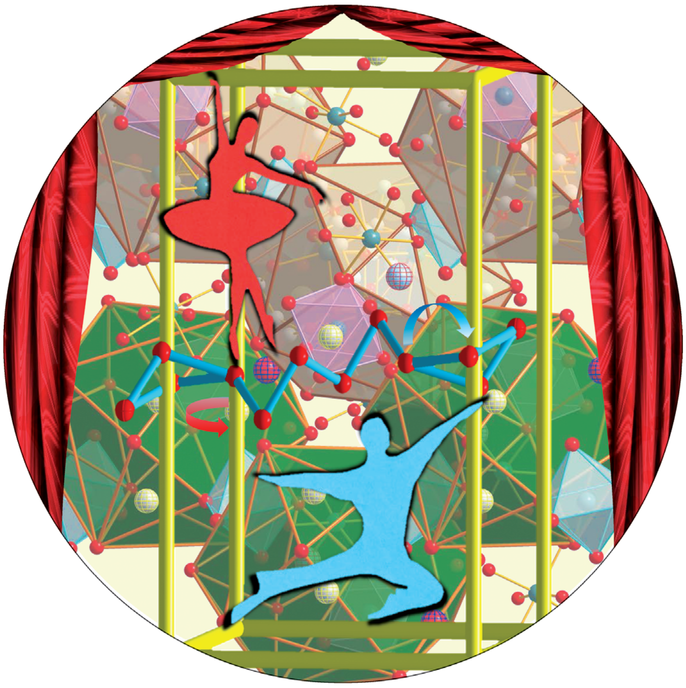
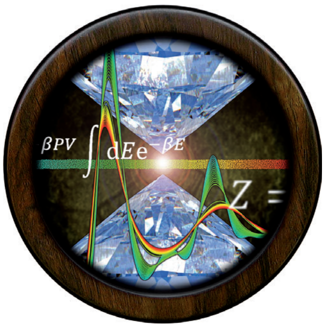
A reflection on the “Grotthuss mechanism” …

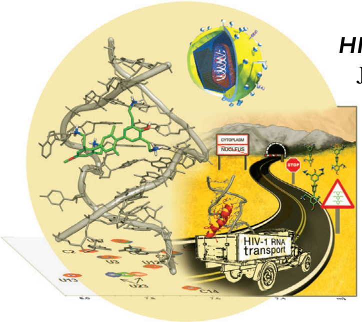


… of proton transport observed in nonporous single crystals by L. R. Falvello, G. J. McIntyre, M. Tomás et al. in their Communication on page 13463 ff. The pirouette shows the rotation of water molecules, one step in the mechanism, and the grand jeté leap is a metaphor for proton hopping along the water wire, the other step. The backdrop shows two strands of the polymer in the crystal, whose unit cell outline provides a 3D frame for the scene.

High-Pressure Chemistry

Monte Carlo simulations of argon crystals at up to 100 GPa are presented by J. Wiebke, E. Pahl, and P. Schwerdtfeger in their Communication on page 13202 ff. The calculations can provide a more accurate description of high-pressure melting than diamond anvil cell experiments. (DAC picture: Prof. S. Jacobsen.)





HIV Inhibitors

J. Alcamí, S. Fustero, and J. Gallego et al. report in their Communication on page 13405 ff., the design of terphenyl molecules that reproduce the interactions of the HIV-1 protein Rev with its RNA receptor and thus block Rev function.

White Light from Gold

In their Communication on page 13472 ff., D. Li and co-workers find adding thiophene into a classical trinuclear gold(I) pyrazolate core gives a solid-state white-light emitter as the result aurophilic phosphorescence and dual emissions.

How to contact us:

Editorial Office:
E-mail: angewandte@wiley-vch.de
Fax: (+49) 6201–606-331
Telephone: (+49) 6201–606-315

Reprints, E-Prints, Posters, Calendars:
Carmen Leitner
E-mail: chem-reprints@wiley-vch.de
Fax: (+49) 6201–606-331
Telephone: (+49) 6201–606-327

Copyright Permission:
Bettina Loycke
E-mail: rights-and-licences@wiley-vch.de
Fax: (+49) 6201–606-332
Telephone: (+49) 6201–606-280

Online Open:
Margitta Schmitt, Carmen Leitner
E-mail: angewandte@wiley-vch.de
Fax: (+49) 6201–606-331
Telephone: (+49) 6201–606-315

Subscriptions:
www.wileycustomerhelp.com
Fax: (+49) 6201–606-184
Telephone: 0800 1800536 (Germany only)
+44(0) 1865476721 (all other countries)

Advertising:
Marion Schulz
E-mail: mschulz@wiley-vch.de
jspiess@wiley-vch.de
Fax: (+49) 6201–606-550
Telephone: (+49) 6201–606-565

Courier Services:
Boschstrasse 12, 69469 Weinheim

Regular Mail:
Postfach 101161, 69451 Weinheim

Angewandte Chemie International Edition is a journal of the Gesellschaft Deutscher Chemiker (GDCh), the largest chemistry-related scientific society in continental Europe. Information on the various activities and services of the GDCh, for example, cheaper subscription to *Angewandte Chemie International Edition*, as well as applications for membership can be found at **www.gdch.de** or can be requested from GDCh, Postfach 900440, D-60444 Frankfurt am Main, Germany.

GDCh
GESELLSCHAFT
DEUTSCHER CHEMIKER

Editorial

"... Our mastery of working across the boundaries of disciplines should encompass more than being a supplier of fine molecules to biologists, materials scientists and physicists. We have a tremendous opportunity to broaden our discipline and study the very core fundamentals of biology ..."
Read more in the Editorial by W. T. S. Huck.

Service

Author Profile

"My favorite time of day is the sunset.
In a spare hour, I observe how people interact with their environment ..."
This and more about Robert Schlögl can be found on page 13140.

News

G. Decher

C. Höbartner

Y. Jung

S. Park

Books

Protein–Protein Interactions in Drug Discovery — Alexander Dömling — *reviewed by J. Rudolph* — **13143**

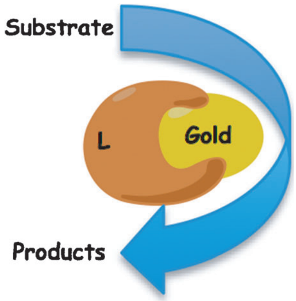
Highlights

Homogeneous Catalysis

R. Gramage-Doria,*
J. N. H. Reek — **13146–13148**

New Endeavors in Gold Catalysis—Size Matters

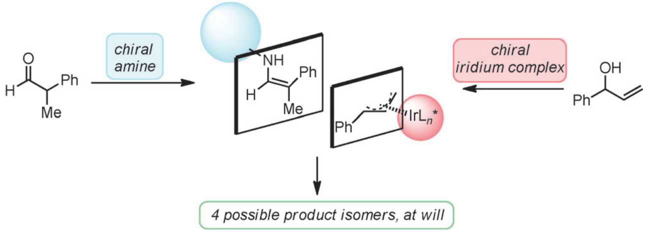
Golden times: Recent breakthroughs in gold-catalyzed transformations using nanosized homogeneous gold catalysts are highlighted. These catalysts have activities and stabilities comparable to (or even surpassing) heterogeneous catalysts. Well-defined, ligand-supported gold clusters turned out to be active in homogeneous catalysis, a catalyst concept which holds potential for future studies.



Asymmetric Catalysis

M. T. Oliveira, M. Luparia, D. Audisio,
N. Maulide* — **13149–13152**

Dual Catalysis Becomes Diastereodivergent



Diastereodivergent is cool: The development of catalytic systems able to generate each and every one of the possible product diastereoisomers from the same starting materials (i.e., that are "diastereodivergent") is an emerging field in asymmetric catalysis. The possibility of designing such systems in a rational manner based on dual catalysis has now become reality.

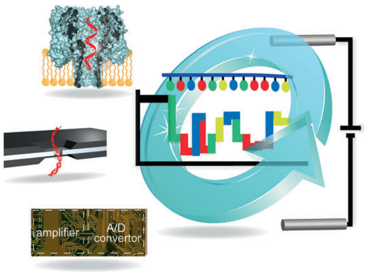
Minireviews

Nucleic Acid Sequencing

Y.-L. Ying, J. J. Zhang, R. Gao,
Y.-T. Long* — **13154–13161**

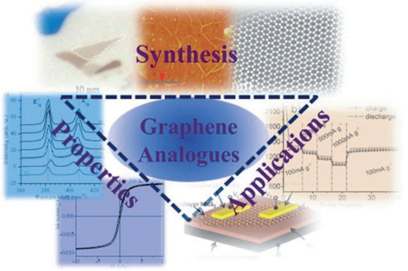
Nanopore-Based Sequencing and Detection of Nucleic Acids

Adopted from nature: The functions of natural ion channels can be mimicked with both biological and solid-state nanopores, which have attracted increasing attention for their possible use in the detection and sequencing of DNA. In this Minireview, background and latest progress in this area are summarized and a novel platform for nanopore-based detection is discussed.



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*, Journal Customer Services, John Wiley & Sons Inc., 350 Main St., Malden, MA 02148-5020. Annual subscription price for institutions: US$ 11.738/10.206 (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.

Reviews

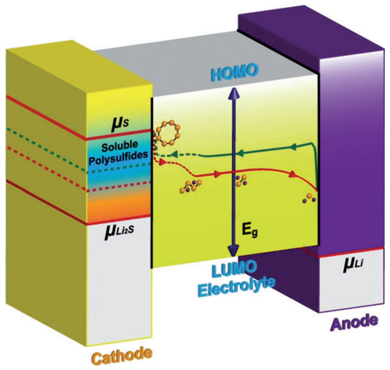


Single and few-layer MoS_2, BN, and similar layered inorganic compounds are emerging as very interesting materials with numerous potential applications. This Review describes the synthesis and characterization of these graphene analogues and presents some of their physical properties and applications.

Nanomaterials

C. N. R. Rao,*
H. S. S. Ramakrishna Matte,
U. Maitra ———— 13162 – 13185

Graphene Analogues of Inorganic Layered Materials



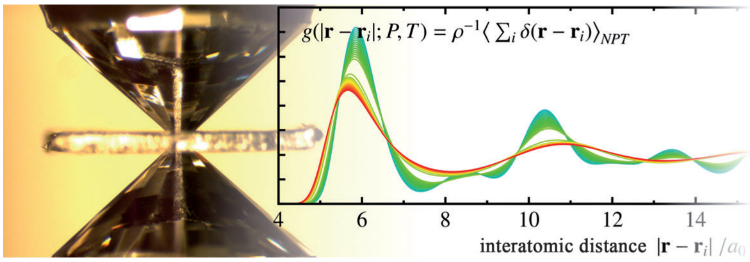
Electrochemical cells with high energy densities are of great importance to satisfy the urgent demand for electronic vehicles and electricity storage. The Li-S battery is one promising candidate, yet it suffers from the low utilization of active materials and poor cycle stability. The electrochemistry and challenges facing Li-S batteries is addressed, and recent progress of materials related to Li-S batteries is summarized.

Lithium–Sulfur Batteries

Y.-X. Yin, S. Xin, Y.-G. Guo,*
L.-J. Wan* ———— 13186 – 13200

Lithium–Sulfur Batteries: Electrochemistry, Materials, and Prospects

Communications



Putting the bite on argon: Ab initio Monte Carlo simulations of superheated argon crystals at up to 100 GPa suggest that theory can provide a more accurate picture of high-pressure melting than modern diamond-anvil cell experiments.

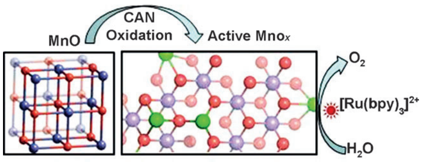
Phase Transitions

J. Wiebke,* E. Pahl,*
P. Schwerdtfeger* ———— 13202 – 13205

Melting at High Pressure: Can First-Principles Computational Chemistry Challenge Diamond-Anvil Cell Experiments?

Frontispiece

Yes, we CAN: Partial oxidation of inactive MnO nanoparticles by Ce^{IV} as oxidant gives active MnO_x catalysts that are suitable for effective photochemical and electrochemical water oxidation. The active MnO_x catalyst contains mixed-valent Mn^{II}, Mn^{III}, and Mn^{IV} species (see picture; green and violet) interconnected through oxido bridges (red) with defects and disorders. MnO_x is analogous to calcium–manganese oxide systems where the calcium sites are replaced by Mn^{II} or Mn^{III} ions.



Water Oxidation Catalysts

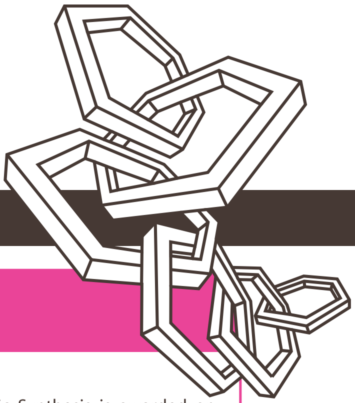
A. Indra, P. W. Menezes, I. Zaharieva,
E. Baktash, J. Pfrommer, M. Schwarze,
H. Dau,* M. Driess* ———— 13206 – 13210

Active Mixed-Valent MnO_x Water Oxidation Catalysts through Partial Oxidation (Corrosion) of Nanostructured MnO Particles

BOSS | XIV

14th Belgian Organic Synthesis Symposium

www.boss14.org




© UCL

July 13>18, 2014

Louvain-La-Neuve, Belgium

Janssen Pharmaceutica Prize for Creativity in Organic Synthesis

▶ **Call for nominations**

The Janssen Pharmaceutica Prize for Creativity in Organic Synthesis is awarded on a biennial basis, on the occasion of the BOSS, to a chemist under the age of 50 who has made a significant contribution to the field of organic synthesis in the broadest sense. The Prize consists of a trophy, a citation and € 20.000. The laureate of the Prize is expected to deliver a lecture at the BOSS XIV.

All details for the submission of a nomination are available via the symposium website **www.BOSS14.org**

▶ **Deadline for nominations** December 31, 2013

Symposium Programme

- **One-day course** by the recipient of the **Tetrahedron Chair in Organic Synthesis**
  Prof. John F. HARTWIG (UC Berkeley, United States)
- **17 plenary lectures**
  - Prof. Lutz ACKERMANN (Georg-August University Goettingen, Germany)
  - Prof. Jeffrey BODE (ETH Zurich, Switzerland)
  - Prof. Martin D. BURKE (University of Illinois, United States)
  - Prof. Thomas CARELL (Ludwig-Maximilians-University Munich, Germany)
  - Prof. Janine COSSY (ESPCI Paristech, France)
  - Prof. Nicolai CRAMER (Ecole Polytechnique Fédérale de Lausanne, Switzerland)
  - Prof. Darren J. DIXON (University of Oxford, United Kingdom)
  - Prof. Gwilherm EVANO (ULB, Belgium)
  - Prof. Fabien GAGOSZ (Ecole Polytechnique, France)
  - Prof. Amir H. HOVEYDA (Boston College, United States)
  - Prof. Dawei MA (Shanghai Institute of Organic Chemistry, China)
  - Prof. José Luis MASCARENAS (University of Santiago de Compostela, Spain)
  - Prof. David MILSTEIN (The Weizmann Institute of Science, Israel)
  - Prof. Dieter SEEBACH (ETH Zurich, Switzerland) – opening lecture on Sunday July 13!
  - Prof. Troels SKRYDSTRUP (Aarhus University, Denmark)
  - Prof. Mikiko SODEOKA (Riken, Japan)
  - Prof. Herbert WALDMANN (Max Planck Institute of Molecular Physiology, Germany)
- **Lecture** delivered by the recipient of the
  Janssen Pharmaceutica Prize for Creativity in Organic Synthesis
- **Poster sessions**
- **Commercial exhibition**
- **Social activities**

Symposium Chairman

Prof. Alois FÜRSTNER
(Max Planck Institut für Kohlenforschung, Germany)

Organising Committee

Chairman

Prof. Olivier RIANT (UCL, Belgium)

Members

Prof. Kourosch ABBASPOUR TEHRANI
(University of Antwerp, Belgium)
Dr Edmond DIFFERDING
(Differding Consulting, Belgium)
Prof. Gwilherm EVANO (ULB, Belgium)
Dr Christophe GENICOT (UCB Pharma SA, Belgium)
Prof. Bert U. MAES (University of Antwerp, Belgium)
Prof. István MARKÓ (UCL, Belgium)
Dr Lieven MEERPOEL (Janssen R&D, Belgium)
Prof. Christian STEVENS (UGent, Belgium)
Prof. Erik VAN DER EYCKEN (KULeuven, Belgium)
Prof. Johan VAN DER EYCKEN (UGent, Belgium)
Prof. Stéphane VINCENT (UNamur, Belgium)

Advisory Board

Members

Prof. Pierre DE CLERCQ (UGent, Belgium)
Prof. Norbert DE KIMPE (UGent, Belgium)
Prof. Léon GHOSEZ (IECB, France)
Prof. Alain KRIEF (UNamur, Belgium)
Prof. Dirk TOURWE (VUB, Belgium)

BOSS XIV Secretariat

LD Organisation
Scientific Conference Producers
Rue Michel de Ghelderode 33/2
1348 Louvain-la-Neuve, Belgium
Tel +32 10 45 47 77
Fax +32 10 45 97 19
secretariat@boss14.org


© MC Dufrêne


© MC Dufrêne

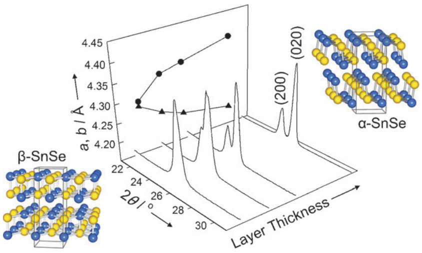

© MC Dufrêne

Nanolaminates

M. Beekman,* S. Disch, S. Rouvimov,
D. Kasinathan, K. Koepernik, H. Rosner,
P. Zschack, W. S. Neumann,
D. C. Johnson* ________ 13211 – 13214

Controlling Size-Induced Phase Transformations Using Chemically Designed Nanolaminates

By dimensionally constraining crystalline layers in a non-epitaxial intergrowth, nanocrystal ensembles with well-defined and precisely controlled size are prepared. Synchrotron X-ray diffraction, electron microscopy, and density functional theory show that a size-induced second-order structural transition allows the crystal structure of a layered semiconductor (SnSe) to be continuously tuned by controlling the thickness of the individual layers.

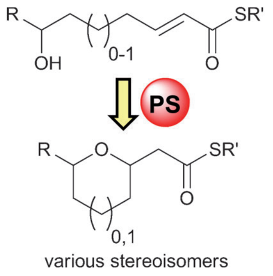


Polyketide Biosynthesis

VIP

P. Pöplau, S. Frank, B. I. Morinaka,
J. Piel* ________ 13215 – 13218

An Enzymatic Domain for the Formation of Cyclic Ethers in Complex Polyketides



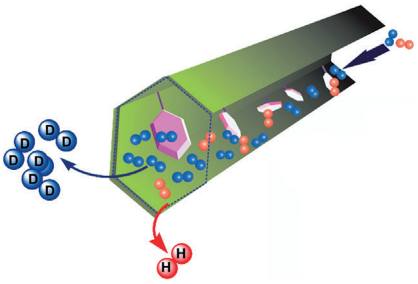
Champion cyclist: In vitro studies on the pederin biosynthetic pathway identify pyran synthases (PS) as a new family of polyketide synthase domains that stereoselectively form diverse five- and six-membered ether rings by oxa-conjugate cyclization during carbon-chain elongation. These domains could be useful tools for chemoenzymatic synthesis.

Quantum Sieving

H. Oh, S. B. Kalidindi, Y. Um,
S. Bureekaew, R. Schmid, R. A. Fischer,*
M. Hirscher* ________ 13219 – 13222

A Cryogenically Flexible Covalent Organic Framework for Efficient Hydrogen Isotope Separation by Quantum Sieving

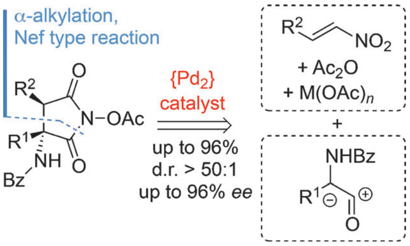
Pyrdine incorporation into the covalent organic framework COF-1 resulted in a highly dense packing structure in which the pyridine occupies the hexagonal pore space between the COF layers. This optimizes pore aperture for quantum sieving of hydrogen isotopes and introduces flexibility at cryogenic temperatures into the system. The separation factor (S_{D_2/H_2}) is about 10 at 22 K, which is the highest reported to date.



Cascade Reactions

M. Weber, W. Frey,
R. Peters* ________ 13223 – 13227

Asymmetric Palladium(II)-Catalyzed Cascade Reaction Giving Quaternary Amino Succinimides by 1,4-Addition and a Nef-Type Reaction

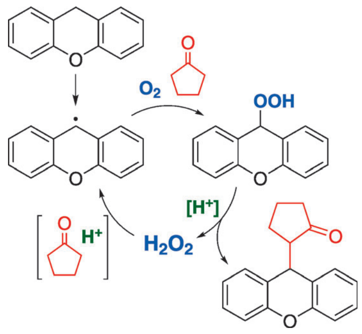


Simple starting materials, high-value products: A dinuclear ferrocene-based Pd^{II} complex transforms mixtures of racemic *N*-benzoyl α-amino acids, nitroolefins, acetic anhydride, and manganese acetate into biologically interesting quaternary aminosuccinimides. The products are obtained as single diastereomers in enantioenriched form. Key steps of the cascade mechanism are a 1,4-addition of in situ generated azlactones to nitroolefins and a Nef-type reaction.

Oxidative Coupling

B. Schweitzer-Chaput, A. Sud, Á. Pintér,
S. Dehn, P. Schulze,
M. Klussmann* **13228 – 13232**

Synergistic Effect of Ketone and Hydroperoxide in Brønsted Acid Catalyzed Oxidative Coupling Reactions

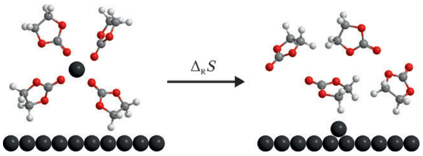


Waste not wasted: A mechanistic study of the autoxidative coupling of xanthene with cyclopentanone uncovered an autoinductive effect of the waste product hydrogen peroxide. It generates radicals in the presence of acid and ketones, which accelerate the reaction by providing an additional pathway to the reactive hydroperoxide intermediate. This discovery could be applied to achieve other Brønsted acid catalyzed oxidative coupling reactions.

Electrochemical Lithium Deposition

M. J. Schmid, K. R. Bickel, P. Novák,
R. Schuster* **13233 – 13237**

Microcalorimetric Measurements of the Solvent Contribution to the Entropy Changes upon Electrochemical Lithium Bulk Deposition



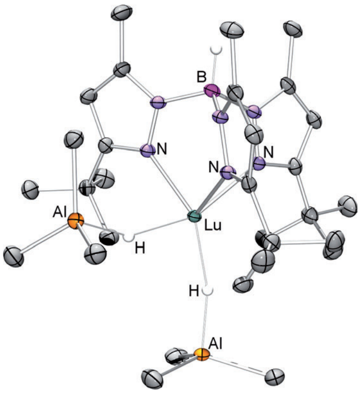
A strongly positive entropy of reaction for the bulk deposition of Li can be explained by the desolvation of Li^+ ions, as revealed by microcalorimetric studies. From this the coordination number of Li^+ can be derived. The positive entropy leads to cooling of the electrode, which may influence lithium plating in lithium-ion batteries.

Rare-Earth-Metal Hydrides

C. Schädle, D. Schädle, K. Eichele,
R. Anwander* **13238 – 13242**

Methylaluminum-Supported Rare-Earth-Metal Dihydrides

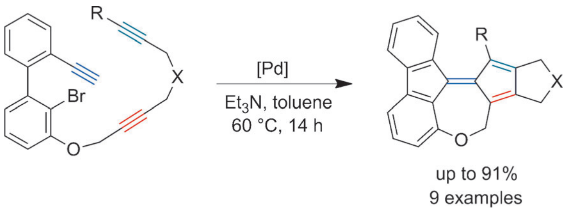
The super-bulky hydrotris(3-*tert*-butyl-5-methylpyrazolyl)borato ligand ($Tp^{t\text{Bu,Me}}$) allows the isolation of the monolanthanide complexes $[Tp^{t\text{Bu,Me}}Ln\{(\mu\text{-H})AlMe_3\}_2]$ (Ln = Y, Lu; see structure), which can be transformed into discrete non-agglomerated imide complexes $[Tp^{t\text{Bu,Me}}Ln\{(\mu\text{-NC}_6H_3Me_2\text{-2,6})(\mu\text{-H})AlMe_2\}]$ by reaction with dimethylaniline. Ln hydrido bonding is corroborated by ^1H NMR spectroscopy through ^1H–^{89}Y coupling and ^{89}Y DEPT45 NMR spectroscopy.



Domino Reactions

J. Wallbaum, R. Neufeld, D. Stalke,
D. B. Werz* **13243 – 13246**

A Domino Approach to Dibenzopentafulvalenes by Quadruple Carbopalladation

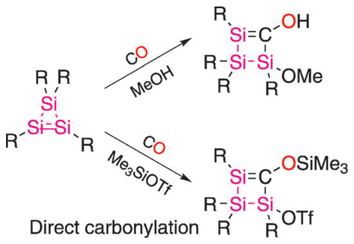


Four at one stroke: A quadruple domino carbopalladation reaction gives access to highly substituted dibenzopentafulvalenes and the complete pentafulvalene backbone is constructed in only one synthetic step. Structural and electronic properties have been evaluated by X-ray crystallography and cyclovoltammetry.

CO Activation

M. J. Cowley, Y. Ohmori, V. Huch,
M. Ichinohe, A. Sekiguchi,*
D. Scheschkewitz* ______ **13247 – 13250**

Carbonylation of Cyclotrisilenes

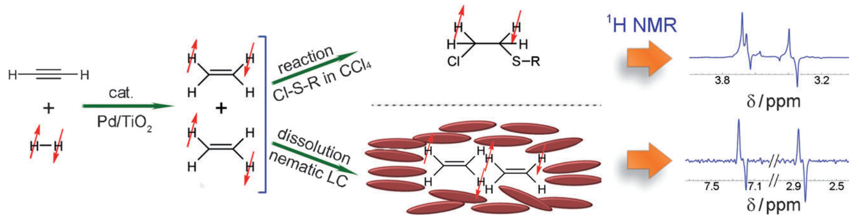


Spontaneous reaction of carbon monoxide with cyclotrisilenes has been observed. Depending on the substitution pattern, the initial product of carbonylation either dimerizes or can be trapped to yield highly functionalized cyclic silenes.

Spin Isomers

V. V. Zhivonitko,* K. V. Kovtunov,
P. L. Chapovsky,
I. V. Koptyug* ______ **13251 – 13255**

Nuclear Spin Isomers of Ethylene: Enrichment by Chemical Synthesis and Application for NMR Signal Enhancement

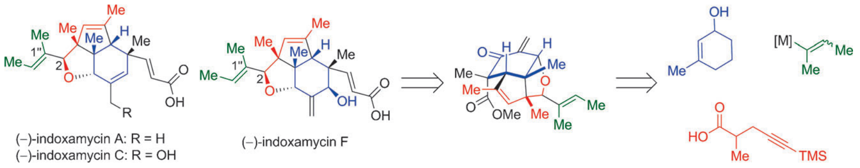


Taking CH_2CH_2 for a spin: Enrichment of the nuclear spin isomers of ethylene was achieved by a catalytic reaction of acetylene with parahydrogen (see scheme). The spin isomers were used for NMR signal enhancement, both with and without subjecting them to a chemical reaction. The interconversion times of the nuclear spin isomers were evaluated at ambient pressure, thus revealing extremely long-lived spin states with lifetimes of (1000 ± 400) s.

Natural Product Synthesis

C. He, C. Zhu, Z. Dai, C.-C. Tseng,
H. Ding* ______ **13256 – 13260**

Divergent Total Synthesis of Indoxamycins A, C, and F



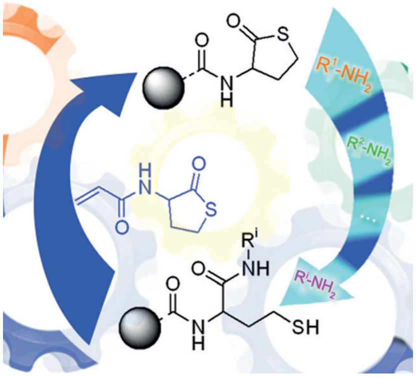
The concise and divergent total synthesis of (−)-indoxamycins A, C, and F has been completed for the first time by using a tricyclic enone as the common late-stage intermediate. The key steps of the strategy are based on an Ireland–Claisen rearrangement, a stereodivergent reductive 1,6-enyne cyclization, and a tandem 1,2-addition/oxa-Michael/methylenation reaction.

Sequence-Controlled Oligomers

P. Espeel, L. L. G. Carrette, K. Bury,
S. Capenberghs, J. C. Martins,
F. E. Du Prez,*
A. Madder* ______ **13261 – 13264**

Multifunctionalized Sequence-Defined Oligomers from a Single Building Block

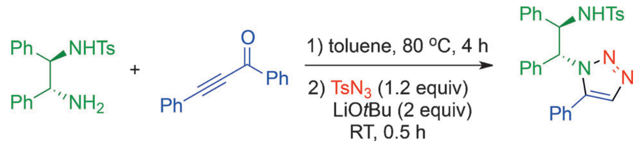
Another link in the chain: A thiolactone-based approach for the preparation of multifunctionalized sequence-defined oligomeric structures on solid support was established. The iterative aminolysis/chain extension method with a single building block and a variety of commercial amines allowed for the protecting group free synthesis of various oligomeric motifs with a unique backbone and a preprogrammed organization of side chain functionalities.



Synthetic Methods

G. Cheng, X. Zeng, J. Shen, X. Wang, X. Cui* **13265 – 13268**

A Metal-Free Multicomponent Cascade Reaction for the Regiospecific Synthesis of 1,5-Disubstituted 1,2,3-Triazoles

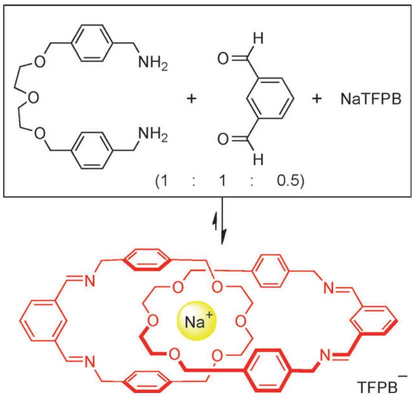


About specifics: A method for the regiospecific synthesis of the title compounds through an unprecedented Michael addition/deacylative diazo transfer/cyclization sequence has been established. The simple and practical method can be used for the modification of primary amines including chiral α-amines. The process involves the formation three covalent bonds and the cleavage of two covalent bonds (see scheme, Ts = 4-toluenesulfonyl).

Template Synthesis

S.-T. Tung, C.-C. Lai, Y.-H. Liu, S.-M. Peng, S.-H. Chiu* **13269 – 13272**

Synthesis of a [2]Catenane from the Sodium Ion Templated Orthogonal Arrangement of Two Diethylene Glycol Chains

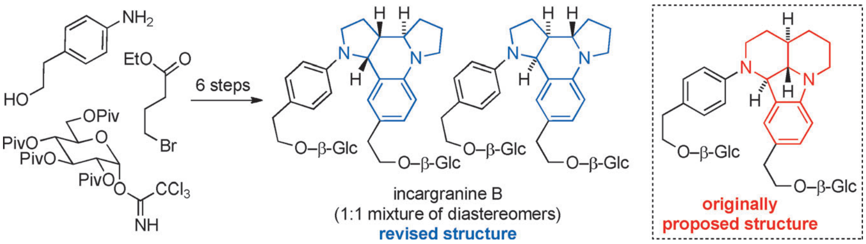


Take five: Two dialdehydes, two diamines, one Na^+ ion have been used to generate a [2]catenane. This simple and efficient synthesis makes use of a Na^+ ion as a template to align in an orthogonal manner two diethylene glycol chains between the two amine groups (see scheme, $TFPB^-$ = tetrakis(3,5-trifluoromethylphenyl)borate).

Total Synthesis

P. D. Brown, A. C. Willis, M. S. Sherburn, A. L. Lawrence* **13273 – 13275**

Total Synthesis and Structural Revision of the Alkaloid Incargranine B

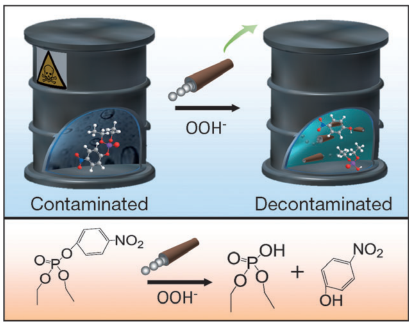


Seeing double: Consideration of the biosynthetic origins of incargranine B, which was originally assigned an unprecedented indolo[1.7]naphthyridine structure, led to the proposal of a dipyrroloquinoline framework as a more biosynthetically feasible structure (see scheme; Piv = pivaloyl). This hypothesis was validated by a short biomimetic synthesis of incargranine B.

Nanomachines

J. Orozco, G. Cheng, D. Vilela, S. Sattayasamitsathit, R. Vazquez-Duhalt, G. Valdés-Ramírez, O. S. Pak, A. Escarpa, C. Kan, J. Wang* **13276 – 13279**

Micromotor-Based High-Yielding Fast Oxidative Detoxification of Chemical Threats

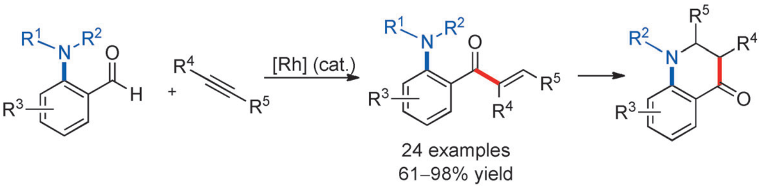


Oxidative decontamination: An effective strategy for the oxidative neutralization of organophosphorus nerve agents that is based on self-propelled micromotors has been developed. The movement of multiple motors across a peroxide-activated contaminated solution enhances the decontamination efficiency compared with common neutralization processes for chemical warfare agents.

Hydroacylation

M. Castaing, S. L. Wason, B. Estepa,
J. F. Hooper,
M. C. Willis* ________ 13280 – 13283

2-Aminobenzaldehydes as Versatile Substrates for Rhodium-Catalyzed Alkyne Hydroacylation: Application to Dihydroquinolone Synthesis

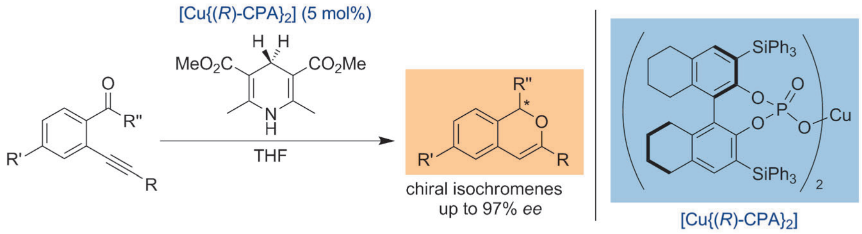


Amine for it! A cationic rhodium catalyst, which was assembled in situ from commercial components, promoted the reaction of a range of simple 2-aminobenzaldehydes with terminal and internal alkynes in a series of intermolecular hydroacylation reactions. The products of this reaction, amino-substituted enones, were efficiently converted into the corresponding dihydro-4-quinolones.

Asymmetric Catalysis

K. Saito, Y. Kajiwara,
T. Akiyama* ________ 13284 – 13288

Chiral Copper(II) Phosphate Catalyzed Enantioselective Synthesis of Isochromene Derivatives by Sequential Intramolecular Cyclization and Asymmetric Transfer Hydrogenation of *o*-Alkynylacetophenones

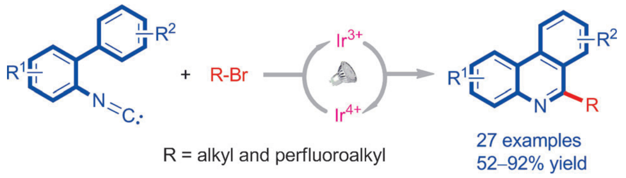


A good mix: The title reaction of *o*-alkynylacetophenones with the Hantzsch ester in the presence of a chiral copper/phosphate catalyst proceeds in good yields with excellent enantioselectivities. The key intermediate for enantiocontrol is the ion pair of the carbonyl ylide with a chiral phosphate anion, and this process provides straight forward access to highly enantioriched chiral isochromenes.

Photochemistry

H. Jiang, Y. Cheng, R. Wang, M. Zheng,
Y. Zhang,* S. Yu* ________ 13289 – 13292

Synthesis of 6-Alkylated Phenanthridine Derivatives Using Photoredox Neutral Somophilic Isocyanide Insertion

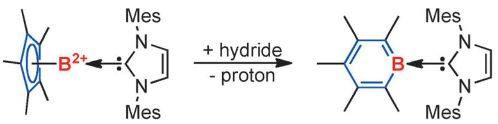


Bring to light: The first visible-light-promoted somophilic isocyanide insertion occurs using an iridium photocatalyst. This efficient synthetic approach provides a rapid entry to 6-alkylated phenanthridine derivatives (see scheme). The reactions proceed at room temperature in good to excellent yields with broad substrate scope and under environmentally friendly conditions.

Boron Cations

C.-T. Shen, Y.-H. Liu, S.-M. Peng,
C.-W. Chiu* ________ 13293 – 13297

A Di-Substituted Boron Dication and Its Hydride-Induced Transformation to an NHC-Stabilized Borabenzene

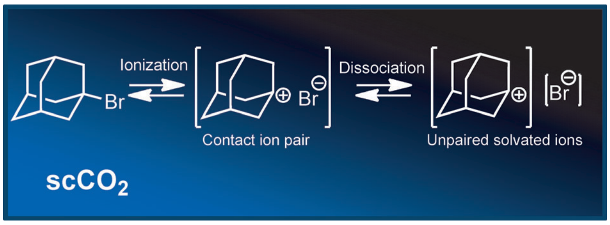


Give me a B: A stepwise chloride abstraction of [Cp*BCl$_2$(IMes)] resulted in the linear di-substituted boron dication [Cp*B(IMes)]$^{2+}$. The hypercoordinated boron dication, stabilized in the pentagonal pyramidal [C$_5$B]$^{2+}$ cluster, reacts with superhydride to yield the N-heterocyclic carbene-stabilized borabenzene, [C$_5$Me$_5$B(IMes)] (see scheme).

Supercritical CO_2

T. Delgado-Abad, J. Martínez-Ferrer, A. Caballero, A. Olmos, R. Mello, M. E. González-Núñez,* P. J. Pérez, G. Asensio **13298 – 13301**

Supercritical Carbon Dioxide: A Promoter of Carbon–Halogen Bond Heterolysis

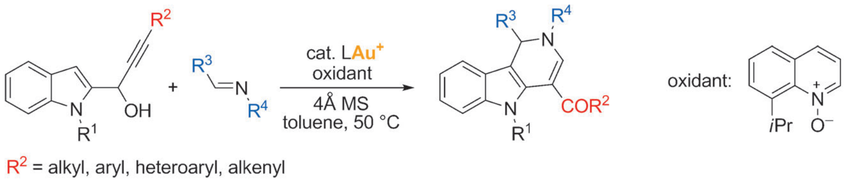


Amazing reaction medium: Supercritical carbon dioxide, with zero dipole moment, lower dielectric constant than pentane, and non-hydrogen-bonding behavior, ionizes carbon–halogen bonds, dissociates the resulting ion pairs, and escapes from capture by the carbocation intermediates at temperatures above 40 °C. These properties allow the observation of carbocation chemistry in the absence of acids.

Synthetic Methods

L. Wang, X. Xie, Y.-H. Liu* **13302 – 13306**

Gold-Catalyzed Oxidative Rearrangement Involving 1,2-Acyl Migration: Efficient Synthesis of Functionalized Dihydro-γ-Carbolines from α-(2-Indolyl) Propargylic Alcohols and Imines

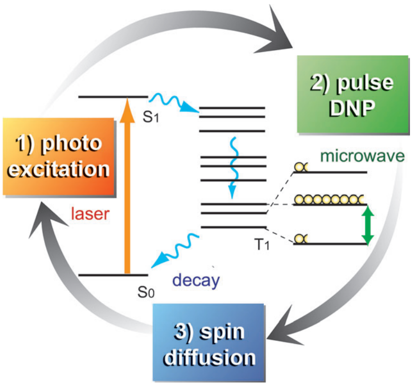


Smooth moves with a nifty side step: A gold-catalyzed transformation of α-(2-indolyl) propargylic alcohols with imines in the presence of the oxidant 8-isopropylquinoline *N*-oxide provided rapid access to highly functionalized dihydro-γ-carbolines (see scheme). The reaction mechanism is proposed to involve intermolecular trapping of an α-carbonyl gold carbenoid intermediate, followed by cyclization and a novel gold-assisted 1,2-acyl migration.

Dynamic Nuclear Polarization

K. Tateishi, M. Negoro,* A. Kagawa, M. Kitagawa **13307 – 13310**

Dynamic Nuclear Polarization with Photoexcited Triplet Electrons in a Glassy Matrix

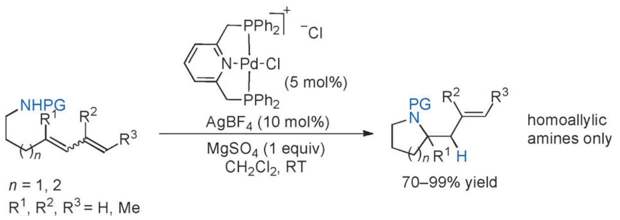


Utilizing photoexcited triplet electrons, dynamic nuclear polarization (DNP) has achieved, in a glassy matrix at 0.40 T and 120 K, a ^{1}H spin polarization of 1.45 %, which is 4250 times larger than the thermal ^{1}H spin polarization. In a glassy matrix, various molecules of interest, including 2,3,4-trifluorobenzoic acid and 5-fluorouracil can be co-doped with polarizing agents; polarizing these co-dopants with DNP was also successful.

Homoallylic Amines

J. M. Pierson, E. L. Ingalls, R. D. Vo,
F. E. Michael* ________ **13311 – 13313**

Palladium(II)-Catalyzed Intramolecular Hydroamination of 1,3-Dienes to Give Homoallylic Amines

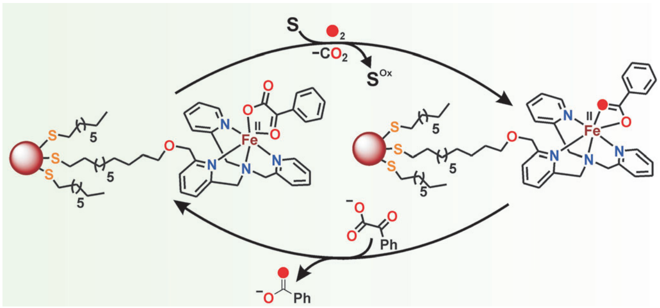


A pincer for high selectivity: A mild palladium-catalyzed hydroamination of protected amino-1,3-dienes is possible. This highly regioselective reaction employs a tridentate PNP pincer ligand and leads to cyclic and homoallylic protected amines in high yields. Substrates with a wide array of amine protecting groups and diene substitution patterns were cyclized to form five- and six-membered heterocycles. PG = protecting group.

Surface Functionalization

D. Sheet, P. Halder,
T. K. Paine* ________ **13314 – 13318**

Enhanced Reactivity of a Biomimetic Iron(II) α-Keto Acid Complex through Immobilization on Functionalized Gold Nanoparticles

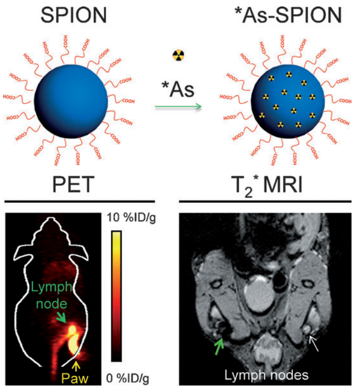


Immobilized biomimetic iron complex: An iron(II) benzoylformate complex of a thiol-appended N_4 ligand immobilized on gold nanoparticles activates dioxygen to carry out oxidative decarboxylation of benzoylformic acid to benzoic acid catalytically.

PET/MRI Agents

F. Chen, P. A. Ellison, C. M. Lewis,
H. Hong, Y. Zhang, S. Shi, R. Hernandez,
M. E. Meyerand, T. E. Barnhart,
W. Cai* ________ **13319 – 13323**

Chelator-Free Synthesis of a Dual-Modality PET/MRI Agent

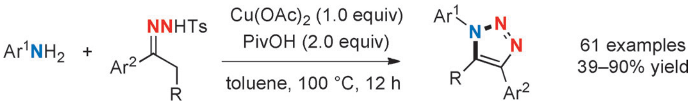


Old technique, new application: A simple and efficient chelator-free strategy for the synthesis of a novel dual-modality PET/MRI agent has been developed. Labeling of radioarsenic (*As^{III} and *As^{V}, * = 71, 72, 74, 76) at the surface of superparamagnetic iron oxide nanoparticles (SPIONs) resulted in *As-SPIONs that can be used for simultaneous PET/MRI in cancer diagnosis, lymph-node mapping, and potentially for internal radiotherapy.

Nitrogen Heterocycles

Z. Chen, Q. Yan, Z. Liu, Y. Xu,
Y. Zhang* ________ **13324 – 13328**

Copper-Mediated Synthesis of 1,2,3-Triazoles from *N*-Tosylhydrazones and Anilines

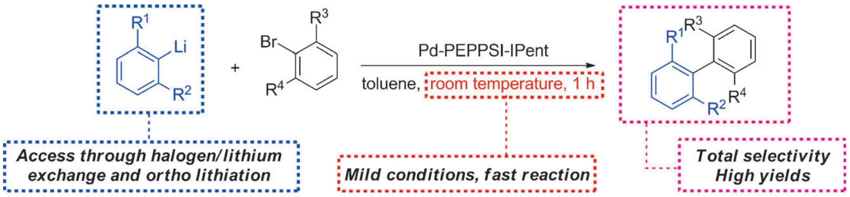


NNNifty targets: In a straightforward copper-mediated synthesis of 1,4-disubstituted and 1,4,5-trisubstituted 1,2,3-triazoles, readily available aniline and *N*-tosylhydrazone substrates underwent cyclization through C–N and N–N bond formation (see scheme; Piv = pivaloyl, Ts = *p*-toluenesulfonyl). This method enables the preparation of 1,2,3-triazoles with high efficiency under mild conditions without the use of azides.

Cross-Coupling

M. Giannerini, V. Hornillos, C. Vila,
M. Fañanás-Mastral,*
B. L. Feringa* ―――― 13329 – 13333

Hindered Aryllithium Reagents as Partners in Palladium-Catalyzed Cross-Coupling: Synthesis of Tri- and Tetra-*ortho*-Substituted Biaryls under Ambient Conditions

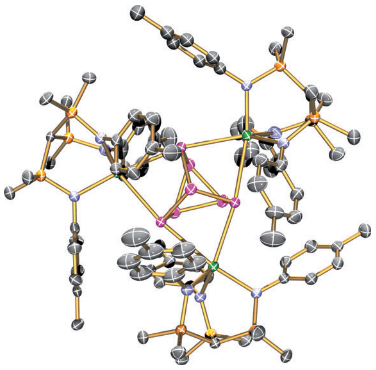


Elegant like a butterfly, stings like a lithium reagent: Mono- and di-*ortho*-substituted aryllithium reagents were coupled through palladium catalysis with hindered aryl bromides to form highly congested tri- and tetra-*ortho*-substituted biaryls. The reaction allows the use of easily accessible *ortho*-functionalized aryllithium compounds. The high reactivity of organolithium reagents facilitates a fast process under ambient conditions.

Actinide Zintl Compounds

D. Patel, F. Tuna, E. J. L. McInnes,
W. Lewis, A. J. Blake,
S. T. Liddle* ―――― 13334 – 13337

An Actinide Zintl Cluster: A Tris(triamidouranium)μ_3-η^2:η^2:η^2-Heptaphosphanortricyclane and Its Diverse Synthetic Utility

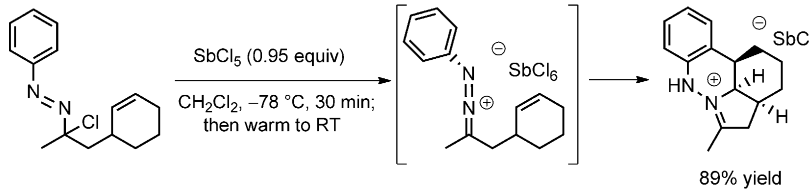


A diuranium(V) arene complex reductively cleaves P_4 to give a triuranium heptaphosphanortricyclane cluster (see picture; U green, P purple, N blue, Si orange). This cluster is the first example of a molecular actinide $[P_7]$ Zintl complex and the first example of uranium-promoted catenation of P_4. This complex undergoes a wide range of reactions under mild conditions to afford liberated P_7R_3 phosphanortricyclanes.

Heterocycles

D. A. Bercovici, J. M. Ogilvie, N. Tsvetkov,
M. Brewer* ―――― 13338 – 13341

Intramolecular Polar $[4^{\oplus}+2]$ Cycloadditions of Aryl-1-aza-2-azoniaallene Salts: Unprecedented Reactivity Leading to Polycyclic Protonated Azomethine Imines

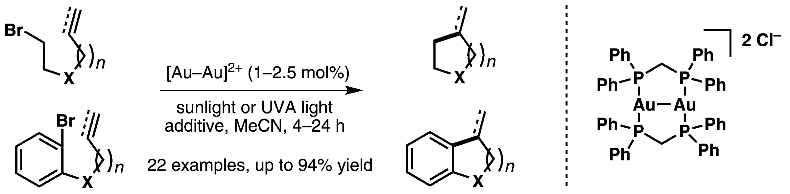


Charged up: In the first example of the title salts undergoing a $[4^{\oplus}+2]$ cycloaddition reaction, the azo bond and one aromatic π bond make up the 4π component. This reaction appears to be concerted and provides high yields of protonated azomethine imine products. Substituted alkenes provided products containing all-carbon or nitrogen-bearing quaternary centers in high yield.

Radical Reactions

G. Revol, T. McCallum, M. Morin,
F. Gagosz, L. Barriault* ― 13342 – 13345

Photoredox Transformations with Dimeric Gold Complexes

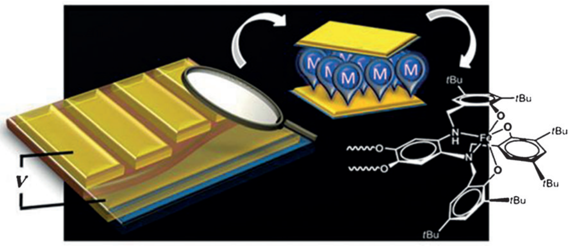


Let the sunshine in! Unactivated alkyl and aryl bromides underwent a light-enabled reductive radical cyclization in the presence of a dimeric phosphine–gold complex as a photocatalyst (see scheme; X = $C(CO_2Et)_2$, NR, O). Sunlight can be used as the energy source for this simple and efficient radical reaction, which does not require potentially hazardous and toxic chemical reagents, such as organostannanes and chemical initiators.

Molecular Rectification

L. D. Wickramasinghe, M. M. Perera, L. Li, G. Mao, Z. Zhou, C. N. Verani* ______ **13346 – 13350**

Rectification in Nanoscale Devices Based on an Asymmetric Five-Coordinate Iron(III) Phenolate Complex

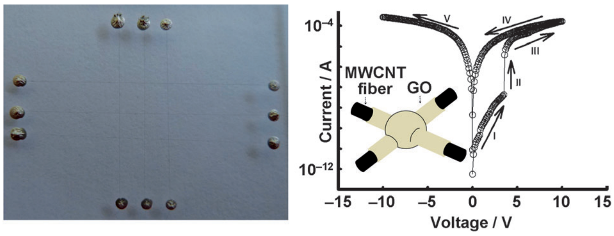


One-way street: An asymmetric iron(III) phenolate complex with amphiphilic and redox properties was used in the formation of Langmuir–Blodgett (LB) films. These were used as a basis for nanoscale Au | LB film | Au devices that are capable of current rectification.

Carbon-Fiber Memory Devices

G. Z. Sun, J. Q. Liu, L. X. Zheng,* W. Huang, H. Zhang* ______ **13351 – 13355**

Preparation of Weavable, All-Carbon Fibers for Non-Volatile Memory Devices

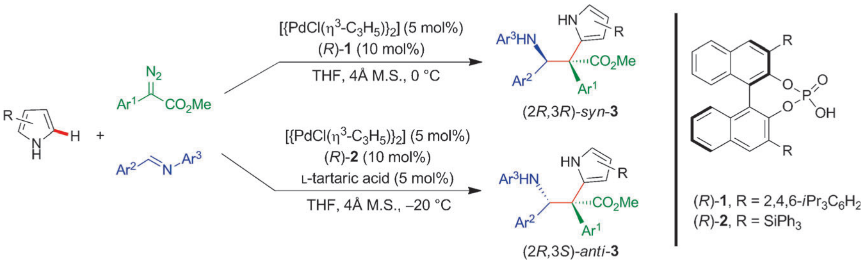


Woven into your memories: Aligned multi-walled carbon nanotube (MWCNT) fibers are coated by a thin layer of graphene oxide (GO). The MWCNT fibers work as the top and bottom electrodes while the GO acts as the active layer. By simply cross-stacking two MWCNT@GO fibers, the memory cell obtained shows a write-once-read-many-times effect (see picture).

C–H Functionalization

D. Zhang, H. Qiu, L. Jiang,* F. Lv, C. Ma, W. Hu* ______ **13356 – 13360**

Enantioselective Palladium(II) Phosphate Catalyzed Three-Component Reactions of Pyrrole, Diazoesters, and Imines

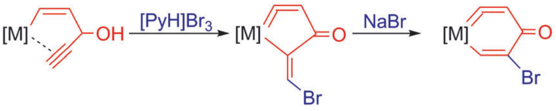


Reaction trio: The title reaction delivers C–H functionalized pyrrole derivatives in moderate to good yields. This novel three-component reaction provides both *syn*- and *anti*-pyrrole derivatives having two contiguous stereocenters with good regio-, diastereo-, and enantioselectivity. This process represents the first highly enantioselective palladium-carbenoid-mediated reaction.

Strained Metallacycles

T. Wang, J. Zhu, F. Han, C. Zhou, H. Chen, H. Zhang,* H. Xia* ______ **13361 – 13364**

Synthesis of Five-Membered Osmacycloallenes and Conversion into Six-Membered Osmacycloallenes

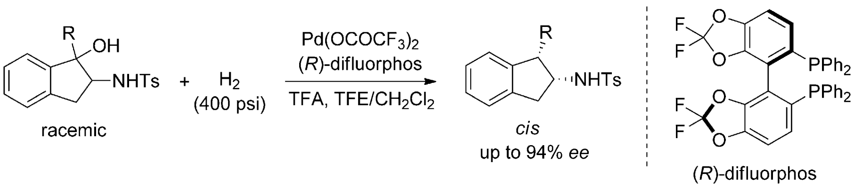


Highly stable five-membered metallacycloallenes were synthesized under mild conditions. Calculations revealed that the incorporation of transition-metal moieties relieves considerable strain and indicates a trend toward ring enlargement in the five-membered metallacycloallenes. Conversion into six-membered metallacycloallenes was confirmed experimentally.

Asymmetric Synthesis

C.-B. Yu, Y.-G. Zhou* ____ **13365 – 13368**

Palladium-Catalyzed Asymmetric Hydrogenolysis of *N*-Sulfonyl Aminoalcohols via Achiral Enesulfonamide Intermediates

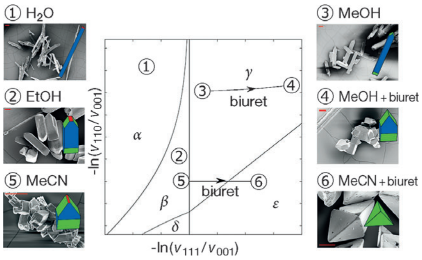


Giving the cat complete control: A stereoconvergent formal hydrogenolysis of *N*-sulfonyl aminoalcohols in the presence of a chiral Pd catalyst and trifluoroacetic acid (TFA) gave chiral amines with two contiguous stereocenters (see scheme; TFE = trifluoroethanol, Ts = *p*-tosyl). The products were formed with up to 94% *ee* by acid-catalyzed dehydration to afford an enesulfonamide, enamine/imine isomerization, and Pd-catalyzed asymmetric hydrogenation.

Molecular Dynamics

M. Salvalaglio,* T. Vetter, M. Mazzotti,* M. Parrinello* ____ **13369 – 13372**

Controlling and Predicting Crystal Shapes: The Case of Urea

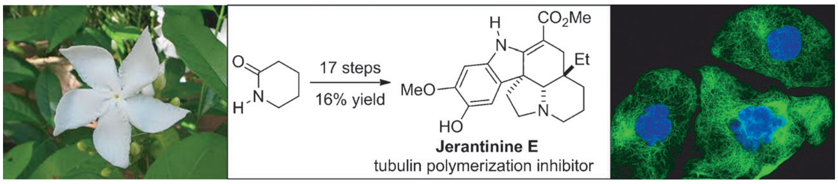


Understanding crystal growth from solution is crucial to control the evolution of crystal morphologies. Experiments, molecular simulations, and theory were combined to examine the morphology of urea crystals grown in different solutions. To get a rational representation of all the possible habits a shape diagram (see picture) is introduced in which the habit dependence on the relative growth rates is illustrated.

Natural Product Synthesis

R. Frei, D. Staedler, A. Raja, R. Franke, F. Sasse, S. Gerber-Lemaire, J. Waser* ____ **13373 – 13376**

Total Synthesis and Biological Evaluation of Jerantinine E

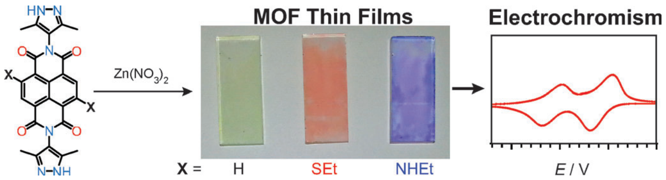


Nature's beauty: The first total synthesis of the alkaloid natural product jerantinine E is based on a selective cyclization of an aminocyclopropane. Preliminary investigations show that it inhibits the polymerization of tubulin, displaying significant cytotoxicity and antimigratory activity against both breast and lung cancer cell lines.

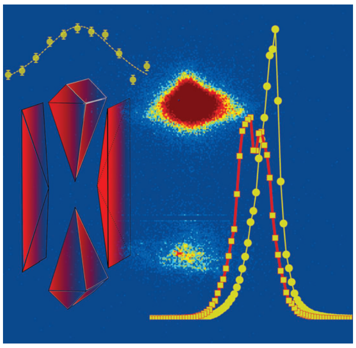
Electrochromic Materials

C. R. Wade, M. Li, M. Dincă* ____ **13377 – 13381**

Facile Deposition of Multicolored Electrochromic Metal–Organic Framework Thin Films



Metal–organic frameworks: The solvothermal reaction of Zn^{2+} ions and bis(pyrazolyl)naphthalene diimide readily affords strongly adhering, electroactive metal–organic framework thin films on conductive glass substrates (see picture). Electrochemical cycling of these films followed by in situ UV/Vis spectroscopy reveals striking multicolored electrochromic responses.

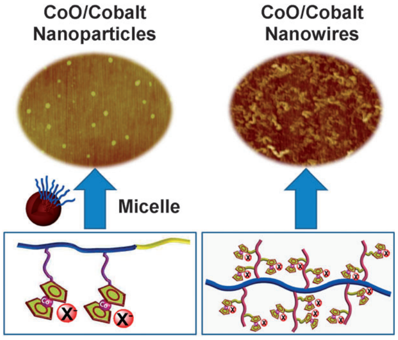


Crystallographic microscopy: Zeolite ZSM-5 is one of the most used solid acid catalysts in the oil refining and chemical industries. Synchrotron-based micro X-ray diffraction imaging has been used to spatially resolve the internal crystallographic 3D architecture of ZSM-5 intergrowths and to visualize the zoning of aluminium at the single-catalyst-particle level.

Zeolites

Z. Ristanović, J. P. Hofmann, U. Deka, T. U. Schülli, M. Rohnke, A. M. Beale, B. M. Weckhuysen* ——— **13382 – 13386**

Intergrowth Structure and Aluminium Zoning of a Zeolite ZSM-5 Crystal as Resolved by Synchrotron-Based Micro X-Ray Diffraction Imaging

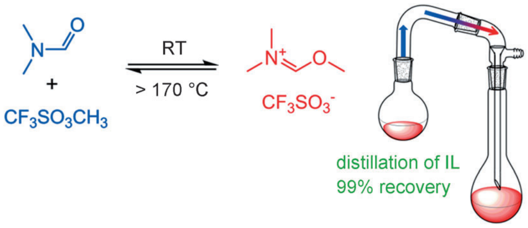


A facile phase-transfer ion-exchange strategy was used to prepare cationic cobaltocenium-containing polyelectrolytes with different counterions. These cobalt-containing polymers were used to prepare cobalt-based materials, including cobalt metal, cobalt phosphide, cobalt monoxide, cobalt–iron hybrids, and cobalt ferrite. Block copolymers and polymer brushes were also used to prepare cobalt-based nanoparticles and nanowires.

Nanomaterials

J. Zhang, Y. Yan, M. W. Chance, J. Chen, J. Hayat, S. Ma, C. Tang* . **13387 – 13391**

Charged Metallopolymers as Universal Precursors for Versatile Cobalt Materials

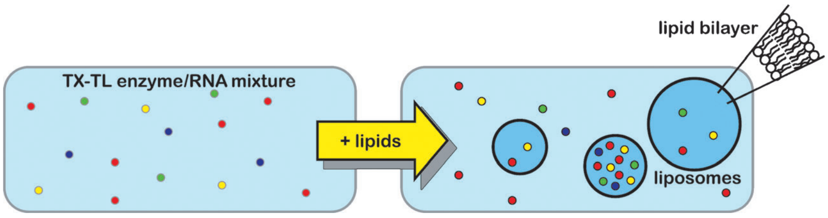


Put it in reverse: The recycling of ionic liquids (ILs) by distillation of the regenerated volatile precursors was demonstrated to be feasible by using low-cost amide-cation-derived aprotic ionic liquids prepared from reversible O alkylation. The low viscosity (21.6 cP at 25 °C), high conductivity (15.45 mS cm^{-1} at 25 °C), and wide electrochemical windows (ca. 4.5 V) of the ILs show potential for electrochemical applications.

Ionic Liquids

Z. J. Chen, H. W. Xi, K. H. Lim, J.-M. Lee* ——— **13392 – 13396**

Distillable Ionic Liquids: Reversible Amide O Alkylation



Encapsulation: The emergence of primitive cells remains an enigma of the origin of life. By modeling this key process as the encapsulation of a complex multimolecular mixture inside liposomes, a remarkable self-organization process has been revealed that brings about solute-rich compartments in which protein synthesis can take place.

Synthetic Biology

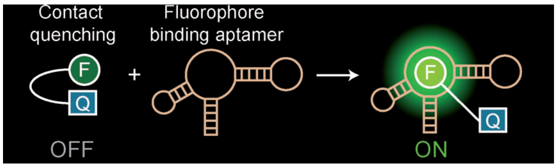
P. Stano, E. D'Aguanno, J. Bolz, A. Fahr, P. L. Luisi* ——— **13397 – 13400**

A Remarkable Self-Organization Process as the Origin of Primitive Functional Cells

Light-up Probes

M. Sunbul, A. Jäschke* ____ **13401 – 13404**

Contact-Mediated Quenching for RNA Imaging in Bacteria with a Fluorophore-Binding Aptamer



Bind and shine: Sulforhodamine B was converted into a very efficient fluorescence turn-on probe exclusively by contact quenching. The fluorescence of the probe increases more than 100-fold upon binding to a sulforhodamine-binding RNA aptamer (SRB-2). The probe and the SRB-2 aptamer were used to monitor transcriptions in real-time and to image RNA in live bacteria.

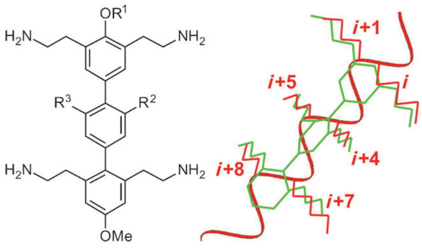
RNA-Binding Agents

L. González-Bulnes, I. Ibáñez,
L. M. Bedoya, M. Beltrán, S. Catalán,
J. Alcamí,* S. Fustero,*
J. Gallego* ____ **13405 – 13409**

Structure-Based Design of an RNA-Binding *p*-Terphenylene Scaffold that Inhibits HIV-1 Rev Protein Function

Inside Back Cover

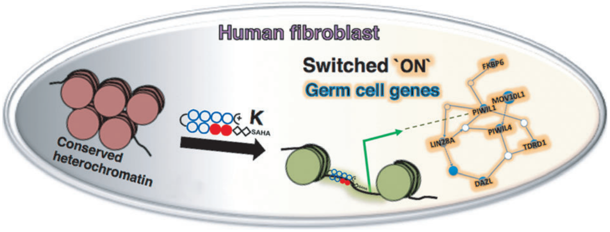
Rev(ersing) RNA binding: RNA-binding inhibitors based on a bilaterally substituted *p*-terphenylene scaffold (green) project their substituents in a broad spatial angle and reproduce the interactions of a protein α-helix (red) embedded in its RNA receptor. These terphenyls can mimic one α-helix of the HIV-1 protein Rev and inhibit Rev function and HIV-1 replication in cells. This scaffold may open new avenues for targeting nucleic acids with small molecules.



Synthetic Transcription Activators

L. Han, G. N. Pandian, S. Junetha, S. Sato,
C. Anandhakumar, J. Taniguchi, A. Saha,
T. Bando, H. Nagase,
H. Sugiyama* ____ **13410 – 13413**

A Synthetic Small Molecule for Targeted Transcriptional Activation of Germ Cell Genes in a Human Somatic Cell



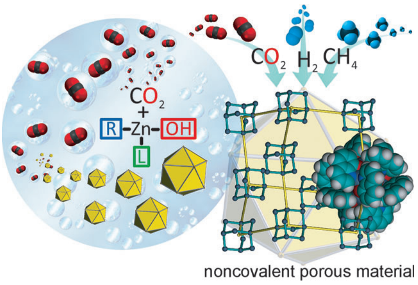
Germ cell gene switch: The dynamic epigenome coordinates the timely genome-wide transcriptional activation that governs interindividual diversity, for example, in germ cells, which differ from somatic cells through their ability to undergo meiosis. Now, an epigenetically active synthetic small molecule can trigger unusual activation of the typically conserved PIWI gene that regulates the meiotic process in a human somatic cell.

Noncovalent Porous Materials

K. Sokołowski, W. Bury, I. Justyniak,
D. Fairen-Jimenez, K. Sołtys,
D. Prochowicz, S. Yang, M. Schröder,
J. Lewiński* ____ **13414 – 13418**

Permanent Porosity Derived From the Self-Assembly of Highly Luminescent Molecular Zinc Carbonate Nanoclusters

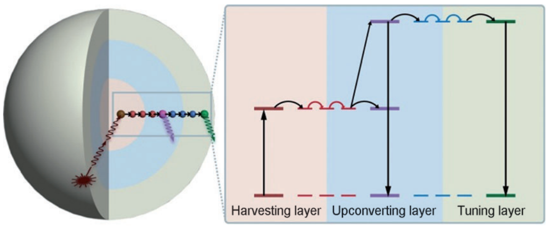
Hungry hungry micropores: Reaction of $[Zn_4(\mu_3\text{-}OH)_2(L)_4(tBu)_2]$ (LH = 8-hydroxyquinoline) with CO_2 forms a 3D microporous material with spherical zinc carbonate nanoclusters packed in a diamondoid manner in the solid state. This compound exhibits one of the highest Brunauer—Emmett—Teller surface areas for a noncovalent porous material, with high H_2, CO_2, and CH_4 uptake.



Multishell Nanostructures

H. Wen, H. Zhu, X. Chen, T. F. Hung, B. Wang, G. Zhu, S. F. Yu, F. Wang* ______ **13419 – 13423**

Upconverting Near-Infrared Light through Energy Management in Core–Shell–Shell Nanoparticles

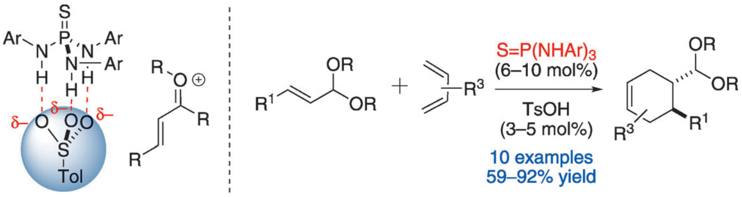


Blue emission at NIR excitation: A strategy, based on energy management in nanostructured materials, is reported for photon upconversion of near-infrared light. Several optical processes can be integrated into a single nanoparticle (see picture). The effect offers upconversion emissions spanning from ultraviolet to the visible spectral region by excitation at 808 nm.

Organocatalysis

A. Borovika, P.-I. Tang, S. Klapman, P. Nagorny* ______ **13424 – 13428**

Thiophosphoramide-Based Cooperative Catalysts for Brønsted Acid Promoted Ionic Diels–Alder Reactions

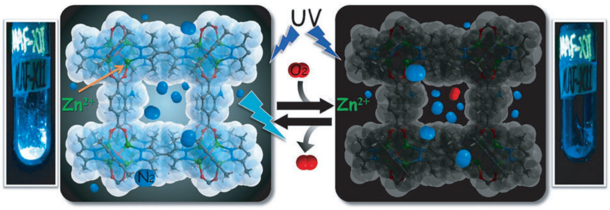


Three's a crowd: The combination of a Brønsted acid and a hydrogen-bond donor cocatalyst was found to promote various ionic [2+4] cycloadditions under mild reaction conditions (see scheme; Ts = 4-toluenesulfonyl). Thiophosphoramides are the most effective cocatalysts because of the stronger counterion activation effect resulting from three, rather than two, hydrogen bonds involved in anion binding.

Optical Chemical Sensor

R.-B. Lin, F. Li, S.-Y. Liu, X.-L. Qi, J.-P. Zhang,* X.-M. Chen _ **13429 – 13433**

A Noble-Metal-Free Porous Coordination Framework with Exceptional Sensing Efficiency for Oxygen



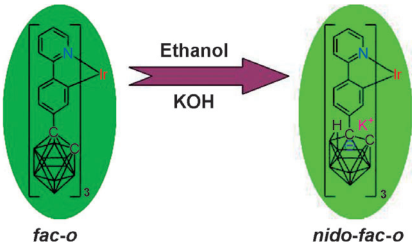
Light material: By virtue of the unique framework structure and very high oxygen permeability, a noble-metal-free, highly fluorescent, porous coordination polymer demonstrates a rapid, reversible, efficient, stable, and selective fluorescence-quenching response toward oxygen.

Carborane Clusters

C. Shi, H. Sun, X. Tang, W. Lv, H. Yan,* Q. Zhao,* J. Wang, W. Huang* ______ **13434 – 13438**

Variable Photophysical Properties of Phosphorescent Iridium(III) Complexes Triggered by *closo*- and *nido*-Carborane Substitution

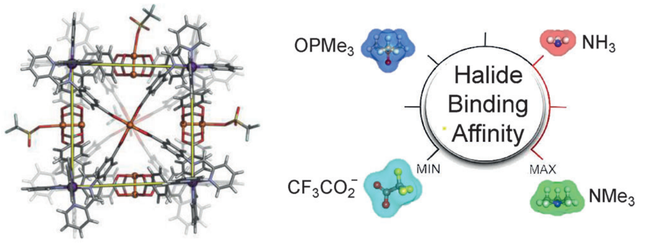
Phosphorescent iridium(III) complexes with three bidentate carborane-functionalized ligands have been synthesized. The luminescent efficiency of the *o*-carborane-based facial complex *fac-o* shows solvent-molecule dependence both in solution and solid state that is related to the dielectric constant. The water-soluble and high phosphorescence-efficient *nido* complex *nido-fac-o* can be used in fluorescence lifetime bioimaging.



Synthetic Receptors

W. J. Ramsay, T. K. Ronson, J. K. Clegg,
J. R. Nitschke* ———— 13439 – 13443

Bidirectional Regulation of Halide Binding in a Heterometallic Supramolecular Cube

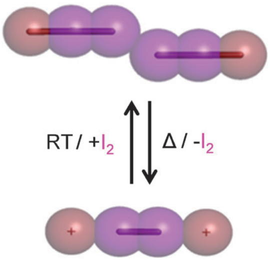


Complex cubes: In a cationic supramolecular cube, coordinatively unsaturated metal centers in the walls of the host provided binding sites for neutral or negatively charged guests. The binding of an initial guest ($CF_3CO_2^-$, $OPMe_3$, NH_3, or NMe_3) either cooperatively enhanced or competitively inhibited the binding of a second guest (halide ion).

Polyhalogen Anions

J. Martí-Rujas, L. Meazza, G. K. Lim,
G. Terraneo, T. Pilati, K. D. M. Harris,*
P. Metrangolo,*
G. Resnati* ———— 13444 – 13448

An Adaptable and Dynamically Porous Organic Salt Traps Unique Tetrahalide Dianions



Bis(I$_2$) adducts of hexamethonium dihalides are pre-organized to respond dynamically to heating and reach a functional structure that favors the formation of the poorly stable and virtually unknown $[I_2Br_2]^{2-}$ and $[I_2Cl_2]^{2-}$ tetrahalides which could not be obtained in solution (see picture). The cavity-directed reactivity affords new opportunities for synthesis and interconversion of polyhalogen anions.

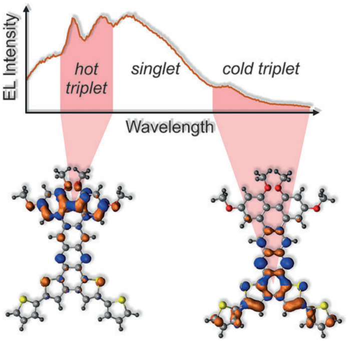
Inside Cover

OLED Triplet Emitters

D. Chaudhuri, E. Sigmund, A. Meyer,
L. Röck, P. Klemm, S. Lautenschlager,
A. Schmid, S. R. Yost, T. Van Voorhis,
S. Bange, S. Höger,*
J. M. Lupton* ———— 13449 – 13452

Metal-Free OLED Triplet Emitters by Side-Stepping Kasha's Rule

Keeping it light: Most organic fluorophores do not show useful emission from the triplet excited state. A new class of materials is presented for organic light-emitting diodes that exhibit phosphorescence under electrical excitation, even at room temperature, without employing the heavy-atom effect. Blocking of internal conversion is so effective that emission from higher-lying triplet states, above the singlet, can be observed at low temperature.



Flexible Materials

Z. Yang, J. Deng, X. Chen, J. Ren,
H. Peng* ———— 13453 – 13457

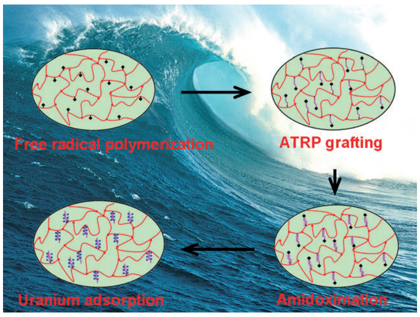
A Highly Stretchable, Fiber-Shaped Supercapacitor

Superstretchy: A supercapacitor with high stretchability has been developed by wrapping two layers of sheets built of aligned carbon nanotubes, which serve as two electrodes, on an elastic fiber. The use of these sheets offers high flexibility, tensile strength, electrical conductivity, and mechanical and thermal stability. The supercapacitor shows and maintains a high specific capacitance after stretching for many cycles.

Polymer Materials

Y. Yue, R. T. Mayes, J. Kim, P. F. Fulvio, X.-G. Sun, C. Tsouris, J. Chen, S. Brown, S. Dai* **13458 – 13462**

Seawater Uranium Sorbents: Preparation from a Mesoporous Copolymer Initiator by Atom-Transfer Radical Polymerization



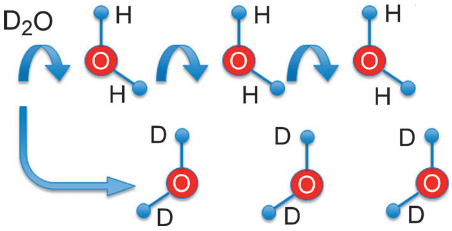
From the sea to the reactor: Nanoporous template-free initiators for atom-transfer radical polymerization (ATRP) were synthesized with surface and framework initiator sites and tailorable pore structures. Polyacrylonitrile grown on one initiator was converted into polyamidoxime to generate a uranium sorbent for seawater extraction with a high uptake rate and capacity relative to those of nonwoven irradiation-grafted polyethylene-fiber composites.

Proton Hopping in Crystals

S. C. Capelli, L. R. Falvello,* E. Forcén-Vázquez, G. J. McIntyre,* F. Palacio, S. Sanz, M. Tomás* **13463 – 13467**

Proton Cascade in a Molecular Solid: H/D Exchange on Mobile and Immobile Water

Front Cover

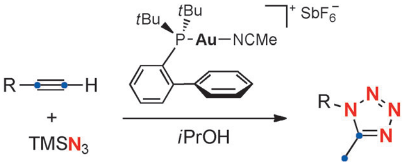


Working without pores: In non-porous, channel-free crystals of a manganese citrate coordination polymer, neutron diffraction reveals that the water molecules, both metal-bound and co-crystallized, undergo full hydrogen/deuterium exchange. Neutron diffraction analyses show a pattern of hydrogen disorder that can be interpreted in terms of the Grotthuss proton-cascade mechanism (see scheme).

Heterocycles

M. Gaydou, A. M. Echavarren* **13468 – 13471**

Gold-Catalyzed Synthesis of Tetrazoles from Alkynes by C–C Bond Cleavage

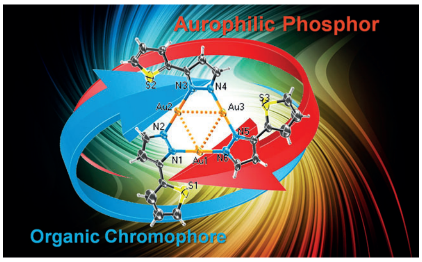


Golden duality: Tetrazoles are formed by the reaction of alkynes with $TMSN_3$ (TMS = trimethylsilyl) in the presence of *i*PrOH and the gold(I) catalyst [JohnPhosAu(MeCN)]SbF_6. In this transformation gold plays a dual role, first activating the alkyne and then generating a Brønsted acid in situ.

Gold Photochemistry

W.-X. Ni, M. Li, J. Zheng, S.-Z. Zhan, Y.-M. Qiu, S. W. Ng, D. Li* ________ **13472 – 13476**

White light: $[\{Au(\mathbf{L})\}_3]$ ($\mathbf{L}$ = 3-(2-thienyl)-pyrazolate) gives dual emission, one from an organic chromophore the other from aurophilic stacking interactions. The resulting blue–green and orange–red emissions can be tuned to approach white-light by modulating the aggregation behavior of the cluster.



Back Cover

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).

This article is available online free of charge (Open Access).

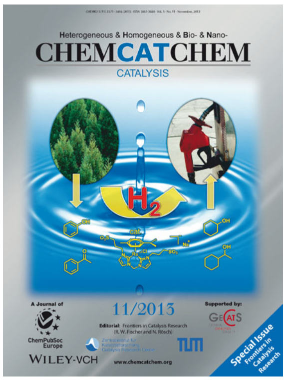
This article is accompanied by a cover picture (front or back cover, and inside or outside).

The Very Important Papers, marked VIP, have been rated unanimously as very important by the referees.

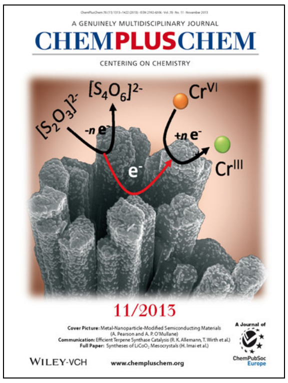
The Hot Papers are articles that the Editors have chosen on the basis of the referee reports to be of particular importance for an intensely studied area of research.

Check out these journals:

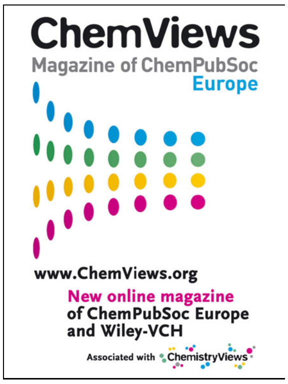
www.chemasianj.org



www.chemcatchem.org



www.chempluschem.org

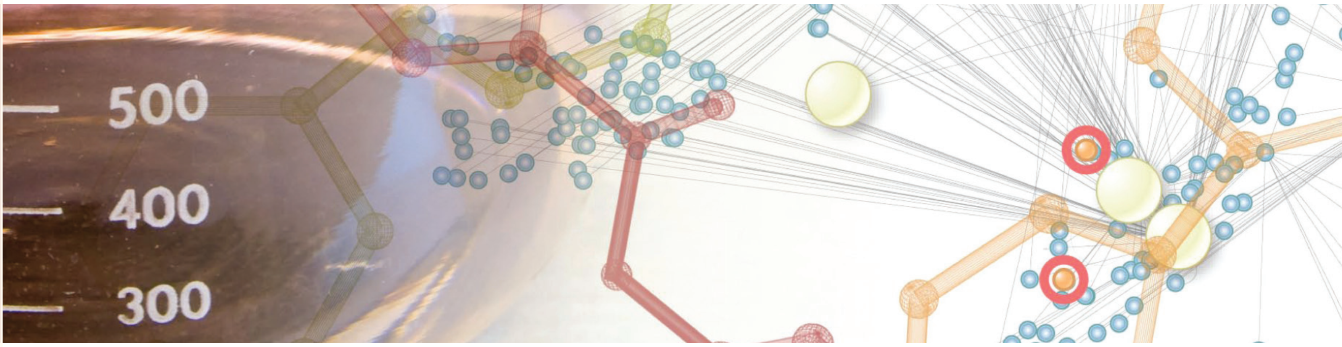


www.chemviews.org

Abstracts for Communications

From January 2014 onwards, all Communications in *Angewandte Chemie* will contain an abstract as their first paragraph. We therefore request that every new Communication be submitted with such an abstract. When you write the abstract, please keep the following aspects in mind (they can be found in more detail in the Author Guidelines on the journal's homepage in Section 3.1):

In the abstract, the **motivation** for the work, the **methods** applied, the **results**, and the **conclusions** drawn should be presented (maximum 1000 characters). The abstract should contain several keywords to aid finding the paper online, and it should not mention graphical elements, tables, or references within the paper.



Novartis is pleased to announce the 2013 recipients of the

Novartis Early Career Award in Organic Chemistry

Professor Nicolai Cramer, *EPF Lausanne, Switzerland*

Nicolai Cramer earned his Ph.D. in 2005 in the group of Professor Sabine Laschat at the University of Stuttgart. After a stay with Professors Michio Murata and Sumihiro Hase at Osaka University he joined the group of Professor Barry M. Trost at Stanford University as a postdoctoral fellow. In 2007, he started his habilitation at the ETH Zürich associated to Professor Erick M. Carreira and in 2010 took his current position at EPF Lausanne. Professor Cramer has made major contributions to the field of enantioselective metal-catalyzed transformations and has been a pioneer in the development of catalytic methods for selective functionalization of relatively inert C-H and C-C bonds.

Professor Daniel Rauh, *Technische Universität, Dortmund, Germany*

Daniel Rauh earned his Ph.D. in 2002 from Phillips-Universität Marburg working with Professor Gerhard Klebe. Later that year he spent time as a Research Fellow at the Genomics Institute of the Novartis Research Foundation (GNF) in San Diego. His postdoctoral studies began with Professor Milton Stubbs at Martin-Luther-Universität Halle-Wittenberg and then with Professor Kevan Shokat at the University of California, San Francisco. Professor Rauh started his independent career at Dortmund in 2006 and has made truly innovative contributions to the field of chemical biology in the development of high-throughput assay methodologies for the identification of allosteric kinase inhibitors, and in the creative design of functional probes for targeting proteins and dissecting oncogene dependencies.

The Novartis Early Career Award in Organic Chemistry is presented annually to outstanding scientists within 10 years of having established an independent academic research career, in the areas of organic or bioorganic chemistry in the broadest sense. Two winners are identified, from the Global Research community, each of whom receives an unrestricted research grant.

Past Awardees:

2012	Sarah E. Reisman and Corey R.J. Stephenson
2011	David Chen and David Spiegel
2010	Karl Gademann and Jin-Quan Yu
2009	Christopher J. Chang and Magnus Rueping
2008	Matthew J. Gaunt and Jeffrey S. Johnson
2007	Lukas J. Goossen and Anna K. Mapp
2006	Armido Studer and F. Dean Toste
2005	Benjamin List and Dirk Trauner
2004	J. Stephen Clark and Jonathan P. Clayden
2003	Thorsten Bach
2002	Bernhard Breit and Thomas Carell
2001	Tim Donohoe
2000	Andrew Miller
1999	Alan Armstrong
1998	Mark Bradley

NOVARTIS