Graphical abstracts

Applications of bismuth(III) compounds in organic synthesis

Tetrahedron 58 (2002) 8373

Nicholas M. Leonard, Laura C. Wieland and Ram S. Mohan*

Department of Chemistry, Illinois Wesleyan University, Bloomington, IL 61701, USA

With increasing environmental concerns and the need for 'green reagents', the interest in bismuth and its compounds has increased tremendously in the last decade. Bismuth(III) compounds are attractive reagents and catalysts in organic synthesis because of their low toxicity, low cost and ease of handling. This report is limited to a review of the recent literature on applications of inorganic bismuth(III) compounds in organic synthesis. The report is organized by reaction type.

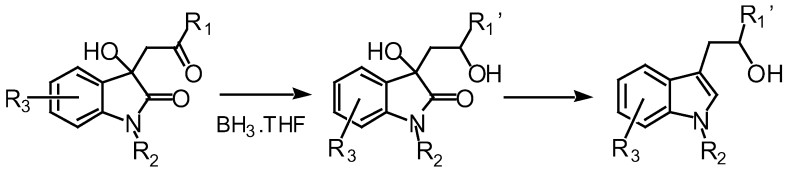
A versatile synthetic methodology for the synthesis of tryptophols

Tetrahedron 58 (2002) 8399

Simon J. Garden,* Rosângela B. da Silva and Angelo C. Pinto

Departamento de Química Orgânica, Instituto de Química, Universidade Federal do Rio de Janeiro, Ilha do Fundão, Rio de Janeiro CEP 21945-970, Brazil

A diverse range of tryptophols can be readily prepared by the BH_3·THF reduction of dioxindole derivatives. Intermediate diols are produced by diastereoselective reduction reaction.



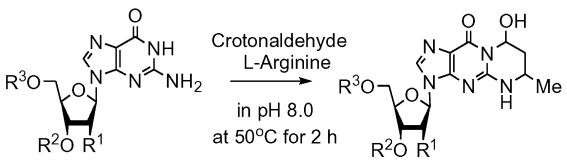
R_1' = R_1 or H

A convenient preparative method for the 1,N^2-cyclic adducts of guanine nucleosides and nucleotides with crotonaldehyde

Tetrahedron 58 (2002) 8413

Magoichi Sako* and Isamu Yaekura

Medicinal Informatics, Gifu Pharmaceutical University, 5-6-1, Mitahora-higashi, Gifu 502-8585, Japan



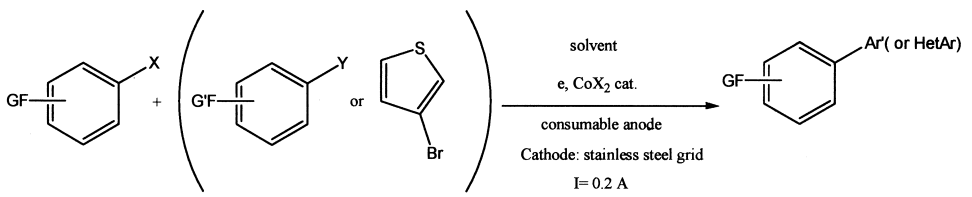
R^1= H or OH; R^2, R^3= H or PO_3H_2

Synthesis of unsymmetrical biaryls by electroreductive cobalt-catalyzed cross-coupling of aryl halides

Tetrahedron 58 (2002) 8417

Paulo Gomes, Hyacinthe Fillon, Corinne Gosmini,* Eric Labbé and Jacques Périchon

Laboratoire d'Electrochimie, Catalyse et Synthèse Organique, CNRS UMR 7582, Université Paris 12, 2-8 rue Henri Dunant, F-94320 Thiais, France



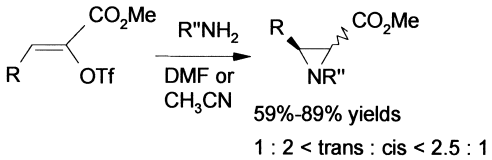
Tetrahedron 58 (2002) 8425

Reaction of vinyl triflates of α-keto esters with primary amines: efficient synthesis of aziridine carboxylates

Marie-José Tranchant, Vincent Dalla,* Ivan Jabin and Bernard Decroix

URCOM, Laboratoire de chimie, Faculté des Sciences et Techniques de l'Université du Havre, BP540, 25 rue Philippe Lebon, 76058 Le Havre Cedex, France

Vinyl triflates of α-keto esters react with primary amines to provide good yields of aziridine carboxylates.



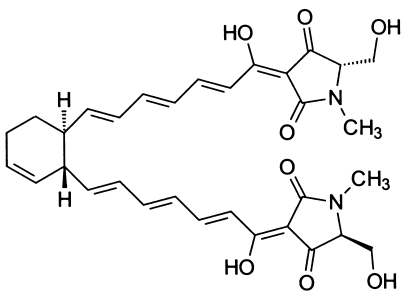
Tetrahedron 58 (2002) 8433

The absolute configuration of polycephalin C from the slime mold *Physarum polycephalum* (Myxomycetes)

Florian Blumenthal, Kurt Polborn and Bert Steffan*

Department Chemie der Ludwig-Maximilians-Universität, Butenandtstr. 5-13, Haus F, 81377 Munich, Germany

The absolute configuration of polycephalin C (**1**) isolated from plasmodia of the slime mold *Physarum polycephalum* is supposed to be 3″*R*,4″*R* as found by comparison of CD spectra of the natural product polycephalin C (**1**) and CD spectra of synthetic bis-benzoates (−)-**4** and (+)-**4**. An X-ray structure of the corresponding bis-camphanate (+)-**3** shows that the exciton chirality method can not be applied to these 1,4-diols in the usual manner.



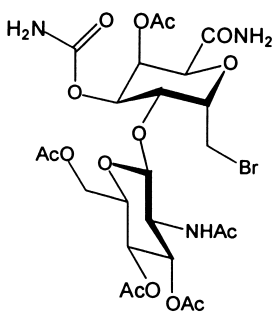
Tetrahedron 58 (2002) 8439

Synthesis of a complex disaccharide precursor of phosphonate analogues of the antibiotic moenomycin A_{12}

Khalid Abu Ajaj,[a] Lothar Hennig,[a] Matthias Findeisen,[a] Sabine Giesa,[a] Dietrich Müller[b] and Peter Welzel[a,*]

[a]*Fakultät für Chemie und Mineralogie, Universität Leipzig, Johannisallee 29, D-04103 Leipzig, Germany*
[b]*Institut für Analytische Chemie, Ruhr-Universität Bochum, D-44780 Bochum, Germany*

An approach for the synthesis of moenomycin A_{12} C-glycoside partial structures is reported.

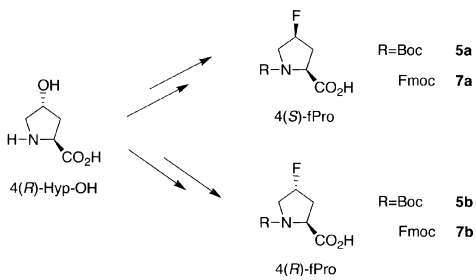


Tetrahedron 58 (2002) 8453

Simple and efficient syntheses of Boc- and Fmoc-protected 4(*R*)- and 4(*S*)-fluoroproline solely from 4(*R*)-hydroxyproline

Masamitsu Doi,[a] Yoshinori Nishi,[b] Naruto Kiritoshi,[a] Tomoya Iwata,[a] Mika Nago,[a] Hiroaki Nakano,[b] Susumu Uchiyama,[b] Takashi Nakazawa,[c] Tateaki Wakamiya[d] and Yuji Kobayashi[b,*]

[a]*Department of Materials Science, Wakayama National College of Technology, 77 Noshima, Nada-cho, Gobo, Wakayama 644-0023, Japan*
[b]*Graduate School of Pharmaceutical Sciences, Osaka University, 1–6 Yamada-oka Suita, Osaka 565-0871, Japan*
[c]*Department of Chemistry, Faculty of Science, Nara Women's University, Kitauoyanishi-machi, Nara 630-8506, Japan*
[d]*Department of Chemistry, Faculty of Science and Technology, Kinki University, 3-4-1 Kowakae, Higashi-Osaka, Osaka 577-8502, Japan*



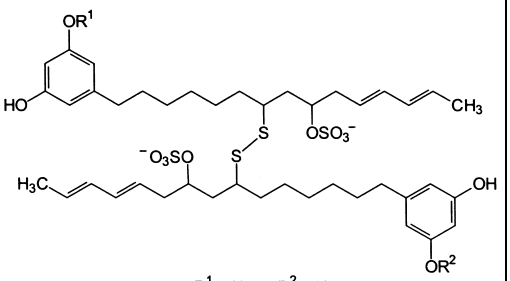
Pentaporins A, B and C: disulfides from the marine bryozoan *Pentapora fascialis*

Tetrahedron 58 (2002) 8461

Sophie Eisenbarth,[a] Matthias Gehling,[b] Achim Harder[c] and Bert Steffan[a,*]

[a]*Department Chemie, Ludwig-Maximilians-Universität München, Butenandtstr. 5-13 (Haus F), D-81377 Munich, Germany*
[b]*Bayer AG, Life Science Center Natural Products, Wuppertal, Germany*
[c]*Bayer AG, Landwirtschaftszentrum, Monheim, Germany*

The novel disulfides pentaporin A (**1**), B (**2**) and C (**3**) have been isolated from the mediterranean bryozoan *Pentapora fascialis*. The determination of the structures by NMR spectroscopy, mass spectrometry and EDX-analysis is described. The three compounds show anthelmintic in vitro activity.



1 $R^1 = H$ $R^2 = H$
2 $R^1 = SO_3^-$ $R^2 = H$
3 $R^1 = SO_3^-$ $R^2 = SO_3^-$

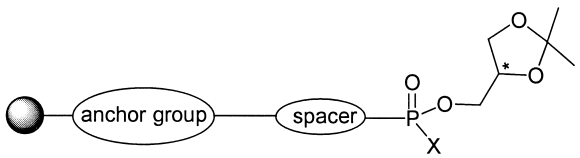
Immobilization of chiral enzyme inhibitors on solid supports by amide-forming coupling and olefin metathesis

Tetrahedron 58 (2002) 8465

Manfred T. Reetz,[a,*] Carsten J. Rüggeberg,[a] Melloney J. Dröge[b] and Wim J. Quax[b]

[a]*Max-Planck-Institut für Kohlenforschung, Kaiser-Wilhelm-Platz 1, D-45470 Mülheim/Ruhr, Germany*
[b]*Department of Pharmaceutical Biology, University Centre for Pharmacy, Antonius Deusinglaan 1, NL-9713 AV Groningen, The Netherlands*

Immobilized chiral phosphonates were synthesized and shown to function as suicide inhibitors of the lipase from *Bacillus subtilis*. This paves the way to test the idea of establishing a phage display-based selection system for the directed evolution of enantioselective enzyme-variants.



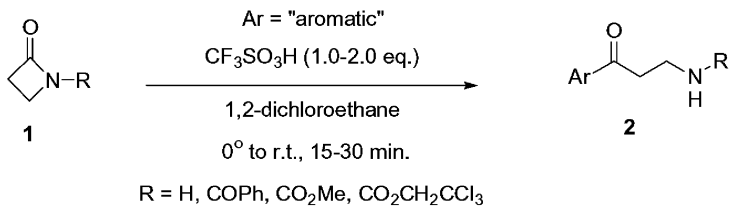
Trifluoromethanesulfonic acid catalyzed Friedel–Crafts acylation of aromatics with β-lactams

Tetrahedron 58 (2002) 8475

Kevin W. Anderson and Jetze J. Tepe*

Department of Chemistry, Michigan State University, East Lansing, MI 48824, USA

N-Protected and unprotected 2-azetidinones, protolytically activated by superacidic trifluoromethanesulfonic acid, react with aromatic compounds to give β-amino aromatic ketones in good to excellent yields (65–98%). Non-benzenoid aromatics (pyrrole and ferrocene) produced good yield (64–89%) of the corresponding ketones.

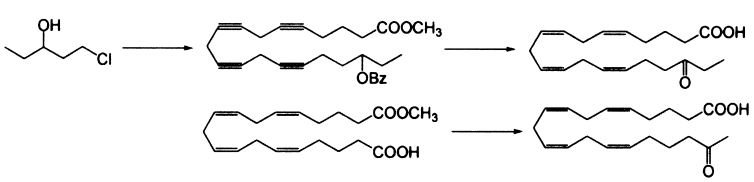


Total synthesis of (5Z,8Z,11Z,14Z)-18- and 19-oxoeicosa-5,8,11,14-tetraenoic acids

Tetrahedron 58 (2002) 8483

Stepan G. Romanov,[a] Igor V. Ivanov,[a,b] Nataliya V. Groza,[a] Hartmut Kuhn[b,*] and Galina I. Myagkova[a]

[a]*M. V. Lomonosov State Academy of Fine Chemical Technology, Pr. Vernadskogo 86, 119571 Moscow, Russian Federation*
[b]*Institute of Biochemistry, University Clinics Charité, Humboldt University, Hessische Str. 3-4, D-10115 Berlin, Germany*



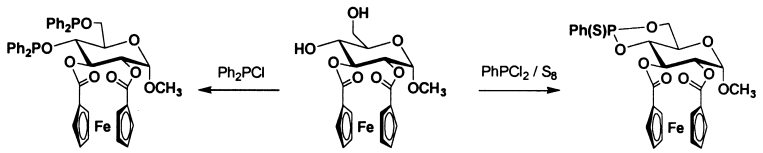
Tetrahedron 58 (2002) 8489

Synthesis of ferrocenylglucose phosphonite and bisphosphinite: Pd(II) and Pt(II) complexes, Pd-catalyzed allylic alkylation

Alexey A. Nazarov,[a] Christian G. Hartinger,[a] Vladimir B. Arion,[a] Gerald Giester[b] and Bernhard K. Keppler[a,*]

[a]*Institute of Inorganic Chemistry, University of Vienna, Waehringer Str. 42, A-1090 Vienna, Austria*
[b]*Institute of Mineralogy and Crystallography, University of Vienna, Althanstr. 14, A-1090 Vienna, Austria*

Synthesis and characterization of new phosphorus containing ligands and their Pd(II) and Pt(II) complexes are reported.

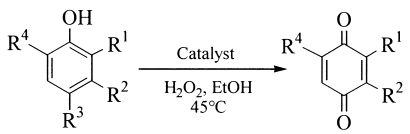


Tetrahedron 58 (2002) 8493

Selective oxidation of phenol and anisole derivatives to quinones with hydrogen peroxide and polymer-supported methylrhenium trioxide systems

Raffaele Saladino,[a,*] Veronica Neri,[a] Enrico Mincione[a] and Paolino Filippone[b]

[a]*Dipartimento di Agrobiologia ed Agrochimica, Università della Tuscia, Via S. Camillo de Lellis s.n.c., 01100 Viterbo, Italy*
[b]*Centro per lo studio delle Sostanze Organiche di Origine Naturale, Università di Urbino, piazza della Repubblica 13, Urbino, Italy*

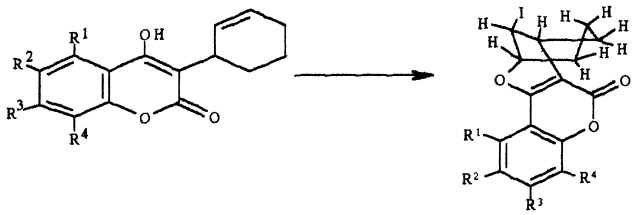


Tetrahedron 58 (2002) 8501

N-Iodosuccinimide mediated regioselective heterocyclization of 3-cyclohex-2′-enyl-4-hydroxycoumarin

K. C. Majumdar* and S. Sarkar

Department of Chemistry, University of Kalyani, Kalyani 741 235, W. B., India

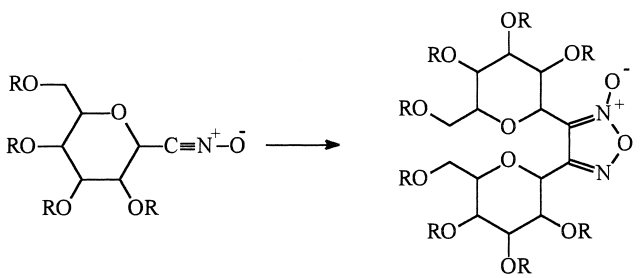


Tetrahedron 58 (2002) 8505

3,4-Dipyranosyl-1,2,5-oxadiazole 2-oxides: synthesis and X-ray structure

Kenneth W. J. Baker, Andrew R. March, Simon Parsons, R. Michael Paton* and Gavin W. Stewart

Department of Chemistry, The University of Edinburgh, West Mains Road, Edinburgh EH9 3JJ, UK



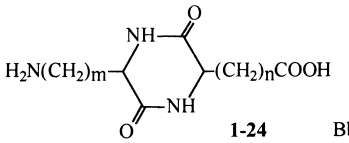
Cyclic dipeptides as building blocks for combinatorial libraries. Part 2: Synthesis of bifunctional diketopiperazines

Tetrahedron 58 (2002) 8515

Igor L. Rodionov,* Ludmila N. Rodionova, Ludmila K. Baidakova, Alla M. Romashko, Tamara A. Balashova and Vadim T. Ivanov

Branch of Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry, Pushchino, Moscow Region 142290, Russian Federation

Twenty-four bifunctional diketopiperazines, cyclo(-Aax-Bbx-) consisting of glutamic or aspartic acid (Aax) and lysine, ornithine or diaminobutyric (Dab) acid (Bbx) were synthesized. Weak acid catalyzed cyclization procedure was modified to avoid severe racemization encountered unexpectedly during this reaction.



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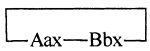


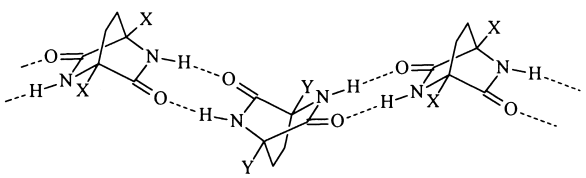
Aax = Asp(n=1), Glu(n=2);
Bbx = Dab(m=2), Orn(m=3), Lys(m=4)

Self-assembly of cage structures. Paper 12: The synthesis and crystal structures of 2,5-diazabicyclo[2.2.2]octane-3,6-dione-1,4-dicarboxylic acids and their diesters

Tetrahedron 58 (2002) 8525

Konstantin A. Lyssenko,[a] Denis A. Lenev[b] and Remir G. Kostyanovsky[b,*]

[a]*A.N. Nesmeyanov Institute of Organoelement Compounds, Russian Academy of Sciences, Vavilova 28, 119991 Moscow, Russian Federation*
[b]*N.N. Semenov Institute of Chemical Physics, Russian Academy of Sciences, Kosygina 4, 119991 Moscow, Russian Federation*

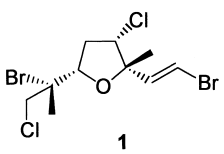


New halogenated monoterpenes from the red alga *Plocamium cartilagineum*

Tetrahedron 58 (2002) 8539

Ana R. Díaz-Marrero,[a] Mercedes Cueto,[a] Enrique Dorta,[a] Juana Rovirosa,[b] Aurelio San-Martín[b] and José Darias[a,*]

[a]*Instituto de Productos Naturales y Agrobiología del CSIC, Avda. Astrofisico F. Sánchez 3, Apdo. 195, 38206 La Laguna, Tenerife, Spain*
[b]*Departamento de Química, Facultad de Ciencias, Universidad de Chile, Santiago de Chile, Chile*



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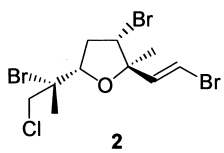

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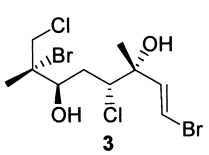


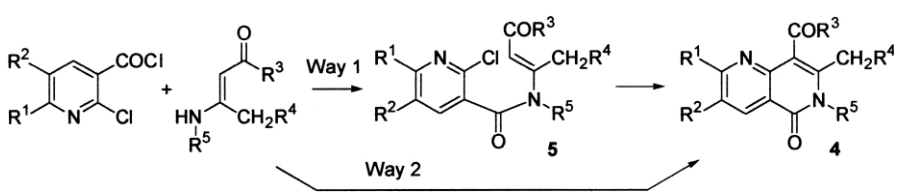
3

Practical synthesis of 8-acyl-7-alkyl-1,6-naphthyridin-5(6*H*)-ones

Tetrahedron 58 (2002) 8543

Magali Valès, Vladimir Lokshin,* Gérard Pèpe, Robert Guglielmetti and André Samat

Faculté des Sciences de Luminy, Université de la Méditerranée, UMR 6114 CNRS, Case 901, 13288 Marseille Cedex 9, France

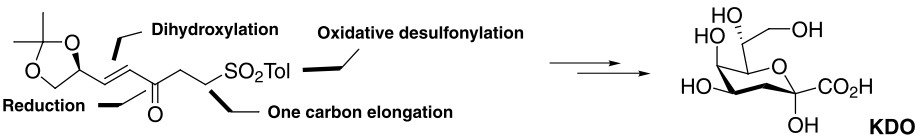


Tetrahedron 58 (2002) 8553

4-[(4-Methylphenyl)sulfonyl]-1-(triphenylphosphoranylidene)-2-butanone as a convenient precursor for a new formal synthesis of KDO

Achille Barco,[a] Lucio Bassetti,[b] Simonetta Benetti,[a,*] Valerio Bertolasi,[c] Carmela De Risi,[b] Paolo Marchetti[b] and Gian Piero Pollini[b]

[a]*Dipartimento di Chimica, Università di Ferrara, Via L. Borsari 46, 44100 Ferrara, Italy*
[b]*Dipartimento di Scienze Farmaceutiche, Università di Ferrara, Via Fossato di Mortara 19, 44100 Ferrara, Italy*
[c]*Dipartimento di Chimica, Centro di Strutturistica Diffrattometrica, Università di Ferrara, Via L. Borsari 46, 44100 Ferrara, Italy*

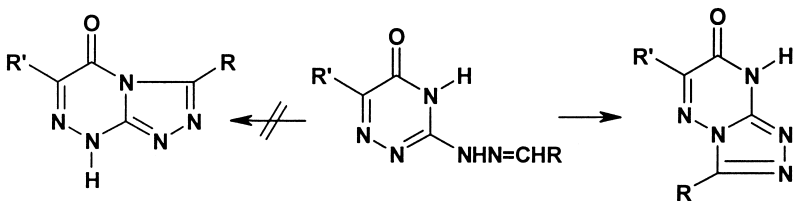


Tetrahedron 58 (2002) 8559

Regioselectivity in 1,5-electrocyclization of *N*-[*as*-triazin-3-yl]-nitrilimines. Synthesis of *s*-triazolo[4,3-*b*]-*as*-triazin-7(8*H*)-ones

Ahmad Sami Shawali* and Sobhi M. Gomha

Department of Chemistry, Faculty of Science, University of Cairo, Giza, Egypt

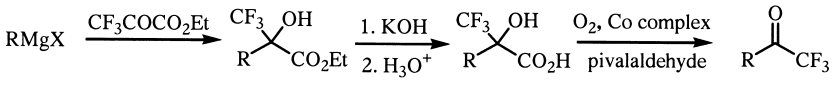


Tetrahedron 58 (2002) 8565

Catalytic aerobic oxidative decarboxylation of α-trifluoromethyl-α-hydroxy acids to trifluoromethyl ketones

Gonzalo Blay, Isabel Fernández, Alicia Marco-Aleixandre, Belén Monje, José R. Pedro* and Rafael Ruiz

Departament de Química Orgànica, Facultat de Química, Universitat de València, E-46100 Burjassot, Valencia, Spain



2 3 4 5

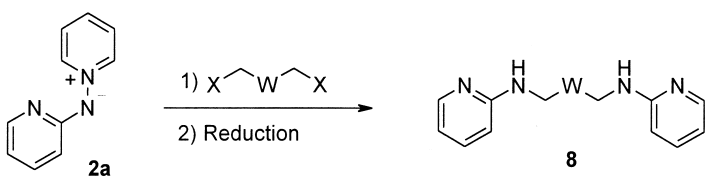
Tetrahedron 58 (2002) 8573

Pyridinium *N*-(2′-azinyl)aminides: regioselective synthesis of *N*-(2-pyridyl) substituted polyamines

M. José Reyes, Francisca Delgado, M. Luisa Izquierdo and Julio Alvarez-Builla*

Departamento de Química Orgánica, Universidad de Alcalá, Alcalá de Henares, 28871 Madrid, Spain

Analogs to **8** have been obtained by the use of *N*-aminides **2** in two steps. Triamines have also been obtained using the same methodology.



2a **8**

Tetrahedron 58 (2002) 8613

Palladium catalysed queuing processes. Part 4: Termolecular cyclisation–anion capture cascades employing allene as a relay switch and secondary amines as nucleophiles

Ronald Grigg,* Vladimir Savic, Visuvanathar Sridharan and Catherine Terrier

Molecular Innovation, Diversity and Automated Synthesis (MIDAS) Centre, School of Chemistry, University of Leeds, Leeds LS2 9JT, UK

Three-component cyclisation–anion capture cascades cyclising onto proximate alkenes or alkynes affords benzo-fused 5–8-membered rings in good yield.