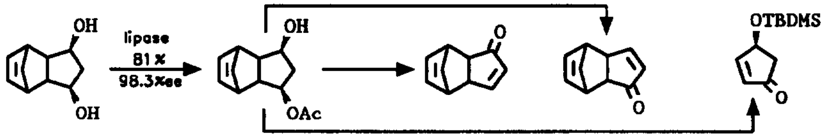
GRAPHICAL ABSTRACTS

Tetrahedron: Asymmetry **1993**, *4*, 2277

Highly Enantioselective Synthesis of (+) and (-)Endo-Tricycvlo[5.2.1.$0^{2,6}$]Deca-4,8-dien-3-one and (-)-4-t-Butyldimethylsilyloxy-Cyclopentenone by Enzyme-Catalyzed Acetylation

Zhi-Yu Liu*[a], Ling He[b] and Hu Zheng[b]
a Shanghai Institute of Organic Chemistry,Chinese Academy of Sciences,354 Fenglin Lu,Shanghai 200032,China
b College of Pharmacy,West China University of Medical Sciences,Chengdu,Sichuan 620031,China

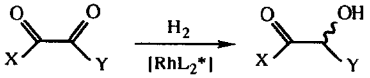


Tetrahedron: Asymmetry **1993**, *4*, 2279

New alkyarylamidophosphinephosphinites as chiral diphosphines for asymmetric hydrogenation of activated keto compounds

Alain Roucoux, Francine Agbossou, André Mortreux, and Francis Petit
Laboratoire de Chimie Organique Appliquée de l'ENSC Lille, URA Centre National de la Recherche Scientifique 402, Université des Sciences et Technologies de Lille, BP 108, 59652 Villeneuve d'Ascq Cedex, France

The asymmetric hydrogenation of ketopantoyllactone and N-benzylphenylglyoxamide in presence of new easily accessible alkyarylamidophosphinephosphinite ligands produces the corresponding alcohols up to 96 and 79.6% ee respectively.

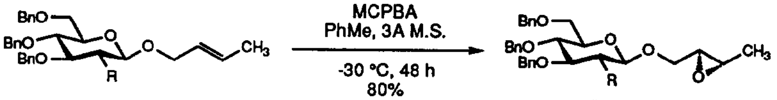


Tetrahedron: Asymmetry **1993**, *4*, 2283

CARBOHYDRATES AS CHIRAL AUXILIARIES: THE ASYMMETRIC EPOXIDATION REACTION OF OLEFINS.

André B. Charette,* and Bernard Côté.
Département de Chimie, Université de Montréal, Montréal, Québec, Canada, H3C 3J7.

Under optimized conditions, the epoxidation of *trans*-crotyl 3,4,6-tri-O-benzyl-b-d-glucopyranose gave a 9:1 mixture of diastereomers.

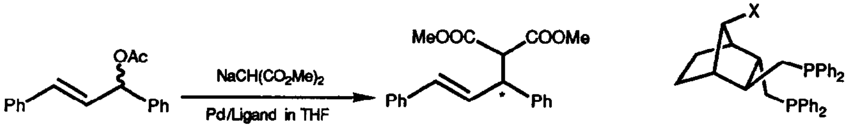


90% Diastereoselectivity

Tetrahedron: Asymmetry **1993**, *4*, 2287

Synthesis and Application of Chiral Bisphosphine Ligands Containing a Hetero-Functional Group

Akira Yamazaki, Toshiaki Morimoto, and Kazuo Achiwa
Scool of Pharmaceutical Science, University of Shizuoka, 52-1 Yada, Shizuoka 422, Japan



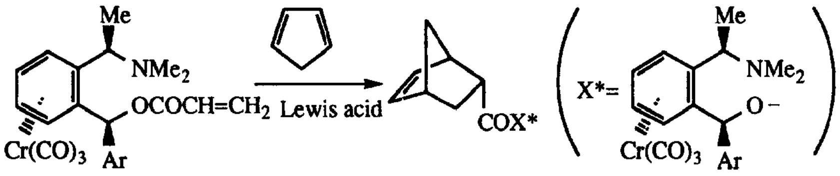
Ligands: BHMP-COOH, 49% ee
BPPF-COOH , 36% ee

BHMP-COOH
x=OCH_2COOH

Tetrahedron: Asymmetry **1993, *4*,** 2291

(η^6-Arene)chromium Tricarbonyl Complexes as Chiral Auxiliaries in Asymmetric Diels-Alder Reactions

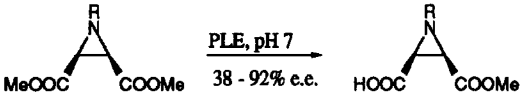
M. Uemura,* Y. Hayashi, Y. Hayashi
Faculty of Science, Osaka City University, Sugimoto, Sumiyoshi, Osaka 558, Japan



Tetrahedron: Asymmetry **1993, *4*,** 2295

STEREOSELECTIVE HYDROLYSIS of DIMETHYL AZIRIDIN-2,3-DICARBOXYLATES with PIG LIVER ESTERASE (PLE).

Peter Renold and Christoph Tamm
Institut für Organische Chemie der Universität Basel, St. Johanns-Ring 19, CH-4056 Basel, Switzerland



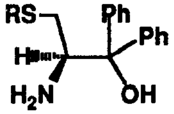
2 R = H; **3** R = Z

4 R = H; **5** R = Z

Dimethyl *meso* aziridine-2,3-dicarboxylates **2** and **3** and the racemic dimethyl aziridine-2,3-dicarboxylates *rac*-**7** and *rac*-**8** were hydrolyzed stereoselectively by pig liver esterase (PLE).

Tetrahedron: Asymmetry **1993, *4*,** 2299

Th. Mehler, J. Martens*
Fachbereich Chemie, Universität Oldenburg
Ammerländer Heerstr. 114-118, D-26129 Oldenburg



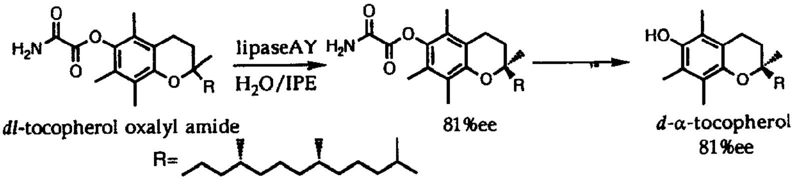
1, 2

The optically active β-amino alcohols 1 (R = C_2H_5) and 2 (R = *i*-C_3H_7) derived from (*R*)-cysteine catalyze the enantioselective borane reduction of various achiral ketones to optically active secondary alcohols in up to 100 % *ee*.

Tetrahedron: Asymmetry **1993, *4*,** 2303

OXALATE AS AN ACTIVATED ESTER GROUP IN LIPASE-CATALYZED ENANTIOSELECTIVE HYDROLYSIS: A VERSATILE APPROACH TO *d*-α-TOCOPHEROL

Eisaku Mizuguchi, and Kazuo Achiwa*
School of Pharmaceutical Sciences, University of Shizuoka, 52-1 Yada, Shizuoka 422, Japan

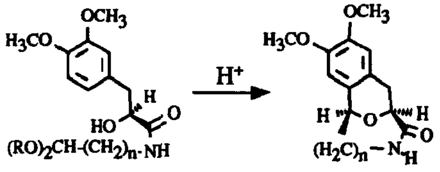


Tetrahedron: Asymmetry **1993**, *4*, 2307

Tricyclic Benzomorphan Analogues by Intramolecular Oxa-Pictet-Spengler Reaction

Bernhard Wünsch* and Matthias Zott, Institut für Pharmazie
und Lebensmittelchemie der Universität München, Sophienstr. 10, 80333 Munich

The intramolecular Oxa-Pictet-Spengler reaction enables the *regio-* and *stereo-*selective preparation of stereohomogeneous benzomorphan analogues.



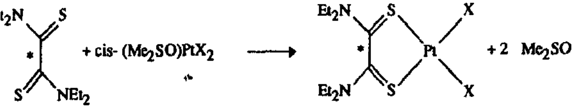
n = 1,2

Tetrahedron: Asymmetry **1993**, *4*, 2311

Evidence for an Unexspected Chiral Axis both in Tetraethyldithioxamide and in its Platinum(II) Coordination and Organometallic Complexes.

Santo Lanza, Giuseppe Bruno, Luigi Monsù Scolaro, Francesco Nicolò and Giuseppe Rosace
Dipartimento di Chimica Inorganica, Analitica e Struttura Molecolare
Università di Messina Salita Sperone 31, Vill. S. Agata 98166 MESSINA (Italy)

In tetraethyldithioxamide molecule and in its platinum(II) complexes the C(=S)-C(=S) axis is an element of chirality.



X = Cl, Me and Ph

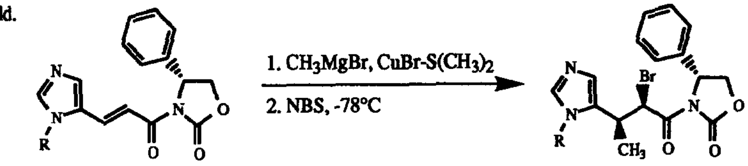
Tetrahedron: Asymmetry **1993**, *4*, 2315

ASYMMETRIC SYNTHESIS OF (2R,3S) AND (2S,3R) PRECURSORS OF ß-METHYL-HISTIDINE, -PHENYLALANINE AND -TYROSINE

Guigen Li, Dinesh Patel and Victor J. Hruby*, Department of Chemstry, University of Arizona, Tucson, AZ 85721, USA.

A systematic series of key intermediates of ß-methyl-His,-Phe and -Tyr have been synthesized with high stereoselectivity and yield.

e.g.



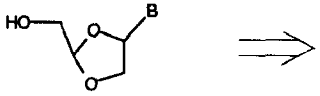
(7 examples)

Tetrahedron: Asymmetry **1993**, *4*, 2319

Divergent Asymmetric Syntheses of Dioxolane Nucleoside Analogues

Colleen A. Evans, Dilip M. Dixit, M. Arshad Siddiqui, Haolun Jin,
H.L. Allan Tse, Alex Cimpoia, Krzysztof Bednarski, Tibor Breining and Tarek S. Mansour*
BioChem Therapeutic Inc., 531 des Prairies Blvd., Laval, Quebec, Canada H7V 1B7

Oxidative degradation of benzyloxymethylacetals derived from D-mannitol or L-ascorbic acid provides dioxolane intermediate **6** and **7** useful in the synthesis of all the stereoisomers of dioxolane nucleoside analogues.



D-mannitol
or
L-ascorbic acid

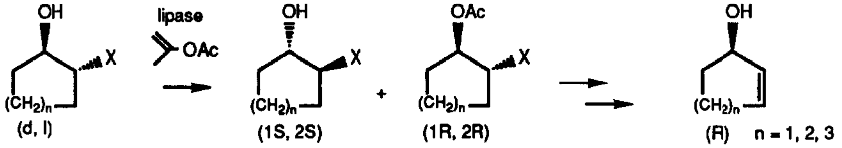
B = purine or pyrimidine base

Tetrahedron: Asymmetry **1993**, *4*, 2323

Synthesis of Enantiomerically Pure (R)-2-Cycloalken-1-ols using Highly Enantioselective Enzymatic Transesterification

Tetsuya Fukazawa and Toshihiko Hashimoto
Medicinal Chemistry Research Laboratories, Sankyo Co., Ltd., Shinagawa-ku, Tokyo 140, Japan

Optically pure (R)-2-cycloalken-1-ols were synthesized via highly enantioselective lipase-catalyzed transesterification of 2-substituted cycloalkanols.



Tetrahedron: Asymmetry **1993**, *4*, 2327

The Value of Partial Racemates in Intraspecific Communication.

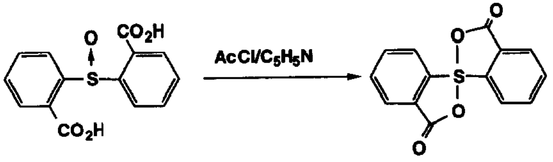
Raymond M. Carman,
Department of Chemistry, The University of Queensland, Brisbane, Qld 4072, Australia.

A mixture of enantiomers may be more effective for pheromonal communication than either a single pure compound or a more complex mixture of compounds. The relative concentration of a mixture of enantiomers will be less time-dependent than any other mixture.

Tetrahedron: Asymmetry **1993**, *4*, 2329

Chromatographic Resolution of a C_2-symmetric Spirosulfurane: 1,1'Spirobi[3H-2,1-benzoxathiol]-3,3'-dione

Stig Allenmark* and Sofia Claeson
Department of Organic Chemistry, University of Gothenburg, S-41296 Gothenburg, Sweden



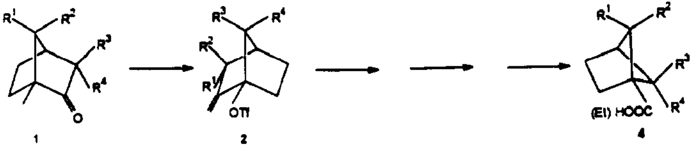
semipreparative resolution by chiral liquid chromatography; enantiomers characterized by chiroptical methods (polarimetry, CD)

Tetrahedron: Asymmetry **1993**, *4*, 2333

Enantiospecific Synthesis of Substituted Bicyclo[2.1.1]hexane-1-carboxylic Acids and Esters

A. García Martínez, E. Teso Vilar, J. Osío Barcina, M. E. Rodriguez Herrero, S. de la Moya Cerero, M. Hanack, L. R. Subramanian.
Fac. C. Químicas, Dept. Quim. Org. I, Universidad Complutense, 28040-Madrid, Spain.

a R^1, R^2, R^3 R^4= H
b R^1, R^2= H, R^3, R^4= CH_3
c. R^1, R^2= CH_3, R^3, R^4= H

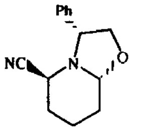


Tetrahedron: Asymmetry **1993**, *4*, 2335

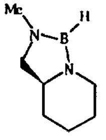
Diazaborolidines, a New Class of Enantioselective Organoboron Catalytic Agents.

Olivier Froelich, Martine Bonin, Jean-Charles Quirion*, Henri-Philippe Husson.
Laboratoire de Chimie Thérapeutique, URA 1310 du CNRS,
Faculté des Sciences Pharmaceutiques et Biologiques, 4, Av. de l'Observatoire, 75270, Paris Cedex 06, France.

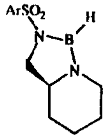
Diazaborolidines 2 and 3 have been prepared in an optically pure form from 2-cyano-6-phenyl oxazolopiperidine 1. Preliminary results about these new class of catalysts for asymmetric reduction of acetophenone is reported.



1



2



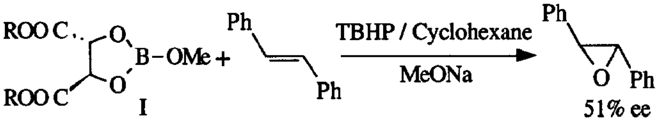
3

Tetrahedron: Asymmetry **1993**, *4*, 2339

Asymmetric Epoxidation of Unfunctionalized Alkenes using Chiral Borates

E. Manoury, H. Ait Haddou Mouloud, G.G.A.Balavoine*
Laboratoire de Chimie de Coordination, CNRS, 205 route de Narbonne, 31077 Toulouse Cedex, France

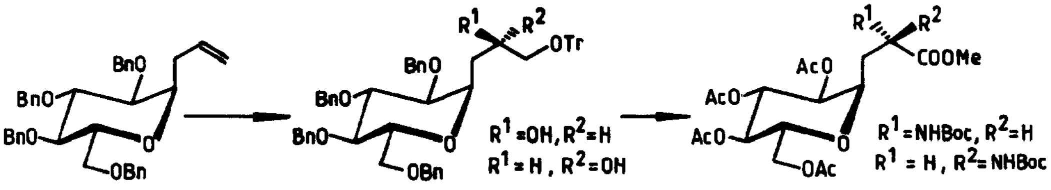
Chiral borates I in the presence of alkyl hydroperoxides induced enantioselective epoxidation of various alkenes



Tetrahedron: Asymmetry **1993**, *4*, 2343

Synthesis of C-α-D-Glucosyl-α-amino Acids

M K Gurjar*, A S Mainkar and M Syamala
Indian Institute of Chemical Technology
Hyderabad 500 007, India

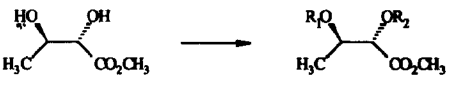


Tetrahedron: Asymmetry **1993**, *4*, 2347

REGIOSELECTIVE PROTECTION OF THREO-2,3-DIHYDROXYBUTANOIC ESTERS

Andreas Kirschning,* Monika Kreimeyer, Hans-Peter Blanke
Institut für Organische Chemie der Technischen Universität Clausthal, Leibnizstraße 6, D-38678 Clausthal-Zellerfeld, Germany

Monoprotected derivatives of optically pure diolester 2 are regioselectively constructed by lipase-based methodologies as well as via the stannylene acetal of 1.



1 2

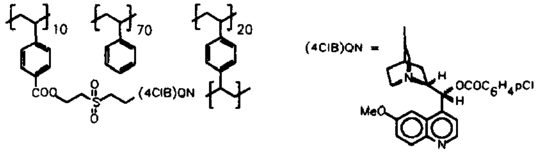
Tetrahedron: Asymmetry **1993**, *4*, 2351

A NEW CROSSLINKED POLYMER FOR THE HETEROGENEOUS CATALYTIC ASYMMETRIC DIHYDROXYLATION OF ALKENES

Dario Pini*, *Antonella Petri* and *Piero Salvadori*

Centro CNR Macromolecole Stereordinate ed Otticamente Attive,
Dipartimento di Chimica e Chimica Industriale, Università di Pisa,
Via Risorgimento 35, 56126 Pisa, ITALY

Heterogeneous catalytic asymmetric dihydroxylation of alkenes has been reported using polymer 1.

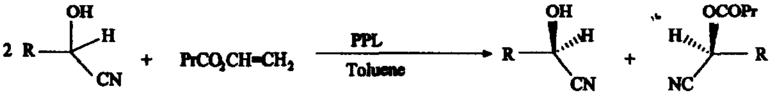


polymer 1

Tetrahedron: Asymmetry **1993**, *4*, 2355

Enzymatic Resolution of Optically Active Aliphatic Cyanohydrins

Liisa T. Kanerva, Eero Kiljunen and Tuomas T. Huuhtanen
Department of Chemistry, University of Turku, Finland



(*R*) **(*S*)**

PPL (porcine pancreatic lipase) catalyses the enantioselective acylation of aliphatic cyanohydrins. CCL and lipase AY (*Candida cylindracea*) catalyse the enantioselective deacylation of acylated cyanohydrins.

Tetrahedron: Asymmetry **1993**, *4*, 2363

AN ENANTIOSPECIFIC SYNTHESIS OF 4-METHYLCAMPHOR

Thomas Money and Monica H. Palme
Chemistry Department, University of B.C., Vancouver, Canada V6T 1Z1

A simple 4-step reaction sequence converts (+)-camphor (1) to enantiopure (-)-4-methylcamphor (3). The key step in the synthesis is the rearrangement of (-)-2-methylenebornane (7) to 4-methylisobornyl bromide (17).

1 **7** **17** **3**

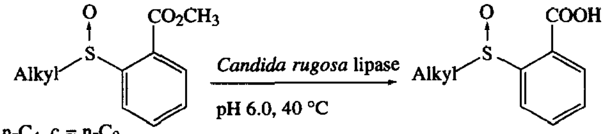
(-)-(1S, 4S)-4-methylbornan-2-one

$[\alpha]_D = -26.7$ (c 3.4, EtOH)

Tetrahedron: Asymmetry **1993**, *4*, 2371

Lipase-Catalyzed Kinetic Resolution of a Series of Esters Having a Sulfoxide Group as the Stereogenic Centre

Stig G. Allenmark* and A. Christina Andersson
Department of Organic Chemistry, University of Göteborg,
S-41296 Göteborg, Sweden



a = C_1, b = n-C_4, c = n-C_8, d = n-C_{12} and e = n-C_{16} **2 a-e**

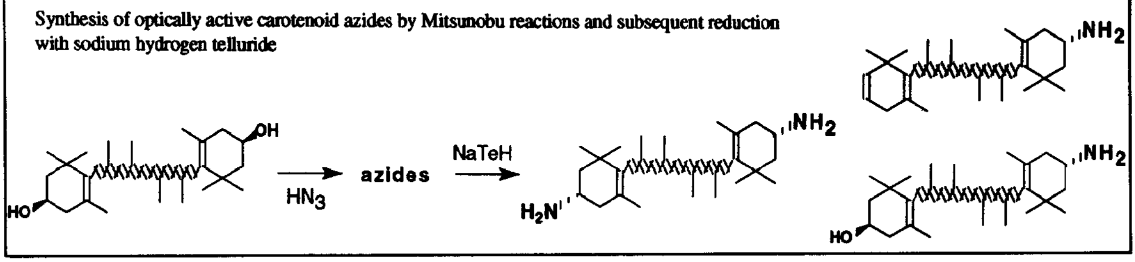
(S)-form kinetically favoured **1 a-e**

Tetrahedron: Asymmetry **1993**, *4*, 2377

Synthetic Nitrogen Carotenoids: Optically Active Carotenoid Amines

Hans-Richard Sliwka* and Synnøve Liaaen-Jensen
Institute of Organic Chemistry, Norwegian Institute of Technology, University of Trondheim, N-7034 Trondheim-NTH, Norway

Synthesis of optically active carotenoid azides by Mitsunobu reactions and subsequent reduction with sodium hydrogen telluride

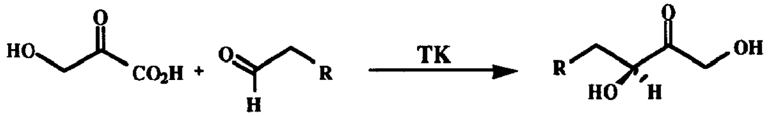


Tetrahedron: Asymmetry **1993**, *4*, 2383

STUDY OF THE SPECIFICITY OF A SPINACH TRANSKETOLASE ON ACHIRAL SUBSTRATES.

Valérie DALMAS et Colette DEMUYNCK, Laboratoire de Chimie Organique Biologique, URA 485 du CNRS, Université Blaise Pascal, 63177 Aubière Cedex, France.

4-deoxy-4-methoxy-L-erythrulose, 4-deoxy-4-methylthio-L-erythrulose and 4,5-dideoxy-4-methylthio-D-xylulose synthesis catalysed by transketolase.

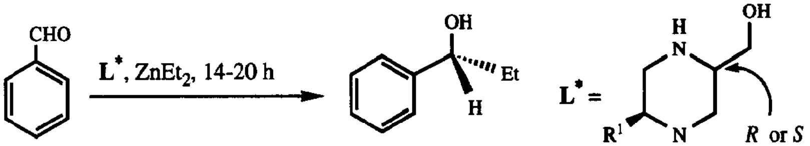


R= OCH_3 (ee=60%)
R= SCH_3 (ee=64%)
R= CH_2SCH_3 (ee=76%)

Tetrahedron: Asymmetry **1993**, *4*, 2389

Chiral Ligands Containing Heteroatoms. 11. Optically Active 2-Hydroxymethyl Piperazines as Catalists in the Enantioselective Addition of Diethylzinc to Benzaldehydes

Massimo Falorni* , Michele Satta, Sandra Conti and Giampaolo Giacomelli
Dipartimento di Chimica dell'Universita', via Vienna 2, I-07100 Sassari, Italy



up to 61% ee

R^1	R^2
H	Me
$-CH_2-CH_2-CH_2-$	
Pr^i	H
Bu^t	H
(*S*)-Bu^s	H