

Organic & Biomolecular Chemistry

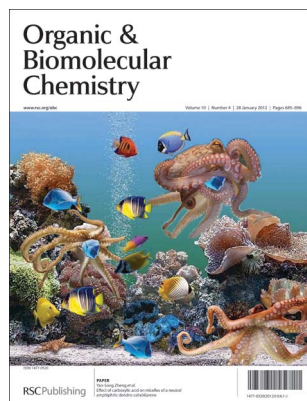
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Cover

See Yan-Song Zheng *et al.*, pp. 729–735.

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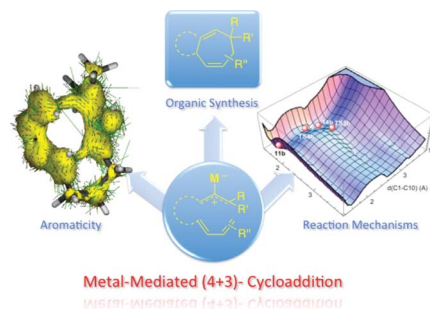
EMERGING AREA

699

Transition metal-catalysed (4 + 3) cycloaddition reactions involving allyl cations

Israel Fernández* and José Luis Mascareñas

In this emerging area article, we focus on the synthetic applications and reaction mechanisms of novel intramolecular transition metal catalysed (4 + 3)-cycloaddition reactions of allenediens.



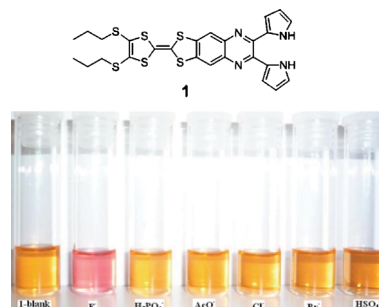
COMMUNICATIONS

705

Fluoride-selective optical sensor based on the dipyrrolyl-tetrathiafulvalene chromophore

Shadi Rivadehi, Ellen F. Reid, Conor F. Hogan, Sheshanath V. Bhosale and Steven J. Langford*

A chemosensor bearing dipyrrolyl motifs as recognition sites and a tetrathiafulvalene redox tag has been evaluated as an optical and redox sensor for a series of anions (F^- , $H_2PO_4^-$, CH_3COO^- , Cl^- , Br^- and HSO_4^-) in DCM solution.



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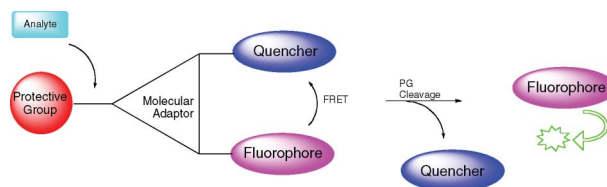
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710

A simple FRET-based modular design for diagnostic probes

Orit Redy, Einat Kisin-Finfer, Eran Sella and Doron Shabat*

Self-immolative dendritic adaptors were applied to the preparation of modular FRET-based molecular probes for detection of various analytes of interest.

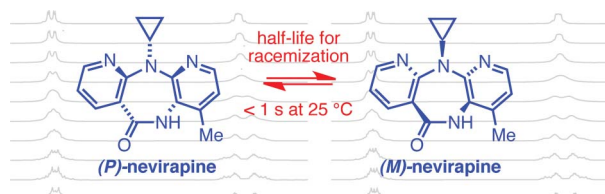


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Is nevirapine atropisomeric? Experimental and computational evidence for rapid conformational inversion

Edmund W. D. Burke, Gareth A. Morris, Mark A. Vincent, Ian H. Hillier and Jonathan Clayden*

We report the results of an NMR and computational study which reveal that while the non-nucleoside reverse transcriptase inhibitor nevirapine possesses two stable enantiomeric conformations, they interconvert with a barrier of about 76 kJ mol⁻¹ at room temperature. Nevirapine has a half life for enantiomerisation at room temperature of the order of seconds and is not atropisomeric.

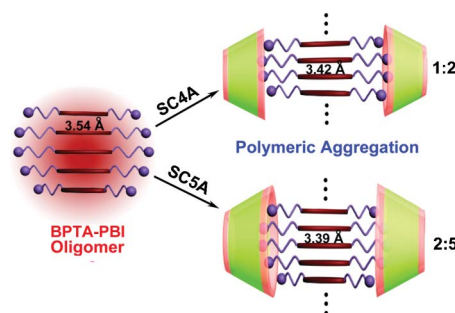


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Calixarene-induced aggregation of perylene bisimides

Dong-Sheng Guo, Bang-Ping Jiang, Xiang Wang and Yu Liu*

The complex-induced aggregation of perylene bisimides by *p*-sulfonatocalix[*n*]arenes was studied, where the aggregation stability, aggregation distance, as well as the degree of order of aggregation were all improved.

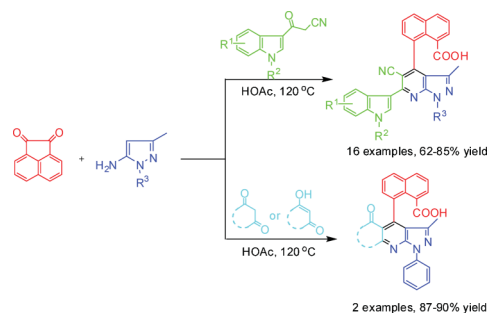


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Multicomponent approaches to 8-carboxynaphthyl-functionalized pyrazolo[3,4-*b*]pyridine derivatives

Yan Hao, Xiao-Ping Xu,* Tao Chen, Li-Li Zhao and Shun-Jun Ji*

A simple and novel protocol for the efficient synthesis of a series of 8-carboxynaphthyl-functionalized pyrazolo[3,4-*b*]pyridine derivatives was developed through a one-pot, three-component reaction involving acenaphthylene-1,2-dione and 1*H*-pyrazol-5-amines in acetic acid medium. A possible reaction mechanism was proposed.

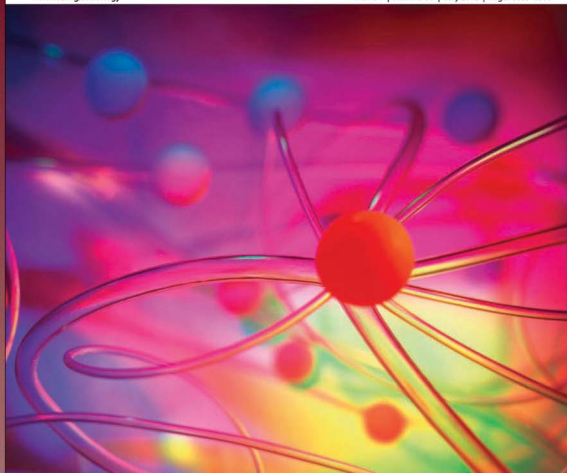


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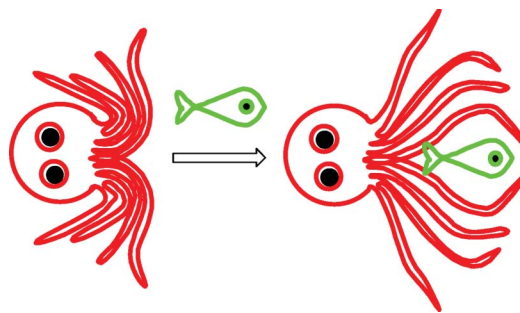
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Effect of carboxylic acid on micelles of a neutral amphiphilic dendro-calix[4]arene

Hong Huang, Dong-Mi Li, Weizhou Wang, Yi-Chang Chen, Khalid Khan, Song Song and Yan-Song Zheng*

Micelles formed from a neutral amphiphilic dendro-calix[4]arene could be changed from solid to hollow or to linear ones through encapsulation of carboxylic acid in the cavity of the calixarene.

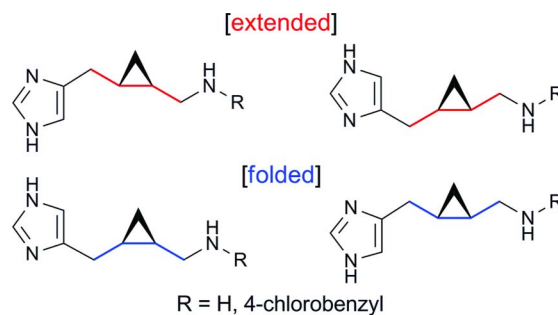


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Cyclopropane-based stereochemical diversity-oriented conformational restriction strategy: Histamine H₃ and/or H₄ receptor ligands with the 2,3-methanobutane backbone

Mizuki Watanabe, Takaaki Kobayashi, Takatsugu Hirokawa, Akira Yoshida, Yoshihiko Ito, Shizuo Yamada, Naoki Orimoto, Yasundo Yamasaki, Mitsuhiro Arisawa and Satoshi Shuto*

Conformationally restricted histamine analogs with a 2,3-methanobutane backbone were designed, synthesized and evaluated as the histamine H₃/H₄ receptor ligands.

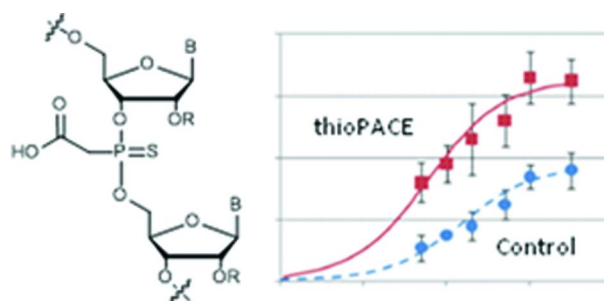


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Synthesis and biological activity of phosphonoacetate- and thiophosphonoacetate-modified 2'-O-methyl oligoribonucleotides

Richard N. Threlfall, Adrian G. Torres, Angelika Krivenko, Michael J. Gait and Marvin H. Caruthers*

2'-O-Me oligoribonucleotides (ORNs) modified with phosphonoacetate and thiophosphonoacetate internucleotide linkages have been synthesised. Thiophosphonoacetate modifications greatly improve the efficiency of cell uptake and the potency of a 2'-O-Me-ORN miRNA122 inhibitor.

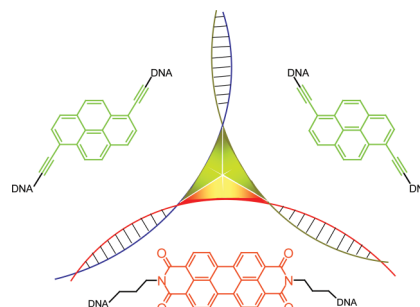


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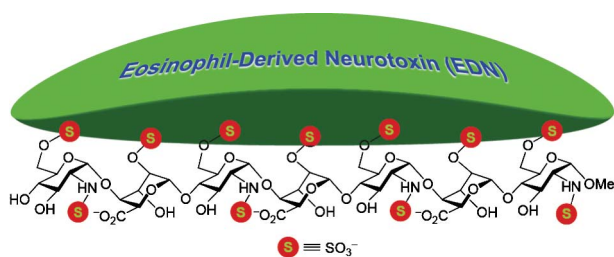
The DNA three-way junction as a mould for tripartite chromophore assembly

Markus Probst, Daniel Wenger, Sarah M. Biner and Robert Häner*

The arrangement of different chromophoric building blocks at the branch point of a DNA three-way junction results in characteristic spectroscopic properties.



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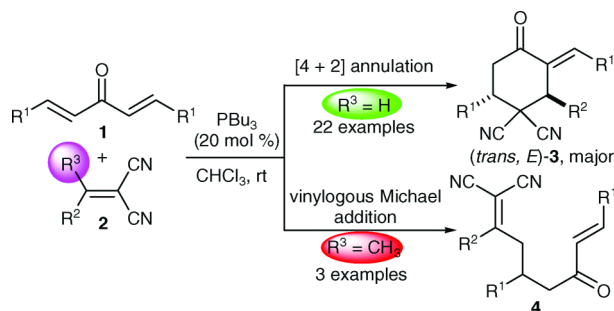


Synthesis of heparin oligosaccharides and their interaction with eosinophil-derived neurotoxin

Shang-Cheng Hung,* Xin-An Lu, Jinq-Chyi Lee, Margaret Dah-Tsyng Chang,* Shun-lung Fang, Tan-chi Fan, Medel Manuel L. Zulueta and Yong-Qing Zhong

Heparin tri-, penta- and heptasaccharides were concisely synthesized and the latter strongly interfered with EDN binding to the cell surface.

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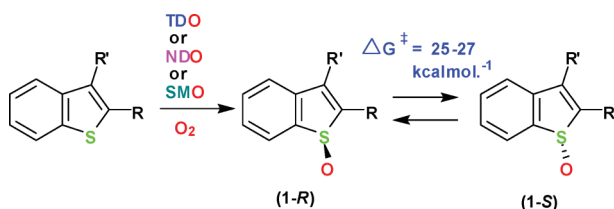


Phosphine-catalyzed [4 + 2] annulation and vinylogous addition reactions between 1,4-dien-3-ones and 1,1-dicyanoalkenes

Rong Zhou, Jianfang Wang, Junjun Tian and Zhengjie He*

Two kinds of highly chemoselective phosphine-catalyzed cross-couplings between 1,4-dien-3-ones and 1,1-dicyanoalkenes are presented.

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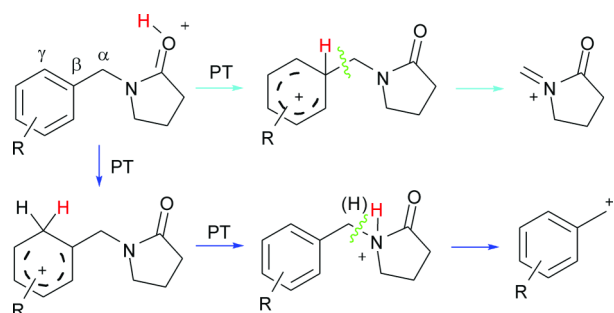


Bacterial dioxygenase- and monooxygenase-catalysed sulfoxidation of benzo[b]thiophenes

Derek R. Boyd,* Narain D. Sharma, Brian McMurray, Simon A. Haughey, Christopher C. R. Allen, John T. G. Hamilton, W. Colin McRoberts, Rory A. More O'Ferrall, Jasmina Nikodinovic-Runic, Lydie A. Coulombel and Kevin E. O'Connor*

Dioxygenase- and monooxygenase-catalysed sulfoxidation of benzo[b]thiophenes can yield enantioenriched chiral benzo[b]thiophene sulfoxides which racemize spontaneously.

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C^α-C^β and C^α-N bond cleavage in the dissociation of protonated N-benzylactams: dissociative proton transfer and intramolecular proton-transport catalysis

Yunfeng Chai, Cheng Guo, Kezhi Jiang, Yuanjiang Pan* and Cuirong Sun*

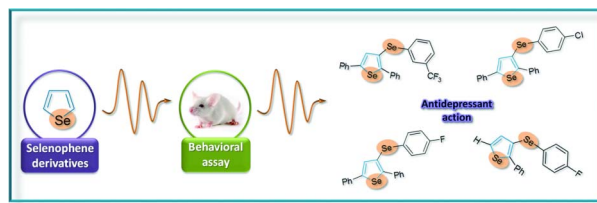
Intramolecular dissociative proton transfers, from oxygen to C^β directly or from oxygen to nitrogen stepwise, lead to bond cleavages on the two sides of C^α, respectively.

798

Synthesis and antidepressant-like activity of selenophenes obtained *via* iron(III)–PhSeSePh-mediated cyclization of *Z*-selenoenynes

Bibiana M. Gai, André L. Stein, Juliano A. Roehrs, Filipe N. Bilheri, Cristina W. Nogueira and Gilson Zeni*

We present the antidepressant-like action of 2,5-disubstituted-3-(organoseleno)selenophenes prepared by a novel synthetic route, the intramolecular cyclization of (*Z*)-chalcogenoenynes.

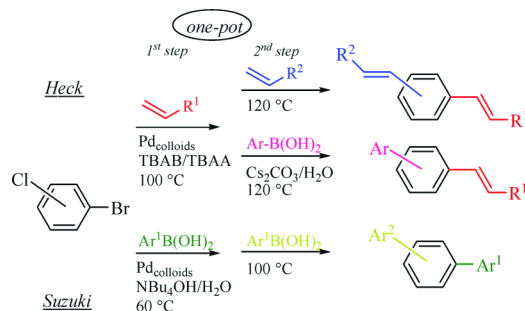


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Pd nanoparticle catalysed one-pot sequential Heck and Suzuki couplings of bromo-chloroarenes in ionic liquids and water

Pietro Cotugno, Antonio Monopoli,* Francesco Ciminale, Nicola Cioffi and Angelo Nacci*

Pd nanoparticles in green reaction media (*viz.* ionic liquids and water) catalyze the one-pot sequential Heck and Suzuki coupling of bromo-chloroarenes to afford unsymmetrically substituted arenes.

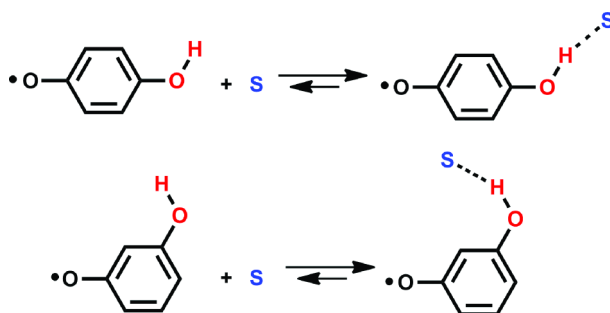


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Hydrogen bond donating ability of *meta* and *para* hydroxy phenoxyl radicals

Riccardo Amorati* and Gian Franco Pedulli

The ability of protonated semiquinones to donate hydrogen bonds to various acceptors has been investigated by EPR spectroscopy and DFT calculations.

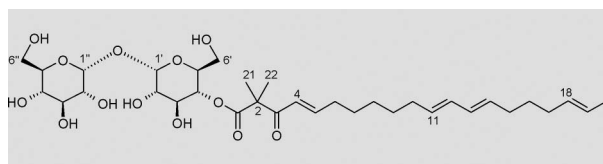


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Fusaroside, a unique glycolipid from *Fusarium* sp., an endophytic fungus isolated from *Melia azedarach*

Sheng-Xiang Yang, Hong-Peng Wang, Jin-Ming Gao,* Qiang Zhang, Hartmut Laatsch* and Yi Kuang

Fusaroside (**1**), a unique trehalose-containing glycolipid, was produced by an endophytic fungus *Fusarium* sp. isolated from *Melia azedarach* L. The structure of fusaroside (**1**) was determined by spectroscopic data and chemical degradation.



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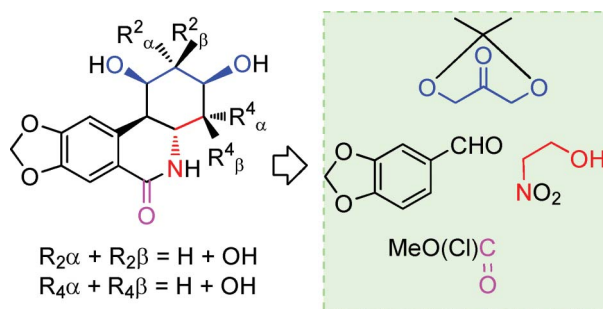
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A formal [3+3]-annulation-based approach to pancratistatins: total synthesis of (±)-7-deoxy-pancratistatin and its 2-*epi* and 2,4-*diepi* analogues

Olaia Nieto-García, Hugo Lago-Santomé, Fernando Cagide-Fagín, Juan Carlos Ortiz-Lara and Ricardo Alonso*

(±)-7-Deoxy-pancratistatin and its 2-*epi*- and 2,4-*diepi*- analogues are prepared from a total of four commercially-available fragments.

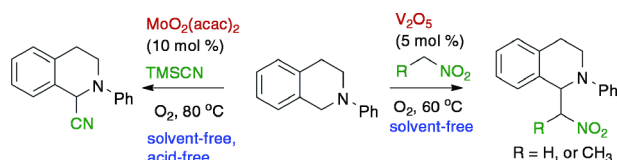


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C–H functionalization of tertiary amines by cross dehydrogenative coupling reactions: solvent-free synthesis of α-aminonitriles and β-nitroamines under aerobic condition

Kaliyamoorthy Alagiri and Kandikere Ramaiah Prabhu*

Environmentally benign CDC reactions to accomplish α-aminonitriles and β-nitroamines are developed using aerobic conditions under solvent-free conditions.

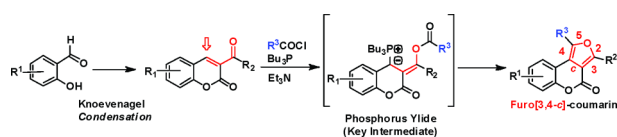


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Syntheses of furo[3,4-*c*]coumarins and related furyl coumarin derivatives *via* intramolecular Wittig reactions

Yeong-Jiunn Jang, Siang-en Syu, Yu-Jhang Chen, Mei-Chun Yang and Wenwei Lin*

Novel preparation of polysubstituted furo[3,4-*c*]coumarins and related furocoumarin derivatives, starting from the Michael acceptors, tributylphosphine, and acyl chlorides, is realized.

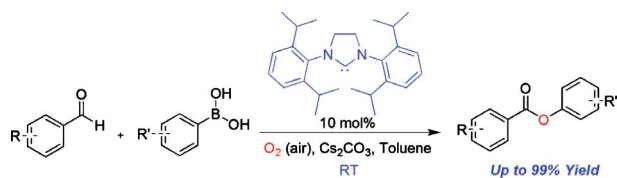


848

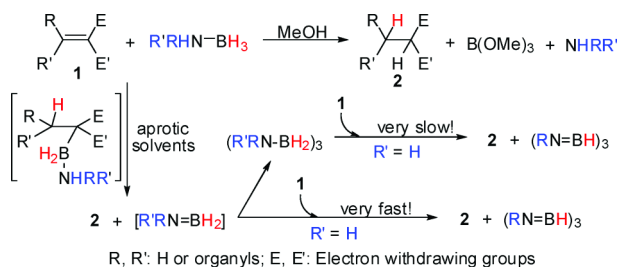
N-Heterocyclic carbene catalysed aerobic oxidation of aromatic aldehydes to aryl esters using boronic acids

Panjab Arde, B. T. Ramanjaneyulu, Virsinha Reddy, Apurv Saxena and R. Vijaya Anand*

A mild protocol for the aerobic oxidation of aromatic aldehydes to the corresponding aryl esters with boronic acids using *N*-heterocyclic carbene as a catalyst is described.



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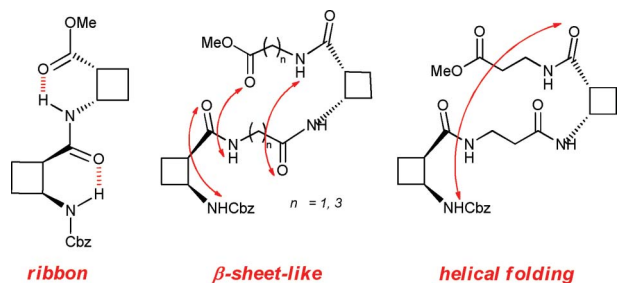


Synthetic and mechanistic studies of metal-free transfer hydrogenations applying polarized olefins as hydrogen acceptors and amine borane adducts as hydrogen donors

Xianghua Yang, Thomas Fox and Heinz Berke*

Metal-free transfer hydrogenation of polarized olefins were studied using amine borane adducts (RR'NH-BH₃) as hydrogen donors.

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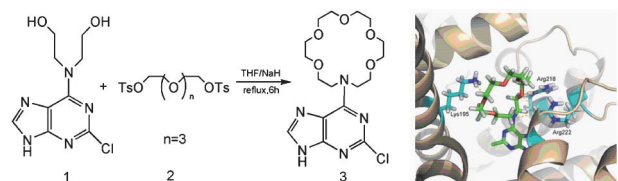


Designing hybrid foldamers: the effect on the peptide conformational bias of β- versus α- and γ-linear residues in alternation with (1R,2S)-2-aminocyclo-butane-1-carboxylic acid

Sergio Celis, Esther Gorrea, Pau Nolis, Ona Illa and Rosa M. Ortuño*

Conformational bias can be tuned from ribbon-type structures to β-sheet-like and helical motifs by intercalating suitable linear segments between *cis*-cyclobutane residues.

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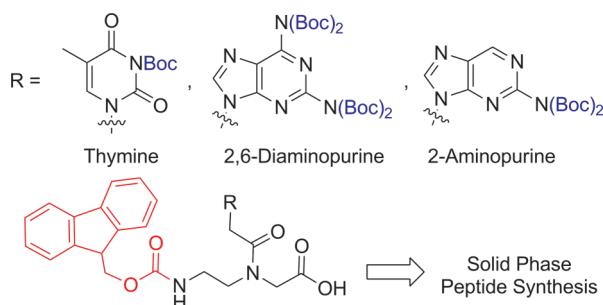


Synthesis of *N*-(2-chloro purin-6-yl) aza-18-crown-6 and its interaction with human serum albumin

Cui Li, Fengling Cui,* Runze Mao, Ruina Huo and Guirong Qu

The novel purine nucleosides-linked azacrown ether in the C6 position was synthesized. This new nucleoside analogue can be prepared from a series of N9-modified nucleosides. The *N*-(2-chloro purin-6-yl) aza-18-crown-6 can bind to human serum albumin through hydrophobic forces.

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Synthesis and oligomerization of Fmoc/Boc-protected PNA monomers of 2,6-diaminopurine, 2-aminopurine and thymine

André H. St. Amant and Robert H. E. Hudson*

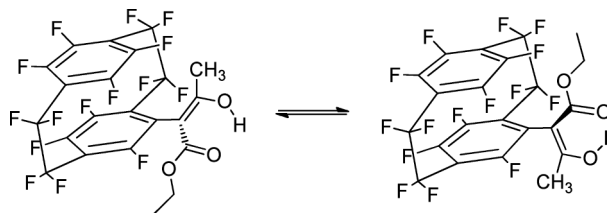
The synthesis and oligomerization of Fmoc/Boc protected PNA monomers is described for 2,6-diaminopurine, 2-aminopurine, and thymine. The mismatch discrimination and fluorescence properties of the PNA were examined.

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Atropisomerism of a monosubstituted perfluoro[2.2]paracyclophane. A combined synthetic, kinetic, spectroscopic and computational study

Ion Ghiviriga, Henry Martinez, Christian Kuhn, Lianhao Zhang and William R. Dolbier, Jr.*

The product of S_NAr addition of ethyl acetoacetate to perfluoro[2.2]paracyclophane produces an enol tautomer which exhibits two NMR signals for its enolic proton, shown to derive from the presence of two atropisomers.

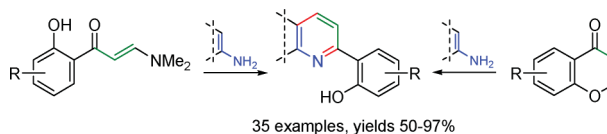


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2,3-Unsubstituted chromones and their enamionone precursors as versatile reagents for the synthesis of fused pyridines

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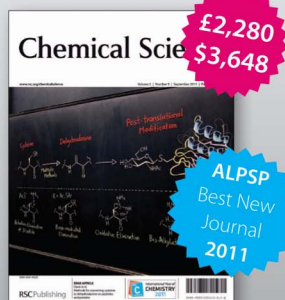
A divergent and regioselective approach to fused pyridines was developed through formal [3 + 3] cyclocondensations from simple 2,3-unsubstituted chromones or their enamionone precursors.



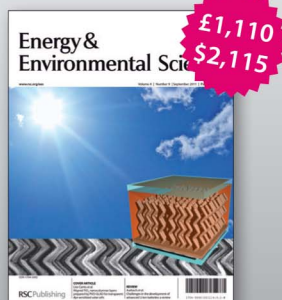
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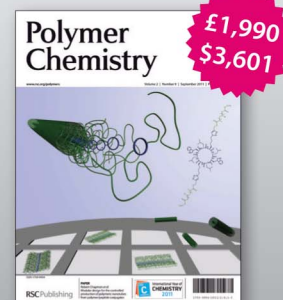
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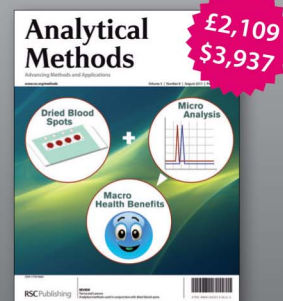
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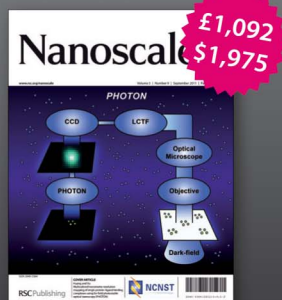
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