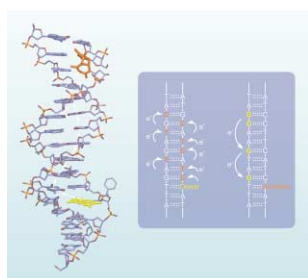


# Organic & Biomolecular Chemistry

FORMERLY PERKIN TRANSACTIONS 1 AND 2

Incorporating Acta Chemica Scandinavica

**Cover**

See T. Carell, C. Behrens and J. Gierlich, page 2221.

The article describes charge transport processes in DNA, which includes hole and electron transfer. Whereas in the first case a positive charge moves through the duplex, transfer of excess electrons might open the door for the future usage of DNA in nano-electronic devices. Mechanistic insights into the electron transfer process were gained with synthetic DNA double strands containing a flavin electron injector and a thymine dimer electron acceptor side directed incorporated.



Chemical biology articles published in this journal also appear in the *Chemical Biology Virtual Journal*: [www.rsc.org/chembiol](http://www.rsc.org/chembiol)

## contents

## EMERGING AREA

2217 2220

**Regulating transcription: a chemical perspective**

Anna K. Mapp

Small molecules that control the expression of specific genes are desirable targets for organic and biological chemists.



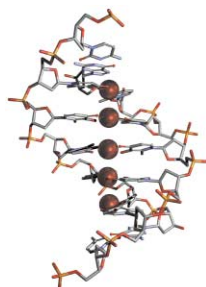
## PERSPECTIVE

2221 2228

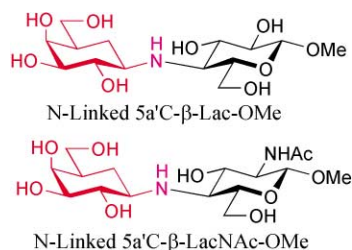
**Electrontransfer through DNA and metal-containing DNA**

Thomas Carell, Christoph Behrens and Johannes Gierlich

The most up to date insights into how a DNA duplex transfers holes and electrons is covered, together with a description of the recent approaches to metallize DNA or to use metal-mediated base pairing in order to increase the electron conducting properties of DNA.



2229 2230

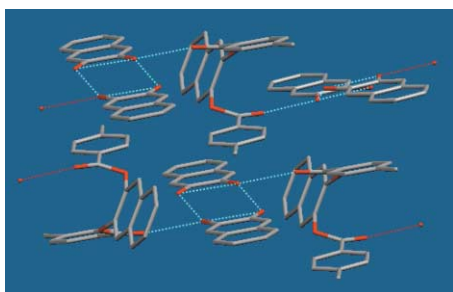


### Potent and specific sialyltransferase inhibitors: imino-linked 5a'-carbadiaccharides

Kensuke Okazaki, Sachiko Nishigaki, Fumito Ishizuka, Yasuhiro Kajihara and Seiichiro Ogawa

Methyl 5a'-carba- $\beta$ -lactoside, imino-linked, has been shown to possess potent and specific inhibitory activity ( $IC_{50} = 185 \mu\text{M}$ ) toward rat recombinant  $\alpha 2,3$ -sialyltransferase.

2231 2234

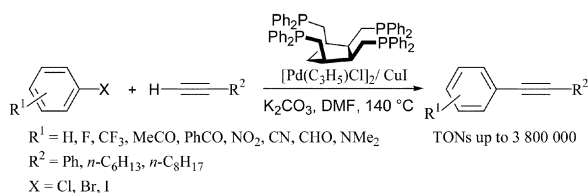


### Isolation of an inclusion complex of naphthol and its benzoate as an intermediate in the solvent-free benzoylation reaction of naphthol

Seiken Nakamatsu, Kazuhiro Yoshizawa, Sinji Toyota, Fumio Toda and Ivanka Matijasic

Solvent-free benzoylation of naphthol is found to proceed *via* an inclusion complex intermediate of the naphthol and its benzoate by IR spectral monitoring.

2235 2237



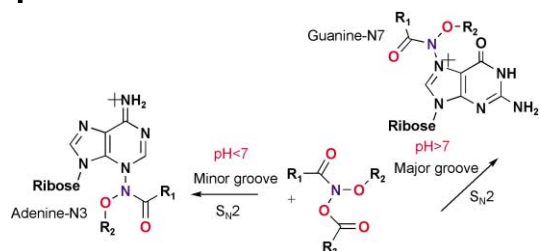
### Palladium-tetraphosphine complex: an efficient catalyst for the coupling of aryl halides with alkynes

Marie Feuerstein, Florian Berthiol, Henri Doucet and Maurice Santelli

The use of the tetradentate ligand Tedicyp associated with a palladium complex provides a convenient catalyst for the coupling of aryl halides to alkynes.

## ARTICLES

2238 2246

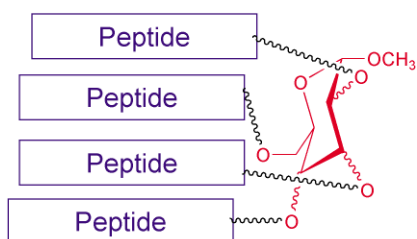


### Mutagenicity and DNA damage studies of N-acyloxy-N-alkoxyamides — the role of electrophilic nitrogen

Tony M. Banks, Antonio M. Bonin, Stephen A. Glover and Arungundrum S. Prakash

*N*-Acyloxy-*N*-alkoxyamides are direct-acting mutagens. They are shown to damage DNA in the major and minor grooves in a pH and sequence-selective manner.

2247 2252



### Monosaccharide templates for *de novo* designed 4- $\alpha$ -helix bundle proteins: template effects in carboproteins

Jesper Brask, Jan M. Dideriksen, John Nielsen and Knud J. Jensen

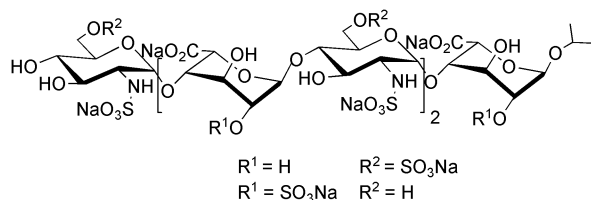
Three diastereomeric carboproteins assembled on Galp, Glcp, and Altp templates were synthesized and analyzed for degree of  $\alpha$ -helicity and stability.

2253 2266

**Synthesis and structural study of two new heparin-like hexasaccharides**

Ricardo Lucas, Jesús Angulo, Pedro M. Nieto and Manuel Martín-Lomas

The synthesis and the solution conformation of two hexasaccharides containing the basic structural motif of the regular region of heparin with negative charge distributions specifically designed to get insight into the mechanism of fibroblast growth factors (FGFs) activation are reported.

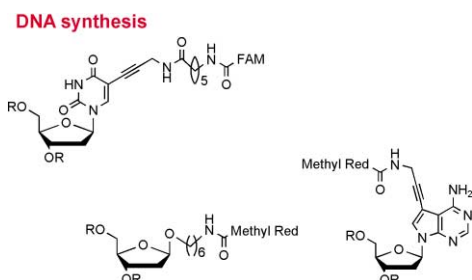


2267 2275

**Synthesis of fluorophore and quencher monomers for use in Scorpion primers and nucleic acid structural probes**

Catherine M. McKeen, Lynda J. Brown, Jamie T. G. Nicol, John M. Mellor and Tom Brown

Syntheses of monomers to incorporate fluorophores and quenchers within oligonucleotides for genetic analysis and the study of multi-stranded nucleic acid structures.

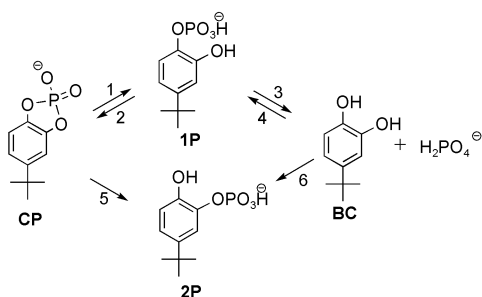


2276 2282

**Polymeric enzyme mimics: catalytic activity of ribose-containing polymers for a phosphate substrate**

Man Jung Han, Kyung Soo Yoo, Young Heui Kim and Ji Young Chang

The catalytic activities of enzyme mimics of nuclease, ligase, phosphatase, and phosphorylase were investigated. The synthetic polymers containing ribose rings catalyzed the hydrolysis of phosphodiester substrates and the reverse reactions, *i.e.*, the esterification of phosphomonoester to phosphodiester and the phosphorylation of alcohols with phosphate ions.

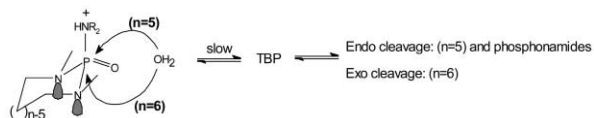


2283 2289

**Hydrolysis of cyclic phosphoramides. Evidence for *syn* lone pair catalysis**

Andrés Núñez, Dyanna Berroterán and Oswaldo Núñez

Small difference in hydrolysis reactivity for  $n = 5$  and  $n = 6$  as evidence for *syn* lone pair catalysis.

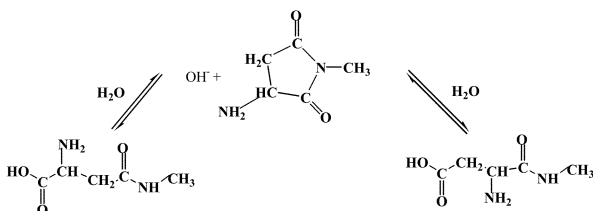


2290 2297

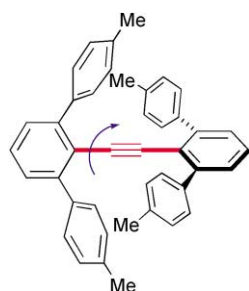
**Modelling the hydrolysis of succinimide: formation of aspartate and reversible isomerization of aspartic acid *via* succinimide**

F. Aylin. S. Konuklar and Viktorya Aviyente

A model of the nucleophilic attack of water and a hydroxyl anion on the carbonyl carbon of a succinimide derivative leading to aspartate and aspartic acid.



2298 2302

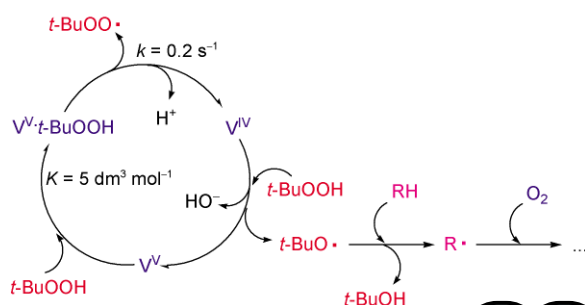


**Rotational isomerism involving an acetylenic carbon IV: synthesis and structure of bis(1,1';3',1''-terphenyl-2'-yl)ethynes: molecular design of sterically congested alkynes toward restricted rotation about acetylenic axis**

Shinji Toyota, Taku Iida, Chinatsu Kunizane, Naoki Tanifuji and Yukihiro Yoshida

Structure and rotational isomerism of sterically hindered diphenylethyne were studied by NMR and X-ray analysis.

2303 2306

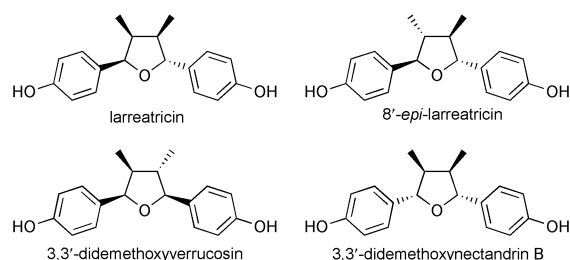


**Kinetics and mechanism of alkane hydroperoxidation with *tert*-butyl hydroperoxide catalysed by a vanadate anion**

Georgiy B. Shul'pin and Yuriy N. Kozlov

A Vanadium(v) oxo complex catalyses decomposition of *t*-BuOOH to produce radicals which initiate alkane oxidation.

2307 2313

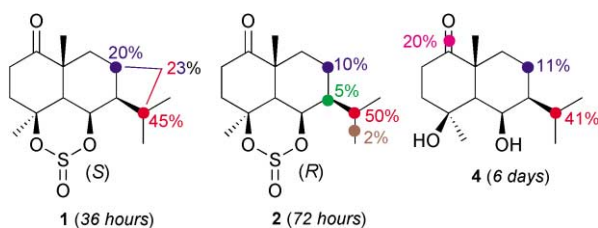


**Synthesis and chiral HPLC analysis of the dibenzyltetrahydrofuran lignans, larreatricins, 8'-*epi*-larreatricins, 3,3'-didemethoxyverrucosins and *meso*-3,3'-didemethoxynectandrin B in the creosote bush (*Larrea tridentata*): evidence for regiospecific control of coupling**

Syed G. A. Moinuddin, Shojiro Hishiyama, Man-Ho Cho, Laurence B. Davin and Norman G. Lewis

The enantiomeric purity of each of the four creosote bush lignans was determined, as a forerunner to defining the factors controlling 8–8' coupling during *L. tridentata* lignan biosynthesis.

2314 2320

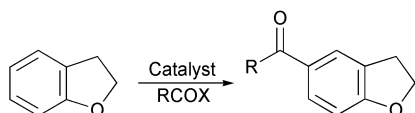


**Improved microbiological hydroxylation of sesquiterpenoids: semisynthesis, structural determination and biotransformation studies of cyclic sulfite eudesmane derivatives**

Andrés García-Granados, María C. Gutiérrez and Francisco Rivas

Semisynthesis, structural arrangement, and biotransformation with increased biocatalysis rates, of two new cyclic sulfite eudesmane derivatives have been investigated.

2321 2325

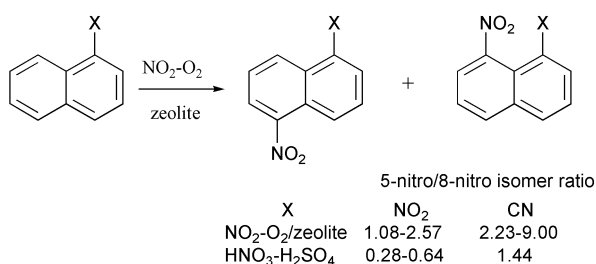


**Acylation of aromatic ethers over solid acid catalysts: scope of the reaction with more complex acylating agents**

Keith Smith, Gamal A. El-Hiti, Anthony J. Jayne and Michael Butters

For potential application in the fine chemicals/pharmaceuticals area, the regioselective acylation of anisole and 2,3-dihydrobenzofuran with complex acylating agents over zeolites is reported.

2326 2335

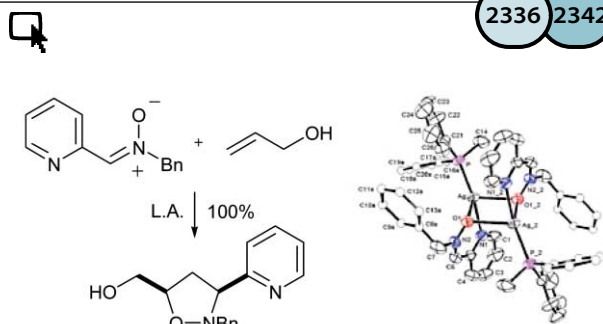


### Nitration of moderately deactivated arenes with nitrogen dioxide and molecular oxygen under neutral conditions. Zeolite-induced enhancement of regioselectivity and reversal of isomer ratios

Xinhua Peng, Naoyuki Fukui, Masayuki Mizuta and Hitomi Suzuki

Zeolite assisted room temperature nitration of nitro- and cyanonaphthalenes and methylated benzonitriles with NO<sub>2</sub>-O<sub>2</sub> is reported, where regioselectivity is often improved relative to classical nitration and isomer ratios are sometimes reversed.

2336 2342

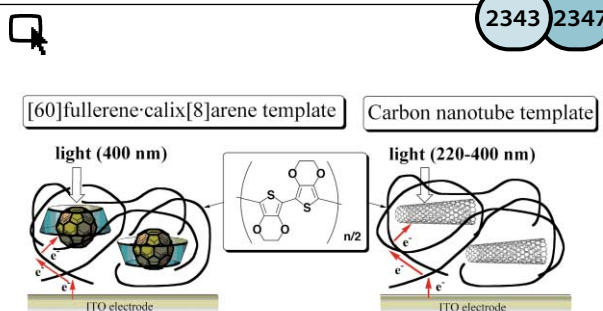


### An investigation of the Lewis acid mediated 1,3-dipolar cycloaddition between *N*-benzyl-*C*-(2-pyridyl)nitron and allylic alcohol. Direct entry to isoxazolidinyl *C*-nucleosides

Pedro Merino, Tomas Tejero, Mariano Laguna, Elena Cerrada, Ana Moreno and Jose A. Lopez

To develop novel strategies for preparing heterocyclic nucleosides the cycloaddition reaction of *N*-benzyl *C*-(2-pyridyl) nitron with allylic alcohol in the presence of Lewis acids has been studied.

2343 2347

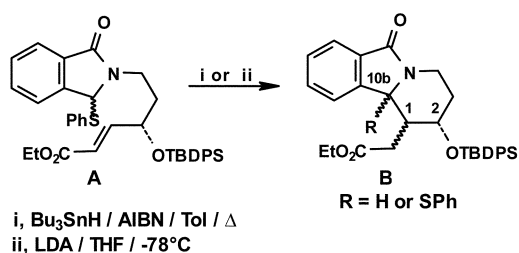


### Facile deposition of [60]fullerene and carbon nanotubes on ITO electrode by electrochemical oxidative polymerization of ethylenedioxythiophene

Tsukasa Hatano, Ah-Hyun Bae, Kazunori Sugiyasu, Norifumi Fujita, Masayuki Takeuchi, Asushi Ikeda and Seiji Shinkai

It was found that [60]fullerene and carbon nanotubes can be deposited on a ITO electrode by electrochemical oxidative polymerization of ethylenedioxythiophene.

2348 2356

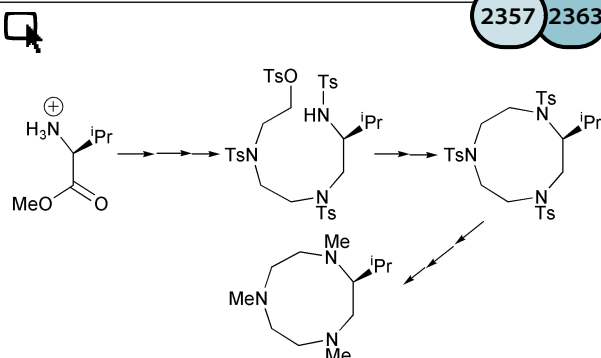


### Stereoselective tetrapyrrodo[2,1-*a*]isoindolone synthesis via carbanionic and radical intermediates: a model study for the Tacaman alkaloid D/E ring fusion

Roger Hunter and Philip Richards

Stereoselective cyclization of **A** to **B** provides models for Tacaman alkaloid synthesis. The stereoselectivities are discussed.

2357 2363



### The synthesis of an isopropyl substituted 1,4,7-triazacyclononane via an *in situ* sequential macrocyclisation method

Graham Stones, Gilles Argouarch, Alan R. Kennedy, David C. Sherrington and Colin L. Gibson

The preparation of a novel sterically demanding isopropyl macrocycle and its use as an epoxidation catalyst are discussed.



2364 2376

**Pyrrolidinones derived from (*S*)-pyroglutamic acid: penmacric acid and analogues**

Muhammed Anwar, Jonathan H. Bailey, Laura C. Dickinson, Hermia J. Edwards, Rajesh Goswami and Mark G. Moloney

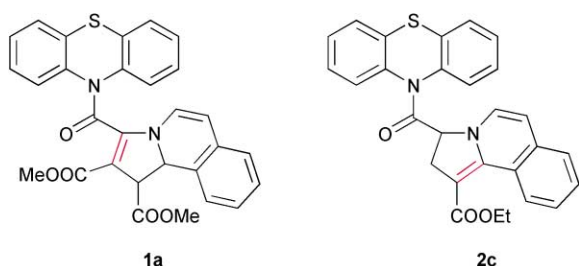
Protected penmacric acid and analogues have been obtained by modification of a bicyclic lactam derived from pyroglutamic acid, using two alternative strategies.



2377 2382

**Benzoindolizine derivatives of *N*-acylphenothiazine. Synthesis and characterization**

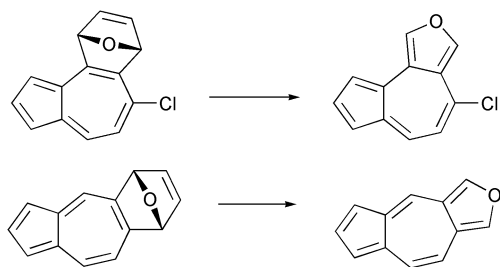
Elena Băcu, Dalila Samson-Belei, Guy Nowogrocki, Axel Couture and Pierre Grandclaude

Partly and differentially saturated benzoindolizine derivatives of *N*-acylphenothiazine 1 or 2 have been synthesized by ylide 1,3-dipolar cycloaddition with acetylenic or olefinic dipolarophiles depending on the nature of the reagents and/or the experimental conditions used.

2383 2387

**The synthesis of some azuleno[*c*]furans**

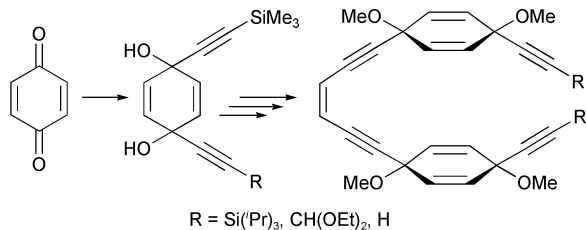
Alan D. Payne and Dieter Wege

Two azuleno[*c*]furans, which are structural analogues of the highly reactive isobenzofuran system, have been prepared by a tandem cycloaddition–cycloreversion sequence.

2388 2392

**Synthesis of differentially protected/functionalised acetylenic building blocks from *p*-benzoquinone and their use in the synthesis of new enediyne**

Sethuraman Sankararaman and Manivannan Srinivasan

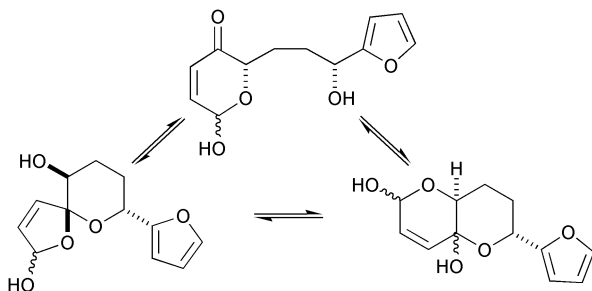
Synthesis of differentially protected/functionalized acetylenic building blocks from *p*-benzoquinone and their use in the synthesis of new enediynes have been described.

2393 2402

**Exploiting predisposition in the stereoselective synthesis of mono-, bi- and tetracyclic oxygen heterocycles: Equilibration between, and trapping of, alternative di- and tetraacetals**

Stephen Bartlett, Robert Hodgson, Joanne M. Holland, Matthew Jones, Colin Kilner, Adam Nelson and Stuart Warriner

Equilibration between alternative polyacetal structures may be exploited in the synthesis of mono-, bi- and tetracyclic ring systems.





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**Syntheses and biological evaluation of vinblastine congeners**

Rita Kakkar, Rajni Grover and Preeti Chadha

**Conformational behavior of some hydroxamic acids**

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