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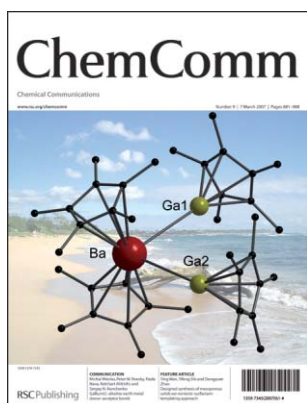
Chemical Communications

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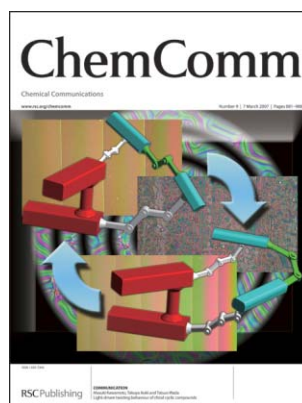
IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS (9) 881-988 (2007)



Cover

See P. W. Roesky *et al.*, p. 927. The picture shows the structure of the trimetallic compound $[(\eta^5\text{-C}_5\text{Me}_5)_2\text{Ba}\{-\{\text{Ga}(\eta^5\text{-C}_5\text{Me}_5)\}_2\}]$, which is the first molecular species with a Ga–Ba–interaction. Image reproduced by permission of Michal Wiecko, Peter W. Roesky, Paola Nava, Reinhart Ahlrichs and Sergey N. Konchenko from *Chem. Commun.*, 2007, 927.



Inside cover

See Masuki Kawamoto, Takuya Aoki and Tatsuo Wada, page 930. A dynamic control of alignment of liquid crystals with the aid of light-driven twisting of chiral cyclic compounds. Image reproduced by permission of Masuki Kawamoto, Takuya Aoki and Tatsuo Wada from *Chem. Commun.*, 2007, 930.

CHEMICAL BIOLOGY

B17

Drawing together research highlights and news from all RSC publications, *Chemical Biology* provides a 'snapshot' of the latest developments in chemical biology, showcasing newsworthy articles and significant scientific advances.

Chemical Biology

March 2007/Volume 2/Issue 3

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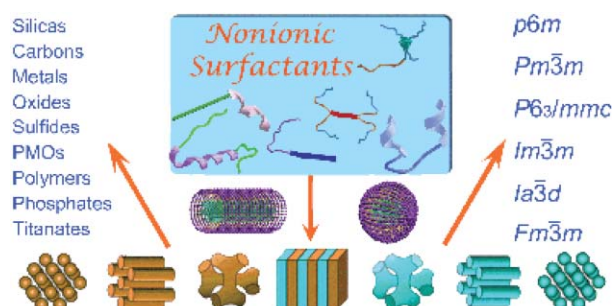
FEATURE ARTICLE

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Designed synthesis of mesoporous solids via nonionic-surfactant-templating approach

Ying Wan, Yifeng Shi and Dongyuan Zhao*

Nonionic surfactants with a range of ordered microdomains can be utilized as effective templates to design and synthesize mesoporous solids with abundant compositions and mesostructures.



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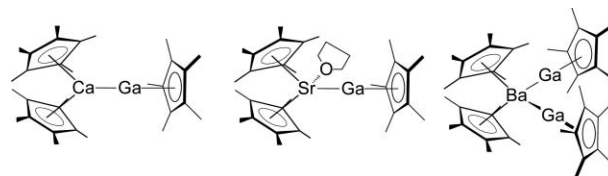
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Gallium(I)–alkaline earth metal donor–acceptor bonds

Michal Wiecko, Peter W. Roesky,* Paola Nava, Reinhart Ahlrichs and Sergey N. Konchenko

Compounds with a gallium–alkaline earth metal bond, $[(\eta^5\text{-C}_5\text{Me}_5)_2\text{Ca-Ga}(\eta^5\text{-C}_5\text{Me}_5)]$, $[(\eta^5\text{-C}_5\text{Me}_5)_2(\text{THF})\text{Sr-Ga}(\eta^5\text{-C}_5\text{Me}_5)]$, and $[(\eta^5\text{-C}_5\text{Me}_5)_2\text{Ba-Ga}(\eta^5\text{-C}_5\text{Me}_5)_2]$, were prepared.



930

Light-driven twisting behaviour of chiral cyclic compounds

Masuki Kawamoto,* Takuya Aoki and Tatsuo Wada*

Chiral cyclic compounds exhibited light-driven twisting by means of *trans*–*cis* photoisomerization in 1,4-dioxane solution, a neat film, and a liquid-crystalline host.

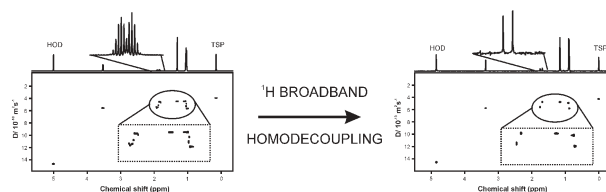


933

Pure shift proton DOSY: diffusion-ordered ^1H spectra without multiplet structure

Mathias Nilsson and Gareth A. Morris*

The ability to resolve the signals of different species using DOSY is greatly improved if multiplet structure is suppressed in the spectral dimension, reducing the incidence of signal overlap.

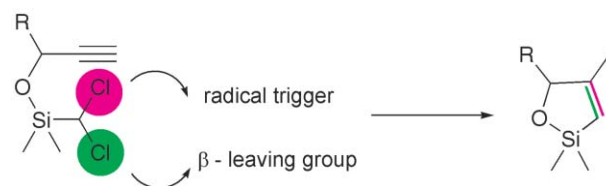


936

Preparation of fused polycyclic vinylcyclopropanes via radical cascade reactions

Matthew L. Maddess, Emily Mainetti, Youssef Harrak, Célia Brancour, Priscille Devin, Anne-Lise Dhimane, Louis Fensterbank* and Max Malacria*

A *gem*-dichloromethyl silyl group serves as a dual tool for radical initiation and termination via β -elimination in a variety of radical cascades, also featuring cyclopropanations.



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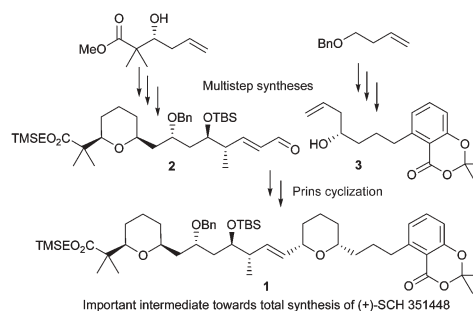
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Formal synthesis of (+)-SCH 351448: the Prins cyclization approach

Kok-Ping Chan, Yvonne Hui Ling and Teck-Peng Loh*

An efficient synthesis of the monomeric unit of (+)-SCH 351448 has been accomplished using catalytic Prins cyclization as one of the key steps. The convergence of two complex molecular fragments yielded the monomeric unit as a single isomer, illustrating a straightforward and efficient formal synthesis route.

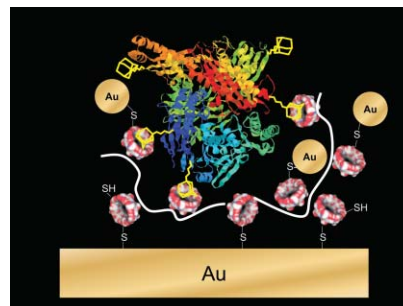


942

Amperometric biosensor for xanthine with supramolecular architecture

Reynaldo Villalonga,* Conrado Camacho, Roberto Cao, Javier Hernández and Juan C. Matías

A novel non covalent strategy for preparing an enzyme biosensor with supramolecular architecture is described, based on the host-guest associations of chemically modified xanthine oxidase with Au nanoparticles coated with a β -cyclodextrin polymer.

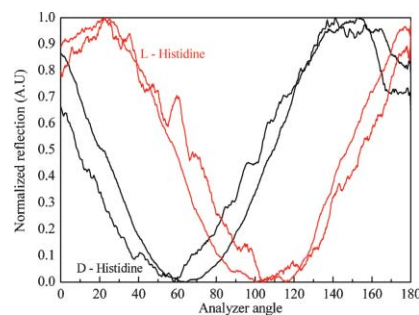


945

Sub-micrometer polarimetry of chiral surfaces using near-field scanning optical microscopy

David H. Dressler, Asher Landau, Arie Zaban and Yitzhak Mastai*

In this work we have studied the optical activity of chiral crystal surfaces with polarized near-field scanning optical microscopy (NSOM). Our studies clearly demonstrated that NSOM can be utilized to determine chirality of surfaces. The sensitivity of this method allows us to measure chirality of nanostructures.

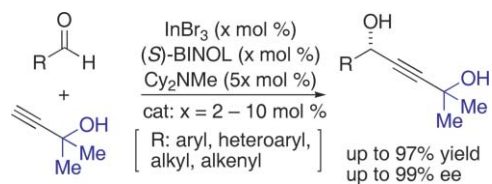


948

Ligand accelerated indium(III)-catalyzed asymmetric alkynylation of aldehydes with 2-methyl-3-buten-2-ol as an ethyne equivalent donor

Shinji Harada, Ryo Takita, Takashi Ohshima, Shigeki Matsunaga and Masakatsu Shibasaki*

Indium(III)-catalyzed asymmetric alkynylation of aryl, heteroaryl, alkyl and alkenyl aldehydes with 2-methyl-3-buten-2-ol as an ethyne equivalent donor was realized, giving products in up to 97% yield and 99% ee.



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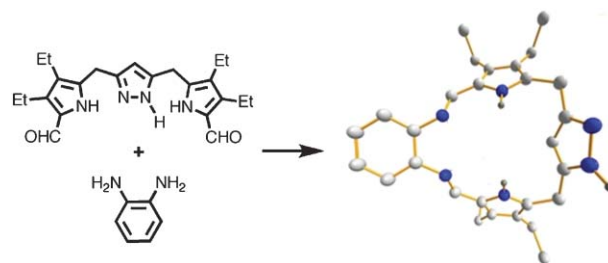
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951

A versatile building block for pyrazole–pyrrole hybrid macrocycles

Stamatia Katsiaouni, Sebastian Dechert,
Christian Brückner* and Franc Meyer*

The synthesis of a pyrazole–pyrrole building block and its conversion into a Schiff base-type macrocycle incorporating H-bonding donor and acceptor functionalities on its inside and outside are described.

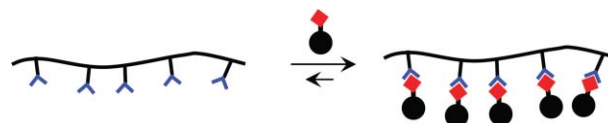


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Urea-bearing copolymers for guest-dependent tunable self-assembly

Amanda C. Kamps, Teddie Magbitang and
Alshakim Nelson*

Copolymers bearing urea side-chains were synthesized and investigated for their binding to carboxylate anions and their isosteres.

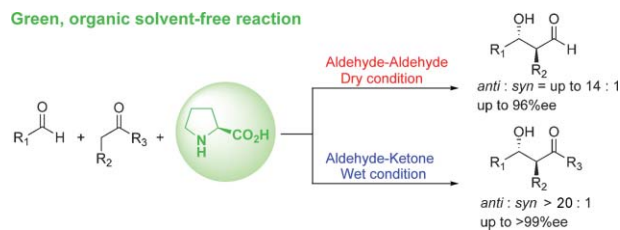


957

Dry and wet prolines for asymmetric organic solvent-free aldehyde–aldehyde and aldehyde–ketone aldol reactions

Yujiro Hayashi,* Seiji Aratake, Takahiko Itoh,
Tsubasa Okano, Tatsunobu Sumiya and Mitsuru Shoji

Dry and wet prolines were found to catalyze the direct aldol reactions of aldehyde–aldehyde and aldehyde–ketone, respectively, to afford aldols with excellent diastereo- and enantioselectivities, and an organic solvent-free reaction was realized in some cases.

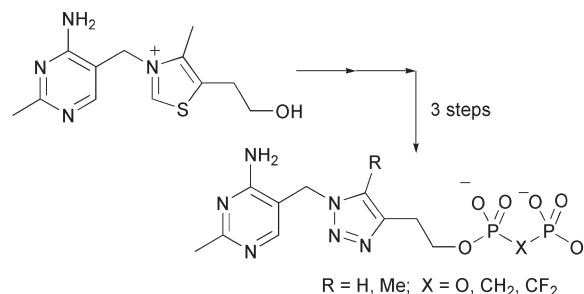


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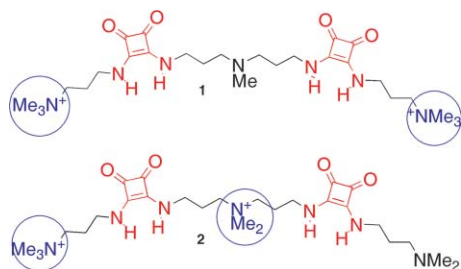
Inhibition of pyruvate decarboxylase from *Z. mobilis* by novel analogues of thiamine pyrophosphate: investigating pyrophosphate mimics

Karl M. Erixon, Chester L. Dabalos and Finian J. Leeper*

The triazoles shown inhibit pyruvate decarboxylase with K_I values down to 20 pM.



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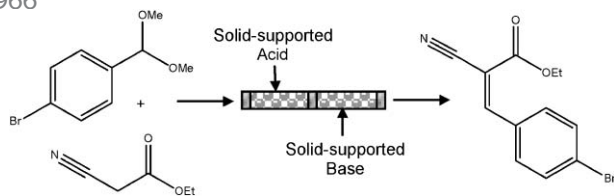


Evidence of anion-induced dimerization of a squaramide-based host in protic solvents

M. Neus Piña, Carmen Rotger,* Bartomeu Soberats, Pablo Ballester, Pere M. Deyà and Antoni Costa*

The combination of squaramide units with tetraalkylammonium groups leads to two hosts that bind distinctively dianions in water–ethanol mixtures. The formation of complexes of 2 : 1 stoichiometry with host 2 was supported by ITC, fluorescence, and ^1H NMR data.

966

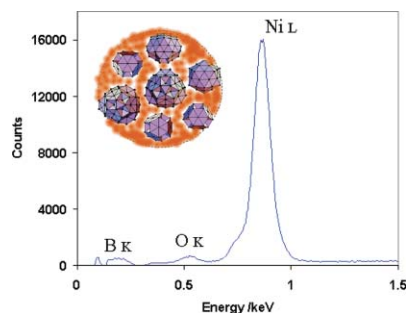


The use of electroosmotic flow as a pumping mechanism for semi-preparative scale continuous flow synthesis

Charlotte Wiles, Paul Watts* and Stephen J. Haswell

Employing a series of acid- and base-catalysed reactions, electroosmotic flow is shown as a continuous pumping mechanism suitable for semi-preparative scale synthesis, affording an array of small organic compounds in analytical purity.

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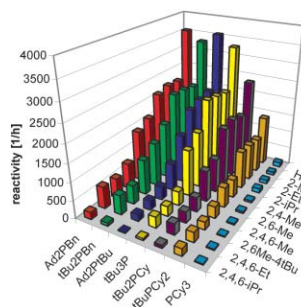


The unusual nanostructure of nickel–boron catalyst

Junfeng Geng,* David A. Jefferson and Brian F. G. Johnson*

A highly unusual nanostructure of the nickel–boron particulate material, initially synthesised in the 1950s and well known to be an exceedingly active hydrogenation catalyst, has been identified for the first time.

972



The effect of steric bulk in Sonogashira coupling reactions

Markus an der Heiden and Herbert Plenio*

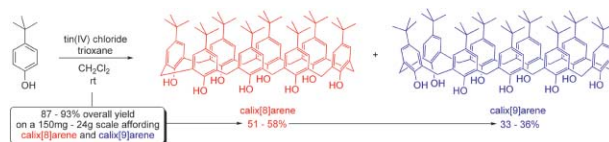
Parallel multisubstrate screening allows the fast collection of kinetic data, whose evaluation ultimately leads to a better understanding of cross-coupling reactions.

975

An expedient one-pot synthesis of *para-tert*-butylcalix[8]- and [9]arene

Sean P. Bew* and Sunil V. Sharma

The first example of a high yielding, up to 93%, one-pot synthesis of *para-tert*-calix[8]arene and *para-tert*-calix[9]arene is described. The reaction proceeds at ambient temperature and is mediated by tin(IV) chloride (1 eqⁿ).



978

New pincer-type diphosphinito (POCOP) complexes of Ni^{II} and Ni^{III}

Valerica Pandarus and Davit Zargarian*

The PCP-type square-pyramidal complex $\{(\text{Pr}^i\text{POCH}_2)_2\text{CH}\}\text{Ni}^{\text{III}}\text{Br}_2$ can be prepared by oxidation of its square-planar Ni^{II} precursor. This 17-electron pincer complex promotes the Kharasch type addition of CCl_4 to olefins with nearly 1000 turnovers.

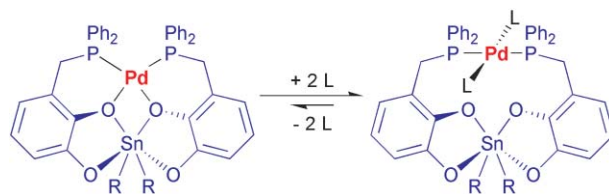


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Template controlled self-assembly of bidentate phosphine complexes with hemilabile coordination behaviour

Samir Chikkali, Dietrich Gudat* and Mark Niemeyer

Template-assisted assembly of ditopic catechol phosphines creates complexes containing a chelating diphosphine ligand, which display hemilabile coordination properties with prospects for applications in catalysis.

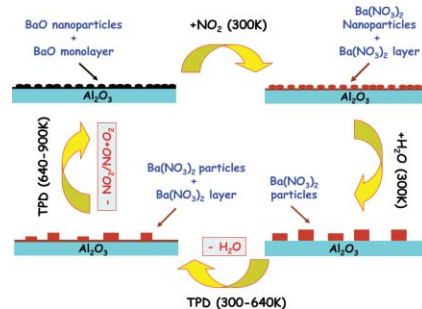


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Water-induced morphology changes in BaO/ γ -Al₂O₃ NO_x storage materials

János Szanyi,* Ja Hun Kwak, Do Heui Kim, Xianqin Wang, Jonathan Hanson, Ricardo J. Chimentao and Charles H. F. Peden

Morphology cycle: the dramatic effect of H₂O on the morphology of an NO₂-saturated BaO/Al₂O₃ NO_x storage material.





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Structure and folding dynamics of a DNA hairpin with a stabilising d(GNA) trinucleotide loop: influence of base pair mis-matches and point mutations on conformational equilibria

Mark Searle, UK

Using singlet oxygen to synthesise a [6,6,5]-bis-spiroketal in one-pot from a simple 2,5-disubstituted furan

Georgios Vassilikogiannakis, Greece

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