

GRAPHICAL ABSTRACTS

*Tetrahedron Lett.* 1993, 34, 7355

**FACILE ESTERIFICATION OF SULFONIC ACIDS AND CARBOXYLIC ACIDS WITH TRIETHYLORTHOACETATE**

John I. Trujillo and Aravamudan S. Gopalan\*  
Department of Chemistry and Biochemistry,  
New Mexico State University, Las Cruces, NM 88003-0001

Triethylorthoacetate (TEOA) was found to be surprisingly more effective than triethylorthoformate in the esterification of sulfonic acids and carboxylic acids. Using this reagent, esters of sulfonic acids and carboxylic acids are prepared in high yields.

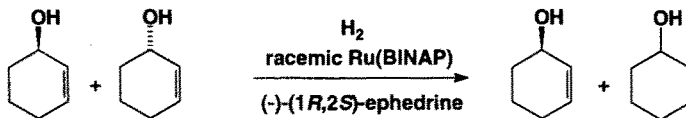


*Tetrahedron Lett.* 1993, 34, 7359

**Chiral Poisoning in the Kinetic Resolution of Allylic Alcohols.**

J.W. Fallers\* and Makoto Tokunaga, Department of Chemistry,  
Yale University, New Haven, CT 06511 USA

Kinetic resolutions of allylic alcohols can be effected using a (BINAP)-RuCl<sub>2</sub>(dmf)<sub>x</sub> catalyst prepared from *racemic* BINAP and preferentially deactivating one enantiomer of the catalyst with an enantiomerically pure chiral poison.

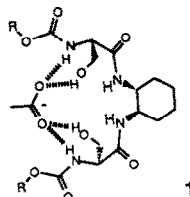


*Tetrahedron Lett.* 1993, 34, 7363

**SYNTHETIC ANALOGS OF THE RISTOCETIN BINDING SITE: NEUTRAL, MULTIDENTATE RECEPTORS FOR CARBOXYLATE RECOGNITION**

Jeffrey S. Albert and Andrew D. Hamilton\*  
Department of Chemistry, University of Pittsburgh, Pittsburgh, PA 15260.

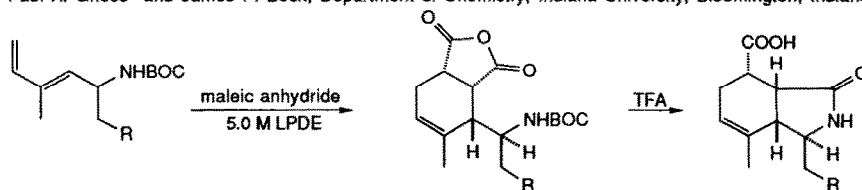
A new family of receptors for carboxylates has been developed based on the multidentate recognition strategy of ristocetin. The design employs four hydrogen bond donors from either urea or amino acid derivatives. Particularly strong binding is seen with receptors that employ hydroxyl binding sites, as in 1.



*Tetrahedron Lett.* 1993, 34, 7367

**DIELS-ALDER REACTIONS  
ENHANCED DIASTEREOFACIAL SELECTIVITY IN 5.0 M LiClO<sub>4</sub>-Et<sub>2</sub>O  
APPROACH TO THE CONSTRUCTION OF THE ISOINDOLONE NUCLEUS OF CYTOCHALASANS**

Paul A. Grieco\* and James P. Beck, Department of Chemistry, Indiana University, Bloomington, Indiana 47405



*Tetrahedron Lett.* 1993, 34, 7371

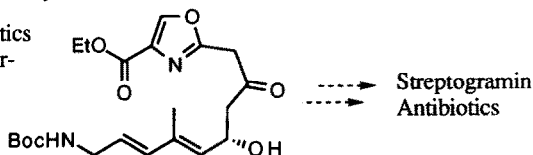
### Synthesis of the Oxazole- and Diene-Containing C<sub>9</sub>-C<sub>23</sub> Fragment of the Type A Streptogramin Antibiotics

Mikael Bergdahl, Robert Hett, Timothy L. Friebe, Anthony R.

Gangloff, Javed Iqbal, Yinghui Wu and Paul Helquist\*

Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, Indiana 46556 U.S.A.

A key portion of the type A streptogramin antibiotics was synthesized in non-racemic form via a Horner-Wadsworth-Emmons reaction, asymmetric aldol condensation, and a zinc-promoted oxazole incorporation.



*Tetrahedron Lett.* 1993, 34, 7375

### MODIFIED CINCHONA ALKALOID LIGANDS: IMPROVED SELECTIVITIES IN THE OSMIUM TETROXIDE CATALYZED ASYMMETRIC DIHYDROXYLATION (AD) OF TERMINAL OLEFINS

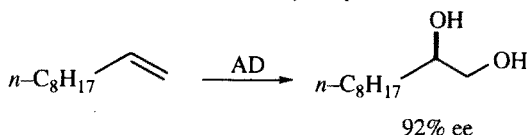
Mark P. Arrington, Youssef L. Bennani, Thomas Göbel, Patrick Walsh, Shu-Hai Zhao and K. Barry Sharpless\*

Department of Chemistry, The Scripps Research Institute

10666 N. Torrey Pines Road

La Jolla, California 92037, USA

Osmium tetroxide catalyzed asymmetric dihydroxylation of 1-decene with modified cinchona alkaloid ligands gave 1,2-decene diol in up to 92% ee.



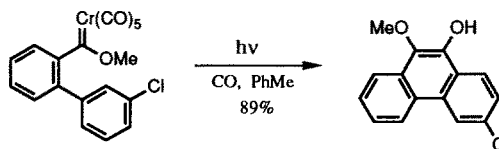
*Tetrahedron Lett.* 1993, 34, 7379

### REGIOSELECTIVITY OF PHOTOCHEMICAL ANNULATIONS OF CHROMIUM CARBENE COMPLEXES

Craig A. Merlic,\* and W. Michael Roberts

Department of Chemistry and Biochemistry, University of California, Los Angeles, CA 90024-1569

High regioselectivity is found in photochemical benzannulation reactions of chromium biarylcarbene complexes.



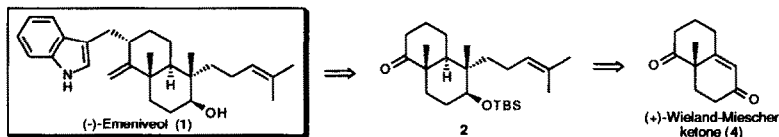
*Tetrahedron Lett.* 1993, 34, 7383

### TOTAL SYNTHESIS OF THE POLLEN-GROWTH INHIBITOR (-)-EMENIVEOL. ASSIGNMENT OF ABSOLUTE STEREOCHEMISTRY

Ken'ichiro Shimokawa and Amos B. Smith, III\*

Department of Chemistry, Laboratory for Research on the Structure of Matter, and Monell Chemical Senses Center, University of Pennsylvania, Philadelphia, Pennsylvania 19104, U.S.A.

The total synthesis of emeniveol (1), a pollen growth inhibitor, is described and its absolute stereochemistry was determined using (+)-Wieland-Miescher ketone as the starting material.

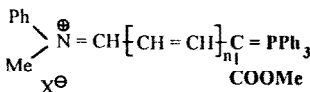
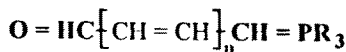
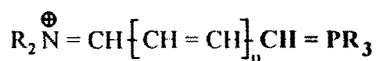


*Tetrahedron Lett.* **1993**, *34*, 7385

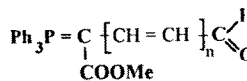
$\lambda^5\sigma^4$ -Monophosphapolymercyanine  
 $\lambda^5\sigma^4$ -Monophosphapolymermerocyanine

G. Märkl\*, A. Rehberger, W. Schumann

Institut für Organische Chemie der Universität D-93040 Regensburg



$n = 0; n = 1; n = 2; n = 3;$



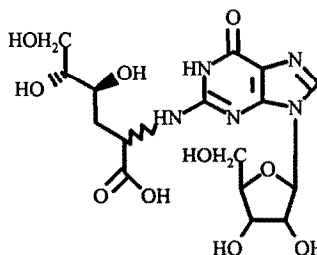
$n = 0; n = 1; n = 2; n = 3;$

**Reaction of glucose with guanosine**

Thomas Knerr and Theodor Severin

Institut für Pharmazie und Lebensmittelchemie der Universität,  
Sophienstr. 10, 80333 München, Germany

Reaction of glucose with guanosine under physiological conditions leads to the two diastereomeric 2-(N<sup>7</sup>-guanosyl)-4,5,6-trihydroxy-erythro-hexanoic acids.



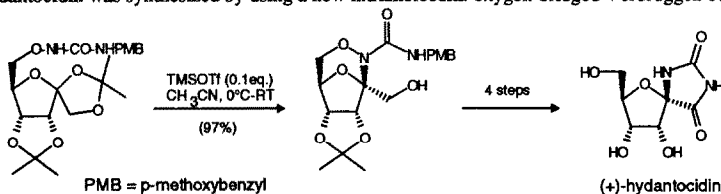
*Tetrahedron Lett.* **1993**, *34*, 7389

**STEREOSELECTIVE SYNTHESIS OF (+)-HYDANTOCIDIN**

P. Chemla, Plant Protection Division, Ciba-Geigy Ltd., 4002 Basel, Switzerland

*Tetrahedron Lett.* **1993**, *34*, 7391

(+)-Hydantocidin was synthesized by using a new intramolecular oxygen-bridged Vorbrüggen coupling.



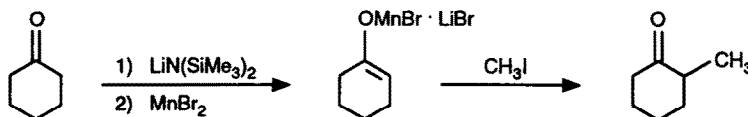
**$\alpha$ -METHYLATION OF KETONES VIA MANGANESE-ENOLATES:  
ABSENCE OF UNDESIRED POLYALKYLATION**

Manfred T. Reetz\* and Helmut Haning

Max-Planck-Institut für Kohlenforschung, Kaiser-Wilhelm-Platz 1, 45470 Mülheim/Ruhr, Germany

Transmetalation of Li-enolates by MnBr<sub>2</sub> results in Mn-enolates which can be smoothly mono-methylated, e. g.:

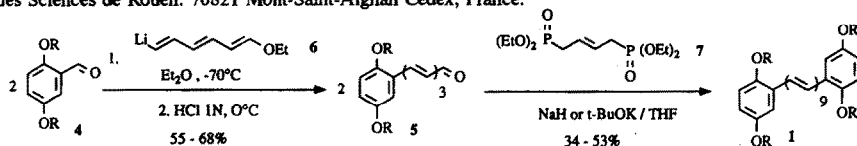
*Tetrahedron Lett.* **1993**, *34*, 7395



*Tetrahedron Lett.* **1993**, *34*, 7399

**TERMINALLY SUBSTITUTED LINEAR CONJUGATED POLYENES :  
PRECURSORS OF MOLECULAR WIRES.**

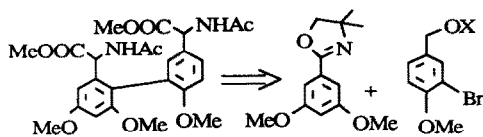
L. Duhamel, P. Duhamel\*, G. Ple and Y. Ramondenc.. Institut de Recherche en Chimie Organique Fine  
et Université de Rouen - Laboratoire de Chimie Organique, Unité de Recherche Associée D O 464 au C.N.R.S.  
Faculté des Sciences de Rouen. 76821 Mont-Saint-Aignan Cedex, France.



*Tetrahedron Lett.* **1993**, *34*, 7401

**A Concise and Efficient Synthesis of Protected  
Actinoidic Acid, the Degradation Product of Vancomycin**

Jieping Zhu\*, Réne Beugelmans, Antony Bigot, Girij Pal Singh, Michèle Bois-Choussy  
Institut de Chimie des Substances Naturelles, CNRS, 91198 Gif-sur-Yvette, France



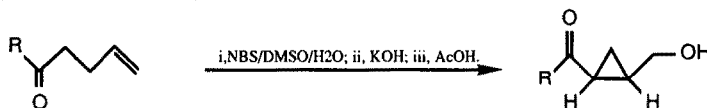
Protected actinoidic acid, one of the degradation products of vancomycin, has been efficiently synthesized

*Tetrahedron Lett.* **1993**, *34*, 7405

**A SIMPLE ONE-POT PREPARATION OF (Z)-CYCLOPROPANES FROM  
γ,δ-KETOALKENES USING KOH/DMSO INTRAMOLECULAR ALKYLATION**

CONDITIONS; Luc Dechoux, Maurice Ebel, Louis Jung, Jean François Stambach, Laboratoire de Chimie Thérapeutique,  
Faculté de Pharmacie, Université Louis Pasteur de Strasbourg, F-67000, FRANCE.

A simple one-pot preparation of (Z)-cyclopropanes from γ,δ-ketoalkenes, with d.e.>99% was presented.



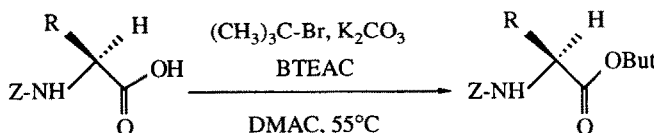
*Tetrahedron Lett.* **1993**, *34*, 7409

**FACILE SYNTHESIS OF TERT-BUTYL ESTER OF N-PROTECTED AMINO ACIDS  
WITH TERT-BUTYL BROMIDE.**

Pierre Chevallet, Patrick Garrouste, Barbara Malawska & Jean Martinez\*

Chimie et Pharmacologie de Molécules d'Intérêt Biologique, CNRS, Faculté de Pharmacie, 15 av. C. Flahault, 34060 Montpellier, France.

A wide variety of Z-Amino Acid Tert-butyl Esters  
(including Z-Asp(OBut)-OH and Z-Glu(OBut)-OH,  
were synthesized via the Tert-Butyl Bromide Method.

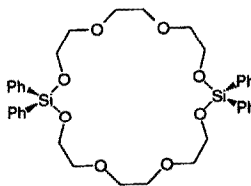


**SILACROWN ETHERS: SYNTHESIS OF MACROCYCLIC DIPHENYLPOLYETHYLENEGLYCOL MONO- AND DISILANES**

Gilles Odon and Mir Wais Hosseini\*,  
 Université Louis Pasteur, Institut Le Bel, 4, rue Blaise Pascal,  
 F-67000 Strasbourg, France

The synthesis of mono- and disilacrown ethers was achieved by reacting  $\text{Ph}_2\text{SiCl}_2$  with polyethylene glycols. A cation template effect was observed.

*Tetrahedron Lett.* 1993, 34, 7413

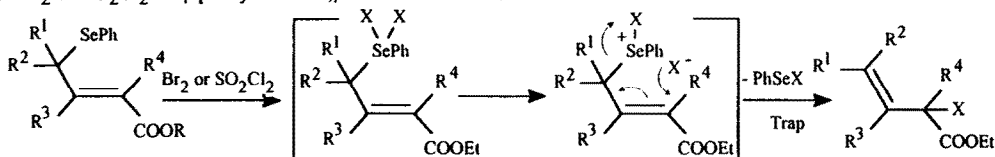


**SYNTHESIS OF  $\alpha$ -HALO  $\beta,\gamma$ -UNSATURATED ESTERS FROM  $\gamma$ -PHENYLSELENO  $\alpha,\beta$ -UNSATURATED ESTERS.**

Jean-François Duclos, Francis Outurquin and Claude Paulmier\*, Laboratoire de Synthèse Hétéroorganique (I.R.C.O.F.), Université de ROUEN, UFR Sciences, F-76821 Mont Saint Aignan Cedex, France

Reactions of  $\text{Br}_2$  or  $\text{SO}_2\text{Cl}_2$  on  $\gamma$ -phenylseleno  $\alpha,\beta$ -unsaturated esters.

*Tetrahedron Lett.* 1993, 34, 7417

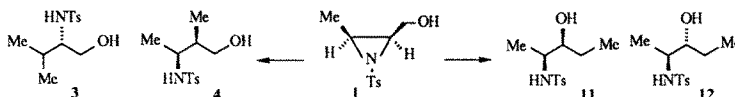


**UNPRECEDENTED REARRANGEMENT REACTION OF 2-AZIRIDINEMETHANOLS WITH 'LOWER ORDER' LITHIUM METHYLCYANOCUPRATE**

Toshiro Ibuka,\* Kazuo Nakai, Hiromu Habashita, and Nobutaka Fujii,\* Faculty of Pharmaceutical Sciences, Kyoto University, Kyoto 606, Japan  
 Fabrice Garrido and André Mann, Centre de Neurochimie-CNRS, 5, rue B. Pascal, 67084 Strasbourg, France  
 Yukiyasu Chounan and Yoshinori Yamamoto,\* Department of Chemistry, Tohoku University, Sendai 980, Japan

Whereas reaction of 1 with  $\text{Me}_2\text{CuLi}$  yielded the expected products (3 and 4), exposure of 1 to  $\text{MeCu}(\text{CN})\text{Li}$  afforded the rearranged products (11 and 12) as the major products.

*Tetrahedron Lett.* 1993, 34, 7421

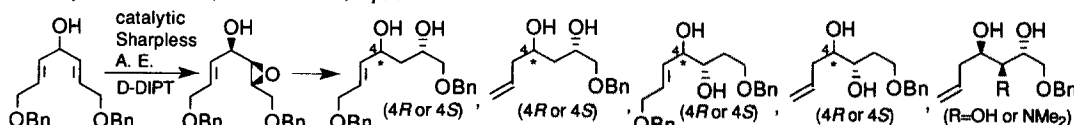


**Red-Al Promoted Intramolecular Reductive Cleavage of Benzyloxy 4-Hydroxy-2-butenyl Ether Structures. A Concise Preparation of Polyol Chiral Building Blocks**

Susumi Hatakeyama,\* Kumiko Satoh, and Seiichi Takano\*

Pharmaceutical Institute, Tohoku University, Aobayama, Sendai 980, Japan \* Faculty of Pharmaceutical Sciences, Tokushima Bunri University, Yamashiro-cho, Tokushima 770, Japan

*Tetrahedron Lett.* 1993, 34, 7425



Ten chiral building blocks were prepared in enantiomerically pure forms from the common epoxy alcohol.

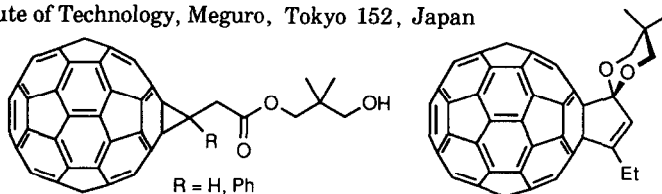
**[1 + 2] AND [3 + 2] CYCLOADDITION REACTIONS OF VINYL CARBENES WITH C<sub>60</sub>**

*Tetrahedron Lett.* **1993**, *34*, 7429

Hidetoshi Tokuyama, Masaharu Nakamura and Eiichi Nakamura\*

Department of Chemistry, Tokyo Institute of Technology, Meguro, Tokyo 152, Japan

Novel fullerene derivatives were synthesized by thermal cycloaddition of vinylcarbene species.

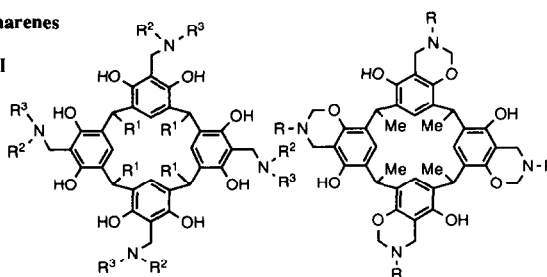


**Synthesis of Aminomethylated Calix[4]resorcinarenes**

*Tetrahedron Lett.* **1993**, *34*, 7433

Yoh-ichi MATSUSHITA\* and Takanao MATSUI  
Faculty of Engineering, Miyazaki University,  
Gakuen-Kibanadai, Miyazaki 889-21, JAPAN

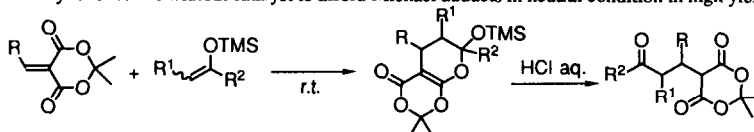
**Abstract:** Functionalized calix[4]resorcinarenes bearing substituted aminomethyl groups were synthesized by the Mannich reaction of calix[4]resorcinarene in an alcoholic solution.



**A NOVEL MICHAEL REACTION OF SILYL ENOL ETHERS VIA HETERO DIELS-ALDER REACTION WITH ALKYLIDENE-MELDRUM'S ACID.** Shigeo Mizukami, Nobuhiro Kihara, and Takeshi Endo\*, Research Laboratory of Resources Utilization, Tokyo Institute of Technology, Nagatsuta-cho, Midori-ku, Yokohama 227, JAPAN

*Tetrahedron Lett.* **1993**, *34*, 7437

Alkylidene Meldrum's acid reacted with silyl enol ethers without catalyst to afford Michael adducts in neutral condition in high yield with high diastereoselectivity.

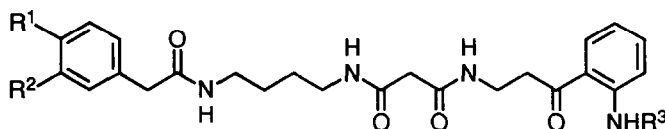


**MONODONTAMIDES A, B, AND C, THREE NEW PUTRESCINE ALKALOIDS FROM THE MARINE GASTROPOD MOLLUSC MONODONTA LABIO (LINNÉ)**

*Tetrahedron Lett.* **1993**, *34*, 7441

Haruki Niwa,\* Masaru Watanabe, and Kiyoyuki Yamada\*

Department of Chemistry, Faculty of Science, Nagoya University, Chikusa, Nagoya 464, Japan



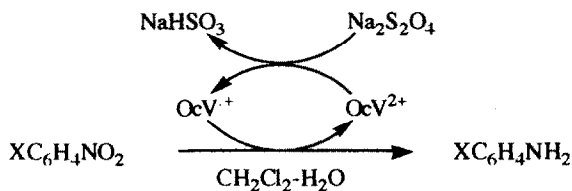
monodontamide A: R<sup>1</sup> = R<sup>2</sup> = H, R<sup>3</sup> = CHO  
monodontamide B: R<sup>1</sup> = OH, R<sup>2</sup> = OMe, R<sup>3</sup> = CHO  
monodontamide C: R<sup>1</sup> = OH, R<sup>2</sup> = OMe, R<sup>3</sup> = H

*Tetrahedron Lett.* 1993, 34, 7445

**Sodium Dithionite Reduction of Nitroarenes Using Viologen as an Electron Phase-Transfer Catalyst.** Kwanghee Koh Park\*

Chang Hun Oh, and Won Kyou Joung, Department of Chemistry, Chungnam National University, Taejeon 305-764, Korea

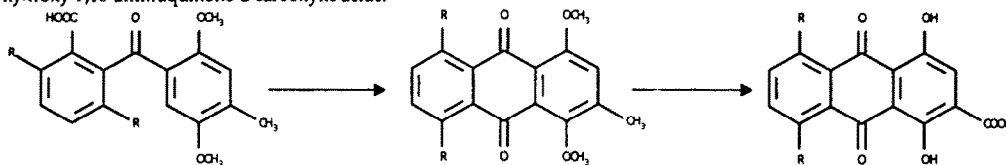
Nitroarenes were reduced conveniently with sodium dithionite using dioctyl viologen as an electron-transfer catalyst in dichloromethane-water two-phase system.



*Tetrahedron Lett.* 1993, 34, 7447

**A VERSATILE SYNTHESIS OF HYDROXY-9,10-ANTHRAQUINONE-2-CARBOXYLIC ACIDS.**

Colin W. Smith, Samantha J. Ambler & David J. Steggle, Lilly Res. Centre Ltd., Eli Lilly & Co., Windlesham, Surrey GU20 6PH, U.K.  
The ring-closure of appropriate benzoic acids leading to an anthrol or 9,10-anthraquinones and subsequent oxidation to various hydroxy-9,10-anthraquinone-2-carboxylic acids.

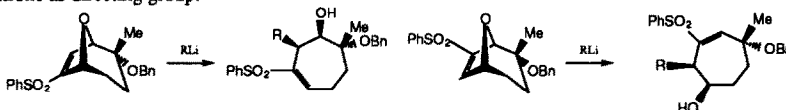


*Tetrahedron Lett.* 1993, 34, 7451

**REGIO- AND STEREOCONTROLLED ALKYLATIVE RING OPENING OF UNSYMMETRICAL 8-OXABICYCLO[3.2.1]OCTENE SYSTEMS. SYNTHESIS OF HIGHLY SUBSTITUTED HYDROXYCYCLOHEPTENYL SULFONES.**

Odón Arjona\*, Alfonso de Dios and Joaquín Plumet\*,  
Departamento de Química Orgánica I. Facultad de Química, Universidad Complutense, Madrid, Spain.

The regio- and stereoselective ring opening of unsymmetrical 8-oxabicyclo[3.2.1]octenes has been performed via  $\text{S}_{\text{N}}2'$  reactions using a phenylsulfone as directing group.



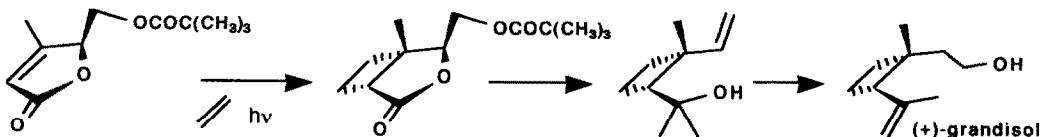
*Tetrahedron Lett.* 1993, 34, 7455

**HIGHLY EFFICIENT APPROACH TO (+)-GRANDISOL VIA A DIASTERESELECTIVE 12+21 PHOTOCYCLOADDITION TO 2(SH)-FURANONES**

Ramón Alibés, José L. Bourdelande and Josep Font\*

Unitat de Química Orgànica, Departament de Química, Universitat Autònoma de Barcelona, Bellaterra, 08193 Barcelona, Spain.

An approach to (+)-grandisol is described through a diastereoselective photocycloaddition of ethylene to an homochiral butenolide.

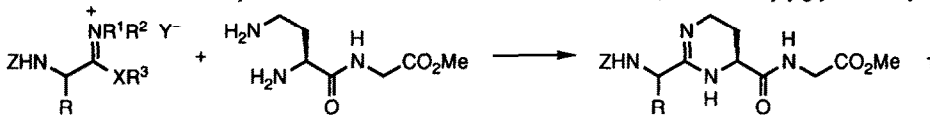


**THE SYNTHESIS OF UNUSUAL TETRAHYDOPYRIMIDINE AMINO ACIDS**

Raymond C F Jones \* and Alan K Crockett  
(Chemistry Department, Nottingham University, Nottingham NG7 2RD, UK)

*Tetrahedron Lett.* **1993**, *34*, 7459

Derivatives 1 of 2-(1-aminoalkyl)-4-carboxy-3,4,5,6-tetrahydropyrimidines, unusual amino acids isolated from bacterial siderophores, are synthesized from condensation of N-protected amino acid imidates or thioimidates with 2,4-diaminobutyrylglycine methyl ester.

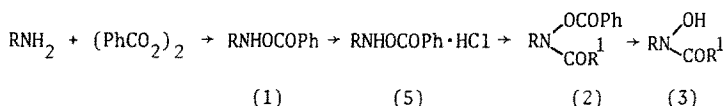


**SYNTHESIS OF NOVEL N-(PRIMARY)ALKYLHYDROXAMIC ACIDS**

Lebert Grierson<sup>1\*</sup>, M. John Perkins<sup>2</sup>

1. Department of Chemistry, The University of the West Indies, St. Augustine, Trinidad.
2. Department of Chemistry, Brunel University, Uxbridge, Middlesex, England, UK.

*Tetrahedron Lett.* **1993**, *34*, 7463

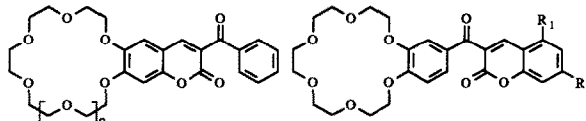


**SYNTHESIS AND COMPLEXATION PROPERTIES OF 3-ARYLOUOMARIN CROWN ETHERS. A NEW CLASS OF PHOTOACTIVE MACROCYCLES.**

Maria Teresa Brunet, Concepción Hernandez and Juan Carlos Rodríguez-Ubis.\* *Departamento de Química, C-1. Facultad de Ciencias. Universidad Autónoma de Madrid, 28049-Madrid, Spain Fax 34 1 397 3966*

*Tetrahedron Lett.* **1993**, *34*, 7465

Synthesis of the title compounds ( $n=0,1$ ;  $R_1, R_2=H, \text{OMe}, \text{NEt}_2$ ) is described. This macrocycles bore emission properties strongly dependent on metal ions and coumarin substitution and may be therefore used as cation dependent fluorescence signaling systems or triplet sensitizers for lanthanide luminescence.

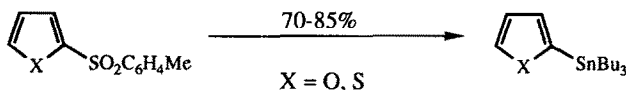


**INTERMOLECULAR RADICAL DISPLACEMENT REACTIONS OF HETEROAROMATIC ARYL SULPHONES.**

S. Caddick\* and S. Khan, Department of Chemistry, Birkbeck College, Gordon House, 29 Gordon Square, London WC1H 0PP

*Tetrahedron Lett.* **1993**, *34*, 7469

Heteroaromatic sulphones undergo intermolecular radical substitution with tri-*n*-butyltin hydride to provide heteroaromatic stannanes in good yield e.g.



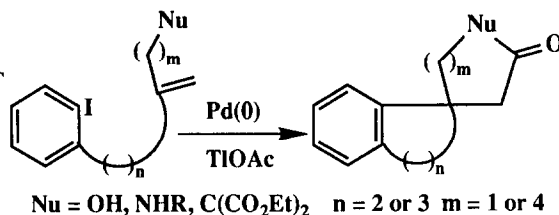


*Tetrahedron Lett.* 1993, 34, 7471

### SPIROCYCLES VIA PALLADIUM CATALYSED CASCADE CYCLISATION - CARBONYLATION - ANION CAPTURE PROCESSES.

Ronald Grigg\* and Visuvanathar Sridharan  
School of Chemistry, Leeds University, Leeds LS2 9JT

TIOAc facilitates atmospheric pressure carbonylation in a series of cascade processes leading to spirocyclic ketones, lactones, and lactams.

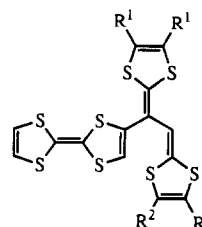


*Tetrahedron Lett.* 1993, 34, 7475

### NEW EXTENSIVELY-CONJUGATED $\pi$ -ELECTRON DONORS COMBINING BOTH TETRATHIAFULVALENE (TTF) AND 2,2'-ETHANEDIYLIDENE-BIS-(1,3-DITHIOLE) UNITS: SYNTHESIS AND SOLUTION ELECTROCHEMISTRY

Marc Sallé, Adrian J. Moore and Martin R. Bryce\*  
Department of Chemistry, University of Durham, Durham, DH1 3LE, U.K.  
Michel Jubault  
Laboratoire de Chimie Organique Fondamentale et Appliquée, Université d'Angers, 2 Bd. Lavoisier, 49045 Angers, France.

Three derivatives of the title system have been prepared and their redox properties studied.



*Tetrahedron Lett.* 1993, 34, 7479

### TOTAL SYNTHESIS OF THE SPIROKETAL MACROLIDE

(+) MILBEMYCIN  $\alpha_1$

Steven V. Ley<sup>a,\*</sup>, Andrew Madin<sup>b</sup> and Nathaniel J.T. Monck<sup>a</sup>

*a) University Chemical Laboratory, Lensfield Road, Cambridge, CB2 1EW, UK.*

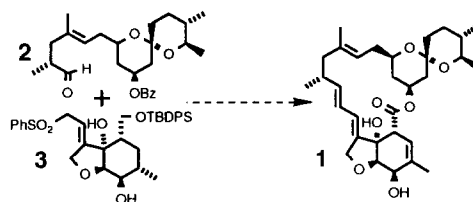
*b) Imperial College of Science, Technology and Medicine, South Kensington,*

*London SW7 2AY, UK.*

The total synthesis of the antiparasitic spiroketal macrolide (+) milbemycin  $\alpha_1$

1 is reported, following Julia sulfone anion coupling of the sulphone 3 with a

"northern hemisphere" aldehyde 2 and subsequent functional group elaboration.



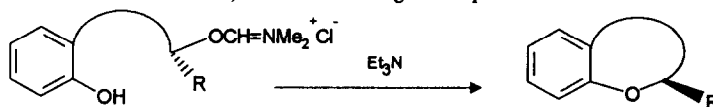
*Tetrahedron Lett.* 1993, 34, 7483

### A NOVEL CYCLODEHYDRATION REACTION OF HYDROXY-PHENOLS USING IMIDATE ESTERS AS LEAVING GROUPS.

Panayiotis A. Procopiou,\* Alastair C. Brodie, Martyn J. Deal, and David F. Hayman.

*Glaxo Group Research Ltd., Greenford, Middlesex, UB6 0HE.*

A mild, efficient and stereospecific intramolecular method for converting hydroxy-phenols into benzodioxans, dihydrobenzopyrans and dihydrobenzofurans *via* imidate esters, and suitable for large scale operation is described.

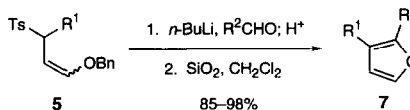


*Tetrahedron Lett.* **1993**, *34*, 7487

**1-BENZYLOXY-3-(*p*-TOLYLSULFONYL)ALKENES AS ENAL  $\beta$ -ANION EQUIVALENTS. SYNTHESIS OF 2,3-DISUBSTITUTED FURANS.**

Donald Craig\* and Christopher J. Etheridge  
Department of Chemistry, Imperial College of Science, Technology and Medicine,  
London SW7 2AY, U.K.

Reaction of lithiated **5** with aldehydes followed by proton quench gives 2,3-disubstituted furans **7** in excellent yields on treatment of the crude adducts with silica gel in dichloromethane.

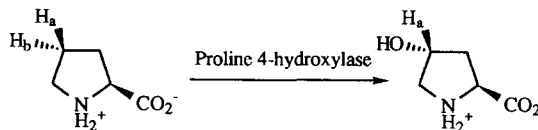


*Tetrahedron Lett.* **1993**, *34*, 7489

**PROLINE 4-HYDROXYLASE: STEREOCHEMICAL COURSE OF THE REACTION**

Jack E. Baldwin, Robert A. Field, Christopher C. Lawrence, Kirsten D. Merritt and Christopher J. Schofield  
The Dyson Perrins Laboratory and the Oxford Centre for Molecular Sciences, South Parks Road, Oxford OX1 3QY, UK

The hydroxylation of (*S*)-proline to (2*S*, 4*R*)-hydroxyproline by bacterial proline 4-hydroxylase proceeds with retention of stereochemistry at C-4.



*Tetrahedron Lett.* **1993**, *34*, 7493

**A TOTAL SYNTHESIS OF (±)-EPIBATIDINE**

Simon C. Clayton and Andrew C. Regan\*

Department of Chemistry, University of Manchester, Oxford Road, Manchester M13 9PL, U.K.

(±)-Epibatidine has been synthesised, employing a reductive palladium-catalysed coupling as the key reaction:

