



The following Communications have been judged by at least two referees to be "very important papers" and are published online at www.angewandte.org:

C. Wang, H. Daimon, T. Onodera, T. Koda, S. Sun*

A General Approach to the Size- and Shape-Controlled Synthesis of Platinum Nanoparticles and Their Catalytic Reduction of Oxygen

T. J. Greshock, A. W. Grubbs, P. Jiao, J. B. Gloer, R. M. Williams*
Isolation, Structure Elucidation, and Biomimetic Total Synthesis of Versicolamide B and the Isolation of Antipodal (–)-Stephacidin A and (+)-Notoamide B from *Aspergillus versicolor* NRRL 35600

H. Wu, H. Zhu, J. Zhuang, S. Yang, C. Liu, Y. C. Cao*
Water-Soluble Nanocrystals through Dual-Interaction Ligands

Y. V. Geletii, B. Botar,* P. Kögerler, D. A. Hillesheim, D. G. Musaev, C. L. Hill*

An All-Inorganic, Stable, and Highly Active Tetraruthenium Homogeneous Catalyst for Water Oxidation

Z. Liu, A. Kumbhar, D. Xu, J. Zhang, Z. Sun, J. Fang*
Co-Reduction Colloidal Synthesis of III-V Nanocrystals: The Case of InP

Y. H. Sehleier, A. Verhoeven, M. Jansen*
Observation of Direct Bonds Between Carbon and Nitrogen in Si–B–N–C Ceramic After Pyrolysis at 1400 °C

Surface Chemistry:
Somorjai Awarded _____ **3488**

Nanochemistry:
Stoddart Honored _____ **3488**

News

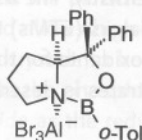
Organic Chemistry:
Prize to Shibasaki _____ **3488**

The Most Secret Quintessence of Life

Chandak Sengoopta

Books

reviewed by E. Ottow, H. Weinmann **3489**



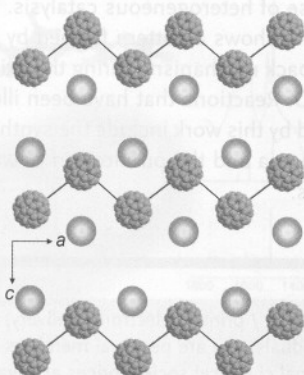
More and more applicable: The adduct of an oxazaborolidine and aluminum tribromide (see picture) turns out to be an efficient catalyst not only for enantioselective Diels–Alder reactions but now also for enantioselective [2+2] cycloadditions. The products are important enantiomerically pure building blocks for the synthesis of complex organic compounds.

Highlights

Asymmetric Catalysis

H. Butenschön* _____ **3492–3495**

Oxazaborolidines as Catalysts for Enantioselective Cycloadditions: Now [2+2]!



Nuggets and buckyballs: Cationic small molecular gold clusters linked together by anions form ionic crystals. The cutting edge of such intercluster compounds involves combinations of Au₇ and Au₈ clusters and fullerides obtained by the reaction of KC₆₀ with [Au₈(PPh₃)₈](NO₃)₂ in MeCN/THF. The picture shows a simplified view of the crystal structure of [Au₇(PPh₃)₇]C₆₀·THF in the direction of [010] (C gray, Au yellow).

Gold Clusters

G. Schmid* _____ **3496–3498**

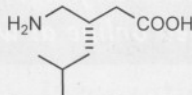
Ionically Cross-Linked Gold Clusters and Gold Nanoparticles

Essays

Drug Research

R. B. Silverman* — 3500–3504

From Basic Science to Blockbuster Drug:
The Discovery of Lyrica



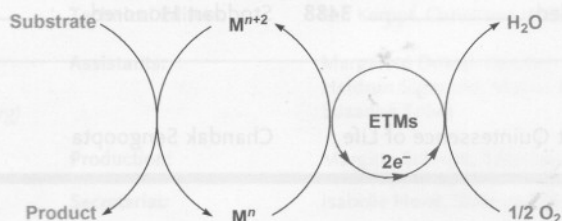
The anticonvulsant drug (S)-(+)-3-isobutyl-γ-aminobutyric acid ((S)-(+)-3-isobutyl-GABA, Lyrica; see structure) was developed from a study of fundamental science, which took an unexpected course. The activity of Lyrica was found to be unrelated to the originally anticipated activation of L-glutamic acid decarboxylase and the increase in the inhibitory neurotransmitter GABA; instead, it antagonizes a calcium ion channel, which inhibits the release of the excitatory neurotransmitter L-glutamate. The ultimate effect, however, is the same.

Reviews

Green Chemistry

J. Piera, J.-E. Bäckvall* — 3506–3523

Catalytic Oxidation of Organic Substrates
by Molecular Oxygen and Hydrogen
Peroxide by Multistep Electron Transfer—
A Biomimetic Approach



Going green: The use of environmentally friendly oxidation materials such as O_2 or H_2O_2 is a very important goal in organic chemistry, particularly for oxidations in

industrial chemistry. The use of electron-transfer mediators (ETMs) to facilitate the use of these oxidants for the oxidation of organic substrates is described.

Heterogeneous Catalysis

G. Ertl* — 3524–3535

Reactions at Surfaces: From Atoms to
Complexity (Nobel Lecture)



The spatio-temporal formation of patterns on the surface during a chemical reaction is one phenomenon that can now be understood and modeled thanks to the Nobel Prize winning research on the course of heterogeneous catalysis. The picture shows a pattern formed by a feedback mechanism during the oxidation of CO. Reactions that have been illuminated by this work include the synthesis of ammonia and the purification of waste gases.

For the USA and Canada:

ANGEWANDTE CHEMIE International Edition (ISSN 1433-7851) is published weekly by Wiley-VCH, PO Box 191161, 69451 Weinheim, Germany. Air freight and mailing in the USA by Publications Expediting Inc., 200

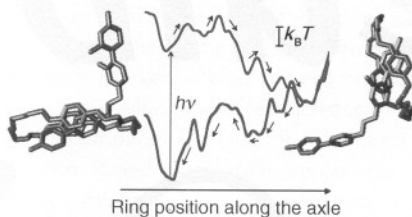
Meacham Ave., Elmont, NY 11003. Periodicals postage paid at Jamaica, NY 11431. US POSTMASTER: send address changes to *Angewandte Chemie*, Wiley-VCH, 111 River Street, Hoboken, NJ 07030. Annual subscription price for institutions: US\$ 7225/6568 (valid for print and

electronic / print or electronic delivery); for individuals who are personal members of a national chemical society prices are available on request. Postage and handling charges included. All prices are subject to local VAT/sales tax.

Communications

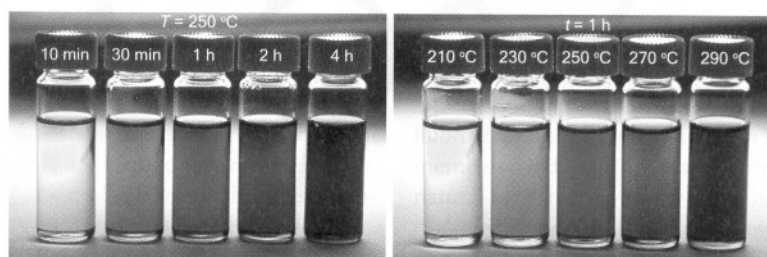
Molecular Machines

On the move: A computational investigation of the photo-triggered shuttling of a multicomponent bistable rotaxane in solution has shown that decomplexation of the counterions from the positively charged stations may be the efficiency-limiting step of the nanomachine. The picture shows the free-energy profile as a function of the ring position along the axle for the oxidized (ground) state (blue) and the reduced state (red) generated by photo-excitation.



P. Raiteri,* G. Bussi, C. S. Cucinotta, A. Credi,* J. F. Stoddart, M. Parrinello — 3536–3539

Unravelling the Shuttling Mechanism in a Photoswitchable Multicomponent Bistable Rotaxane



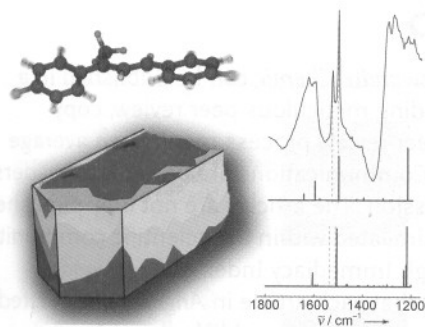
Finding the little InP particles: A core-reduction method allows high-quality colloidal InP nanocrystals to be synthesized by using PCl_3 as the phosphorus source and superhydride as the reducing agent. Etching the as-grown nanocrystals with

HF leads to high-efficiency photoluminescence. The synthetic strategy can be extended to the preparation of other III–V nanocrystals with the corresponding nitrogen halides.

Nanocrystal Synthesis

Z. Liu, A. Kumbhar, D. Xu, J. Zhang, Z. Sun, J. Fang* — 3540–3542

Coredreduction Colloidal Synthesis of III–V Nanocrystals: The Case of InP



CSI: Carbocation species identification:

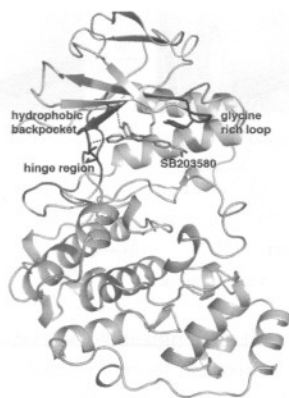
The nonhomogeneous distribution of the reaction products of styrene oligomerization on large ZSM-5 crystals was mapped with in situ IR microspectroscopy. Diffraction-limited spatial resolution was achieved with synchrotron light. IR spectra for possible reaction products were calculated with DFT/B3LYP; by comparison with experimental results carbocationic reaction species formed in zeolite channels could be singled out.

Heterogeneous Catalysis

E. Stavitski, M. H. F. Kox, I. Swart, F. M. F. de Groot, B. M. Weckhuysen* — 3543–3547

In Situ Synchrotron-Based IR Microspectroscopy To Study Catalytic Reactions in Zeolite Crystals



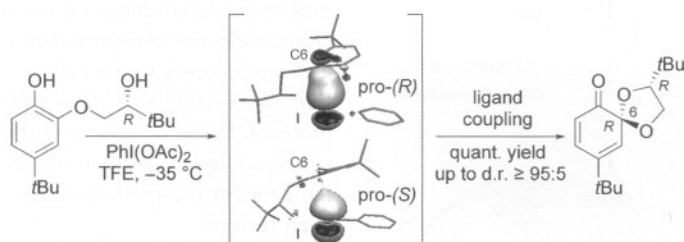


Added flexibility: NMR data for p38 α MAP kinase in a complex with the SB203580 inhibitor show intermediate exchange of residues in the binding pocket (affected residues marked in blue and red on the structure), which indicates increased flexibility compared to that of the unbound protein. Based on residual dipolar couplings, the overall solution structure of p38 α is very similar to the crystal structure. Thus, the increased mobility in solution is an effect of the inhibitor that is not reflected in the crystal structure.

Enzyme-Inhibitor Complex

V. S. Honndorf, N. Coudeville, S. Laufer, S. Becker, C. Griesinger* — 3548–3551

Dynamics in the p38 α MAP Kinase–SB203580 Complex Observed by Liquid-State NMR Spectroscopy



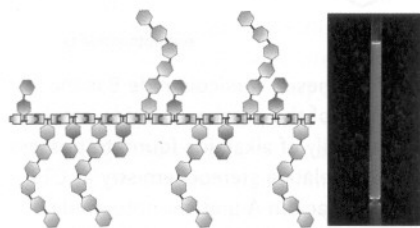
Versatile chiral substrates for asymmetric synthesis are formed through the spiroketalization of phenols with a chiral substituted ethanol unit O-tethered to the *ortho* position upon treatment with PhI(OAc)₂ (see example; TFE = 2,2,2-tri-

fluoroethanol). Intermediates with a six-membered iodine(III)-containing ring (the natural localized molecular orbitals associated with the I–C6 bond are shown) undergo ligand coupling to give the spiroketals.

Asymmetric Synthesis

L. Pouységu, S. Chassaing, D. Dejugnac, A.-M. Lamidey, K. Miqueu, J.-M. Sotiropoulos, S. Quideau* — 3552–3555

Highly Diastereoselective Synthesis of Orthoquinone Monoketals through λ^3 -Iodane-Mediated Oxidative Dearomatization of Phenols

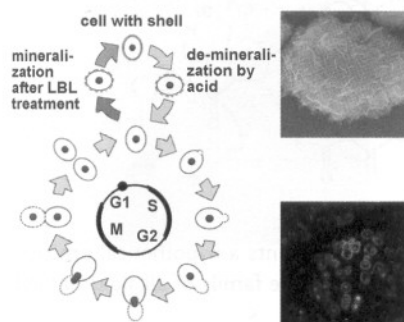


A change in the constitution: Dynamic glycopolymers based on a poly(acylhydrazone) main chain bearing lateral oligosaccharide groups have been obtained and their structure has been characterized as a bottlebrush type (see picture) by cryo-TEM and small-angle neutron scattering studies. They have remarkable fluorescence with emission wavelengths which are tunable by exchange/incorporation of components which modify the polymer constitution.

Dynamic Biopolymers

Y. Ruff, J.-M. Lehn* — 3556–3559

Glycodynamers: Fluorescent Dynamic Analogues of Polysaccharides



Inspired by eggshells in nature, living yeast cells were conferred with an artificial mineral coat by using a combination of the layer-by-layer (LBL) treatment with functional polymers and in situ biomimetic mineralization. The resulting hard inorganic shells have a tremendous effect on the storage, protection, delivery, and modification of the cells.

Cells with Mineral Shells

B. Wang, P. Liu, W. Jiang, H. Pan, X. Xu, R. Tang* — 3560–3564

Yeast Cells with an Artificial Mineral Shell: Protection and Modification of Living Cells by Biomimetic Mineralization

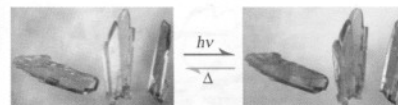
Photochromic Materials

M.-S. Wang, G.-C. Guo,* W.-Q. Zou,
W.-W. Zhou, Z.-J. Zhang, G. Xu,
J.-S. Huang ————— 3565–3567



Photochromism of a 3D Cd^{II} Complex with
Two Captured Ligand Isomers Generated
In Situ from the Same Precursor

Color on command: A hydrothermally synthesized 3D Cd^{II} complex with an unusual 4²6⁶8² topology consisting of cadmium centers as five-connected nodes and two in situ generated isomers from the same precursor as linkers was found to exhibit reversible redox photochromic behavior.

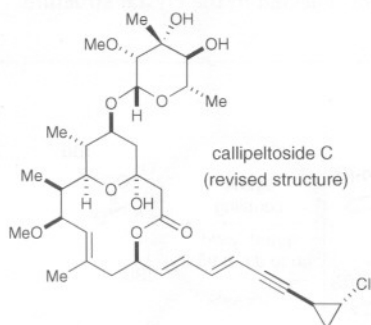


Natural Products

J. Carpenter, A. B. Northrup, dM. Chung,
J. J. M. Wiener, S.-G. Kim,
D. W. C. MacMillan* ————— 3568–3572



Total Synthesis and Structural Revision of
Callipeltoside C



Look again: Highlights of the 20-step synthesis of callipeltoside C include the proline-catalyzed direct aldol reaction, enantioselective α -oxyamination reaction, and rapid access to the carbohydrate framework using a de novo synthesis protocol. Based on this work the previously assigned absolute configuration of the pendent 2-O-methylevalose unit has been revised.

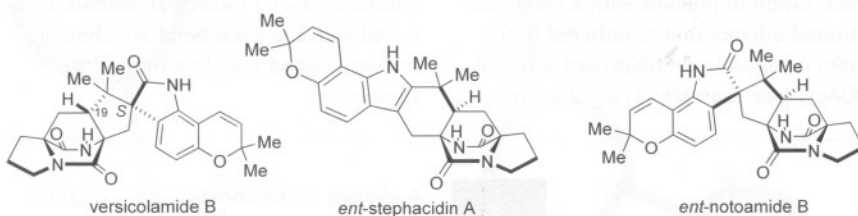


Structure Elucidation

T. J. Greshock, A. W. Grubbs, P. Jiao,
D. T. Wicklow, J. B. Gloer,
R. M. Williams* ————— 3573–3577



Isolation, Structure Elucidation, and
Biomimetic Total Synthesis of
Versicolamide B, and the Isolation of
Antipodal (–)-Stephacidin A and (+)-
Notoamide B from *Aspergillus versicolor*
NRRL 35600



Stereochemically unique: A new prenylated indole alkaloid, (+)-versicolamide B, has been isolated from cultures of *Aspergillus versicolor* NRRL 35600. The structure has been assigned by 2D NMR experiments, and confirmed by a biomimetic

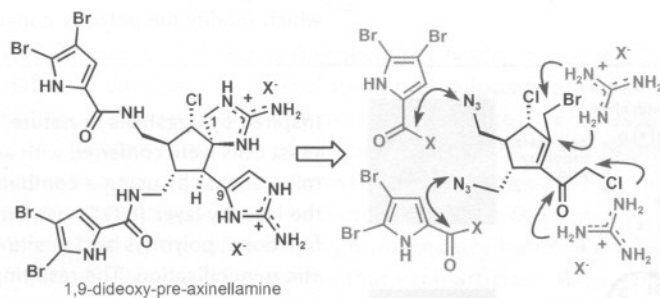
total synthesis. Versicolamide B is the first member of the paraherquamide/stephacidin family of alkaloids found to possess the *anti* relative stereochemistry at C19. *ent*-Stephacidin A and *ent*-notoamide B were also isolated for the first time.

Natural Products

J. Yamaguchi, I. B. Seiple, I. S. Young,
D. P. O'Malley, M. Maue,
P. S. Baran* ————— 3578–3580

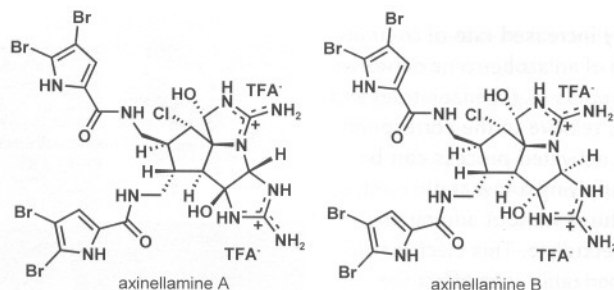


Synthesis of 1,9-Dideoxy-pre-axinellamine



Within reach: A 19-step route to 1,9-dideoxy-pre-axinellamine has been designed and executed. This key com-

pound represents a hypothetical precursor to an entire family of alkaloid natural products.



Chemoselective by design: The first total synthesis of members of the axinellamine/palau'amine/massadine class of pyrrole-imidazole alkaloids features uncon-

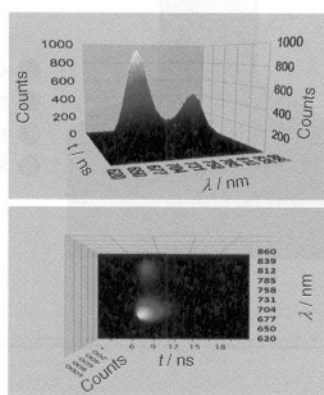
ventional transformations on completely unprotected polyamino and hydroxylated substrates and a new method for chemoselective oxidations in such settings.

Natural Products

D. P. O'Malley, J. Yamaguchi, I. S. Young, I. B. Seiple, P. S. Baran* — **3581–3583**

Total Synthesis of (±)-Axinellamines A and B

Bilingual fluorescent molecules: An array of asymmetric carbocyanines capable of dual fluorescence emissions in the near-infrared region is described (see image). The fluorescent molecules are robust in different pH and solvents. Additionally, each fluorescence peak possesses a distinct fluorescence lifetime. These properties are retained after conjugation of the dyes with small bioactive peptides.

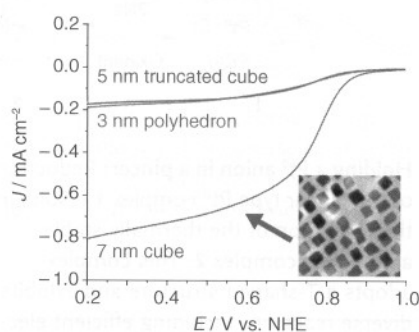


Dichromic Molecules

Z. Zhang, M. Y. Berezin, J. L. F. Kao, A. d'Avignon, M. Bai, S. Achilefu* — **3584–3587**

Near-Infrared Dichromic Fluorescent Carbocyanine Molecules

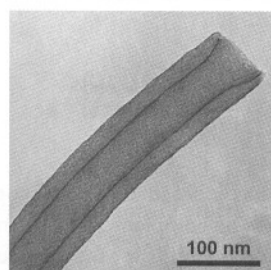
Catalytic cobblestones: Monodisperse platinum nanoparticles were prepared with controlled sizes (3–7 nm) and shapes (polyhedron, truncated cube, or cube). The cubic nanoparticles are a much more active cathode catalyst for the oxygen reduction reaction: the current density j from 7 nm cubes is four times that of the other shapes (see picture), indicating great potential for fuel cell applications.



O₂ Reduction

C. Wang, H. Daimon, T. Onodera, T. Koda, S. Sun* — **3588–3591**

A General Approach to the Size- and Shape-Controlled Synthesis of Platinum Nanoparticles and Their Catalytic Reduction of Oxygen



Controlled growth: A non-aqueous approach inspired from sol-gel chemistry and adapted to the formation of metal oxide thin films by means of atomic layer deposition is presented. The process is based on the reaction of a carboxylic acid with an alkoxide. Growth of metal oxides is achieved at temperatures as low as 50°C on various supports including carbon nanotubes (see TEM picture). The as-grown films show excellent uniformity and possess good dielectric properties.

Thin Films

E. Rauwel, G. Clavel, M.-G. Willinger, P. Rauwel, N. Pinna* — **3592–3595**

Non-Aqueous Routes to Metal Oxide Thin Films by Atomic Layer Deposition

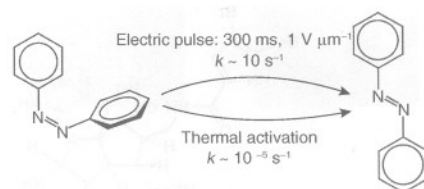
Electroisomerization

X. Tong, M. Pelletier, A. Lasia,
Y. Zhao* 3596–3599



Fast *Cis-Trans* Isomerization of an Azobenzene Derivative in Liquids and Liquid Crystals under a Low Electric Field

A dramatically increased rate of *cis-trans* isomerization of an azobenzene derivative dissolved in liquids (e.g. benzonitrile) and liquid crystals relative to the corresponding thermally activated process can be achieved by applying a low static electric field (see picture) without adding any supporting electrolyte. This electric-field-induced isomerization can affect the electrooptical behavior of azobenzene-doped liquid crystals.

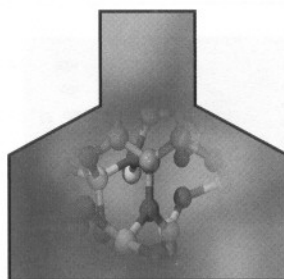


Nitridic Ceramics

Y. H. Sehlleier, A. Verhoeven,
M. Jansen* 3600–3602



Observation of Direct Bonds between Carbon and Nitrogen in Si-B-N-C Ceramic after Pyrolysis at 1400 °C



● C
● N
● B
● Si

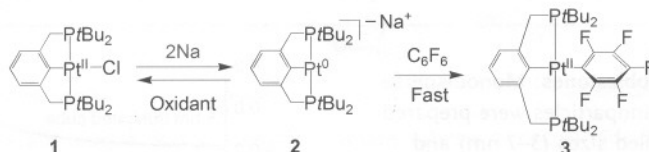
An unlikely couple: Carbon and nitrogen usually go separate ways above 600 °C, but in a precursor-derived high-performance SiBNC ceramic pyrolyzed at 1400 °C the presence of carbon–nitrogen bonds was demonstrated by using various double-resonance solid-state NMR techniques in combination with a novel isotope labeling scheme.

Coordination Chemistry

L. Schwartzburd, R. Cohen,
L. Konstantinovski,
D. Milstein* 3603–3606



A Pincer-Type Anionic Platinum(0) Complex



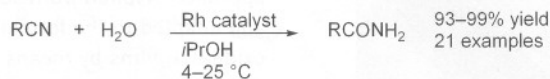
Holding a Pt⁰ anion in a pincer: Reduction of the pincer-type Pt^{II} complex **1** results in the formation of the thermally stable anionic Pt⁰ complex **2**. This complex adopts a T-shaped structure and exhibits diverse reactivity, including efficient elec-

tron-transfer processes in which **2** is re-oxidized quantitatively to Pt^{II}. Protonation of **2** with water gives a Pt^{II} hydride complex, and C–F activation under mild conditions leads to **3** (see scheme).

Nitrile Hydration

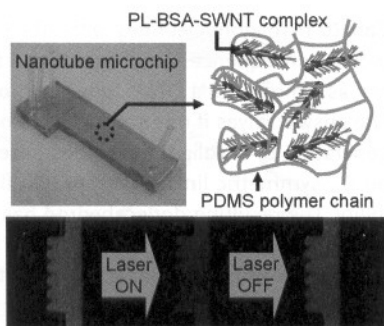
A. Goto, K. Endo, S. Saito* 3607–3609

Rh^I-Catalyzed Hydration of Organonitriles under Ambient Conditions



New scoop on scope and selectivity: The hydration of organonitriles catalyzed by a Rh^I(OMe) species under nearly pH-neutral and ambient conditions (25 °C, 1 atm) is chemoselective and high-yielding (93 to

99%), has a broad substrate scope, and may thus be complementary to enzymatic hydration methods for the introduction of a terminal amido group (CONH₂) onto a carbon chain.



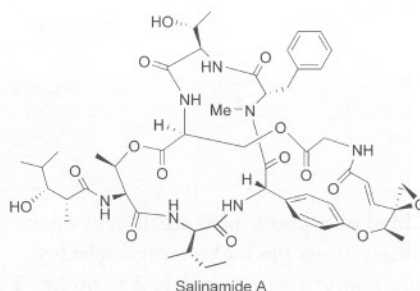
Rapid temperature control: A phospholipid-bovine serum albumin functionalized single-walled carbon nanotube complex (PL-BSA-SWNT) was found to be readily dispersible in poly(dimethylsiloxane) (PDMS). A photoinduced PDMS microchip encapsulating this complex is capable of achieving ultrarapid control of the temperature of a solution contained in one of its microchannels (see image).

Nanotube-Polymer Composites

E. Miyako,* H. Nagata, K. Hirano, T. Hirotsu 3610–3613

Carbon Nanotube-Polymer Composite for Light-Driven Microthermal Control

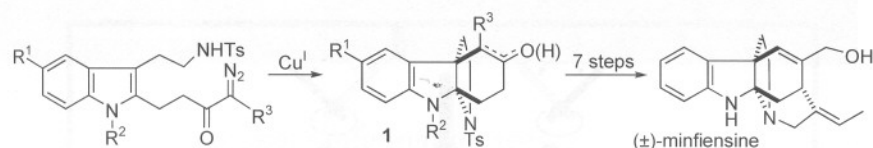
It's swell! The first total synthesis of potent anti-inflammatory agent salinamide A was achieved. This synthesis features a concise elaboration of the phenylglycine-derived epoxide fragment and the identification of two possible macrolactamization sites (see scheme).



Natural Products

L. Tan, D. Ma* 3614–3617

Total Synthesis of Salinamide A: A Potent Anti-Inflammatory Bicyclic Depsipeptide



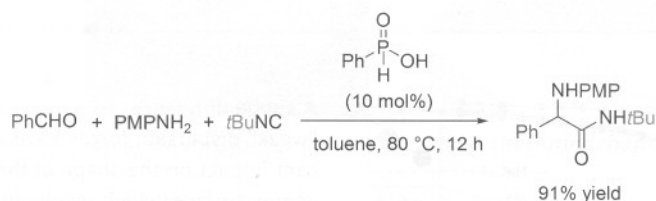
Cascading into (±)-minfiensine: An efficient method was developed for the assembly of tetracyclic skeleton **1** by a three-step, one-pot cascade reaction including cyclopropanation, ring opening,

and ring closure (see scheme; Ts = *p*-toluenesulfonyl). The concise total synthesis of the (±)-minfiensine was completed in about a 4% overall yield.

Natural Products

L. Shen, M. Zhang, Y. Wu, Y. Qin* 3618–3621

Efficient Assembly of an Indole Alkaloid Skeleton by Cyclopropanation: Concise Total Synthesis of (±)-Minfiensine



Perfect atom economy characterizes a novel catalytic three-component Ugi reaction (see example). Different α -amino amides are formed in good yields from aldehydes, primary amines, and isocya-

nides in the presence of phenyl phosphonic acid as the catalyst. The products will be useful for the synthesis of α -amino acid derivatives and in diversity-oriented synthesis.

Multicomponent Reactions

S. C. Pan, B. List* 3622–3625

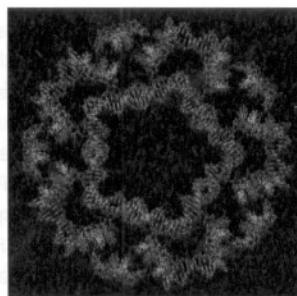
Catalytic Three-Component Ugi Reaction

DNA Nanostructures

J. Zimmermann, M. P. J. Cebulla,
S. Mönninghoff,
G. von Kiedrowski* — 3626–3630



Self-Assembly of a DNA Dodecahedron
from 20 Trisilgonucleotides with C_{3h}
Linkers



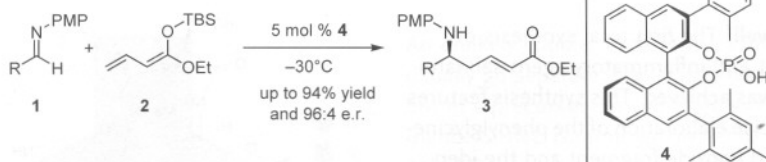
Can 20 trisilgonucleotides with 20×3 individual sequences be programmed to self-assemble into a DNA dodecahedron? The answer is yes if one starts from a new generation of trisilgonucleotides based on C_{3h} -symmetric linkers with proper flexibility. The resulting dodecahedron has C_1 symmetry and may facilitate the construction of multimodular scaffolds in the future.

Asymmetric Catalysis

M. Sickert, C. Schneider* — 3631–3634



The Enantioselective, Brønsted Acid
Catalyzed, Vinylogous Mannich Reaction



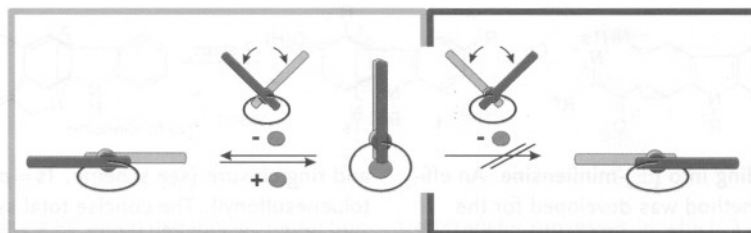
Chiral phosphoric acid **4** catalyzes enantioselectively the highly γ -regioselective addition of a silyl dienolate **2** to imines **1** in good yields and furnishes α,β -unsaturated δ -amino carboxy esters **3** in one

step. The reaction may also be carried out as a direct three-component coupling (PMP = *para*-methoxyphenyl; TBS = *tert*-butyldimethylsilyl).

Molecular Machines

G. Haberhauer* — 3635–3638

Control of Planar Chirality: The
Construction of a Copper-Ion-Controlled
Chiral Molecular Hinge



An open-and-closed case: When a chiral clamp is attached to a molecular hinge the open–close motion induced by coordination to a metal ion becomes unidirectional (see scheme). The large change in ampli-

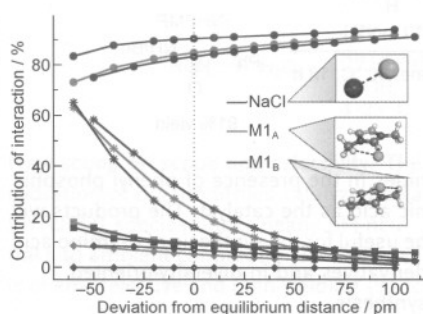
tude caused by the unidirectional rotation and the relatively simple preparation of the hinge open up the possibility of using this concept for even more-complex molecular machines.

Ionic Liquids

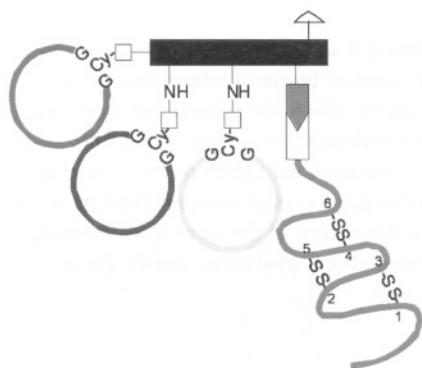
S. Zahn, F. Uhlig, J. Thar, C. Spickermann,
B. Kirchner* — 3639–3641



Intermolecular Forces in an Ionic Liquid
([Mmim][Cl]) versus Those in a Typical
Salt (NaCl)



A subtle difference: In ionic liquids the “weak” dispersion forces have a significant impact on the shape of the potential energy surface, which results in a shallow profile when all of the contributions are considered. Such findings are commonly accepted to determine the liquid state.



The synthesis of a 23-kDa protein that mimics the ligand-binding extracellular part of a G-protein-coupled receptor shows the potential of a combined recombinant, enzymatic, and chemical synthesis (CRECS) strategy. The mimic of the corticotropin-releasing factor receptor, synthesized from single domains by chemical ligation and sortase A-mediated coupling, has a high affinity for natural ligands.

Protein Mimics

S. Pritz, O. Kraetke, A. Klose, J. Klose, S. Rothmund, K. Fechner, M. Bienert, M. Beyermann* 3642–3645

Synthesis of Protein Mimics with Nonlinear Backbone Topology by a Combined Recombinant, Enzymatic, and Chemical Synthesis Strategy



Supporting information is available on www.angewandte.org (see article for access details).



A video clip is available as Supporting Information on www.angewandte.org (see article for access details).

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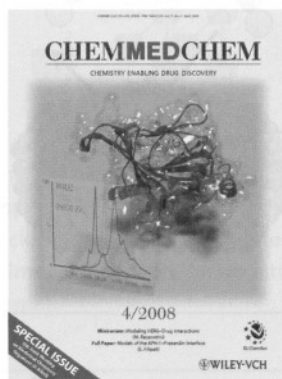
Vacancies 3487

Preview 3649

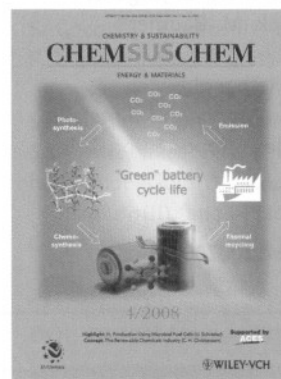
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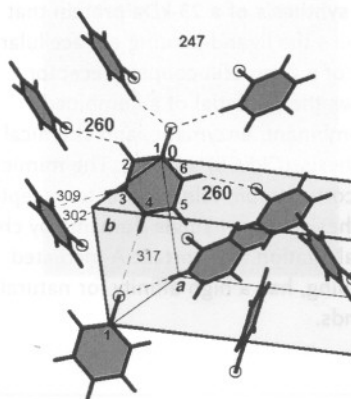
Supramolecular Chemistry

P. Ganguly,* G. R. Desiraju*

Van der Waals and Polar Intermolecular Contact Distances: Quantifying Supramolecular Synthons

Chem. Asian J.

DOI: 10.1002/asia.200700343



Sizing it up: Crystal structures are considered in terms of intermolecular distances, which are determined by environment-dependent atomic sizes. The supramolecular synthons that make up an organic crystal are quantified in terms of the nature of the weak intermolecular interactions (distances shown are in ppm).

Protein Engineering

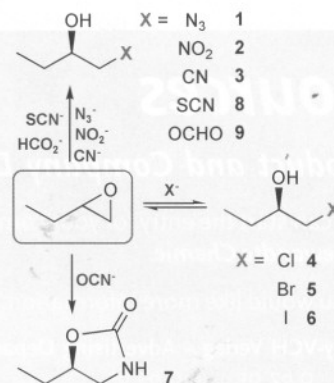
G. Hasnaoui-Dijoux,
M. Majerić Elenkov, J. H. Lutje Spelberg,
B. Hauer, D. B. Janssen*

Catalytic Promiscuity of Halohydrin Dehalogenase and its Application in Enantioselective Epoxide Ring Opening

ChemBioChem

DOI: 10.1002/cbic.200700734

Easy virtue: Halohydrin dehalogenase is a highly promiscuous enzyme that can catalyze enantioselective epoxide ring opening with at least nine different anionic nucleophiles (see scheme). Its capacity to form carbon–nitrogen, carbon–oxygen, carbon–sulfur, and carbon–carbon bonds makes it possible to use this enzyme for the preparation of a range of highly enantioenriched β -substituted alcohols or derivatives thereof, including cyanoalcohols, nitroalcohols, and oxazolidinones.



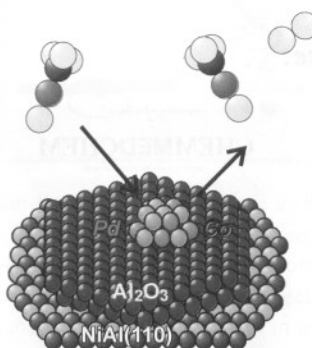
Catalysts

T. Nowitzki, H. Borchert, B. Jürgens,
T. Risse, V. Zielasek, M. Bäumer*

UHV Studies of Methanol Decomposition on Mono- and Bimetallic CoPd Nanoparticles Supported on Thin Alumina Films

ChemPhysChem

DOI: 10.1002/cphc.200700663



One metal or two? Adsorption and reaction studies on well-defined model systems are important to understand the complex surface processes on real catalysts. This fundamental study of the decomposition of methanol on metal clusters (see picture) results in syngas and/or carbon deposits on the particle surfaces depending on their composition.

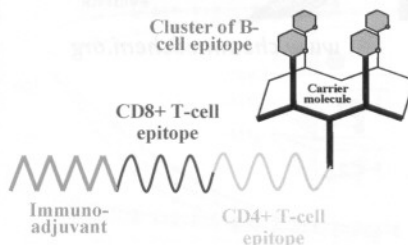
Antitumor Agents

O. Renaudet, L. BenMohamed,
G. Dasgupta, I. Bettahi, P. Dumy*

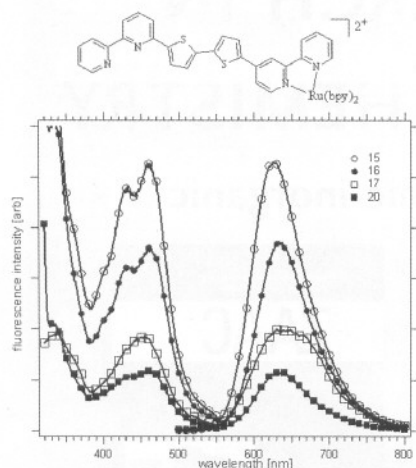
Towards a Self-Adjuvanting Multivalent B and T cell Epitope Containing Synthetic Glycolipopeptide Cancer Vaccine

ChemMedChem

DOI: 10.1002/cmdc.200700315



A new generation of synthetic cancer vaccine: the first self-adjuvanting vaccine prototype combining a cluster of B cell epitope, a CD4+ T helper cell epitope, a CD8+ T cell epitope, and an immuno-adjuvant has been synthesized by a chemo-selective strategy. Vaccination of mice with this molecularly defined construction induces a strong protection against tumors.



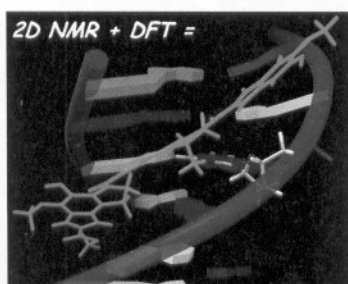
A range of mono- and bis(bidentate) 2,2'-bipyridine-capped oligothiophene-bridged Ru^{II} complexes based on the 6-(2-thienyl)-2,2'-bipyridine motif and the 4-(2-thienyl)-2,2'-bipyridine motif have been synthesized, and the luminescence lifetimes and electrochemical potentials have been measured.

Photophysics

R. O. Steen, L. J. Nurkkala, S. J. Angus-Dunne, C. X. Schmitt, E. C. Constable, M. J. Riley, P. V. Bernhardt, S. J. Dunne*

The Role of Isomeric Effects on the Luminescence Lifetimes and Electrochemistry of Oligothiophenyl-Bridged Dinuclear Tris(2,2'-bipyridine)-ruthenium(II) Complexes

Eur. J. Inorg. Chem.
DOI: 10.1002/iejic.200701118



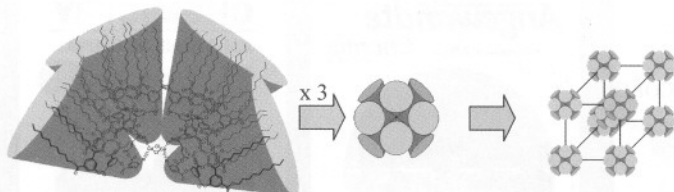
A hybrid approach based on 2D-NMR spectroscopy and quantum mechanical calculations of ¹H chemical shifts at the DFT/MPW1PW91 level was used for the characterization of the covalent complex formed by (+)-yatakemycin and d(GAC-TAATTGAC)–(GTCAATTAGTC), showing that calculation of NMR parameters can be a useful tool for the structural characterization of ligand–receptor interactions.

Ligand–Receptor Interactions

S. Di Micco, D. L. Boger, R. Riccio, G. Bifulco*

Structural Features of the (+)-Yatakemycin/d(GACTAATTGAC)–(GTCAATTAGTC) Complex – Quantum Mechanical Calculation of NMR Parameters as a Tool for the Characterization of Ligand/DNA Interactions

Eur. J. Org. Chem.
DOI: 10.1002/ejoc.200701212



Branching out! Stable metallodendrimers made from monodendrons with an isocyanide group in the focal point have been prepared. Although the molecules of the metallodendrimers prepared are structurally very different, consisting of one, two,

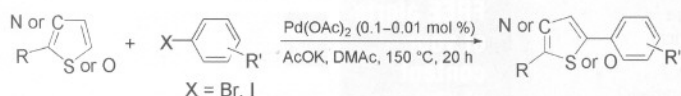
or four monodendrons, the structures of the mesophases are similar and consist of the packing of micellar aggregates in a three-dimensional cubic *Im3m* lattice (see scheme).

Metallodendrimers

S. Coco,* C. Cordovilla, B. Donnio, P. Espinet,* M. J. García-Casas, D. Guillon

Self-Organization of Dendritic Supramolecules, Based on Isocyanide–Gold(I), –Copper(I), –Palladium(II), and –Platinum(II) Complexes, into Micellar Cubic Mesophases

Chem. Eur. J.
DOI: 10.1002/chem.200800128



How low can Pd go? The direct arylation of heteroaryl compounds under very low loadings of Pd(OAc)₂ as catalyst and in the absence of any added ligand proceeds in high yield. Turnover numbers

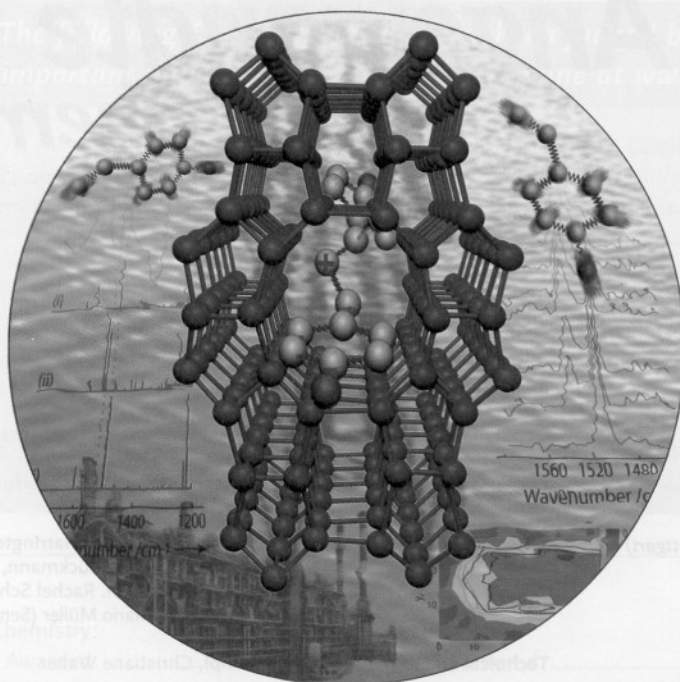
up to 10000 are observed for the coupling of activated aryl bromides with thiazole, thiophene or furan derivatives (see scheme; DMAc = *N,N*-dimethylacetamide).

Homogeneous Catalysis

F. Požgan, J. Roger, H. Doucet*

Ligand-Free Palladium-Catalysed Direct Arylation of Heteroaromatics Using Low Catalyst Loadings

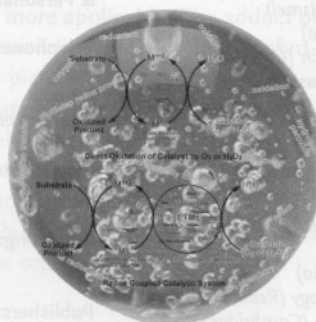
ChemSusChem
DOI: 10.1002/cssc.200700166



In their Communication on page 3543 ff., B. M. Weckhuysen and co-workers use synchrotron-based IR microspectroscopy with diffraction-limited spatial resolution to map the catalytic activity of ZSM-5 zeolite crystals in styrene oligomerization and identify the carbocationic reaction products entrapped in zeolite pores. They propose a combined three-pronged microspectroscopic approach for in-depth spatially- and time-resolved characterization of catalytic processes taking place within catalyst grains.

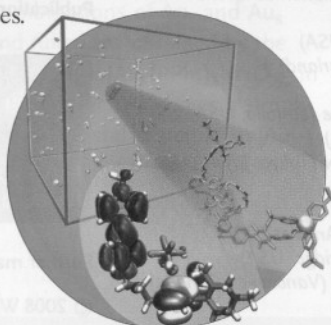
Oxygen as an Oxidant

J.-E. Bäckvall and J. Piera describe in their Review on page 3506 ff. how the combination of transition-metal catalysts and electron-transfer mediators enable the use of oxygen or hydrogen peroxide as oxidants.



Elementary Reaction Steps (Nobel Lecture)

In the Review on page 3524 ff., G. Ertl describes for a broad audience his research on heterogeneous catalysis, for which he was awarded the 2007 Nobel Prize in Chemistry. The synthesis of ammonia and automotive catalytic converters are used as examples.



Rotaxanes

Fast-switching nanomachines can exist in solution. Raiteri, Credi et al. show in their Communication on page 3536 ff. by using free-energy calculations that ring displacement in a photo-controllable molecular shuttle may occur on the nanosecond timescale.

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