

Spotlight on Angewandte's Sister Journals

10926–10928



*"The best advice I have ever been given is to follow my heart.
I like refereeing because it is an excellent way to stay up-to-date in the research field. ..."*
This and more about Gerard Meijer can be found on page 10930.

Service

Author Profile

Gerard Meijer _____ 10930

News



G. S. Fischer



E. Winterfeldt



G. Mloston



C. Ottmann



A. Walther



X. Duan



J. Seibel



E. W. Meijer



P. Schwill



M. Mann

Honorary Membership of the Gesellschaft Deutscher Chemiker:

G. S. Fischer and E. Winterfeldt _____ 10931

Liebig Lectureship:

G. Mloston _____ 10931

Innovation Prize in Medicinal/Pharmaceutical Chemistry:

C. Ottmann _____ 10931

Raimund Stadler Prize:

A. Walther _____ 10931

DuPont Young Professor Grants:

X. Duan and J. Seibel _____ 10932

Members of the Deutsche Akademie der Technikwissenschaften:

E. W. Meijer and P. Schwill _____ 10932

Körber Prize:

M. Mann _____ 10932

Books

Supramolecular Polymer Chemistry

Akira Harada

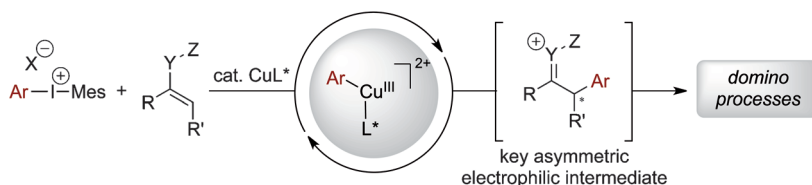
reviewed by H.-W. Schmidt _____ 10933

Highlights

Asymmetric Catalysis

S. Rousseaux,* E. Vrancken,*
J.-M. Campagne* _____ 10934–10935

Chiral Aryl–Copper(III) Electrophiles: New Opportunities in Catalytic Enantioselective Arylations and Domino Processes



"Chiral aryl cation" equivalents: The combination of diaryliodonium salts and catalytic amounts of chiral copper complexes provides facile access to "chiral aryl

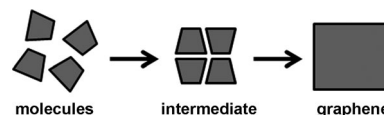
cation" synthons. These reagents offer new possibilities for asymmetric arylation reactions that initiate further domino processes.

Graphene

A. Götzhäuser* — 10936 – 10937

Graphene from Molecules

Step by step: According to the molecular approach to the production of graphene, precursor molecules are cross-linked to form two-dimensional intermediates, and pyrolysis transforms the intermediates into graphene. This type of highly efficient synthesis of high-quality graphene is crucial to the development of innovative applications.

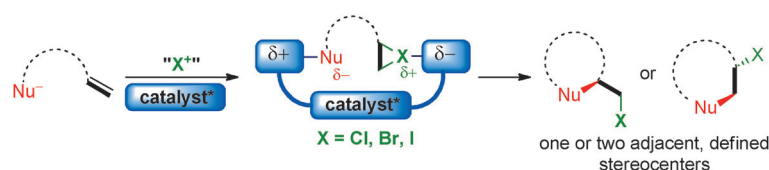


Minireviews

Synthetic Methods

S. E. Denmark,* W. E. Kuester,
M. T. Burk — 10938 – 10953

Catalytic, Asymmetric
Halofunctionalization of Alkenes—
A Critical Perspective



The return of the salt makers: Catalytic enantioselective versions of halofunctionalizations have recently appeared and although important breakthroughs, they represent just the very beginnings of a nascent field. Herein is a critical analysis

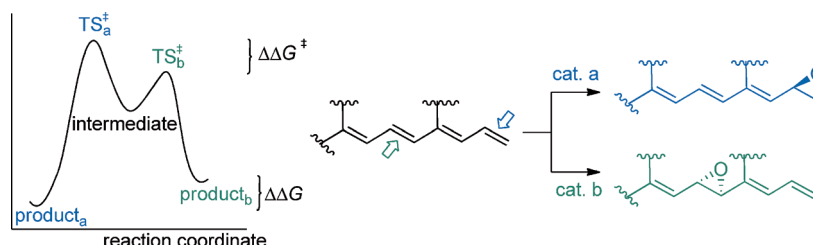
of the challenges that accompany the development of general and highly enantioselective halofunctionalizations. Various modes of catalysis and the different strategies implemented for asymmetric induction are identified.

Reviews

Selective Catalysis

J. Mahatthananchai, A. M. Dumas,
J. W. Bode* — 10954 – 10990

Catalytic Selective Synthesis



A tale of two catalysts: Catalyst-controlled selectivity is well established for enantioselective catalysis but less formulated for catalytic regio-, chemo-, or product-selective reactions. This Review describes

selective transformations of the same starting materials into two or more different products simply by the choice of catalyst even when the reaction conditions are nearly identical.

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Communications

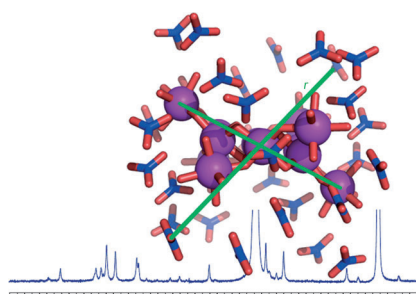
Structure Elucidation

A. F. Oliveri, M. E. Carnes,
M. M. Baseman, E. K. Richman,
J. E. Hutchison,*
D. W. Johnson* 10992–10996

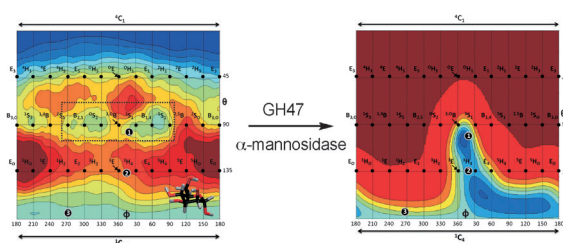
Single Nanoscale Cluster Species
Revealed by ^1H NMR Diffusion-Ordered
Spectroscopy and Small-Angle X-ray
Scattering



Frontispiece



A solvated structure: The hydrated Ga_{13} cluster, $[\text{Ga}_{13}(\mu_3\text{-OH})_6(\mu\text{-OH})_{18}(\text{H}_2\text{O})_{24}(\text{NO}_3)_{15}]^-$, persists as a discrete nanoscale structure in an aqueous polar solvent at millimolar concentration. SAXS data confirm the presence of Ga_{13} in dimethyl sulfoxide (DMSO). In aqueous $[\text{D}_6]\text{DMSO}$ ^1H NMR signals for the hydroxo and aquo ligands of Ga_{13} were detected, thus showing a cluster with a hydrodynamic radius of $(11.2 \pm 0.8) \text{ \AA}$ (see picture).



Mannosides in the southern hemisphere: Conformational analysis of enzymatic mannoside hydrolysis informs strategies for enzyme inhibition and inspires solutions to mannoside synthesis. Atomic resolution structures along the reaction coordinate of an inverting α -mannosidase

show how the enzyme distorts the substrate and transition state. QM/MM calculations reveal how the free energy landscape of isolated α -D-mannose is molded on enzyme to only allow one conformationally accessible reaction coordinate.

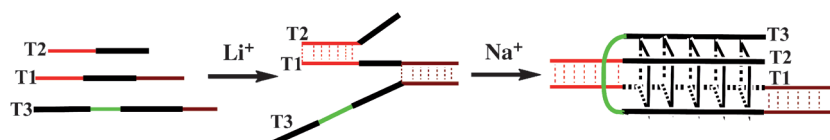
Computational Chemistry

A. J. Thompson, J. Dabin,
J. Iglesias-Fernández, A. Ardèvol, Z. Dinev,
S. J. Williams, O. Bande, A. Siriwardena,
C. Moreland, T.-C. Hu, D. K. Smith,
H. J. Gilbert, C. Rovira,*
G. J. Davies* 10997–11001

The Reaction Coordinate of a Bacterial
GH47 α -Mannosidase: A Combined
Quantum Mechanical and Structural
Approach



Inside Back Cover



In my (DNA) dreams: A tri-G-quadruplex was constructed from three strands (T1–T3) of DNA using duplex formation to guide the G-rich tracts into close proximity with the addition of Li^+ ions (see

scheme). The defined G-quadruplex structure was formed upon addition of Na^+ ions and characterized by gel electrophoresis and spectroscopy.

DNA Structures

J. Zhou, A. Bourdoncle, F. Rosu,
V. Gabelica, J.-L. Mergny* 11002–11005

Tri-G-Quadruplex: Controlled Assembly of
a G-Quadruplex Structure from Three
G-Rich Strands



The German Chemical Society (GDCh) invites you to:



Angewandte Anniversary Symposium

GDCh
Eine Zeitschrift der Gesellschaft Deutscher Chemiker

Tuesday, March 12, 2013

Henry Ford Building / FU Berlin

Speakers



Carolyn R.
Bertozzi



François
Diederich



Alois
Fürstner



Roald Hoffmann
(Nobel Prize 1981)



Susumu
Kitagawa



Jean-Marie Lehn
(Nobel Prize 1987)



E.W. "Bert"
Meijer



Frank
Schirrmacher
(Publisher, FAZ)



Robert
Schlögl



George M.
Whitesides



Ahmed Zewail
(Nobel Prize 1999)

More information:

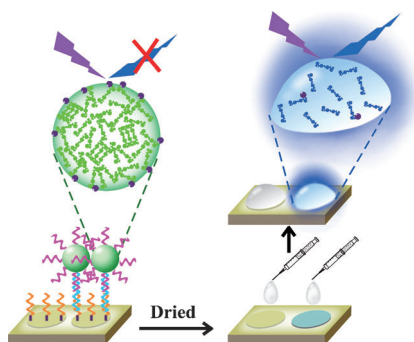


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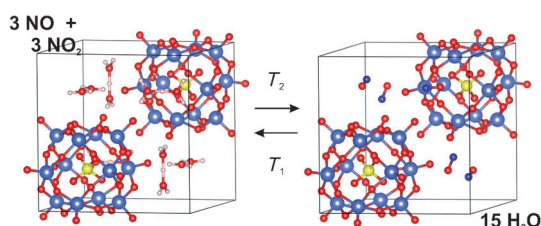


High and dry fluorescence: Fluorogenic nanospheres (green, see scheme) are conjugated to DNA (pink) and used to detect target DNA (aqua). Upon addition of *N*-butylmorpholine (droplet), the nanospheres dissolve, releasing fluorophores, and intense blue fluorescence is emitted at the site of DNA hybridization. The separation of DNA hybridization and signal amplification gives high sensitivity (100 zmol) and selectivity.

Fluorescent Probes

X. Shu, Y. Liu, J. Zhu* — 11006–11009

DNA Detection Based on Fluorogenic Nanospheres



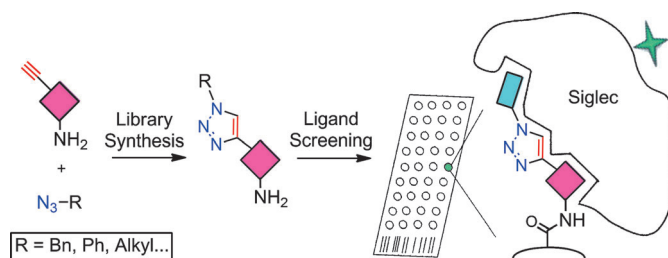
Free-energy calculations indicated that the NO_x adsorption process on heteropolyacids is entropy-driven, as more gas molecules are released than adsorbed by

substitution of H_3O_2^+ with NO^+ species. P yellow, W light blue, O red, H pink, N small dark blue spheres.

Nitrogen-Oxide Adsorption

S. Heylen, L. Joos, T. N. Parac-Vogt, V. Van Speybroeck, C. E. A. Kirschhock,* J. A. Martens — 11010–11013

Entropy-Driven Chemisorption of NO_x on Phosphotungstic Acid



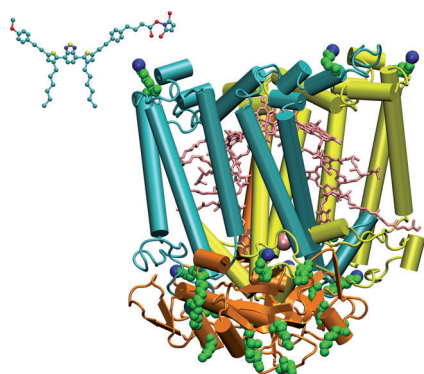
Click 'n' chips: Azide and alkyne-bearing sialic acids (purple diamond; see picture) were subjected to high-throughput click chemistry to generate a library of sialic acid analogues. Microarray printing of the

library and screening with the siglec family of sialic-acid-binding proteins, led to the identification of high-affinity ligands for siglec-9 and siglec-10.

Cell Targeting

C. D. Rillahan, E. Schwartz, R. McBride, V. V. Fokin, J. C. Paulson* — 11014–11018

Click and Pick: Identification of Sialoside Analogues for Siglec-Based Cell Targeting



Light machine: The simplest photosynthetic protein able to convert sunlight into other energy forms is covalently functionalized with a tailored organic dye to obtain a fully functional hybrid complex that outperforms the natural system in light harvesting and conversion ability.

Hybrid photosynthetic complexes

F. Milano, R. R. Tangorra, O. Hassan Omar, R. Ragni, A. Operamolla, A. Agostiano, G. M. Farinola,* M. Trotta* — 11019–11023

Enhancing the Light Harvesting Capability of a Photosynthetic Reaction Center by a Tailored Molecular Fluorophore

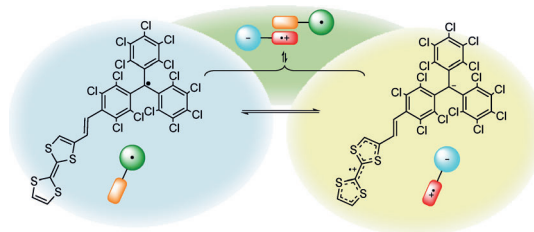


Front Cover



Supramolecular Chemistry

J. Guasch, L. Grisanti, V. Lloveras,
J. Vidal-Gancedo, M. Souto,
D. C. Morales, M. Vilaseca, C. Sissa,
A. Painelli, I. Ratera, C. Rovira,
J. Veciana* — 11024 – 11028



Induced Self-Assembly of
a Tetrathiafulvalene-Based Open-Shell
Dyad through Intramolecular Electron
Transfer

An organic switch: An open-shell dyad, consisting of an electron acceptor perchlorotriphenylmethyl radical unit linked to an electron π -donor tetrathiafulvalene unit through a vinylene π -bridge, was

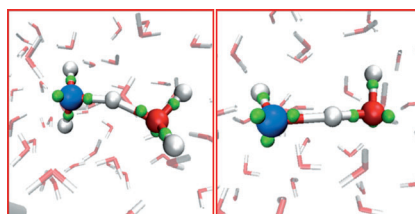
synthesized (see picture). The self-assembly of the dyad in solution induced by its intramolecular electron transfer was studied.

Bulk Water Modeling

S. Kale, J. Herzfeld* — 11029 – 11032



Proton Defect Solvation and Dynamics in
Aqueous Acid and Base



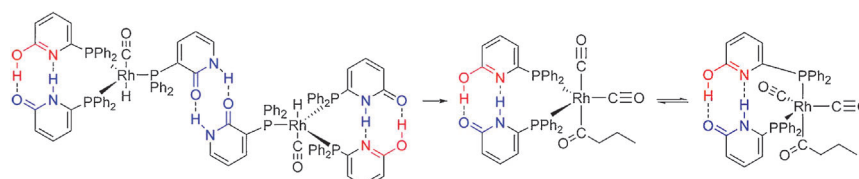
Easy come, easy go: LEWIS, a new model of reactive and polarizable water that enables the simulation of a statistically reliable number of proton hopping events in aqueous acid and base at concentrations of practical interest, is used to evaluate proton transfer intermediates in aqueous acid and base (picture, left and right, respectively).

Supramolecular Catalysis

U. Gellrich, W. Seiche, M. Keller,
B. Breit* — 11033 – 11038



Mechanistic Insights into
a Supramolecular Self-Assembling
Catalyst System: Evidence for Hydrogen
Bonding during Rhodium-Catalyzed
Hydroformylation



The structural integrity and flexibility provided by intermolecular hydrogen bonds leads to the outstanding properties of the 6-diphenylphosphinopyridine-(2H)-1-one ligand (see scheme) in the rhodium-catalyzed hydroformylation of ter-

minal alkenes, as demonstrated by the combination of spectroscopic methods and DFT computations. Hydrogen bonds were also detected in a competent intermediate of the catalytic cycle.

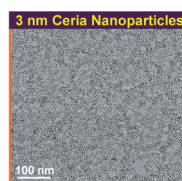


Therapeutic Nanoparticles

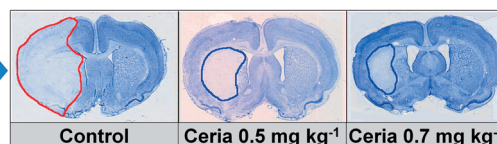
C. K. Kim, T. Kim, I.-Y. Choi, M. Soh,
D. Kim, Y.-J. Kim, H. Jang, H.-S. Yang,
J. Y. Kim, H.-K. Park, S. P. Park, S. Park,
T. Yu, B.-W. Yoon, S.-H. Lee,*
T. Hyeon* — 11039 – 11043



Ceria Nanoparticles that can Protect
against Ischemic Stroke



IV
Injection

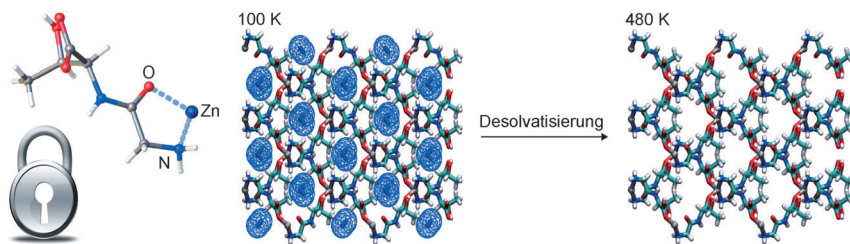


Uniform 3 nm-sized ceria nanoparticles can protect against ischemic stroke by scavenging reactive oxygen species (ROS) and reducing apoptosis. PEGylated ceria nanoparticles showed protective effects

against ROS-induced cell death in vitro. Optimal doses of ceria nanoparticles reduced infarct volumes and the rate of ischemic cell death in vivo.



Back Cover



Pepped up: Notwithstanding the intrinsic conformational flexibility of peptides, $[\text{Zn}(\text{Gly-Thr})_2]$ behaves as a robust porous metal-organic framework thanks to the rigidity introduced by the use of

Gly-Thr (see scheme). This rigidity arises from the sequence of amino acids in the dipeptide that locks its conformational flexibility in the framework.

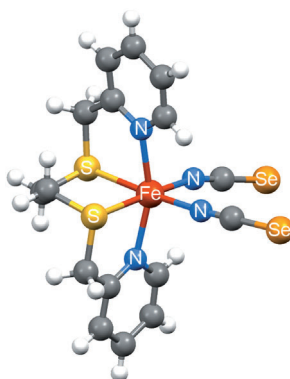
Metal-Organic Frameworks

C. Martí-Gastaldo, J. E. Warren, K. C. Stylianou, N. L. O. Flack, M. J. Rosseinsky* — 11044–11048

Enhanced Stability in Rigid Peptide-Based Porous Materials



Round and round: A mononuclear Fe^{II} complex (see picture) with an N_4S_2 coordination set has been characterized in four polymorphic forms. Two of the polymorphs display four-site cooperative spin crossover (SCO), shown conclusively by the crystal structure of a fully ordered 1:3 high-spin/low-spin state. The presence of S donor atoms in SCO-active compounds is unusual, and further investigation of Fe^{II} complexes for SCO activity is warranted.



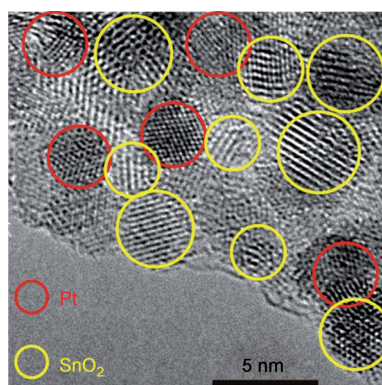
Spin Crossover

A. Lennartson, A. D. Bond,* S. Piligkos, C. J. McKenzie* — 11049–11052

Four-Site Cooperative Spin Crossover in a Mononuclear Fe^{II} Complex



There's something in the air ... A nanocomposite consisting of well-dispersed SnO_2 and Pt nanoparticles on reduced graphene oxide (see the high-resolution TEM image) exhibited very high responses to hydrogen at concentrations between 0.5 and 3% in air, with response times of 3–7 s and recovery times of 2–6 s. The sensor was prepared by a straightforward microwave-assisted non-aqueous sol-gel approach.



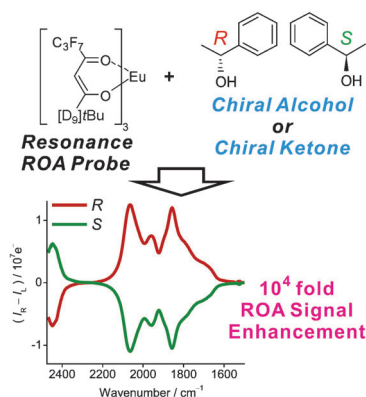
Sensors

P. A. Russo, N. Donato, S. G. Leonardi, S. Baek, D. E. Conte, G. Neri, N. Pinna* — 11053–11057

Room-Temperature Hydrogen Sensing with Heteronanostructures Based on Reduced Graphene Oxide and Tin Oxide



Beef up the signal: Induced resonance Raman optical activity (IRROA) in the presence of a europium complex enabled the detection of molecular chirality (see picture) with a 10^4 -fold increase in sensitivity relative to that observed with conventional nonresonant vibrational ROA. The method can thus be used as a sensitive tool for the determination of the absolute configuration and enantiomeric excess of organic and biologically relevant compounds.



Molecular Chirality

S. Yamamoto, P. Bouř* — 11058–11061

Detection of Molecular Chirality by Induced Resonance Raman Optical Activity in Europium Complexes



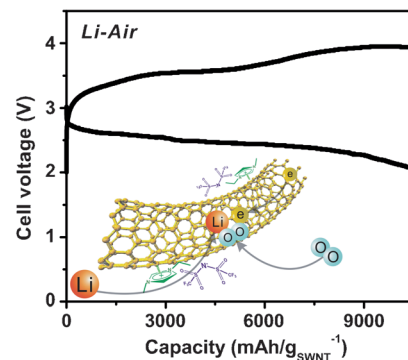
Gel–Air Electrodes

T. Zhang, H. Zhou* — 11062 – 11067



From Li–O₂ to Li–Air Batteries: Carbon Nanotubes/Ionic Liquid Gels with a Tricontinuous Passage of Electrons, Ions, and Oxygen

A salt and battery: The combination of single-walled carbon nanotubes (SWNTs) and an ionic liquid (IL) cross-linked network gel (CNG) allows the conventional three-phase reactive interface to be expanded to the whole cross-linked network (see picture). Thus, it integrates high specific energy and specific power with the feasibility of operating in ambient air.



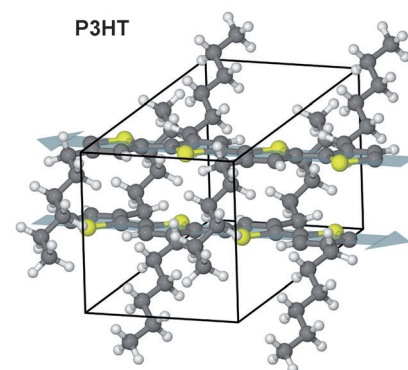
π -Conjugated Polymers

D. Dudenko, A. Kiersnowski, J. Shu, W. Pisula, D. Sebastiani, H. W. Spiess, M. R. Hansen* — 11068 – 11072



A Strategy for Revealing the Packing in Semicrystalline π -Conjugated Polymers: Crystal Structure of Bulk Poly-3-hexylthiophene (P3HT)

To tilt or not to tilt: The crystal structure for bulk P3HT (phase I) was determined by “multi-technique crystallography”, which combines X-ray diffraction, solid-state NMR spectroscopy, and DFT calculations. The results showed that this semiconducting polymer crystallizes in the monoclinic space group $P2_1/c$ with nontilted π -stacks at a distance of 3.9 Å (see picture).



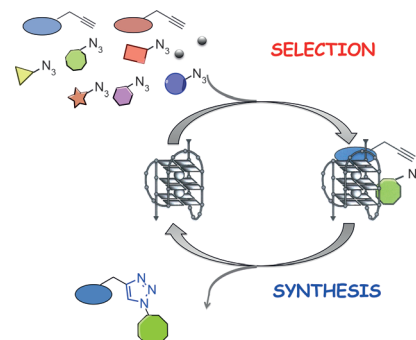
Bioorganic Chemistry

M. Di Antonio, G. Biffi, A. Mariani, E.-A. Raiber, R. Rodriguez,* S. Balasubramanian* — 11073 – 11078



Selective RNA Versus DNA G-Quadruplex Targeting by In Situ Click Chemistry

It all clicks into place: A potent telomere-targeting small molecule has been identified by using the copper-free 1,3-dipolar cycloaddition of a series of alkyne and azide building blocks catalyzed by a non-Watson–Crick DNA secondary structure (see picture). This method rapidly identifies, otherwise unanticipated, potent small-molecule probes to selectively target a given RNA or DNA.



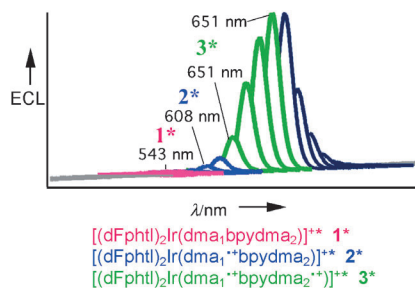
Inside Cover

Photoelectrochemistry

K. N. Swanick, S. Ladouceur, E. Zysman-Colman,* Z. Ding* — 11079 – 11082

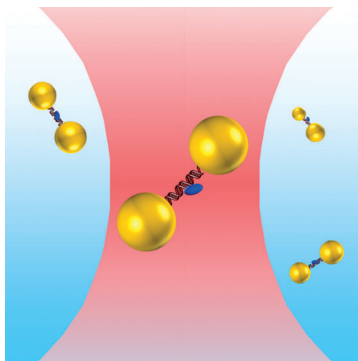


Self-Enhanced Electrochemiluminescence of an Iridium(III) Complex: Mechanistic Insight



Improved luminophore: The electrochemiluminescence (ECL) of an iridium complex self-enhanced up to 16 times is reported. Three excited states were observed in the emission spectra (see picture). The ECL efficiency of this complex is the highest reported for an iridium complex.

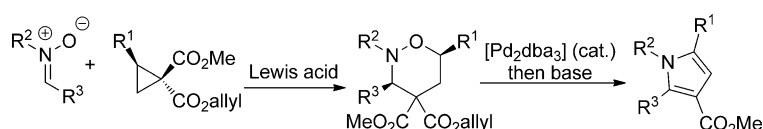
An aureate dye: Confined electromagnetic fields in DNA-templated gold nanoparticle dimers were tuned to engineer the fluorescence properties of organic dyes in water (see picture). Purified suspensions of hybrid metal–organic chromophores featured unprecedented photophysical properties, such as a short lifetime and low quantum yield but high brightness.



Photochemistry

M. P. Busson, B. Rolly, B. Stout, N. Bonod, J. Wenger,* S. Bidault* — 11083–11087

Photonic Engineering of Hybrid Metal–Organic Chromophores



Ring the changes: The cycloaddition of nitrones with 1-carboallyloxy-1-carbomethoxycyclopropanes yields tetrahydro-1,2-oxazines, which in turn undergo a Tsuji dehydrocarbonylation to give dihydro-1,2-oxazines (see scheme; dba = dibenzylide-

neacetone). Addition of base to this reaction mixture results in clean conversion to pyrroles. The result is a flexible three-component strategy for the synthesis of tetrasubstituted pyrroles.

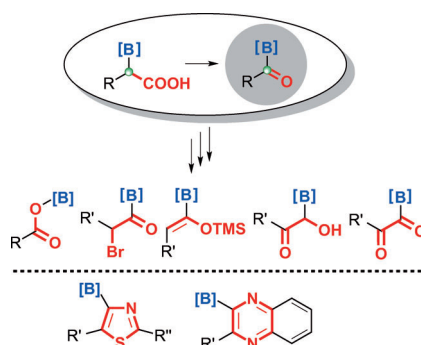
Pyrrole Synthesis

W. J. Humenny, P. Kyriacou, K. Sapeta, A. Karadeolian, M. A. Kerr* — 11088–11091

Multicomponent Synthesis of Pyrroles from Cyclopropanes: A One-Pot Palladium(0)-Catalyzed Dehydrocarbonylation/Dehydration



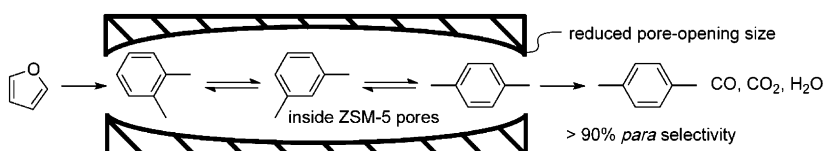
Excellent tolerance: Stable acylboronates equipped with *N*-methyliminodiacetyl (MIDA) boryl groups ([B]) were prepared by using a sequence of oxidative manipulations at the boron-bound carbon center (green in scheme). Chemoselective transformations of these acylated organoboron building blocks yielded a range of multifunctionalized boron derivatives and supplied access to valuable borylated heterocycles (see scheme).



Synthetic Methods

Z. He, P. Trinchera, S. Adachi, J. D. St. Denis, A. K. Yudin* — 11092–11096

Oxidative Geminal Functionalization of Organoboron Compounds



Pores for thought: Chemical liquid deposition of silica onto ZSM-5 catalysts led to smaller pore openings that resulted in > 90% selectivity for *p*-xylene over the other xylenes in the catalytic fast pyrolysis

of furan and 2-methylfuran (see scheme). The *p*-xylene selectivity increased from 51% with gallium spray-dried ZSM-5 to 72% with a pore-mouth-modified catalyst in the pyrolysis of pine wood.

Heterogeneous Catalysis

Y.-T. Cheng, Z. Wang, C. J. Gilbert, W. Fan,* G. W. Huber* — 11097–11100

Production of *p*-Xylene from Biomass by Catalytic Fast Pyrolysis Using ZSM-5 Catalysts with Reduced Pore Openings

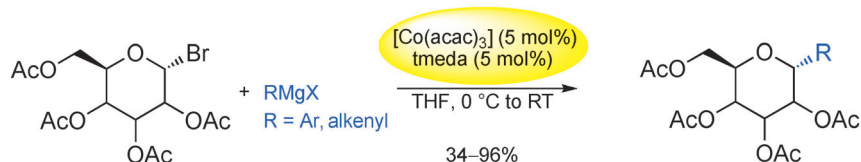


Synthetic Methods

L. Nicolas, P. Angibaud, I. Stansfield,
P. Bonnet, L. Meerpoel, S. Reymond,*
J. Cossy* ————— 11101–11104



Diastereoselective Metal-Catalyzed
Synthesis of C-Aryl and C-Vinyl Glycosides



Cobalt, the catalyst of choice: The diastereoselective cobalt-catalyzed cross-coupling of 1-bromo glycosides and aryl or vinyl Grignard reagents is described. A convenient and inexpensive catalyst, [Co(acac)₃]/tmeda (acac = acetylaceto-

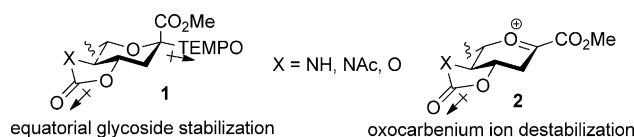
nate, tmeda = *N,N'*-tetramethylethylenediamine), gives full α selectivity in the mannose and galactose series, and an α selectivity in the glucose series with α/β ratios of 1.3:1–3:1.

Glycosides

P. K. Kancharla, C. Navuluri,
D. Crich* ————— 11105–11109



Dissecting the Influence of
Oxazolidinones and Cyclic Carbonates in
Sialic Acid Chemistry



At a moment's notice: Thermal equilibration of **1** and mass spectral analysis of sialyl phosphates suggest that the 4*O*,5*N*-oxazolidinone and the 4,5-*O*-carbonate systems influence the anomeric effect and the mechanisms of sialylation by virtue of

their dipole moment in the mean plane of the pyranose ring. The electron-withdrawing effect destabilizes **2** and promotes associative glycosylation mechanisms. TEMPO = 2,2,6,6-tetramethylpiperidine *N*-oxide.

Expanded Phthalocyanines

T. Furuyama, Y. Ogura, K. Yoza,
N. Kobayashi* ————— 11110–11114



Superazaporphyrins: Meso-Pentaazapentaphyrins and One of Their Low-Symmetry Derivatives



Supersized: Three pentaazapentaphyrin derivatives, that is, the superazaporphyrins (SAZPs), as well as a superphthalocyanine (SPC) and a mixed low-symmetry derivative have been prepared and char-

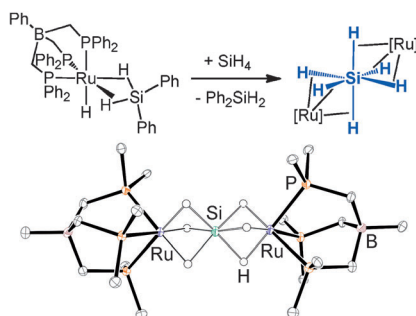
acterized. Decaaryl SAZPs have a distorted $(4n+2)$ π structure and show the Q bands at about $\lambda = 840$ – 880 nm. These compounds are relatively air stable.

Hydrosilicate σ -Complexes

M. C. Lipke, T. D. Tilley* — 11115–11121

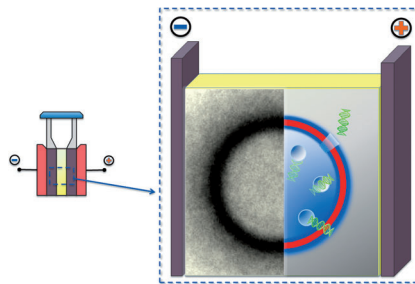


Stabilization of ArSiH_4^- and SiH_6^{2-}
Anions in Diruthenium Si–H
 σ -Complexes



Hydrosilicate anions ($[\text{ArSiH}_4]^-$ and $[\text{SiH}_6]^{2-}$) were stabilized as ligands in diruthenium Si–H σ -complexes $[(\text{PhBP}^{\text{Ph}})_2\text{Ru}_2(\mu\text{-Cl})(\mu\text{-}\eta^3\text{-}\eta^3\text{-H}_4\text{SiAr})]$ ($\text{Ar} = 2\text{-MeOC}_6\text{H}_4$, Mes, Ph) and $[(\text{PhBP}^{\text{Ph}})_2\text{Ru}_2(\mu\text{-}\eta^4\text{-}\eta^4\text{-H}_6\text{Si})]$ (see picture). These complexes were formed under mild conditions and characterized by single-crystal X-ray diffraction (see picture), NMR and IR spectroscopy, and computational techniques.

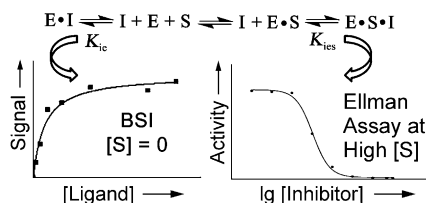
Biological macromolecules can be encapsulated into preformed polymersomes by controlled temporary destabilization of the vesicle membrane. The morphology and the size of the polymersome are unchanged after electroporation, suggesting that the polymersome membrane is reformed. The surface charge of the biomacromolecules plays a key role for the electroporation process.



Polymersomes

L. Wang, L. Chierico, D. Little, N. Patikarnmonthon, Z. Yang, M. Azzouz, J. Madsen, S. P. Armes, G. Battaglia* 11122–11125

Encapsulation of Biomacromolecules within Polymersomes by Electroporation



A series of inhibitors of acetylcholinesterase (AChE) have been screened by back-scattering interferometry (BSI). Enzyme levels as low as 100 pM (22 000 molecules of AChE) can be detected. This method can be used to screen for mixed AChE inhibitors, agents that have shown high efficacy against Alzheimer's disease, by detecting dual-binding interactions. E = enzyme, I = inhibitor, S = substrate.

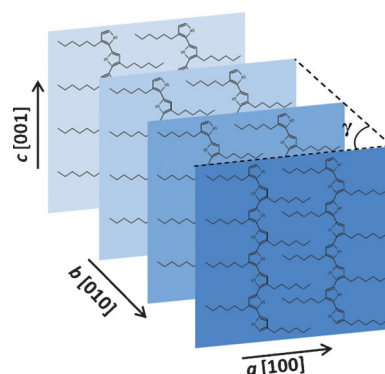
Biosensors

G. L. Haddad, S. C. Young, N. D. Heindel, D. J. Bornhop,* R. A. Flowers II* 11126–11130

Back-Scattering Interferometry: An Ultrasensitive Method for the Unperturbed Detection of Acetylcholinesterase–Inhibitor Interactions



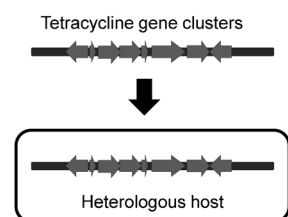
Sowing the seeds: A simple strategy based on self-seeding allows large single crystals of long regioregular poly(3-hexylthiophene) chains to be grown from solution. When appropriately crystallized, materials differing in their degrees of regioregularity and molecular weights formed monoclinic form II crystals with interdigitated hexyl side groups (see picture).



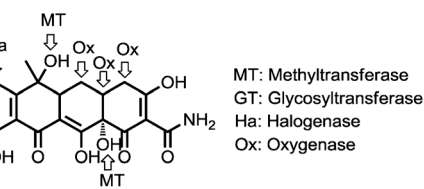
Conjugated Polymers

K. Rahimi, I. Botiz, N. Stingelin, N. Kayunkid, M. Sommer, F. Koch, H. Nguyen, O. Coulembier, P. Dubois, M. Brinkmann, G. Reiter* 11131–11135

Controllable Processes for Generating Large Single Crystals of Poly(3-hexylthiophene)



A very accommodating host: Three tetracycline biosynthetic pathways were overexpressed and manipulated in the heterologous host *Streptomyces lividans* K4-114. Through the inactivation of vari-



ous genes and characterization of the resulting biosynthetic intermediates, new tetracycline-modifying enzymes were identified (see scheme).

Engineered Biosynthesis

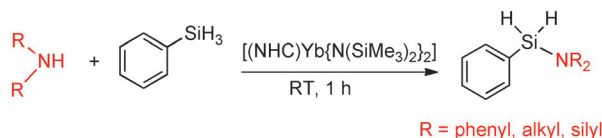
P. Wang, W. Kim, L. B. Pickens, X. Gao, Y. Tang* 11136–11140

Heterologous Expression and Manipulation of Three Tetracycline Biosynthetic Pathways



Rare-Earth Catalysis

W.-L. Xie, H.-F. Hu,
C.-M. Cui* 11141–11144



[(NHC)Yb{N(SiMe₃)₂}₂]-Catalyzed Cross-Dehydrogenative Coupling of Silanes with Amines

Top cat: [(NHC)Yb{N(SiMe₃)₂}₂] adducts (NHC = N-heterocyclic carbene) are efficient catalysts for catalytic cross-dehydrogenative coupling of silanes with a range of primary and secondary amines to yield silylamines in high yields (82–

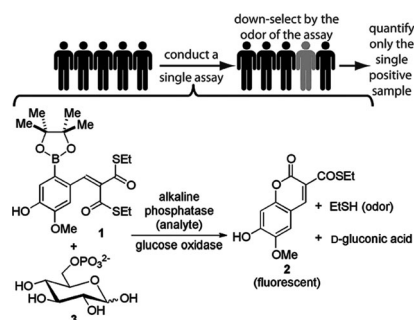
100%) under mild reaction conditions. The catalytic activity and selectivity of the rare-earth-metal silylamines are modulated by altering the steric bulk of the NHC.

Assay Development

H. Mohapatra,
S. T. Phillips* 11145–11148



Using Smell To Triage Samples in Point-of-Care Assays



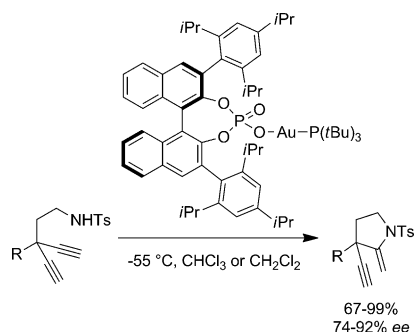
Smell of success: Reagent **1** provides the dual readouts of odor (ethanethiol) and fluorescence (derivative of 7-hydroxycoumarin) and can be used in down-selection assays based on smell and quantitative fluorescence assays of the samples that give a positive result. An important feature of **1** is the matched sensitivity of the two outputs. This reagent is designed for use in resource-limited settings and is demonstrated in assays that detect enzymes.

Gold Catalysis

A. K. Mourad, J. Leutzow,
C. Czekelius* 11149–11152



Anion-Induced Enantioselective Cyclization of Diynamides to Pyrrolidines Catalyzed by Cationic Gold Complexes



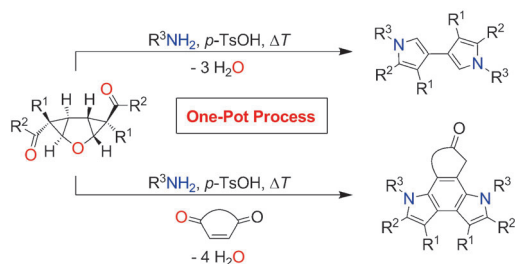
Only chiral anions do the job! Optically active gold complexes derived from substituted binol hydrogen phosphate catalyze the desymmetrizing cyclization of 1,4-diynamides. This reaction provides access to synthetically useful, chiral methylene pyrrolidines with an all-carbon-substituted quaternary stereocenter.

Synthetic Methods

J. Kaschel, T. F. Schneider, D. Kratzert,
D. Stalke, D. B. Werz* 11153–11156



Domino Reactions of Donor–Acceptor-Substituted Cyclopropanes for the Synthesis of 3,3'-Linked Oligopyrroles and Pyrrolo[3,2-*e*]indoles



Multiple displacement of oxygen: Electron-rich oligopyrroles and pyrrolo[3,2-*e*]indoles are generated by a domino process induced by donor–acceptor-substituted cyclopropanes. Up to seven molecules of water are eliminated, thus allowing the introduction of nitrogen and aromaticity.

tuted cyclopropanes. Up to seven molecules of water are eliminated, thus allowing the introduction of nitrogen and aromaticity.



A handsome couple: Through the use of the simple Pd catalyst $[\text{Pd}(\text{tmpp})_2\text{Cl}_2]$ (tmpp = tris(2,4,6-trimethoxyphenyl)-phosphine) and THF/DMF as solvent, various aryl-, heteroaryl-, benzyl- and alkylaluminum reagents can be readily

cross-coupled with aryl or heteroaryl iodides, bromides, and nonaflates, and in special cases even with chlorides and triflates. This cross-coupling tolerates free NH_2 groups, aldehydes, ketones, esters, and nitro functions.

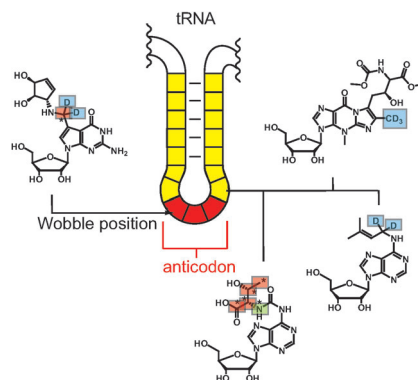
Organoaluminum Reagents

K. Groll, T. D. Blümke, A. Unsinn, D. Haas, P. Knochel* 11157–11161

Direct Pd-Catalyzed Cross-Coupling of Functionalized Organoaluminum Reagents



Useful diversity: Quantification of modified tRNA nucleobases in different murine and porcine tissues reveals a tissue-specific overall modification content. The modification content correlates with rates of protein synthesis in vitro, suggesting a direct link between tRNA modification levels and tissue-specific translational efficiency.



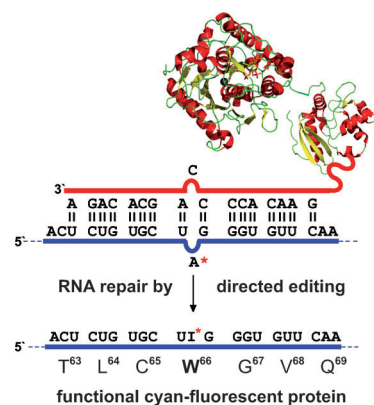
Modified RNA nucleosides

C. Brandmayr, M. Wagner, T. Brückl, D. Globisch, D. Pearson, A. C. Kneutinger, V. Reiter, A. Hienzsch, S. Koch, I. Thoma, P. Thumbs, S. Michalak, M. Müller, M. Biel, T. Carell* 11162–11165

Isotope-Based Analysis of Modified tRNA Nucleosides Correlates Modification Density with Translational Efficiency



Checking for mistakes: By conjugating a catalytic domain with a guide RNA, deamination activity can be harnessed to repair a specific codon on mRNA. This method can be used for the highly selective repair of point mutations in mRNA by site-selective editing.



RNA Repair

T. Stafforst,* M. F. Schneider 11166–11169

An RNA–Deaminase Conjugate Selectively Repairs Point Mutations



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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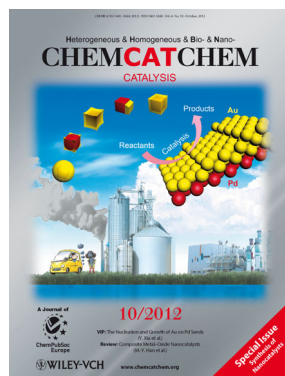


This article is accompanied by a cover picture (front or back cover, and inside or outside).

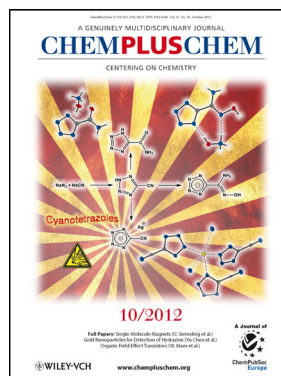
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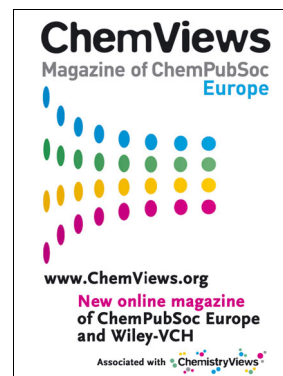
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Angewandte Corrigendum

A Multicolor Nanoprobe for Detection and Imaging of Tumor-Related mRNAs in Living Cells

N. Li, C. Chang, W. Pan,
B. Tang* **7426–7430**

Angew. Chem. Int. Ed. **2012**, 51

DOI: 10.1002/anie.201203767

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- [10] a) S. Tyagi, D. P. Bratu, F. R. Cramer, *Nat. Biotechnol.* **1998**, 16, 49–53; b) S. J. He, B. Song, D. Li, C. F. Zhu, W. P. Qi, Y. Q. Wen, L. H. Wang, S. P. Song, H. P. Fang, C. H. Fan, *Adv. Funct. Mater.* **2010**, 20, 453–459; c) G. M. Qiao, Y. Gao, N. Li, Z. Z. Yu, L. H. Zhuo, B. Tang, *Chem. Eur. J.* **2011**, 17, 11210–11215; d) S. P. Song, Z. Q. Liang, J. Zhang, L. H. Wang, G. X. Li, C. H. Fan, *Angew. Chem.* **2009**, 121, 8826–8830; *Angew. Chem. Int. Ed.* **2009**, 48, 8670–8674; e) Y. Huang, S. L. Zhao, H. Liang, Z. F. Chen, Y. M. Liu, *Chem. Eur. J.* **2011**, 17, 7313–7319; f) A. E. Prigodich, P. S. Randeria, W. E. Briley, N. J. Kim, W. L. Daniel, D. A. Giljohann, C. A. Mirkin, *Anal. Chem.* **2012**, 84, 2062–2066.