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Unsaturated diazoesters undergo Grubbs(II)-catalysed dimerisation at the diazo functionality then ring-closing alkene metathesis, giving dienyl dilactones in a one-flask process.
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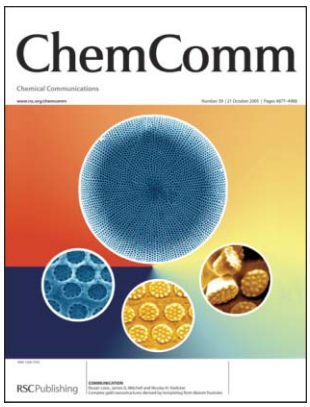

Inside cover
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Diatom frustules can be used as templates for the fabrication of complex gold nanostructures.
Image reproduced by permission of Dusan Losic, James G. Mitchell and Nicolas H. Voelcker, from *Chem. Commun.*, 2005, 4905.

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Chemical Technology

October 2005/Volume 2/Issue 10

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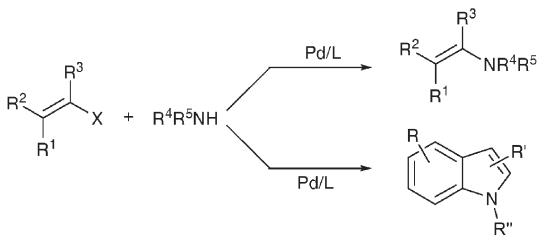
FEATURE ARTICLE

4891

Palladium catalyzed alkenyl amination: from enamines to heterocyclic synthesis

José Barluenga* and Carlos Valdés

The most recent advances in the Pd catalyzed amination of alkenyl halides directed towards the synthesis of imines and enamines are reviewed. The application of this cross-coupling reaction to the synthesis of heterocycles appears to be a potentially powerful methodology. The few examples already available are also discussed.



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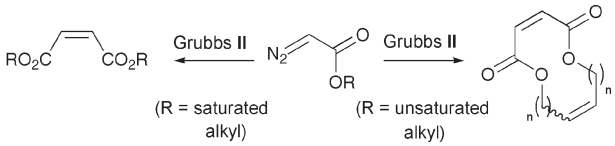
Maleates from diazoacetates and dilactones from head-to-head dimerisation of alkenyl diazoacetates using Grubbs' 2nd-generation ruthenium carbene catalyst

David M. Hodgson* and Deepshikha Angrish

Grubbs' 2nd-generation ruthenium carbene catalyst homocouples diazoacetates to maleates and also catalyses head-to-head dimerisation of alkenyl diazoacetates giving dienyl dilactones.

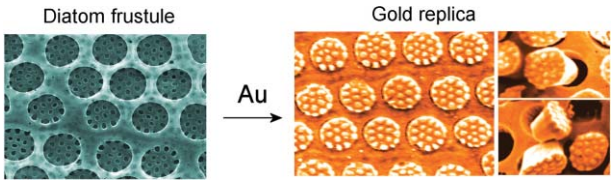


4905

Complex gold nanostructures derived by templating from diatom frustules

Dusan Losic,* James G. Mitchell and Nicolas H. Voelcker

Diatom frustules have been used for the first time as templates for the fabrication of gold nanostructures; high-precision replicas featuring complex three-dimensional gold nanostructures from the nano- to the microscale were achieved.

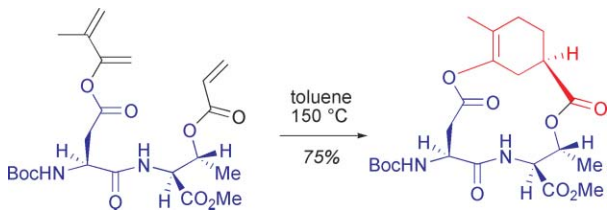


4908

Regio- and stereocontrolled Diels–Alder reaction tethered by Asp-Thr dipeptide

Takayuki Doi,* Yuko Miura, Susumu Kawauchi and Takashi Takahashi*

The peptide-tethered Diels–Alder reaction proceeded in a reigo- and stereoselective manner.

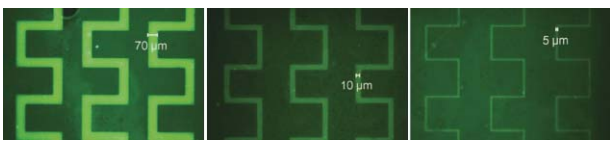


4911

Zeolite micropattern for biological applications

Wenqing Sun, Koon Fung Lam, Ling Wai Wong and King Lun Yeung*

A facile method was established using composition-gradient pattern on zeolite surface to guide the deposition and formation of chemical and biomolecular patterns with features as small as five microns The figure shows BSA-FITC deposited on 70, 10 and 5 microns wide aluminium-rich, square-wave micropattern of ZSM-5 against a Sil-1 background.



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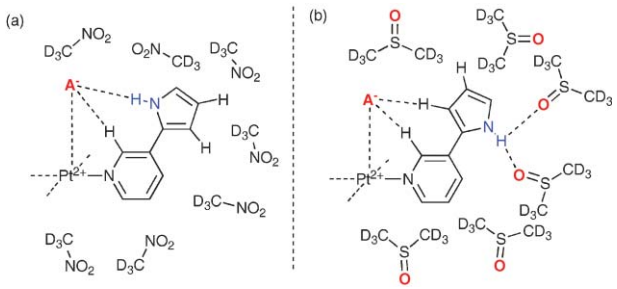

NH *vs.* CH hydrogen bond formation in metal–organic anion receptors containing pyrrolylpyridine ligands

Ismael El Drubi Vega, Philip A. Gale,* Mark E. Light and Stephen J. Loeb

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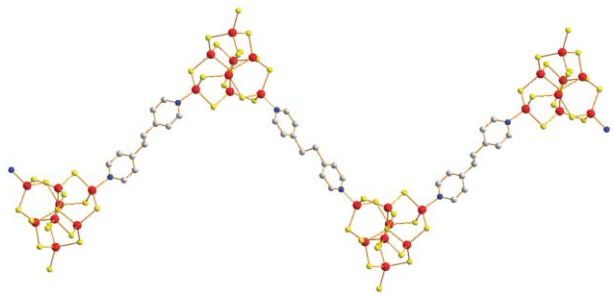

One-dimensional coordination polymers containing penta-supertetrahedral sulfide clusters linked by dipyridyl ligands

Jingli Xie, Xianhui Bu, Nanfeng Zheng and Pingyun Feng*

Three new 1-D coordination polymers $[Zn_8S(SC_6H_5)_{14}\cdot C_{12}H_{10}N_2]$(**1**), $[Zn_7CoS(SC_6H_5)_{14}\cdot C_{13}H_{14}N_2]$(**2**) and $[Zn_8S(SC_6H_5)_{14}\cdot C_{13}H_{14}N_2]$(**3**) have penta-supertetrahedral clusters linked by linear dipyridyl ligands; the two complexes show optical transitions with band gaps of ~3.44 eV (**1**) and ~3.54 eV (**2**).

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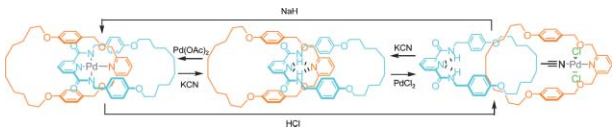

Half-rotation in a [2]catenane *via* interconvertible Pd(II) coordination modes

David A. Leigh,* Paul J. Lusby, Alexandra M. Z. Slawin and D. Barney Walker

Reaction of a [2]catenane with different Pd(II) salts results in different macrocycle orientations and dynamics.

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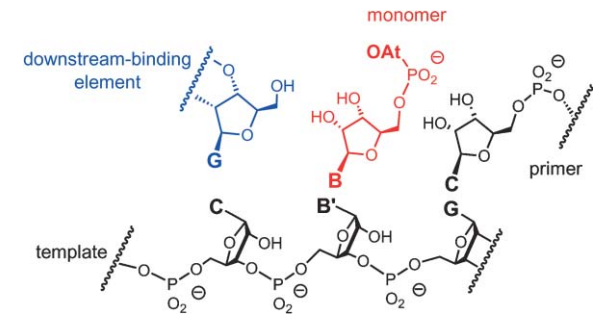
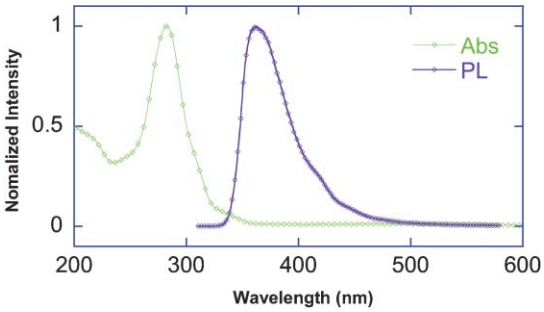
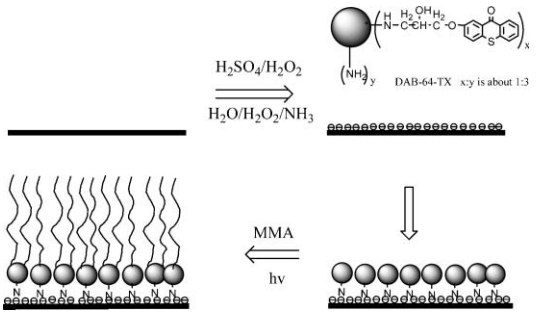


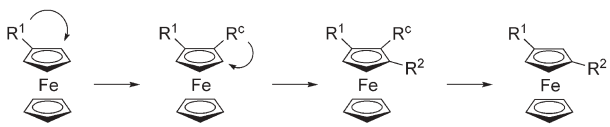
Accelerating chemical replication steps of RNA involving activated ribonucleotides and downstream-binding elements

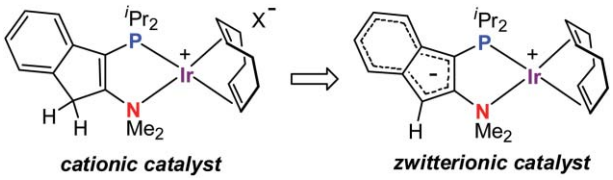
Stephanie R. Vogel, Christopher Deck and Clemens Richert*

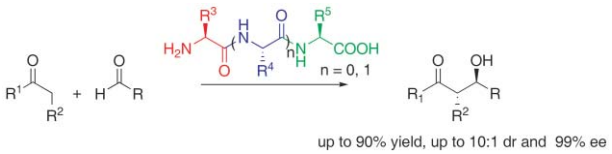
Non-enzymatic, sequence-selective replication steps of RNA proceed more than one order of magnitude faster when azabenzotriazolides, rather than 2-methylimidazolides, are used as monomers at pH 8.9 in the presence of downstream-binding elements.

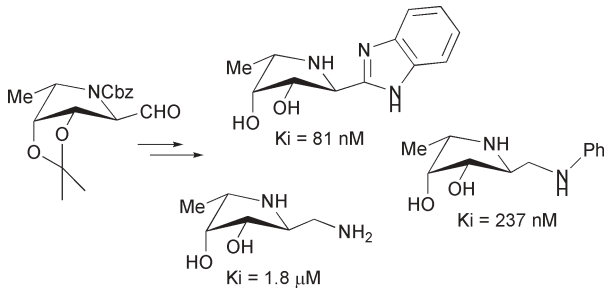


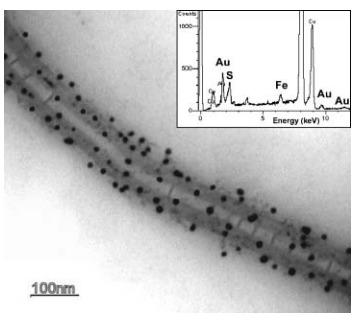


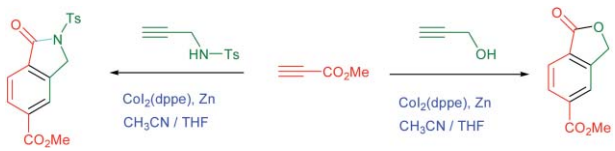


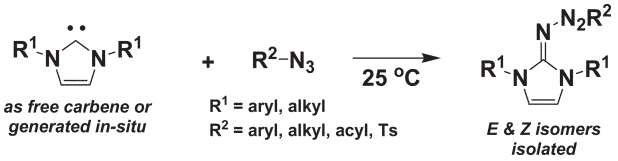








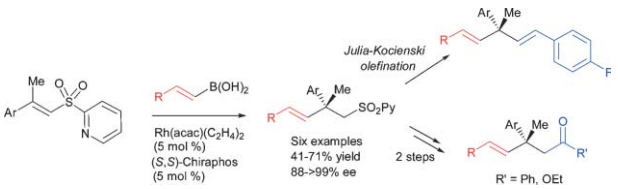




Triazene formation *via* reaction of imidazol-2-ylidenes with azides

Dimitri M. Khramov and Christopher W. Bielawski*

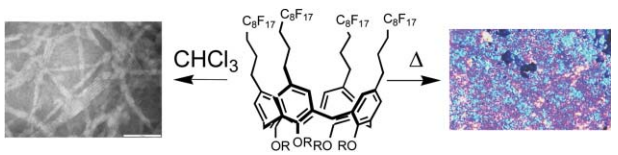
Treatment of N-heterocyclic carbenes (as their free carbenes or generated *in situ*) with alkyl, aryl, acyl or tosyl azides afforded the respective substituted triazenes in excellent yields.



Enantioselective construction of stereogenic quaternary centres *via* Rh-catalyzed asymmetric addition of alkenylboronic acids to α,β-unsaturated pyridylsulfones

Pablo Mauleón and Juan C. Carretero*

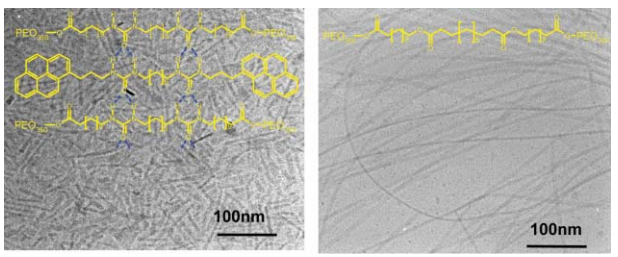
The Rh-catalyzed enantioselective addition of alkenylboronic acids to β,β-disubstituted α,β-unsaturated 2-pyridylsulfones allows the highly enantioselective construction of quaternary stereogenic centres. The chemical versatility of the resulting sulfones enlarges the synthetic interest of this asymmetric conjugate addition procedure.



Solution self-assembly and solid state properties of fluorinated amphiphilic calix[4]arenes

Oana M. Martin, Lian Yu and Sandro Mecozzi*

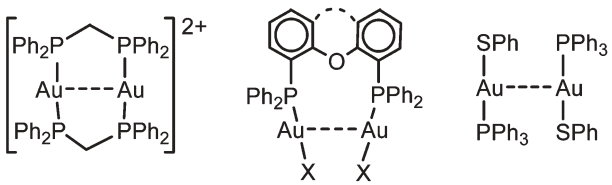
We describe the properties of a new class of water-soluble semifluorinated amphiphilic calix[4]arenes. Fluorous-phase-directed self-assembly drives the formation of an array of different structures in solution whereas liquid crystals are formed in the solid state.

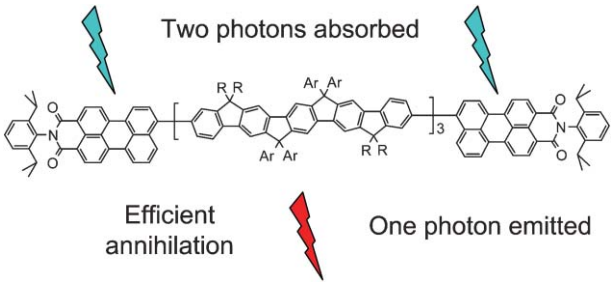


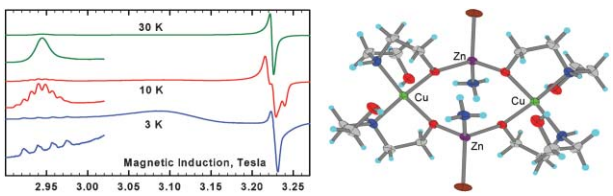
Morphological control and molecular recognition by bis-urea hydrogen bonding in micelles of amphiphilic tri-block copolymers

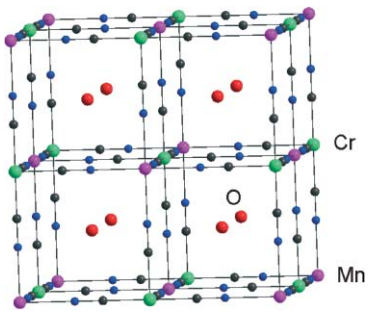
Natalia Chebotareva, Paul H. H. Bomans, Peter M. Frederik, Nico A. J. M. Sommerdijk and Rint P. Sijbesma*

Introduction of bis-urea groups into amphiphilic tri-block copolymers modifies the morphology of micelles from worm- to rod-like. The bis-urea hydrogen bonding motif allows molecular recognition of small molecules with complementary hydrogen bonding units.









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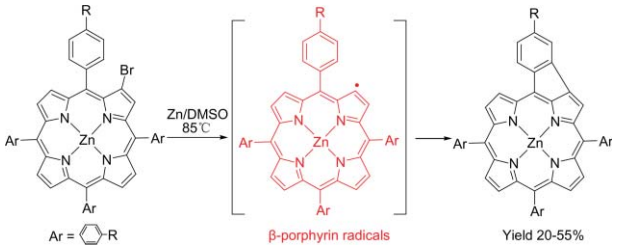

A novel and facile Zn-mediated intramolecular five-membered cyclization of β-tetraarylporphyrin radicals from β-bromotetraarylporphyrins

Dong-Mei Shen, Chao Liu and Qing-Yun Chen*

A novel and facile method for the Zn-mediated intramolecular cyclization of β-porphyrin radicals has been developed for the convenient and effective construction of newly fused five-membered porphyrin systems from readily available β-bromotetraarylporphyrins.

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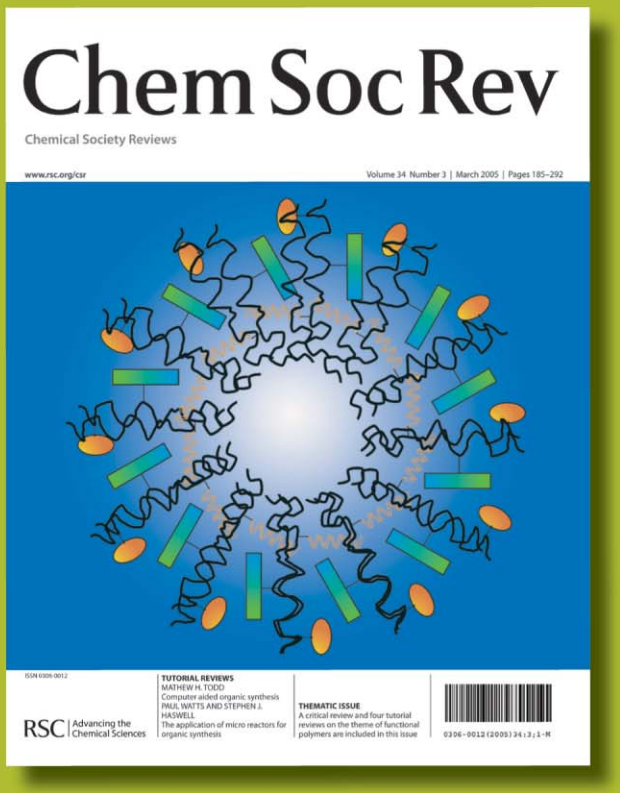

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