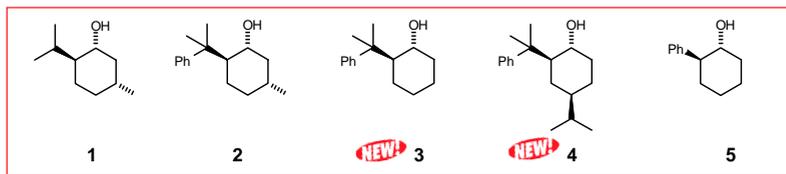
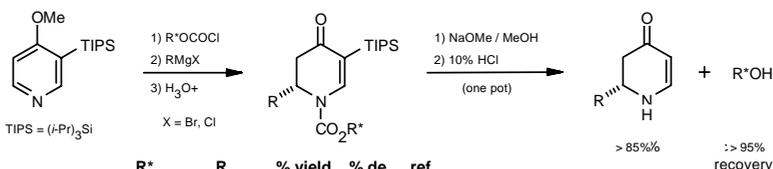


Cyclohexyl-Based Chiral Auxiliaries

Cyclohexyl-based chiral auxiliaries are very effective at affording high diastereofacial selectivity in carbon-carbon bond forming reactions and various reductions.¹ They have recently been used in a number of applications including Friedel-Crafts reactions,² asymmetric oxidation of sulfides,³ synthesis of alkaloids,⁴ and asymmetric Pauson-Khand cyclizations.⁵ *These auxiliaries are readily recycled.* Aldrich offers a variety of these highly efficient chiral auxiliaries; examples of their utility are shown here. Please call our Technical Services Department at **800-231-8327** (US/Canada) or your local office for more information or to request your **FREE** copy of the **1997 Aldrich Chiral Compounds** brochure.



Grignard addition to chiral *N*-acyl pyridinium salts⁶⁻⁹



R*	R	% yield	% de	ref
(-)-2	Ph	80	94	6
(-)-3	Me(CH ₂) ₁₀	85	90	7
(-)-4	c-Hex	85	88	8
(-)-4	Ph	81	95	9
(-)-4	Bu≡	76	90	9

Note: Yield is of purified major diastereoisomer.

22,446-4

(1*S*,2*R*,5*S*)-(+)-Menthol, 99%
(98%ee/GC) [(+)-1]

10g; 50g

M278-0

(1*R*,2*S*,5*R*)-(-)-Menthol, 99%
(99%ee/GC) [(-)-1]

25g; 100g; 500g

32,948-7

(-)-8-Phenylmenthol, 98% [(-)-2]

250mg; 1g

45,340-4

(1*S*,2*R*)-(+)-*trans*-2-(1-Methyl-1-phenylethyl)cyclohexanol, 98% (98%ee/HPLC) [(+)-3]

1g

45,339-0

(1*R*,2*S*)-(-)-*trans*-2-(1-Methyl-1-phenylethyl)cyclohexanol, 98% (98%ee/HPLC) [(-)-3]

1g

45,342-0

(1*S*,2*R*,4*S*)-(+)-4-(1-Methylethyl)-2-(1-methyl-1-phenylethyl)cyclohexanol, 98% (99%ee/HPLC) [(+)-4]

1g

45,341-2

(1*R*,2*S*,4*R*)-(-)-4-(1-Methylethyl)-2-(1-methyl-1-phenylethyl)cyclohexanol, 98% (99%ee/HPLC) [(-)-4]

1g

36,725-7

(1*S*,2*R*)-(+)-*trans*-2-Phenyl-1-cyclohexanol, 99% (99%ee/GC) [(+)-5]

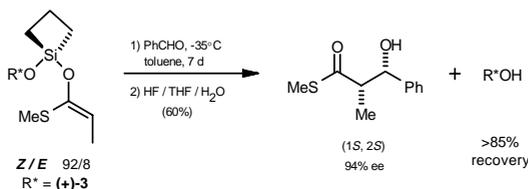
50mg; 250mg

36,724-9

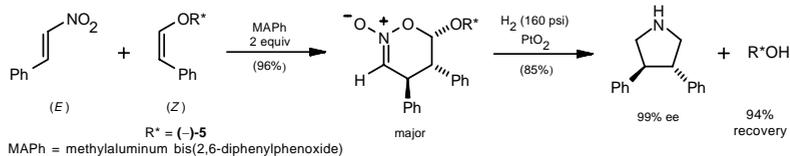
(1*R*,2*S*)-(-)-*trans*-2-Phenyl-1-cyclohexanol, 99% (99%ee/GC) [(-)-5]

250mg; 1g

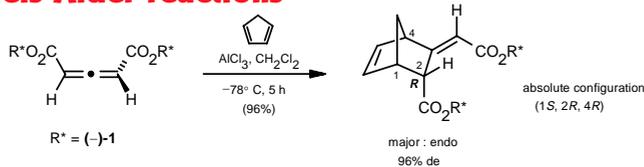
Uncatalyzed, *syn*-selective, asymmetric aldol additions¹⁰



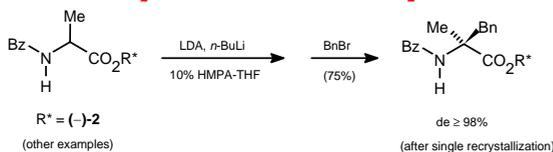
Asymmetric nitroalkene [4+2] cycloadditions¹¹



Diels-Alder reactions¹²



Enantiomerically enriched α -methyl amino acids¹³



References: (1) For an excellent review, see: Whitesell, J.K. *Chem. Rev.* **1992**, *92*, 953. (2) Brown, D.S. et al. *Synlett* **1995**, 269. (3) Matsugi, M. et al. *Tetrahedron: Asymmetry* **1995**, *6*, 2991. (4) Eudistomin and Eudistominin alkaloids: Polniaszek, R.P.; Bell, S.J. *Tetrahedron Lett.* **1996**, *37*, 575. (5) Camptothecin: Comins, D.L. et al. *ibid.* **1994**, *35*, 5331. (6) Bernardes, V. et al. *J. Org. Chem.* **1995**, *60*, 6670. (7) Comins, D.L. et al. *J. Am. Chem. Soc.* **1994**, *116*, 4719. (8) Comins, D.L.; Radi Benjelloun, N. *Tetrahedron Lett.* **1994**, *35*, 829. (9) Comins, D.L. et al. *Synlett* **1994**, 972. (10) Comins, D.L.; Guerra-Weltzien, L. *Tetrahedron Lett.* **1996**, *37*, 3807. (11) Denmark, S.E.; Griedel, B.D. *J. Org. Chem.* **1994**, *59*, 5136. (12) Denmark, S.E.; Marcin, L.R. *ibid.* **1995**, *60*, 3221. (13) Ikeda, I. et al. *ibid.* **1996**, *61*, 2031. (14) Berkowitz, D.B.; Smith, M.K. *ibid.* **1995**, *60*, 1233.



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