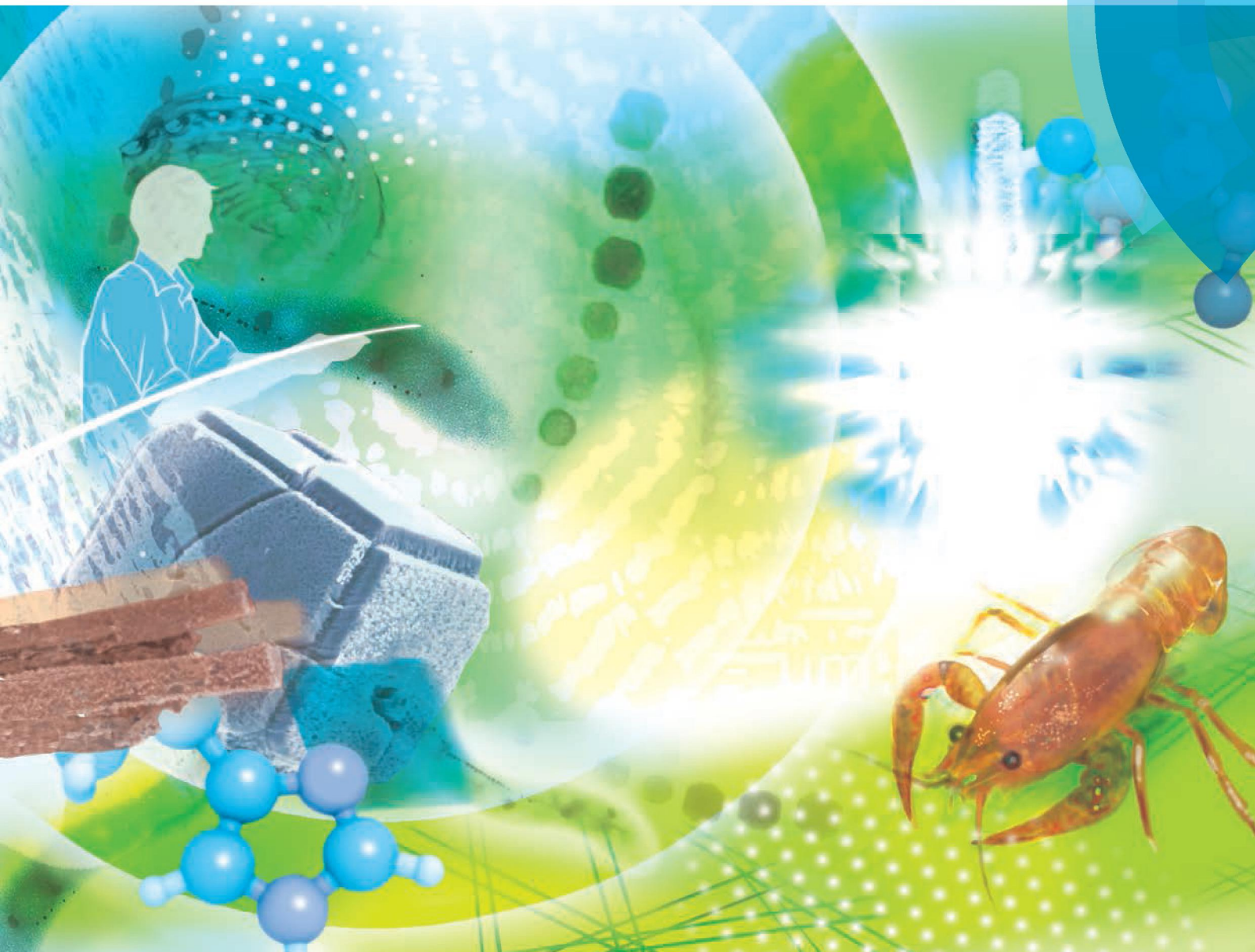


Organic & Biomolecular Chemistry

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ISSN 1477-0520



REVIEW ARTICLE

Atsushi Arakaki, Takashi Kato *et al.*

Biomimetic synthesis of functional organic/inorganic hybrid materials: organic molecular control of self-organization of hybrids

Organic & Biomolecular Chemistry

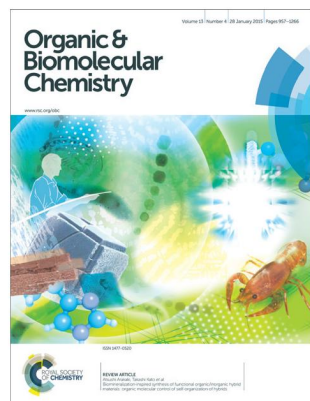
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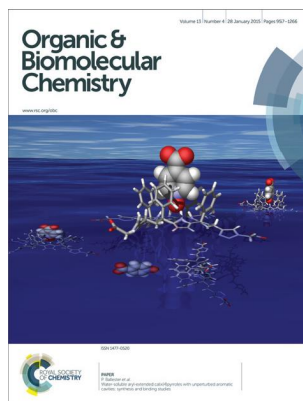
ISSN 1477-0520 CODEN OBCRAK 13(4) 957–1266 (2015)



Cover

See Atsushi Arakaki,
Takashi Kato *et al.*,
pp. 974–989.

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2015, **13**, 974.



Inside cover

See P. Ballester *et al.*,
pp. 1022–1029.

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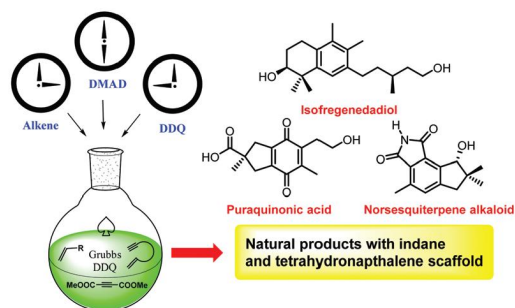
PERSPECTIVE

970

One-pot quadruple/triple reaction sequence: a useful tool for the synthesis of natural products

K. Kashinath and D. Srinivasa Reddy*

Multiple reactions in one pot has always been a useful technique for synthetic organic chemists, as it can minimize solvent usage, time and the number of purification steps when compared to individual multi-step syntheses.



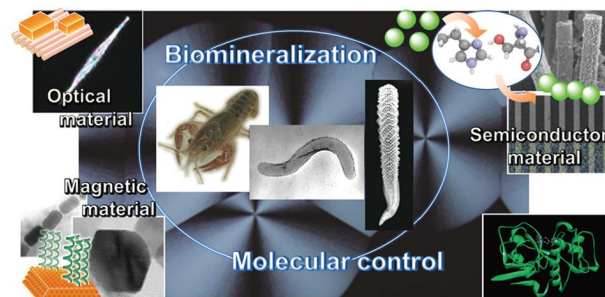
REVIEW

974

Biomimetic synthesis of functional organic/inorganic hybrid materials: organic molecular control of self-organization of hybrids

Atsushi Arakaki,* Katsuhiko Shimizu, Mayumi Oda,
Takeshi Sakamoto, Tatsuya Nishimura and Takashi Kato*

Biomimetic synthesis of functional organic/inorganic hybrid materials. Molecularly controlled mechanisms of biomimetic synthesis and application of the processes towards future material synthesis are introduced.



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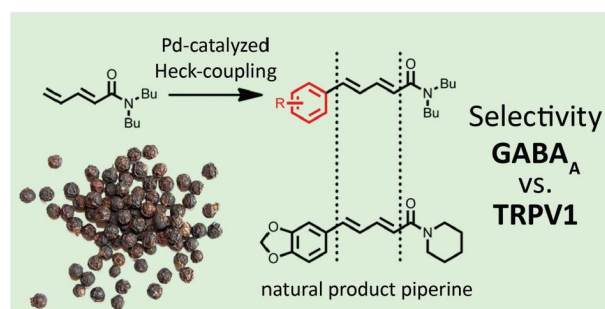
COMMUNICATIONS

990

Developing piperine towards TRPV1 and GABA_A receptor ligands – synthesis of piperine analogs via Heck-coupling of conjugated dienes

Laurin Wimmer, David Schönbauer, Peter Pakfeifer, Angela Schöffmann, Sophia Khom, Steffen Hering and Marko D. Mihovilovic*

Synthetic analogs of piperine, the pungent alkaloid of black pepper, were identified as selective ligands for either GABA_A or TRPV1 receptors.

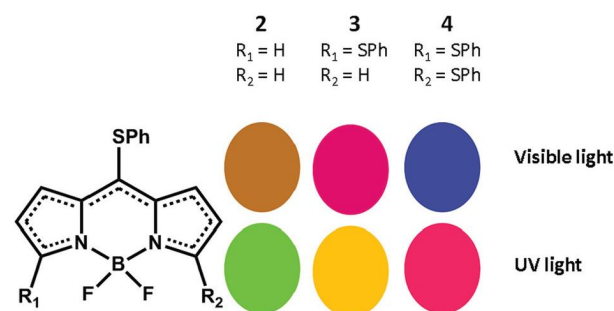


995

Unprecedented one-pot sequential thiolate substitutions under mild conditions leading to a red emissive BODIPY dye 3,5,8-tris(PhS)-BODIPY

Robinson I. Roacho, Alejandro Metta-Magaña, Eduardo Peña-Cabrera and Keith Pannell*

Phenylthiol performs a thiol exchange with 8-MeS-BODIPY and activates/substitutes the 3,5 positions forming a tri-thiolated BODIPY.

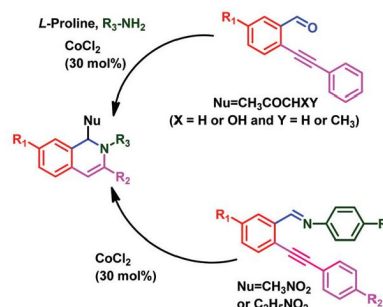


1000

An expedient approach to 1,2-dihydroisoquinoline derivatives via cobalt catalysed 6-endo dig cyclization followed by Mannich condensation of o-alkynylaldimines

Urvashi, Gaurav K. Rastogi, Sandeep K. Ginoitra, Alka Agarwal and Vibha Tandon*

A highly effective 6-endo dig cyclisation of o-alkynyl aldimines to 1,2-dihydroisoquinolines has been described via direct and nitro Mannich condensation using inexpensive and readily available cobalt chloride as catalyst.

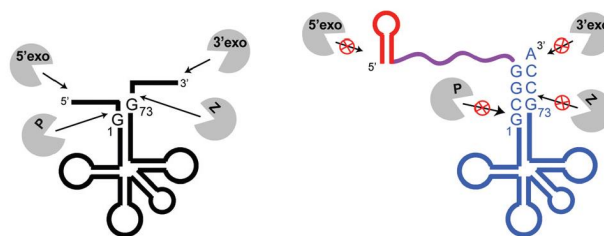


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Investigation of end processing and degradation of premature tRNAs and their application to stabilization of *in vitro* transcripts in wheat germ extract

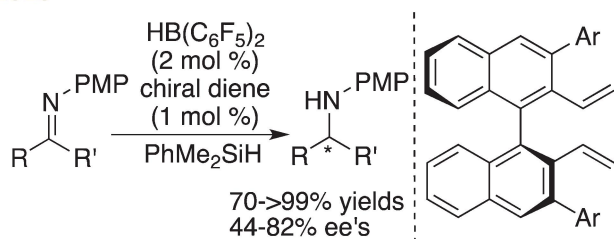
Atsushi Ogawa* and Yasunori Doi

We investigated the end processing and degradation of premature tRNAs in wheat germ extract (left), which led to the findings of end protectors for efficiently stabilizing an *in vitro* transcript (purple, right).



COMMUNICATIONS

1013

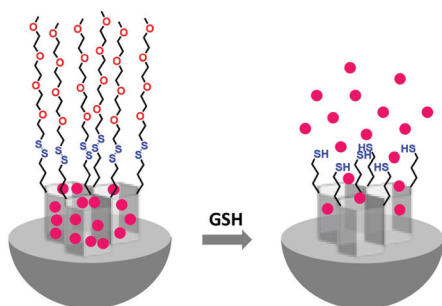


A chiral borane catalyzed asymmetric hydrosilylation of imines

Xi Xia Zhu and Haifeng Du*

An enantioselective hydrosilylation of imines was achieved using an *in situ* generated chiral borane to furnish amines with up to 82% ee.

1017



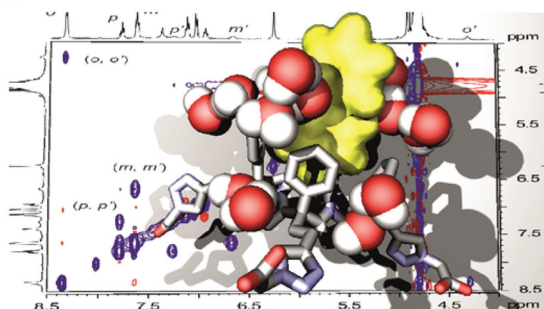
Highly selective and sensitive detection of glutathione using mesoporous silica nanoparticles capped with disulfide-containing oligo(ethylene glycol) chains

S. El Sayed, C. Giménez, E. Aznar, R. Martínez-Mañez,* F. Sancenón and M. Licchelli*

Mesoporous silica nanoparticles loaded with safranin O and capped with disulfide-containing oligo(ethylene glycol) chains were used for the selective and sensitive fluorimetric detection of GSH.

PAPERS

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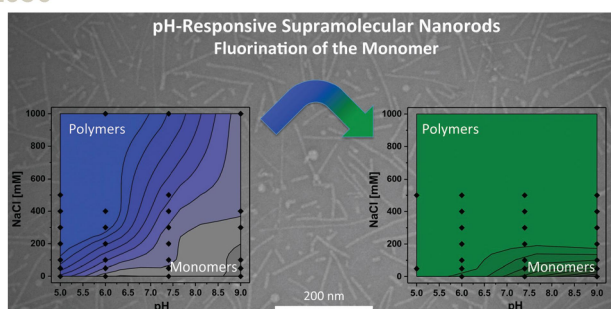


Water-soluble aryl-extended calix[4]pyrroles with unperturbed aromatic cavities: synthesis and binding studies

D. Hernández-Alonso, S. Zankowski, L. Adriaenssens and P. Ballester*

An aryl-extended calix[4]pyrrole receptor with four carboxylic groups at the lower rim binds *N*-oxides in water with high stability constants.

1030



Tuning the pH-triggered self-assembly of dendritic peptide amphiphiles using fluorinated side chains

Ralph Appel, Sebastian Tacke, Jürgen Klingauf and Pol Besenius*

We report the synthesis of a series of anionic dendritic peptide amphiphiles of increasing hydrophobic character and describe their self-assembly into supramolecular nanorods using pH and ionic strength dependent state diagrams.

1040

Modulation of the charge transfer and photophysical properties in non-fused tetrathiafulvalene-benzothiadiazole derivatives

Flavia Pop, Sabine Seifert, Jihane Hankache, Jie Ding, Andreas Hauser* and Narcis Avarvari*

Stille and Sonogashira coupling strategies allowed the preparation of luminescent TTF-benzothiadiazole donor–acceptor compounds with direct linkage or an acetylenic spacer.

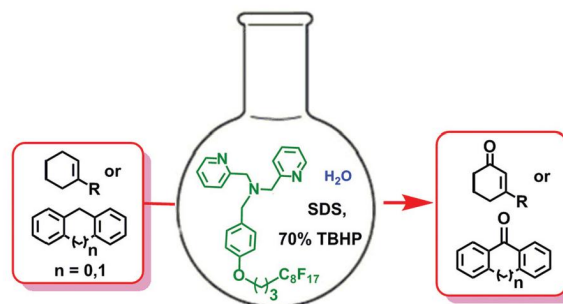


1048

Allylic and benzylic sp³ C–H oxidation in water

Wei Jie Ang and Yulin Lam*

A copper-catalyzed method for the oxidation of allylic and benzylic sp³ C–H by aqueous *tert*-butyl hydroperoxide (T-Hydro) in water using a recyclable fluorinated ligand has been developed.

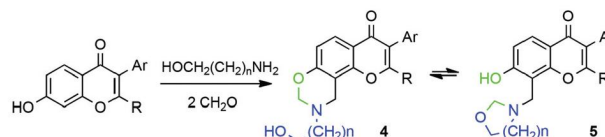


1053

Synthesis and tautomerization of hydroxylated isoflavones bearing heterocyclic hemi-aminals

Mykhaylo S. Frasinuk, Svitlana P. Bondarenko, Volodymyr P. Khilya, Chunming Liu, David S. Watt and Vitaliy M. Sviripa*

Aminomethylation of 7-hydroxy isoflavones with C₂–C₅ ω-aminoalcohols led to tautomers **4** and **5** that were interconverted as confirmed by NMR studies.



4 : 5 ratio in CDCl₃

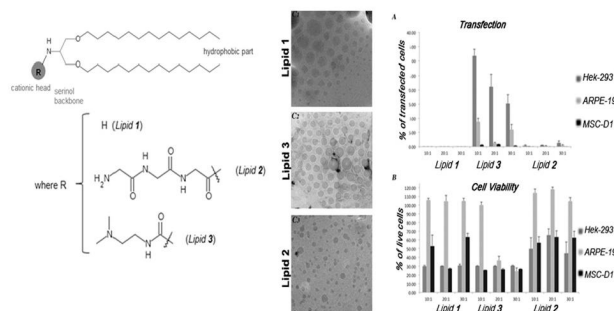
n	4	5
1	86...90	10...14
2	0...5	95...100
3	85...96	4...15
4	100	0

1068

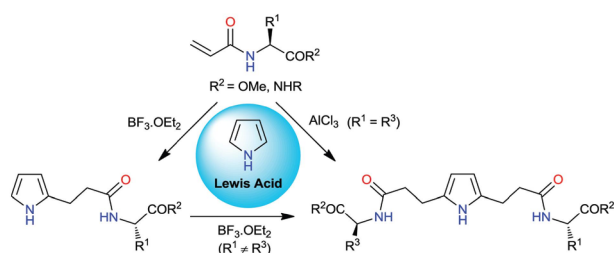
Niosomes based on synthetic cationic lipids for gene delivery: the influence of polar head-groups on the transfection efficiency in HEK-293, ARPE-19 and MSC-D1 cells

E. Ojeda, G. Puras, M. Agirre, J. Zárate, S. Grijalvo, R. Pons, R. Eritja, G. Martinez-Navarrete, C. Soto-Sanchez, E. Fernández and J. L. Pedraz*

We designed niosomes based on three lipids that differed only in the polar-head group to analyze their influence on the transfection efficiency.



1082

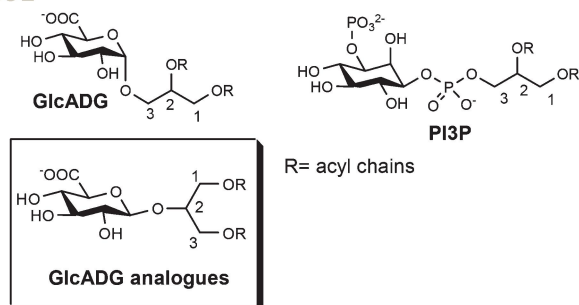


1,4 Addition of unprotected pyrrole onto chiral acrylamides: toward synthesis of new polypeptidic architectures

Alexander Gratais, Xavier Pannecoucke and Samir Bouzbouz*

A variety of new chiral functionalized pyrroloamides have been synthesized by a simple and robust process involving Lewis acids. Unprotected pyrrole could be selectively monoalkylated or dialkylated.

1091

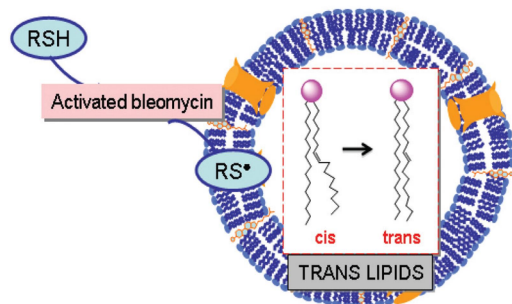


Anionic glycolipids related to glucuronosyl-diacylglycerol inhibit protein kinase Akt

Maria Vetro, Barbara Costa, Giulia Donvito, Noemi Arrighetti, Laura Cipolla, Paola Perego,* Federica Compostella, Fiamma Ronchetti and Diego Colombo*

Long chain GlcADG analogues synthesized as PI3P mimics inhibited isolated Akt and proliferation of human ovarian carcinoma IGROV-1 cells.

1100

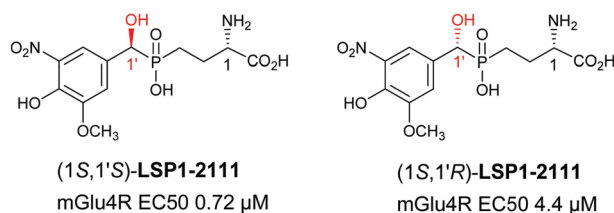


Bleomycin-induced *trans* lipid formation in cell membranes and in liposome models

Aysegul Cort, Tomris Ozben, Anna Sansone, Sebastian Barata-Vallejo, Chrysostomos Chatgililoglu and Carla Ferreri*

Bleomycin–iron complexes cause lipid *cis*–*trans* isomerisation through thiyl radical formation and reactivity with unsaturated phospholipids, revealing membranes as a relevant and novel site of drug effect.

1106



Determination of the absolute configuration of phosphinic analogues of glutamate

Bruno Commare, Delphine Rigault, Isabelle A. Lemasson, Patrick Deschamps, Alain Tomas, Pascal Roussel, Isabelle Brabet, Cyril Goudet, Jean-Philippe Pin, Frédéric R. Leroux,* Françoise Colobert* and Francine C. Acher*

Stereomers of **LSP1-2111** have been separated, their absolute configuration and agonist activity at mGlu4R determined.

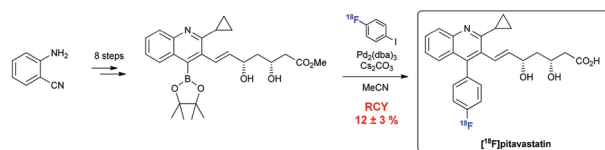
PAPERS

1113

The synthesis of [¹⁸F]pitavastatin as a tracer for hOATP using the Suzuki coupling

Yusuke Yagi, Hiroyuki Kimura,* Kenji Arimitsu, Masahiro Ono, Kazuya Maeda, Hiroyuki Kusuhara, Tetsuya Kajimoto, Yuichi Sugiyama and Hideo Saji*

Fluorine-18 labeled radiotracers, such as [¹⁸F]fluorodeoxyglucose, can be used as practical diagnostic agents in positron emission tomography (PET).

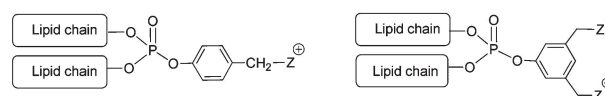


1122

Cationic dialkylarylphosphates: a new family of bio-inspired cationic lipids for gene delivery

Stéphanie S. Le Corre, Nawal Belmadi, Mathieu Berchel, Tony Le Gall, Jean-Pierre Haelters, Pierre Lehn, Tristan Montier and Paul-Alain Jaffrès*

The synthesis of mono- and di-cationic lipophosphates is reported. These cationic lipids were formulated as liposomal solutions, and their capacity to transfect cells was evaluated on three cell lines.

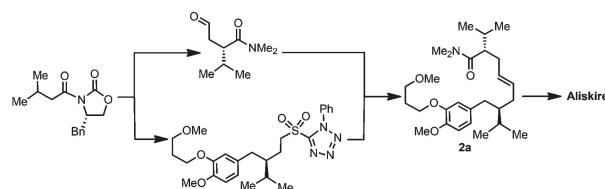


1133

The development of a complementary pathway for the synthesis of aliskiren

Le-Le Li, Jin-Ying Ding, Lian-Xun Gao and Fu-She Han*

We present an alternative pathway for the synthesis of aliskiren by applying the Evans chiral auxiliary-aided asymmetric allylation and the Julia–Kocienski olefination as the key transformations.

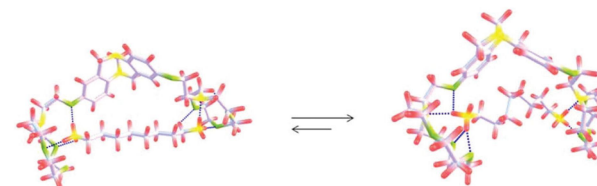


1141

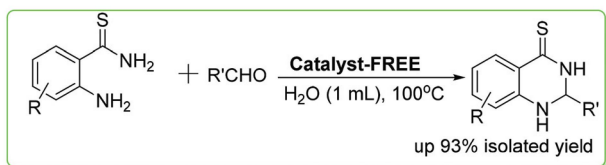
Design and synthesis of Tröger's base ditopic receptors: host–guest interactions, a combined theoretical and experimental study

M. B. Reddy, M. Shailaja, A. Manjula,* J. R. Premkumar, G. N. Sastry,* K. Sirisha and A. V. S. Sarma

The host–guest interaction between flexible ditopic receptors and bisammonium ion has been investigated experimentally and computationally. The conformational folding of guest bisammonium ion molecules leads to the oscillation of the host–guest interaction.



1150

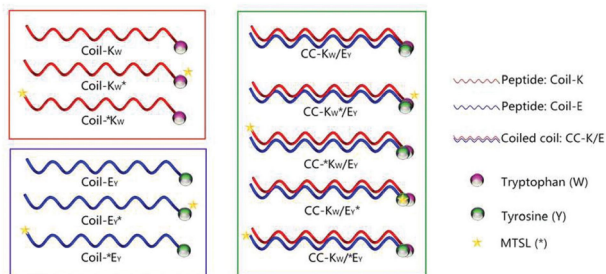


Catalyst-free synthesis of 2-aryl-1,2-dihydroquinazolin-4(1H)-thiones from 2-aminobenzothioamides and aldehydes in water

Stefan Oschatz, Tom Brunzel, Xiao-Feng Wu* and Peter Langer*

A convenient and facile procedure for the synthesis of dihydroquinazolinthiones from 2-aminobenzothioamide with aldehydes has been developed. The reactions took place in water without the need of any additive.

1159

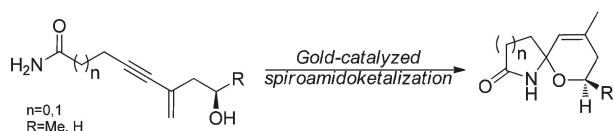


Probing coiled-coil assembly by paramagnetic NMR spectroscopy

TingTing Zheng, Aimee Boyle, Hana Robson Marsden, Dayenne Valdink, Giuliana Martelli, Jan Raap and Alexander Kros*

Here a new method to determine the orientation of coiled-coil peptide motifs is described.

1169

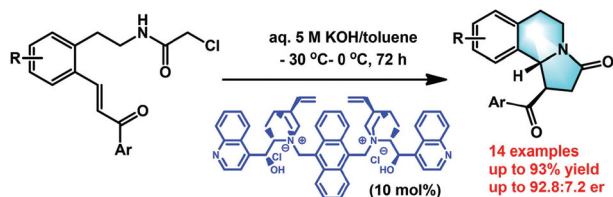


Gold-catalyzed spiro-N,O-ketal synthesis

M. Grammatikopoulou, S. Thysiadis and V. Sarli*

An efficient method for the synthesis of spiro-N,O-ketals with 5- and 6-membered rings was developed via a gold-catalyzed spiroamidoketalization of alkyne amidoalcohols under mild conditions.

1179



Enantioselective synthesis of benzoindolizidine derivatives using chiral phase-transfer catalytic intramolecular domino aza-Michael addition/alkylation

Jiajia Guo and Shouyun Yu*

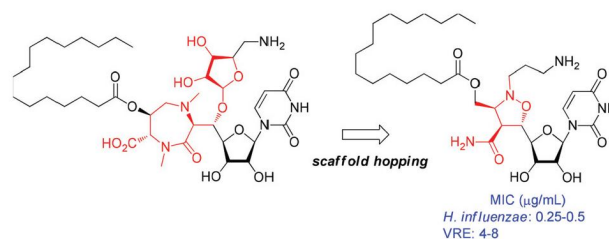
An efficient and enantioselective strategy to synthesize benzoindolizidines via domino intramolecular aza-Michael addition/alkylation was developed.

1187

Synthesis of isoxazolidine-containing uridine derivatives as caprazamycin analogues

Mayumi Yamaguchi, Akira Matsuda and Satoshi Ichikawa*

Simplification of caprazamycins was conducted by scaffold-hopping of the structurally complex diazeponone moiety to the isoxazolidine scaffold.

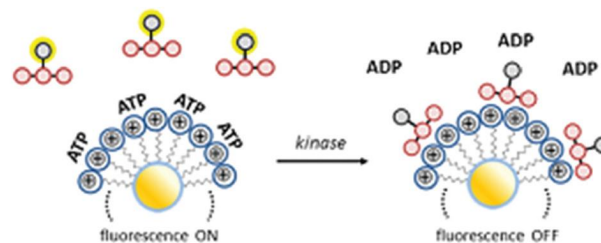


1198

Label-free fluorescence detection of kinase activity using a gold nanoparticle based indicator displacement assay

Cristian Pezzato, Davide Zaramella, Massimiliano Martinelli, Grégory Pieters, Mario A. Pagano* and Leonard J. Prins*

A straightforward fluorescence indicator-displacement assay (IDA) has been developed for the quantitative analysis of ATP→ADP conversion.

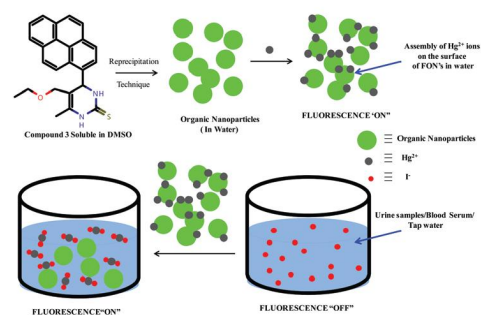


1204

Fluorescent organic nanoparticles of dihydropyrimidone derivatives for selective recognition of iodide using a displacement assay: application of the sensors in water and biological fluids

Amanpreet Kaur, Tilak Raj, Simanpreet Kaur, Narinder Singh* and Navneet Kaur*

Fluorescent organic nanoparticles (FON's) derived from dihydropyrimidone derivatives (**1–4**) were developed and evaluated for their sensor properties.

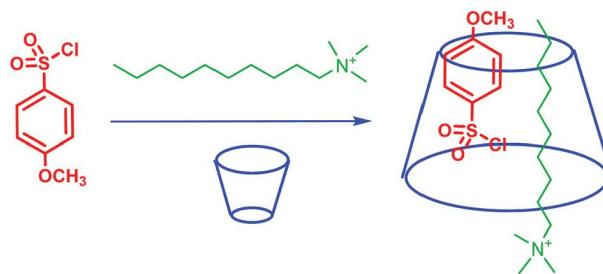


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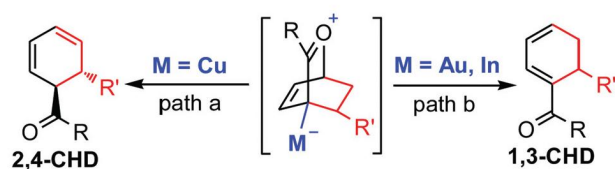
γ -Cyclodextrin modulates the chemical reactivity by multiple complexation

J. Fernández-Rosas, M. Pessêgo, M. Cepeda-Plaza, N. Basilio, M. Parajó, P. Rodríguez-Dafonte and L. García-Río*

Multiple recognition by cooperative/competitive mechanisms to form a 1 : 1 : 1 inclusion complex plays a crucial role in determining the chemical reactivity in the γ -CD cavity.



1225

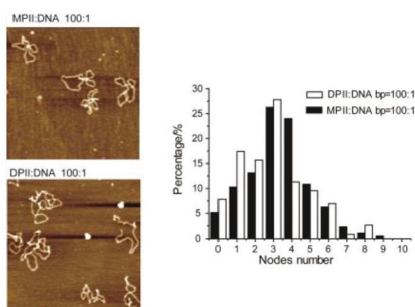


Metal-catalyzed formation of 1,3-cyclohexadienes: a catalyst-dependent reaction

Shifa Zhu,* Xiaobing Huang, Tian-Qi Zhao, Tongmei Ma and Huanfeng Jiang

A metal-dependent and complementary catalytic method to synthesize the cyclohexadienes has been developed. When gold or indium salts were used as catalysts, 1,3-cyclohexadiene (1,3-CHD) could be obtained; when Cu(OTf)₂ was used as the catalyst, however, another isomer 2,4-cyclohexadiene (2,4-CHD) was furnished instead.

1234

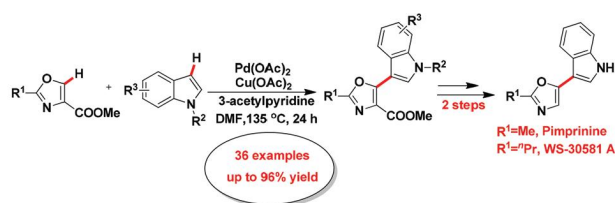


Characterizations of cationic γ -carbolines binding with double-stranded DNA by spectroscopic methods and AFM imaging

Tao Jia,* Jing Wang, Peng Guo and Junping Yu*

Because of differences in their structures, cationic γ -carbolines intercalate into DNA with different activities.

1243

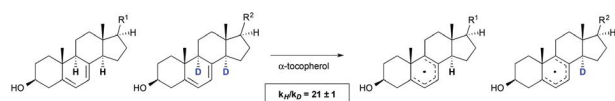


Palladium-catalyzed oxidative cross-coupling of azole-4-carboxylates with indoles: an approach to the synthesis of pimprinine

Haipin Zhou, Kuo Gai, Aijun Lin, Jinyi Xu, Xiaoming Wu* and Hequan Yao*

A palladium-catalyzed oxidative cross-coupling reaction between azole-4-carboxylates and indoles forming 5-(3-indolyl)azoles with excellent regioselectivity has been developed.

1249



Tunneling in tocopherol-mediated peroxidation of 7-dehydrocholesterol

H. Muchalski, L. Xu and N. A. Porter*

We report here that H-atom tunneling facilitates the propagation step in the tocopherol-mediated peroxidation (TMP) of 7-dehydrocholesterol. This process likely becomes a major propagation pathway when radical intermediates are isolated in cellular organelles or lipid particles such as low-density lipoproteins. In TMP of 7-DHC and deuterium-reinforced 7-DHC, the KIE of removing hydrogen/deuterium at C9 was found to be 21 \pm 1.

1254

Ruthenium-catalyzed direct C3 alkylation of indoles with α,β -unsaturated ketones

Shuai-Shuai Li, Hui Lin, Xiao-Mei Zhang and Lin Dong*

In this paper, a simple and highly efficient ruthenium-catalyzed direct C3 alkylation of indoles with various α,β -unsaturated ketones without chelation assistance has been developed.

