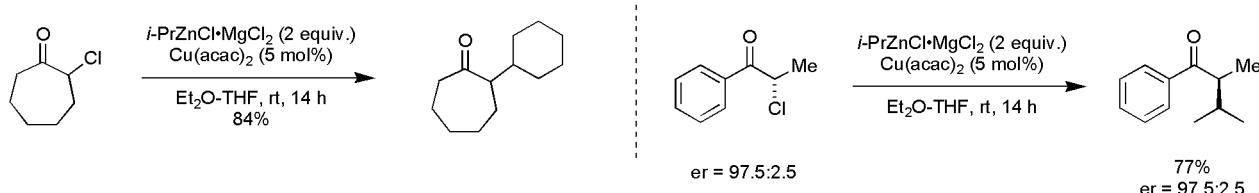
Olefination of α -hydroxy and α -amino aldehyde derivatives.
Wicha, J.; Zarecki, A. *J. Org. Chem.* **2004**, *69*, 5810.

C-C Bond Formation



8 examples (yields 21-88%, 48:52 E/Z 89:11).

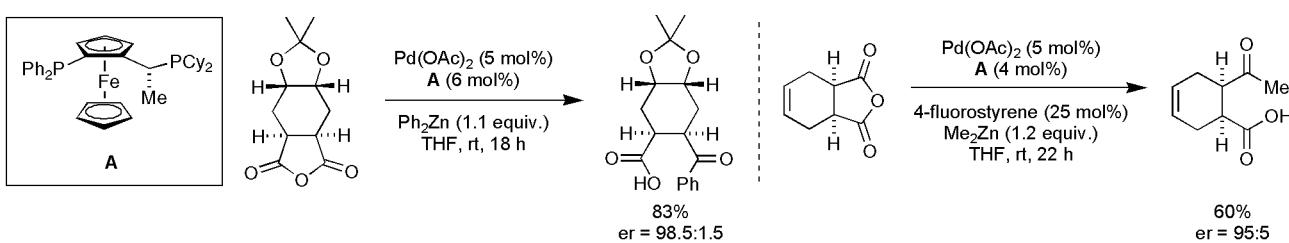
Catalytic cross-coupling of alkylzinc halides with α -chloroketones.
Malosh, C. F.; Ready, J. M. *J. Am. Chem. Soc.* **2004**, *126*, 10204.

 sp^3 - sp^3 Coupling

23 examples (yields 45-96%).

Pd-catalyzed enantioselective alkylative desymmetrisation of meso-succinic anhydrides.
Bercot, E. A.; Rovis, T. *J. Am. Chem. Soc.* **2004**, *126*, 10248.

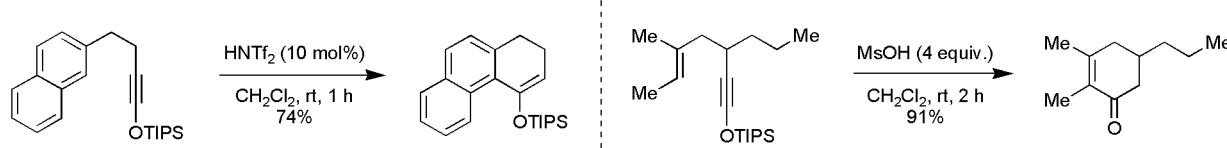
Desymmetrisation



13 examples (yields 0-89%, %ee 64-97%).

Bronsted acid-promoted cyclisations of siloxyalkynes with arenes and alkenes.
Zhang, L.; Kozmin, S. A. *J. Am. Chem. Soc.* **2004**, *126*, 10204.

Annulation



Arené cyclisations: 6 examples (yields 40-92%); Alkene cyclisations: 5 examples (yields 76-91%).