GRAPHICAL ABSTRACTS

Tetrahedron Letters, **1994**, *35*, 7147

Stabilization of Glycosyl Sulfonium Ions for Stereoselective *O*-Glycosylation

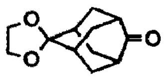
Lihong Sun, Pan Li, and Kang Zhao*
Department of Chemistry, New York University
New York, NY 10003

Bis(trifluoroacetoxy)iodobenzene can be used for studying the stereoselectivity of *O*-glycosylation from thioglycosides and the use of reagent-stabilized sulfonium ions to prohibit the formation of oxonium ions is also discussed.

Tetrahedron Letters, **1994**, *35*, 7151

Improvements in the Synthesis of Adamantane-2,6-dione and Preparation of the Novel Adamantane-2,6-dione *mono*-ketal

Fred D. Ayres,* Saeed I. Khan, Orville L. Chapman, and Steven N. Kaganove, Department of Chemistry and Biochemistry, University of California, Los Angeles, Los Angeles, CA 90024-1569 USA

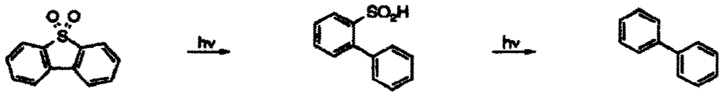


Tetrahedron Letters, **1994**, *35*, 7155

PHOTOCHEMISTRY OF DIBENZOTHIOPHENE-S,S,-DIOXIDE: REACTIONS OF A HIGHLY CONSTRAINED BIRADICAL.

William S. Jenks,* Lisa M. Taylor, Yushen Guo, and Zehong Wan,
Department of Chemistry, Iowa State University, Ames, IA 50011-3111 USA

Photolysis of dibenzothiophene sulfone in isopropanol yields biphenyl in quantitative yields. The reaction takes place in two stages.

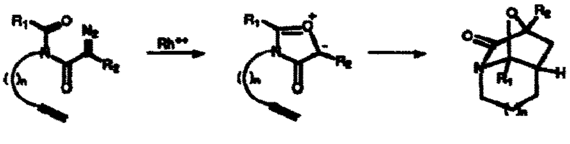


Tetrahedron Letters, **1994**, *35*, 7159

SYNTHESIS OF POLYHETEROCYCLIC RING COMPOUNDS BY THE INTRAMOLECULAR CYCLOADDITION OF N-ALKENYL SUBSTITUTED DIAZOIMIDES

Albert Padwa, David J. Austin, and Alan T. Price*
Department of Chemistry, Emory University Atlanta, GA 30322 USA

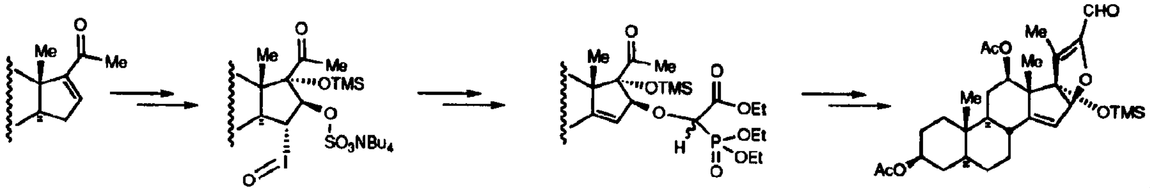
Rhodium(II) catalysis of various diazoimides containing tethered π-systems attached to the nitrogen atom results in isomünchnone dipole formation followed by intramolecular dipolar-cycloaddition.



Tetrahedron Letters, **1994**, *35*, 7163

APPLICATION OF THE REICH IODOSO SYN-ELIMINATION FOR THE PREPARATION OF AN INTERMEDIATE APPROPRIATE FOR THE SYNTHESIS OF BOTH HEXACYCLIC STEROIDAL UNITS OF CEPHALOSTATIN 7.

S. Kim, P. L. Fuchs*
Department of Chemistry, Purdue University, West Lafayette, IN 47907



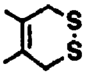
Tetrahedron Letters, **1994**, *35*, 7167

SULFENYL CHLORIDE CHEMISTRY. PRECURSORS FOR DIATOMIC SULFUR TRANSFER.

Imad A. Abu-Yousef and David N. Harpp*
Department of Chemistry
McGill University
Montreal, Quebec, Canada, H3A 2K6

When triphenylmethanethiosulfenyl chloride (as well as its dithio homolog) is treated with various alkenes, 1,2 addition reactions take place. When these adducts are warmed with 1,3-dienes, diatomic sulfur is delivered in good, overall yield.

$$(C_6H_5)_3SSCl + R_2C{=}CR_2 \longrightarrow (\text{ADDUCT}) \xrightarrow[(C_6H_5)_3P]{\text{diene}}$$

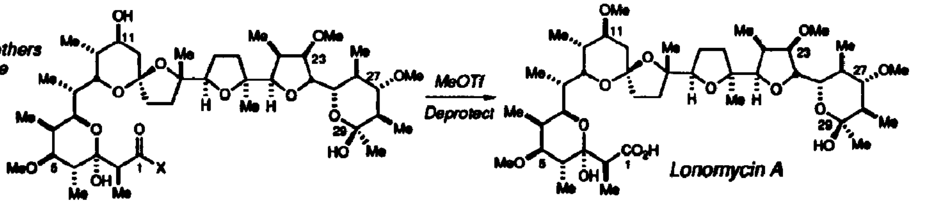


Tetrahedron Letters, **1994**, *35*, 7171

Mild Alcohol Methylation Procedures for the Synthesis of Polyoxygenated Natural Products. Applications to the Synthesis of Lonomycin A

David A. Evans*, Andrew M. Ratz, Bret E. Huff, and George S. Sheppard
Department of Chemistry, Harvard University, Cambridge, Mass. 02138, USA

Selective formation of methyl ethers in four key intermediates for the asymmetric total synthesis of lonomycin A is described.

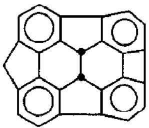


Tetrahedron Letters, **1994**, *35*, 7173

C$_{60}$ DIHYDRIDES AND FULLERENE AROMATICITY. INSIGHTS FROM CALCULATIONS ON MODEL COMPOUNDS.

Philip M. Warner,
Department of Chemistry, Northeastern University, Boston, MA 02115 USA

AM1 calculations on fullerene model compounds (e.g., **15**, **16**, **24**) reveal that C$_{60}$ is quite aromatic, with each C having a resonance energy of about 3.33 kcal/mol. Also, ring-opened fullerene dihydrides (e.g., **25**) (fulleroids) are discussed.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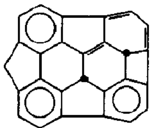
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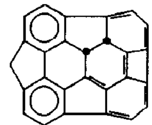
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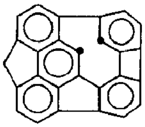
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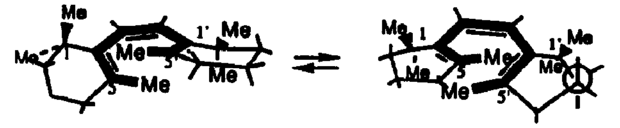
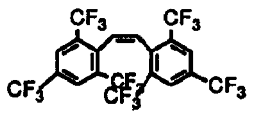
Tetrahedron Letters, **1994**, *35*, 7177

Spiral Hexatrienes. The Hindered cis Isomer of Mini-carotene-3 and Hexakis-(2,2',4,4',6,6'-trifluoromethyl)stilbene.

Rongliang Chen, Leticia U. Colmenares, J. R. Thiel & Robert S. H. Liu*, Department of Chemistry, University of Hawaii, Honolulu, HI 96822, U. S. A.

Spectroscopic (UV-VIS and NMR) and chemical properties of the cis isomers of the titled compounds are reported.

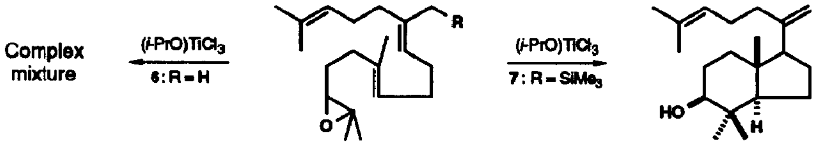




Tetrahedron Letters, **1994**, *35*, 7181

Selective Termination of a Polyene Cyclization by an Internally Situated Allylsilane Group

Paul V. Fish, Department of Chemistry, Stanford University, Stanford, CA 94305, USA



2 3 (79-82%)

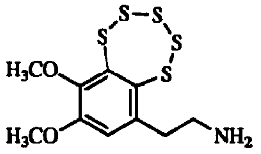
The cyclization of epoxides 6 and 7, incorporating the internally situated propenyl and allylsilane terminator groups respectively, has demonstrated that the allylsilane function is the far superior group for terminating the cyclization process.

Tetrahedron Letters, **1994**, *35*, 7185

CHIRALITY IN UNSYMMETRICALLY SUBSTITUTED BENZOPENTATHIEPINS: THE RESULT OF A HIGH BARRIER TO RING INVERSION

Bradley S. Davidson,* Paul W. Ford, and Magnus Wahlman
Department of Chemistry, University of Hawaii, Honolulu, Hawaii 96822

Evidence obtained using NMR and molecular mechanics calculations indicates that unsymmetrically substituted benzopentathiepins, such as the ascidian metabolite varacin (1), are asymmetric molecules as a result of a high energy barrier to inversion of the low energy chair conformations of the polysulfide ring. Derivatization of varacin with a chiral auxiliary provides a mixture of diastereomeric products which can be separated by fractional recrystallization.



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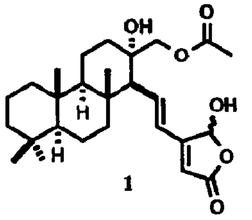
Tetrahedron Letters, **1994**, *35*, 7189

NEW CYTOTOXIC SESTERTERPENES FROM THE MARINE SPONGE *SPONGIA* SP.

Haiyin He[†*], Palaniappan Kulanthaivel[†*] and Bill J. Baker[‡]
[†]Sphinx Pharmaceuticals Corporation, 4 University Place, Durham, NC 27717, USA
[‡]Department of Chemistry, Florida Institute of Technology, Melbourne, FL 32901, USA

Six new cytotoxic sesterterpene lactones, spongianolides A-F (1-6) were isolated from the extracts of the marine sponge *Spongia* sp. The structures were determined by the interpretation of spectral data.



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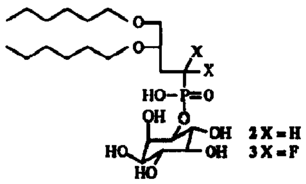
Tetrahedron Letters, **1994**, *35*, 7193

SYNTHESIS OF ISOSTERIC AND ISOPOLAR PHOSPHONATE SUBSTRATE ANALOGUES DESIGNED AS INHIBITORS FOR PHOSPHATIDYLINOSITOL-SPECIFIC PHOSPHOLIPASE C FROM *BACILLUS CEREUS*.

Thottumkara K. Vinod, O. Hayes Griffith* and John F. W. Keana,* Department of Chemistry and
The Institute of Molecular Biology, University of Oregon, Eugene, OR 97403 USA

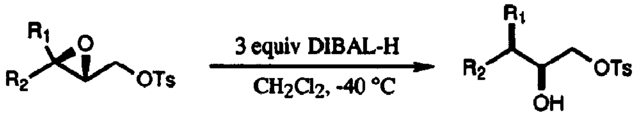
The synthesis of substrate analogues 2 and 3 designed as inhibitors for phosphatidylinositol-specific phospholipase C from *Bacillus cereus* is described.



Tetrahedron Letters, **1994**, *35*, 7197

CHEMOSELECTIVE REDUCTION OF 2,3-EPOXY TOSYLATES WITH DIBAL-H AS A GENERAL ROUTE TO ENANTIOMERICALLY-ENRICHED 1-TOSYLOXY-2-ALKANOLS

J. Michael Chong* and James Johannsen, Guelph-Waterloo Centre for Graduate Work in Chemistry
Department of Chemistry, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1



2,3-Epoxy tosylates may be reduced with DIBAL-H in CH_2Cl_2 or ether at -40 °C to 1-tosyloxy-2-alkanols in high (94-98%) yields.

Tetrahedron Letters, **1994**, *35*, 7201

A Novel One-Pot Conversion of Methyl Sulfones to Sulfonamides

Horng-Chih Huang,* Emily J. Reinhard and David B. Reitz
G. D. Searle, Department of Medicinal Chemistry, 700 North Chesterfield Parkway
St. Louis, Missouri 63198

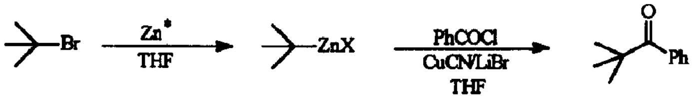
A one-pot synthesis of sulfonamides from methyl sulfones has been developed. Treatment of methyl sulfones with base and trialkylboranes gave the corresponding rearranged sulfinic acid salts which were converted to sulfonamides during oxidative-amination workup.

Tetrahedron Letters, **1994**, *35*, 7205

Direct Formation of Secondary and Tertiary Alkylzinc Bromides.

Mark V. Hanson, Jeff D. Brown, and Reuben D. Rieke,*
Department of Chemistry, University of Nebraska-Lincoln, Lincoln, Nebraska 68588-0304.
Q. Jason Niu, Rieke Metals, Inc., 6133 Heide Lane, Lincoln, Nebraska 68512

The direct formation of secondary and tertiary alkylzinc bromides.

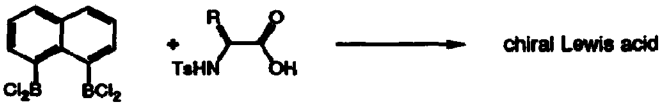


Tetrahedron Letters, **1994**, *35*, 7209

CHIRAL LEWIS ACIDS DERIVED FROM 1, 8-NAPHTHALENEDIYLBIS-(DICHLOROBORANE).

Michael Reilly and Taeboem Oh*, Department of Chemistry, State University of New York, Binghamton, NY 13902-6000

1, 8-Naphthalenediylbis(dichloroborane) was modified with chiral ligands derived from amino acids and diols. These Lewis acids were examined in the context of asymmetric Diels-Alder reactions.

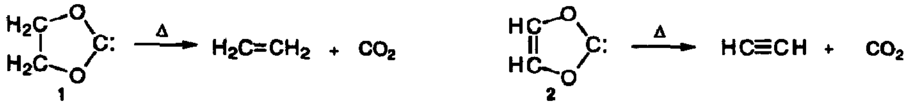


Tetrahedron Letters, **1994**, *35*, 7213

Extrusion Reactions of Carbon Dioxide from Orthoesters and Derivatives: An *ab initio* Study of Some Cyclic Carbenes.

Ronald R. Sauers, Department of Chemistry, Rutgers, The State University, New Brunswick, NJ 08903, USA

Loss of carbon dioxide from dioxocarbene **1** can proceed *via* a concerted process with activation energy: $\Delta G^{\neq}$ = ca. 7.1 kcal/mol (MP2/6-31G**). The unsaturated analog **2** is calculated to be more stable: $\Delta G^{\neq}$ = ca. 25 kcal/mol.

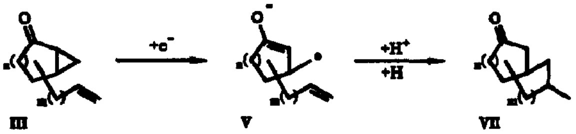


Tetrahedron Letters, **1994**, *35*, 7217

Fragmentation-Cyclization Reactions by Photoinduced Electron Transfer.

Thorsten Kirschberg, Jochen Mattay*, Organisch-Chemisches Institut der Universität Münster, Orléansring 23, D-48149 Münster, Germany.

By PET induced fomation of V spirocyclic and ring anellated compounds are accessible.

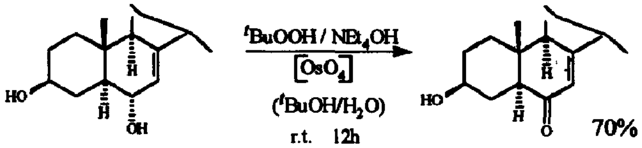


Tetrahedron Letters, **1994**, *35*, 7221

A Novel and Selective Oxidation of Steroidal Allylic Alcohols to the Corresponding Ketones

Christian Beck and Karlheinz Seifert*; Lehrstuhl für Organische Chemie I/2, NWII, Universität Bayreuth, D-95440 Bayreuth;

The oxidation of steroidal allylic alcohols with ^{t}BuOOH and catalytic amounts of OsO_4 yielded the corresponding α,β-unsaturated ketones in good yields.

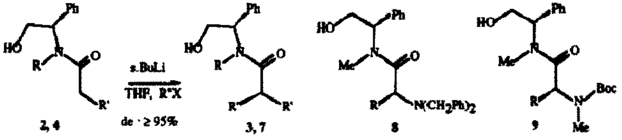


Tetrahedron Letters, **1994**, *35*, 7223

ASYMMETRIC SYNTHESIS. XXXIII. DIASTEREOSELECTIVE ALKYLATION OF N,N-SUBSTITUTED AMIDES.

Laurent Micouin[a], Vincent Schanen[b], Claude Riche[b], Angèle Chiaroni[b],
Jean-Charles Quirion[a]* and Henri-Philippe Husson[a].
a) Laboratoire de Chimie Thérapeutique associé au CNRS, Faculté des Sciences Pharmaceutiques et Biologiques,
Université R. Descartes, 4, Av. de l'Observatoire, 75270 Paris Cedex 06, FRANCE.
b) Institut de Chimie des Substances Naturelles du CNRS, 91198 Gif-sur-Yvette Cedex, France

A series of substituted amides 3 and 7 has been synthetized in enantiomerically pure form from amides 2 and 4 by a stereospecific alkylation. This strategy has been applied to the asymmetric synthesis of diamine derivatives 8 and 9.

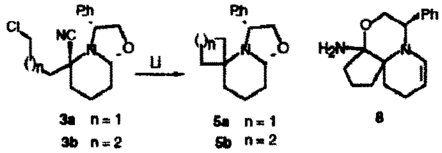


Tetrahedron Letters, **1994**, *35*, 7227

ASYMMETRIC SYNTHESIS. XXXIV SYNTHESIS OF SPIRO-PIPERIDINE DERIVATIVES VIA THE CN(R,S) METHOD.

Carlos M. R. Ribeiro, Sebastião J. de Melo, Martine Bonin, Jean-Charles Quirion*, Henri-Philippe Husson*.
Laboratoire de Chimie Thérapeutique associé au CNRS, Université René Descartes.
Faculté des Sciences Pharmaceutiques et Biologiques, 4, Av. de l'Observatoire, 75270, Paris Cedex 06, France.

5-Aza-spiro-[3,5] nonane **5a**, 6-aza-spiro-[4,5] decane **5b** and tricyclic enamine **8** were prepared from **3a** and **3b** under dissolving metal conditions.

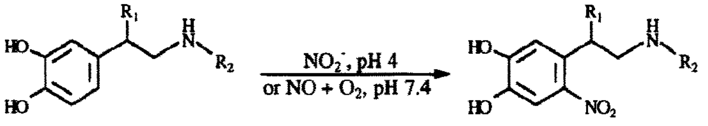


Tetrahedron Letters, **1994**, *35*, 7231

NITRATION OF CATECHOLAMINES WITH NITROGEN OXIDES IN MILD CONDITIONS : A HYPOTHESIS FOR THE REACTIVITY OF NO IN PHYSIOLOGICAL SYSTEMS

Marie-Laure de la Bretèche, Claudine Servy, Maryse Lenfant and Claire Ducrocq*
Institut de Chimie des Substances Naturelles, avenue de la Terrasse, C.N.R.S. F-91198 Gif-sur-Yvette France

Catecholamines react at pH 3-6 with sodium nitrite or in non-deaerated buffer (pH 7.4) with NO leading to the 6-nitro derivatives.

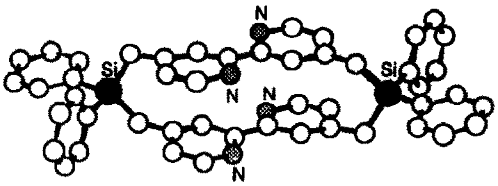


$R_1 = OH, R_2 = H$
$R_1 = OH, R_2 = CH_3$
$R_1 = H,\ R_2 = H$

Tetrahedron Letters, **1994**, *35*, 7233

EXODITOPIC RECEPTORS II: SYNTHESIS AND X-RAY CRYSTAL STRUCTURE OF A DISILAMACROCYCLE BEARING TWO BIPYRIDINE UNITS

Christian Kaes, Mir Wais Hosseini*, Romain Ruppert, André De Cian and Jean Fischer, Université Louis Pasteur, Institut Le Bel, 4, rue Blaise Pascal, F-67000 Strasbourg, France



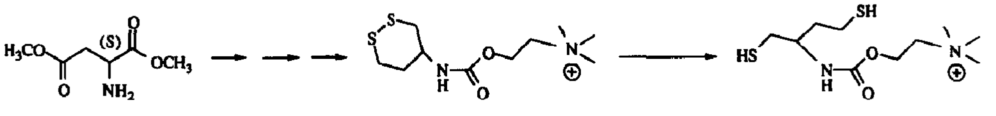
The synthesis of a macrocyclic compound composed of two 2,2'-bipyridines interconnected by two -CH$_2$SiCH$_2$- fragments was achieved and its structure was established.

Tetrahedron Letters, **1994**, *35*, 7237

DESIGN AND SYNTHESIS OF A NOVEL SITE-DIRECTED REDUCING AGENT FOR THE DISULFIDE BOND INVOLVED IN THE ACETYLCHOLINE BINDING SITE OF THE AChoR.

Pascal Kessler*, Denis Servent and Christian Hirth†
CEA, Département d'Ingéniérie et d'Etudes des Protéines (DIEP), C.E. Saclay, 91191 Gif-sur-Yvette, France.

Compound 7 was shown to selectively reduce a disulfide bond in the vicinity of the acetylcholine binding site of the AChoR.



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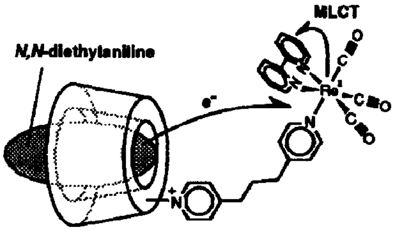
Tetrahedron Letters, **1994**, *35*, 7241

SYNTHESIS OF A RHENIUM COMPLEX APPENDING A CYCLODEXTRIN UNIT ON A LIGAND.

Asao Nakamura, Satoshi Okutsu, Yuji Oda, Akihiko Ueno and Fujio Toda; Department of Bioengineering, Faculty of Bioscience and Biotechnology, Tokyo Institute of Technology, 4259 Nagatsuta-cho, Midori-ku, Yokohama 227, Japan.

A rhenium complex with a hydrophobic binding pocket capable of catching electron donor molecules has been designed for studying photoinduced long-range electron transfer through non-covalent bonding.

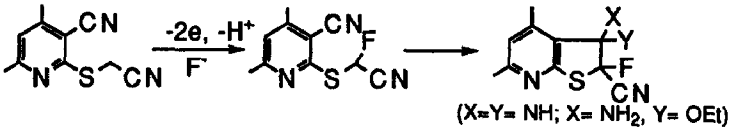


Tetrahedron Letters, **1994**, *35*, 7245

Electrolytic Partial Fluorination of Organic Compounds. 13.

Selective Anodic α-Fluorination of Nitrogen-Containing Heterocyclic Sulfides and Its Application to the Synthesis of Fluorinated Fused Heterocycles

Ayman W. Erian, Akinori Konno, and Toshio Fuchigami,*
Department of Electronic Chemistry, Tokyo Institute of Technology, Nagatsuta, Midori-ku, Yokohama 227, Japan

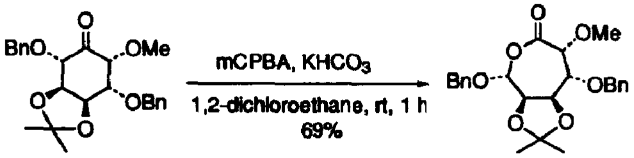


Tetrahedron Letters, **1994**, *35*, 7249

Regioselective Baeyer–Villiger Reaction of Polyhydroxycyclohexanone Derivatives

Noritaka Chida, Takahiko Tobe, and Seiichiro Ogawa
Department of Applied Chemistry, Faculty of Science and Technology, Keio University, 3-14-1, Hiyoshi, Kohoku-ku, Yokohama 223, Japan

The regioselectivity observed in Baeyer-Villiger reaction of polyhydroxycyclohexanone derivatives possessing various substituents at adjacent carbons to the carbonyl are reported.

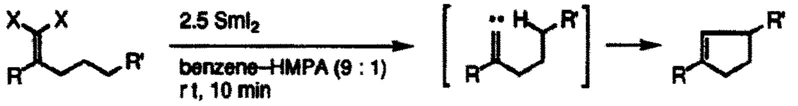


Tetrahedron Letters, **1994**, *35*, 7253

ALKYLIDENECARBENES FROM 1,1-DIHALOGENOALKENES WITH SAMARIUM DIIODIDE: MILD AND EFFICIENT METHOD FOR THE SYNTHESIS OF CYCLOPENTENES

Munetaka Kunishima, Kazuhito Hioki, Shohei Tani,* and Akira Kato[†]
Faculty of Pharmaceutical Sciences, Kobe Gakuin University, Nishi-ku, Kobe 651-21, Japan
[†]Niigata College of Pharmacy, Kamishin'ei-cho, Niigata 950-21, Japan

A new mild method for construction of cyclopentenes *via* 1,5-C—H insertion of alkylidenecarbenes by the reaction of 2,2-dialkyl-1,1-dihalogenoalkenes with SmI_2 in benzene—HMPA was developed.

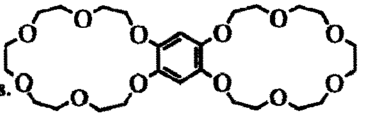


R = alkyl
X = Br, I
Yield: 32—79 %

Tetrahedron Letters, **1994**, *35*, 7255

1,2,4,5-BIS-(1,4,7,10,13,16-HEXAOXAHEXADECAMETHYLENE) BENZENE: BENZO-BIS-(18-CROWN-6).

J.J.H. Schlotter,[a] I.J.A. Mertens,[a] A.M.A. van Wageningen,[a] F.P.J. Mulders,[a] J.W. Zwikker,[a] H.-J. Buschmann[b] and L.W. Jenneskens.[a]
[a] Debye Institute, Dept. of Phys. Org. Chem., Utrecht University, The Netherlands.
[b] Deutsches Textilforschungszentrum Nord-West e.V., Krefeld, Germany.



1

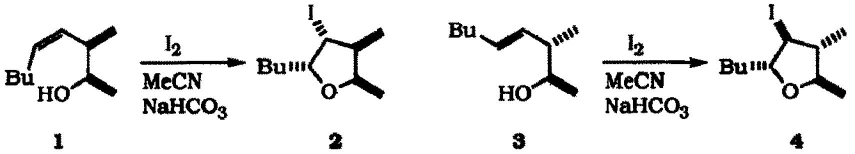
Alkali metal cation complexation of 1,2,4,5-*Bis*-(1,4,7,10,13,16 hexaoxahexadecamethylene)benzene (1) shows that the second ligand site only moderately affects *1:1* and *1:2* complex formation.

Tetrahedron Letters, **1994**, *35*, 7259

PREDICTIVE MODELS FOR THE OVERALL 5-*ENDO*-TRIG IODOCYCLISATION OF HOMOALLYLIC ALCOHOLS

J. M. Barks, D. W. Knight,* C. J. Seaman and G. G. Weingarten, Chemistry Department, University Park, Nottingham, NG7 2RD and Glaxo Research and Development, Ltd., Greenford, Middlesex, UB6 0HE, UK.

Iodocyclisations of the homoallylic alcohols **1** and **3** lead to iodoTHFs **2** and **4**, by *anti*-addition

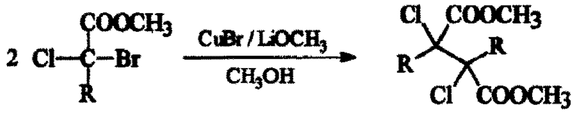


Tetrahedron Letters, **1994**, *35*, 7263

REDUCTIVE COUPLING OF METHYL α-BROMO-α-CHLOROCARBOXYLATES.

Monica Boni, Franco Ghelfi*, Ugo M. Pagnoni and Claudia Zucchi
Dipartimento di Chimica dell'Università, via Campi 183, I-41100, Modena (Italy).

$CuBr\text{-}LiOCH_3$ in methanol efficiently promotes the reductive coupling of methyl α-bromo-α-chlorocarboxylates to dimethyl α,α'-dichloro-succinates.



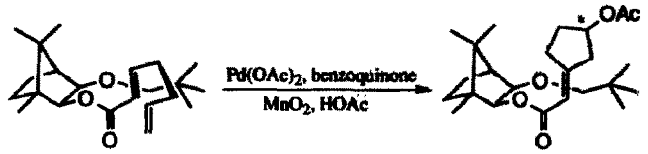
$$2\ Cl-\overset{COOCH_3}{\underset{R}{C}}-Br \xrightarrow[CH_3OH]{CuBr/LiOCH_3} Cl(R)(COOCH_3)C-C(R)(Cl)COOCH_3$$

Tetrahedron Letters, **1994**, *35*, 7267

REMOTE ASYMMETRIC INDUCTION IN PALLADIUM-CATALYZED OXIDATIVE CYCLIZATION OF 2,6-HEPTADIENOATES

Kerstin Nordström and Christina Moberg*, Department of Chemistry, Organic Chemistry, Royal Institute of Technology, S-100 44 Stockholm (Sweden)

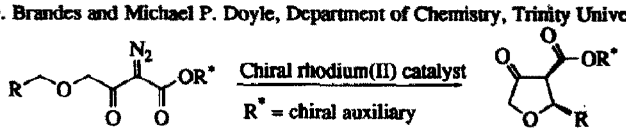
1,8-Asymmetric induction (up to 35% de) was observed in the palladium-catalyzed oxidative cyclization of esters of 2,6-octadienoic acid derived from chiral alcohols.



Tetrahedron Letters, **1994**, *35*, 7269

Stereoselective Synthesis of Disubstituted 3(2H)-Furanones *via* Catalytic Intramolecular C-H Insertion Reactions of α-Diazo-β-Keto Esters Including Asymmetric Induction

Tao Ye and M. Anthony McKervey*, School of Chemistry, The Queen's University, Belfast BT9 5AG, N. Ireland, U.K.
Bridget D. Brandes and Michael P. Doyle, Department of Chemistry, Trinity University, San Antonio, Texas 78212, U.S.A.



cis isomer only
61% de

Tetrahedron Letters, **1994**, *35*, 7273

SYNTHESIS OF THE FIRST [1,3]BENZOXAZINO[3,2-*b*][1,2] BENZOXAZINE AND ITS TANDEM RETRO-DIELS-ALDER - DIELS-ALDER REARRANGEMENT TO A NOVEL [1,3]BENZOXAZINO[2,3-*b*][1,3]BENZOXAZINE.

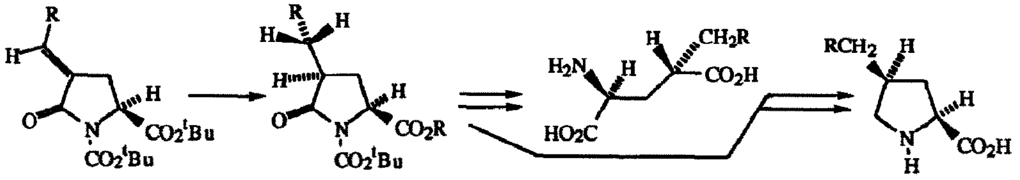
Zeev Goldschmidt,*
Shlomo Levinger and Hugo E. Gottlieb, Department of Chemistry, Bar-Ilan University, Ramat-Gan 52900, Israel

Thermolysis of 3-methyl-4*H*-1,2-benzoxazine gave 12a-methyl-7*H*,12a*H*,13*H*-[1,3]benzoxazino[3,2-*b*][1,2]benzoxazine, which rearranged to 5a-methyl-5a*H*,11*H*,13*H*-[1,3]benzoxazino[2,3-*b*][1,3]benzoxazine via 2-methyl-4*H*-1,3-benzoxazine and *o*-quinone methide.

Tetrahedron Letters, **1994**, *35*, 7277

STEREOSPECIFIC SYNTHESIS OF 4-ALKYLGLUTAMATES AND 4-ALKYLPROLINES

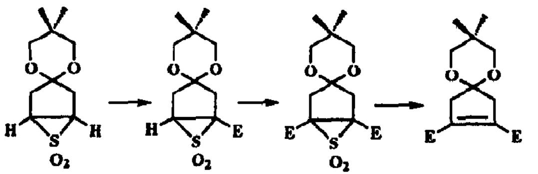
Claire M. Moody and Douglas W. Young*
School of Chemistry and Molecular Sciences, University of Sussex, Falmer, Brighton, BN1 9QJ, U.K.



Tetrahedron Letters, **1994**, *35*, 7281

Episulfone α-Anions: Preparation and Synthetic Utility

Andrew E. Graham, Wendy A. Loughlin and
Richard J. K. Taylor
Department of Chemistry, University of York,
Heslington, YORK, YO1 5DD, and
School of Chemical Sciences, University of East
Anglia, NORWICH, NR4 7TJ



Episulfone deprotonation-trapping is reported: vinylsilanes and vinylstannanes are prepared ($E = R_3Si,, R_3Sn$).

Tetrahedron Letters, **1994**, *35*, 7285

SPATIAL ORIENTATION EFFECTS ON THE σ-ASSISTANCE IN THE SOLVOLYSIS OF METHYL SUBSTITUTED 1-NORBORNYL TRIFLATES.

A. García Martínez,* J. Osío Barcina, M. E. Rodríguez Herrero, M. Iglesias de Dios, E. Teso Vilar, L. R. Subramanian,
Departamento de Química Orgánica, Facultad de Ciencias Químicas, Universidad Complutense, 28040-Madrid, Spain

The σ-participation of the C_2-C_3 bond in the solvolysis of methyl substituted 1-norbornyl triflates is dependent on the spatial orientation of the methyl groups.