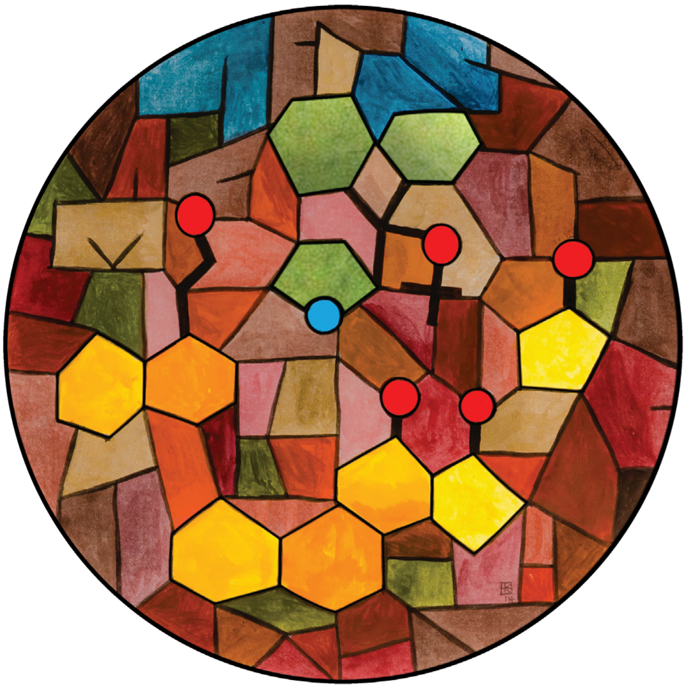
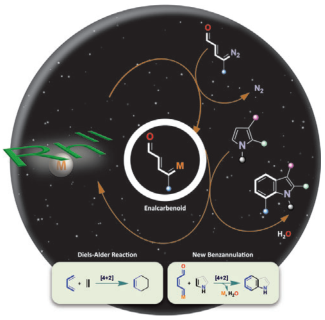
Inspired by “Mountain View”, ...

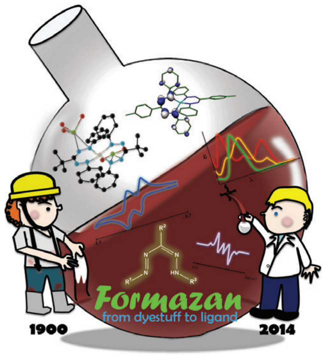


… a painting by Paul Klee, K. A. Jørgensen and co-workers present the organocatalytic asymmetric formation of steroids in their Communication on page 4137 ff. The picture applies mosaic shapes in analogy with the artistic elements of Paul Klee to illustrate the organocatalytic asymmetric formation of steroids. The A and B ring in the steroid (to the left) and the D ring (to the right) are merged by the green organocatalyst in the middle towards the blue sky.

Annulation Methods

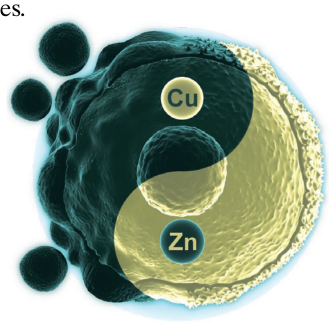
S. Katukojvala et al. describe in their Communication on page 4076 ff. the direct [4+2] benzannulation of pyrroles to indoles by using a rhodium enalcarbenoid generated by rhodium(II)-catalyzed decomposition of enaldiazo compounds.





Redox-Non-Innocent Ligands

E. Otten and co-workers describe formazanate anions as unique ligands in coordination chemistry in their Communication on page 4118. The redox chemistry of these ligands allows the full characterization of bis(formazanate) zinc complexes in three oxidation states.



Enzyme Inhibition

In their Communication on page 4098 ff., N. P. Farrell and co-workers present evidence that zinc inhibits the pro-apoptotic protein caspase-3 through interacting with the active-site histidine residue rather than with the catalytic dyad.

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Author Profile

"My biggest inspiration is the Pacific Ocean. I advise my students to refresh their brains on Sundays …"
This and more about Masaya Sawamura can be found on page 4032.

News

M. Albrecht

S. P. Cramer

M. W. Hosseini

J. Li

M. Murakami

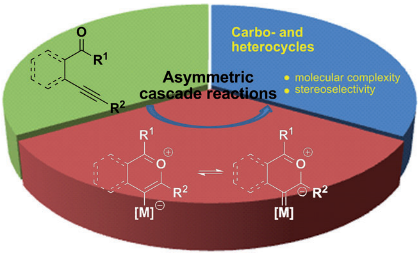
Books

Highlights

Asymmetric Catalysis

J.-R. Chen,* X.-Q. Hu,
W.-J. Xiao* ______________ **4038 – 4040**

Metal-Containing Carbonyl Ylides: Versatile Reactants in Catalytic Enantioselective Cascade Reactions

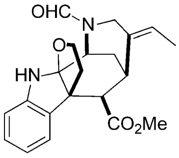


New players in town: In situ generated transition-metal-containing carbonyl ylides are a unique class of reagents which have found wide applications in catalytic asymmetric cascade reactions. Recent advances in reaction design are likely to lead to more novel developments with these reactive species.

Natural Products

E. Doris* ______________ **4041 – 4042**

Total Syntheses of (±)-Aspidophylline A



Aspidophylline A

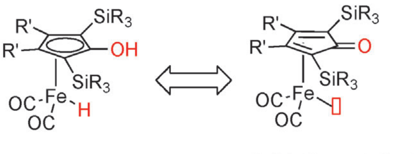
Yes they can! The groups of Zhu and Ma recently reinvestigated the synthetic route to aspidophilline A. These approaches are discussed in the context of the first total synthesis of the title alkaloid that was reported by Garg and co-workers in 2011.

Minireviews

Iron Catalysis

A. Quintard,* J. Rodriguez* **4044 – 4055**

Iron Cyclopentadienone Complexes: Discovery, Properties, and Catalytic Reactivity



Reduction catalyst

Oxidation catalyst

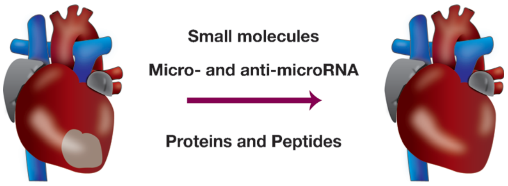
The new iron age? Iron cyclopentadienone complexes are easily synthesized from simple and cheap materials, are stable, and through the presence of a non-innocent ligand, have unique catalytic features. The properties of such complexes and their applications in original redox-neutral transformations in both racemic and enantioselective reactions are reviewed.

Reviews

Drug Discovery

A. T. Plowright,* O. Engkvist, A. Gill,
L. Knerr Q.-D. Wang _______ **4056 – 4075**

Heart Regeneration: Opportunities and Challenges for Drug Discovery with Novel Chemical and Therapeutic Methods or Agents



Small molecules, RNA approaches, modified peptides, and proteins are promising candidates for the regeneration of heart tissue through differentiation of stem cells, proliferation of existing cardiomyocytes and cardiac progenitor cells, and cell reprogramming to cardiomyocytes. Recent advances, including novel screening strategies, and the upcoming challenges and opportunities to develop these hits into pharmaceuticals are summarized.

For the USA and Canada:
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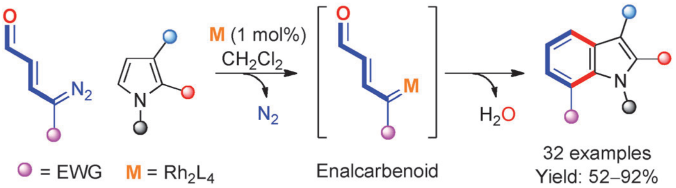
Communications

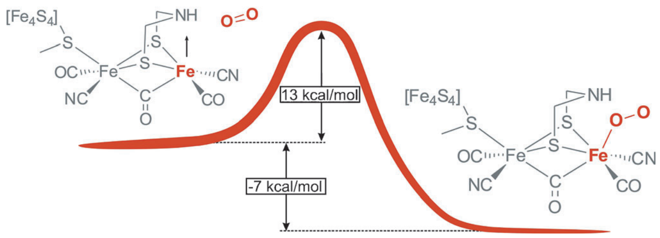
Heterocycle Synthesis

Frontispiece



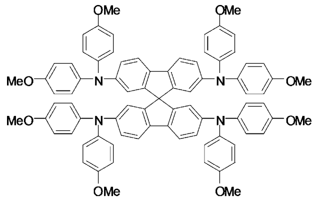
Fat cat: A new class of enaldiazo compounds resulted in the first transition-metal-catalyzed [4+2] benzannulation of pyrroles to deliver indoles. The benzannulation is proposed to involve an unprecedented diacceptor rhodium enalcarbenoid. The reaction was used in the highly efficient synthesis of the natural product leiocarpone and a potent adipocyte fatty-acid binding protein inhibitor.

Enzyme Models

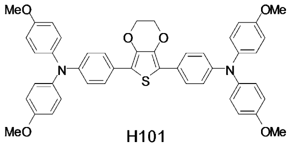


Clearing the air: The free energy profiles for the chemical attachment of O_2 to the active sites of [FeFe]-hydrogenases from *Clostridium pasteurianum* and *Desulfovibrio desulfuricans* were investigated. Based on the results, possible target sites for future mutation studies were suggested that may reduce oxygen binding and thus the oxygen sensitivity of these enzymes.

Hole Transport



Spiro-OMeTAD



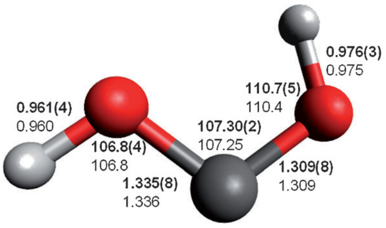
H101

Heterocycle power! A power-conversion efficiency of 13.8% under AM 1.5G illumination was achieved in a perovskite-based solar cell with a new hole-transporting material based on 3,4-ethylenedioxythiophene (H101). This is the first heterocycle-containing material with >10% efficiency in such devices, and has great potential to replace the more expensive spiro-OMeTAD, given its much simpler and less expensive synthesis.

Reactive Intermediates

C. C. Womack, K. N. Crabtree,
L. McCaslin, O. Martinez, Jr., R. W. Field,
J. F. Stanton,
M. C. McCarthy* ________ **4089–4092**

Gas-Phase Structure Determination of Dihydroxycarbene, One of the Smallest Stable Singlet Carbenes

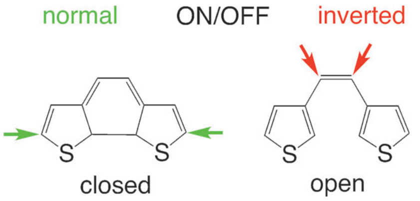


A small stable singlet carbene: The geometric structure of dihydroxycarbene (HO–C̈–OH) is experimentally determined using Fourier transform microwave spectroscopy. This carbene, a structural isomer of the simplest Criegee intermediate (CH_2OO) and formic acid (HCOOH), is found to be long-lived in the dilute gas phase because of the stabilizing effect of the two electron-donating hydroxy groups.

Molecular Switches

Y. Tsuji, R. Hoffmann* ____ **4093–4097**

Frontier Orbital Control of Molecular Conductance and its Switching



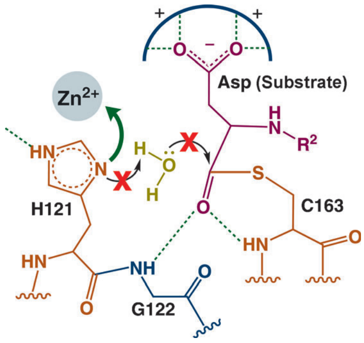
The phase and amplitude of the frontier molecular orbitals at the sites that are connected to electrodes play an essential role in determining transmission of electrons through a π system. When applied to two diarylethene switches, theory then predicts that for some specified sites the switching behavior will be inverted; that is, the "open" molecular form of the switch will be more conductive.

Enzyme Inhibition

A. G. Daniel, E. J. Peterson,
N. P. Farrell* ____________ **4098–4101**

The Bioinorganic Chemistry of Apoptosis: Potential Inhibitory Zinc Binding Sites in Caspase-3

Back Cover



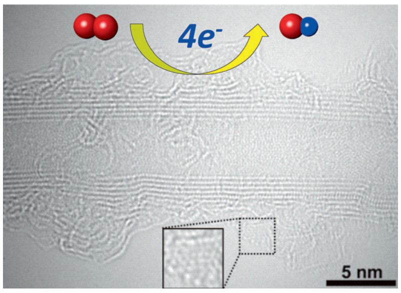
Zinc site insight: Zinc inhibition of caspase-3 is largely uncompetitive. Substrate binding was shown to be unaffected by Zn^{2+} in the sub-micromolar range where most inhibition occurs. This rules out zinc binding to the catalytic dyad, the generally assumed inhibitory site. Based on a hypothesis that zinc inhibition occurs through interaction with the catalytic His residue, a new inhibitory zinc site was proposed and was shown to better fit the experimental observations.

Electrocatalysts

Y. J. Sa, C. Park, H. Y. Jeong, S.-H. Park,
Z. Lee, K. T. Kim, G.-G. Park,
S. H. Joo* ____________ **4102–4106**

Carbon Nanotubes/Heteroatom-Doped Carbon Core–Sheath Nanostructures as Highly Active, Metal-Free Oxygen Reduction Electrocatalysts for Alkaline Fuel Cells

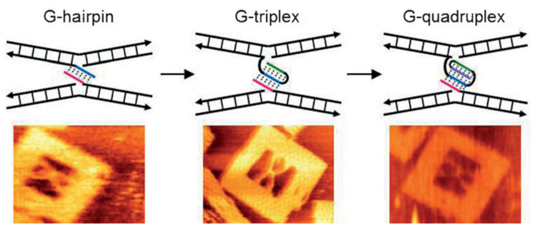
A facile, scalable route for the synthesis of new nanocomposites that are based on carbon nanotubes/heteroatom-doped carbon (CNT/HDC) core–sheath nanostructures has been developed. The CNT/HDC nanostructures exhibit excellent electrocatalytic activity, kinetics, and durability for the oxygen reduction reaction, and they also performed well as the cathode catalysts in alkaline fuel cells.



Single-Molecule Studies

A. Rajendran, M. Endo,* K. Hidaka, H. Sugiyama* **4107 – 4112**

Direct and Single-Molecule Visualization of the Solution-State Structures of G-Hairpin and G-Triplex Intermediates

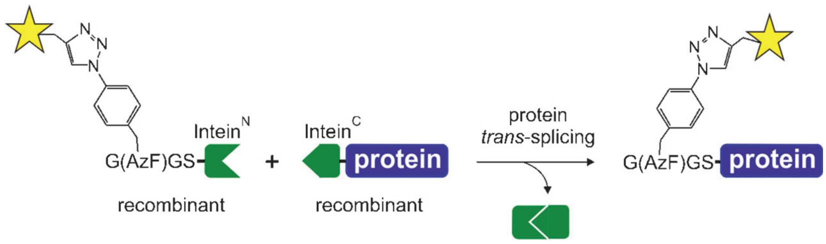


Back to the fold: Using a DNA origami frame as a nanoscaffold for the structural control, the unprecedented solution-state structures of a tetramolecular antiparallel and (3+1)-type G-quadruplex intermediates in the G-quadruplex folding, such as G-hairpin and G-triplex, can be visualized directly at the single-molecule level with nanometer resolution by AFM.

Protein Chemistry

V. Schütz, H. D. Mootz* **4113 – 4117**

Click-Tag and Amine-Tag: Chemical Tag Approaches for Efficient Protein Labeling In Vitro and on Live Cells using the Naturally Split *Npu* DnaE Intein



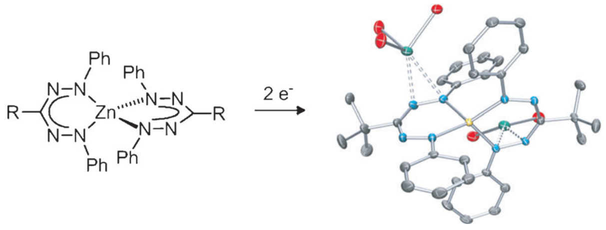
Click and splice: Short tags of only a few amino acids fused to a recombinantly produced split intein fragment were modified with synthetic moieties and then transferred to a protein of interest by protein *trans*-splicing. These two-step procedures circumvent exposure of the protein of interest to copper ions for click chemistry and undesired modification of lysines, even though standard bioconjugation reagents are used.

Redox-Non-Innocent Ligands

M.-C. Chang, T. Dann, D. P. Day, M. Lutz, G. G. Wildgoose, E. Otten* **4118 – 4122**

The Formazanate Ligand as an Electron Reservoir: Bis(Formazanate) Zinc Complexes Isolated in Three Redox States

Inside Back Cover

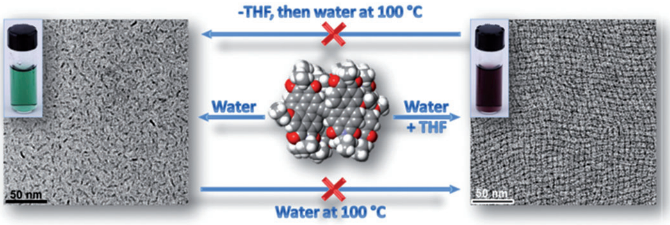


N is better than C: Bis(formazanate) zinc complexes (see picture; Zn yellow, N blue, O red, Na green) show sequential and reversible redox chemistry in which the formazanate ligands are reduced to metallaverdazyl radicals. These ligands are very similar to β-diketiminates, but the nitrogen-rich NNCNN backbone of formazanates opens the door to redox chemistry that is otherwise difficult to access.

Supramolecular Chemistry

J. Baram, H. Weissman, Y. Tidhar,
I. Pinkas, B. Rybtchinski* ___ **4123 – 4126**

Hydrophobic Self-Assembly Affords Robust Noncovalent Polymer Isomers

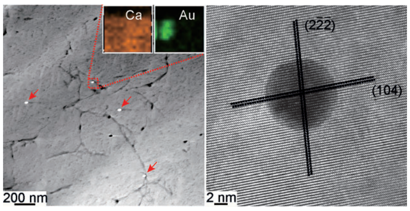


A strong hold: Strong hydrophobic interactions result in stable noncovalent polymer isomers derived from a single covalent unit. These isomers have different electronic and photonic properties and are stable in water, even upon prolonged heating to 100 °C.

Biomineralization

Y. J. Liu, W. T. Yuan, Y. Shi, X. Q. Chen,
Y. Wang, H. Z. Chen,
H. Y. Li* ___ **4127 – 4131**

Functionalizing Single Crystals: Incorporation of Nanoparticles Inside Gel-Grown Calcite Crystals

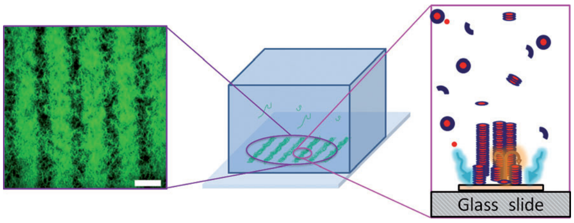


Functionalization of crystals: Biogenic single crystals incorporate biomacromolecules and form single-crystal composites. The abnormal composite structure led to the idea to obtain synthetic crystals with nonintrinsic properties by modifing their internal structure. Intrinsically colorless and diamagnetic calcite single crystals are turned into colored and paramagnetic solids through incorporation of gold and ferroferric oxide nanoparticles.

Surface Chemistry

A. G. L. Olive, N. H. Abdullah,
I. Ziemecka, E. Mendes, R. Eelkema,*
J. H. van Esch* ___ **4132 – 4136**

Spatial and Directional Control over Self-Assembly Using Catalytic Micropatterned Surfaces



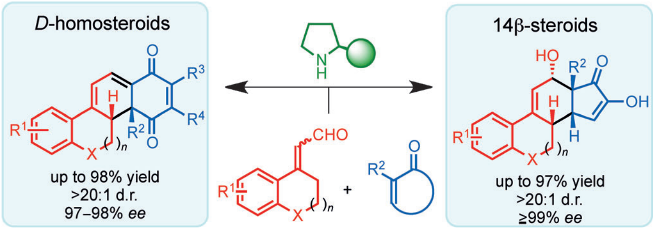
Following a pattern: Catalyst-assisted self-assembly is widespread in nature to achieve spatial control over structure formation. Reported herein is the formation of hydrogel micropatterns on catalytic surfaces. A unique mechanism of fiber formation for a synthetic system, using building blocks added at the interface, leads to orientated structures. Therefore organization is attained at the micro- and nanoscale.

Synthetic Methods

K. S. Halskov, B. S. Donslund,
S. Barfüsser,
K. A. Jørgensen* ___ **4137 – 4141**

Organocatalytic Asymmetric Formation of Steroids

Front Cover

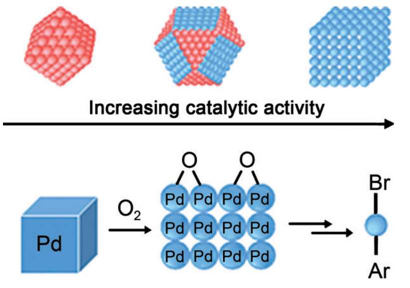


Organocatalysis made it possible: The reported methodology gives 14β-steroids, displaying a broad generality, in one step, and includes various substituents on the A ring, variations of the B ring, hydroxy or alkyl substituents in the 12-position of the C ring, and different substituents in the angular position at C13. Furthermore, the developed reaction concept includes reactions with quinones to form *D*-homosteroids in excellent yields and stereoselectivities.

Nanoparticle Catalysis

G. Collins, M. Schmidt, C. O'Dwyer, J. D. Holmes,* G. P. McGlacken* ________ **4142 – 4145**

The Origin of Shape Sensitivity in Palladium-Catalyzed Suzuki–Miyaura Cross Coupling Reactions

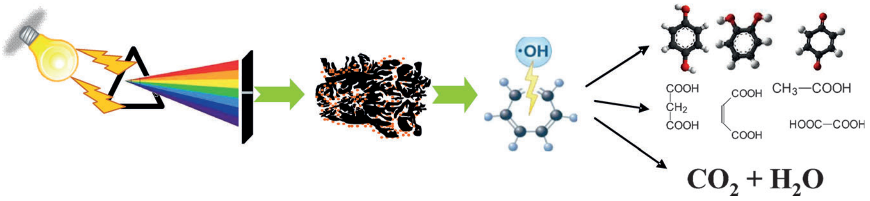


Tracking catalysis: The shape sensitivity of cubic, cuboctahedral, and octahedral Pd nanoparticle catalysts in Suzuki–Miyaura coupling reactions was studied. Superior catalytic reactivity is observed for Pd NCs with {100} surface facets compared to {111} facets. The origin of the enhanced reactivity associated with a cubic morphology is related to the leaching susceptibility of the nanocrystals.

Nanoporous Carbon

L. F. Velasco, J. C. Lima, C. Ania* ________ **4146 – 4148**

Visible-Light Photochemical Activity of Nanoporous Carbons under Monochromatic Light



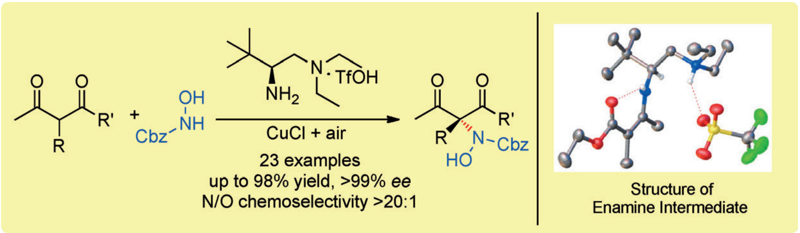
Scratching the surface: The ability of semiconductor-free nanoporous carbons to absorb low-energy photons from visible light and convert them into chemical reactions (i.e., phenol photooxidation) is demonstrated by using monochromatic light. Data showed the strong dependence of the photochemical activity on the wavelength of the irradiation source and the chemical composition of the nanoporous carbon.

α-Amination

VIP

C. Xu, L. Zhang, S. Luo* ________ **4149 – 4153**

Merging Aerobic Oxidation and Enamine Catalysis in the Asymmetric α-Amination of β-Ketocarbonyls Using *N*-Hydroxycarbamates as Nitrogen Sources

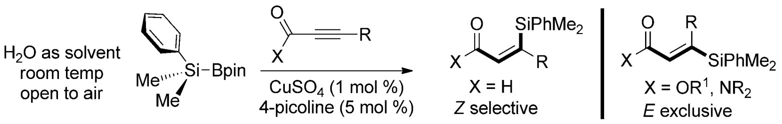


Merging O and N: Enantioselective α-amination of β-ketocarbonyl compounds has been achieved by merging enamine catalysis and Cu^I-catalyzed aerobic oxidation of hydroxycarbamates. Excellent chemoselectivity and enantioselectivity are obtained with the aid of a simple primary/tertiary diamine catalyst. This presents a facile route for the asymmetric synthesis of unnatural amino acids.

Synthetic Methods

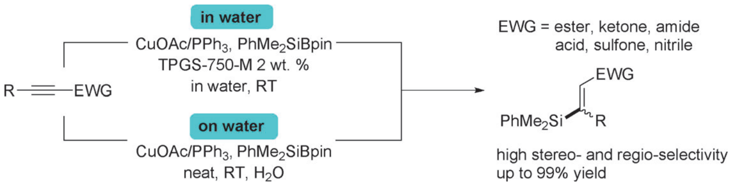
J. A. Calderone, W. L. Santos* ________ **4154 – 4158**

Copper(II)-Catalyzed Silylation of Activated Alkynes in Water: Diastereodivergent Access to *E*- or *Z*-β-Silyl-α,β-Unsaturated Carbonyl and Carboxyl Compounds



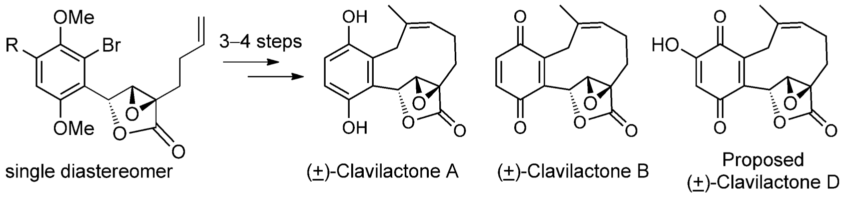
Dial a diastereomer: The title reaction proceeds through the activation of Me$_2$PhSiBpin in water at room temperature and open atmosphere to produce high yields of vinylsilanes conjugated to carbonyl groups. A surprising diastereodivergent access to olefin geometry was discovered using this silyl conjugate addition strategy: aldehydes were *Z* selective while esters and amides exclusively delivered the *E*-configured products.

Green Chemistry



Fast, cheap, and green: Micellar catalysis enables the selective construction of a variety β-silyl-substituted carbonyl derivatives under mild aqueous conditions. The reaction is catalyzed by low levels of Cu^I, is compatible with numerous electron-withdrawing groups, affords high yields, and provides opportunities for scale-up and recycling of the reaction medium. The environmental impact, as measured by E Factors, is very low.

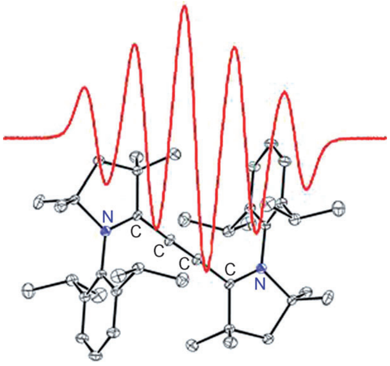
Natural Product Synthesis



A general, concise, and efficient approach for synthesis of clavilactones A, B, and D has been established. Three steps from aldehydes, 1,5-dienes, and *t*BuOOH build up α,β-epoxy-γ-butyrolactones (see scheme, left) as the key building blocks for synthesis of clavilactone family and its derivatives. From these results, the previously proposed clavilactone D structure requires revision.

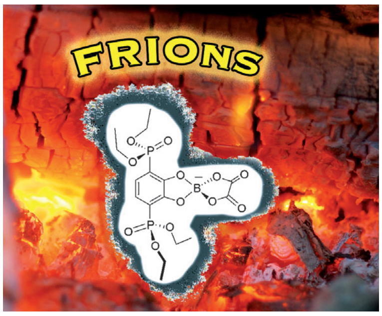
Cumulene Structures

Carbons get excited! Commercially available CBr_4 is utilized as a source of dicarbon for the preparation of the C_4 cumulene that contains a cyclic alkyl(amino) carbene (cAAC). Lithium or potassium is used as a reducing agent. The corresponding air-stable radical cation and dication of the C_4 cumulene were also synthesized and their interconversion was studied by cyclic voltammetry.



Functional Materials

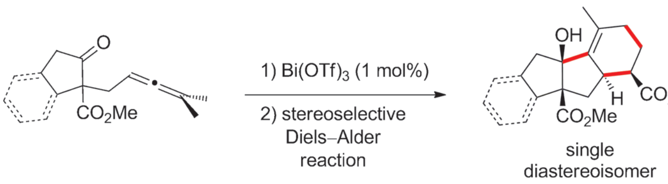
Playing with fire: A series of borate and phosphate anions (flame-retardant ions; FRIONs) have been produced in high yields and purity using a readily accessible diphosphinatocatechol. The phosphoryl-rich character of the anions imparts flame-retardant qualities and offers potential utility as lithium salts for safer lithium-ion batteries.



Synthetic Methods

I. Diaf, G. Lemière,*
E. Duñach* ______________ **4177 – 4180**

Metal-Triflate-Catalyzed Synthesis of Polycyclic Tertiary Alcohols by Cyclization of γ-Allenic Ketones

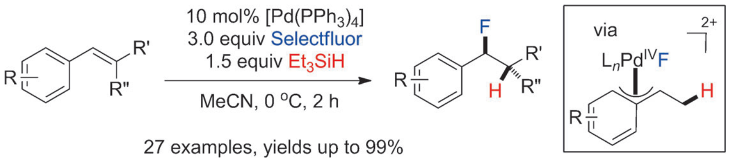


Simply complex: The described catalytic carbonyl-ene reaction is efficiently performed under mild reaction conditions by using only 1 mol % of bismuth(III) triflate, thus affording functionalized molecular scaffolds. Complex polycyclic structures with a defined stereochemistry have been synthesized by using the carbonyl-ene products in a subsequent hydroxy-directed Diels–Alder reaction.

Homogeneous Catalysis

E. Emer, L. Pfeifer, J. M. Brown,
V. Gouverneur* ______________ **4181 – 4185**

cis-Specific Hydrofluorination of Alkenylarenes under Palladium Catalysis through an Ionic Pathway

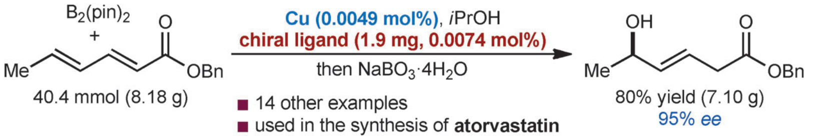


See attached PdF: A series of benzylic fluorides was prepared by hydrofluorination which proceeds through a $Pd^{II/IV}$ catalytic manifold. The method is mechanistically distinct from previously reported radical hydrofluorination, and is characterized by its clean regioselectivity and unique *cis* stereospecificity. The first example of enantioselective net HF addition onto 2-vinylnaphthalene is also disclosed.

Asymmetric Catalysis

Y. Luo, I. D. Roy, A. G. E. Madec,
H. W. Lam* ______________ **4186 – 4190**

Enantioselective Synthesis of Allylboronates and Allylic Alcohols by Copper-Catalyzed 1,6-Boration

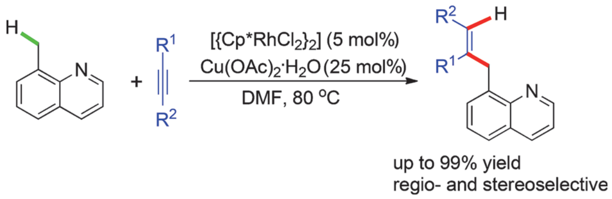


1,6-Borations of electron-deficient dienes with bis(pinacolato)diboron using copper catalyst loadings as low as 0.0049 mol % provided chiral allylboronates that, after oxidation, result in allylic alcohols in high enantioselectivities and 1,6:1,4 ratios. The allylboronates can also be used in stereoselective allylations of aldehydes. This process was applied to a concise synthesis of atorvastatin.

Homogeneous Catalysis

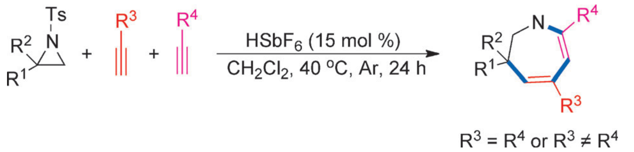
B. Liu, T. Zhou, B. Li, S. Xu, H. Song,
B. Wang* ______________ **4191 – 4195**

Rhodium(III)-Catalyzed Alkenylation Reactions of 8-Methylquinolines with Alkynes by $C(sp^3)-H$ Activation



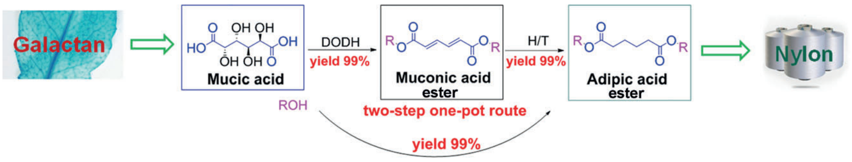
Highly regio- and stereoselective alkenylation reactions of 8-methylquinolines with alkynes give 8-allylquinolines in good yields. These reactions are catalyzed by $[\{Cp^*RhCl_2\}_2]$ ($Cp^* = C_5Me_5$) and proceed by $C(sp^3)-H$ bond activation.

Heterocycles



Superacid powers: The title reaction of unactivated aziridines with two of the same or different terminal alkyne components has been developed, thus opening a new access to seven-membered heterocyclic ring systems. This transformation is experimentally simple while furnishing azepine derivatives in good yields (up to 78%) with good levels of chemo- and regioselectivity. Ts = 4-toluenesulfonyl.

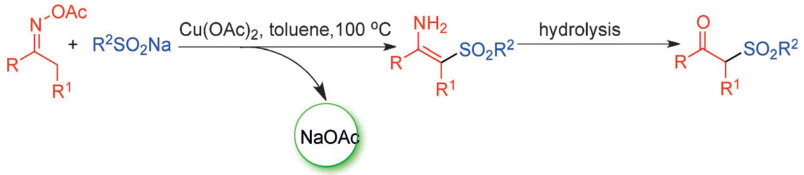
Sustainable Chemistry



Taking a dip: A highly efficient synthetic protocol has been developed for the conversion of mucic acid into adipic acid by the oxorhenium-complex-catalyzed deoxydehydration reaction and subsequent Pt/C-catalyzed transfer hydrogenation. Quantitative yields were achieved for the conversion of mucic acid into muconic acid and adipic acid esters either through separate sequences or through a one-pot process.

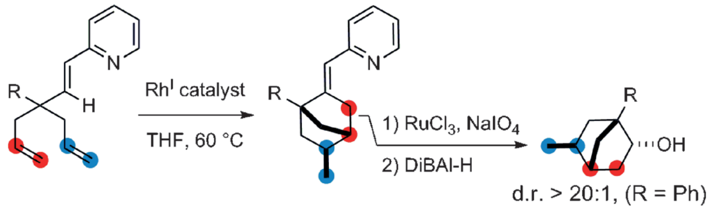
Synthetic Methods

Inside Cover

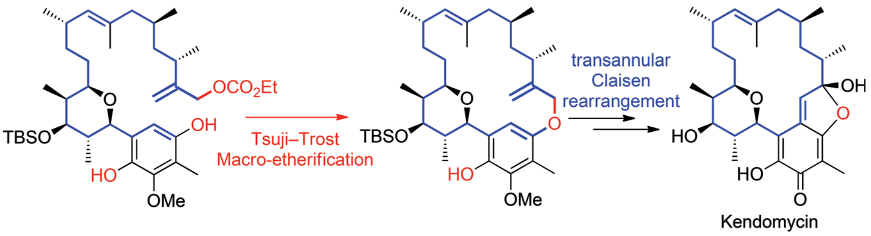


Copper brings us together: The title reaction involves copper-catalyzed N–O bond cleavage, activation of a vinyl sp^2 C–H bond and C–S bond formation; it uses simple oxime acetates and sodium sulfinates to synthesize sulfonylvinylamine products without the need for additional oxidants or additives. Upon hydrolysis, useful β-ketosulfones are obtained.

C–H Activation



Folding alkenes: Described is the first example of a rhodium(I)-catalyzed functionalization of an olefinic C–H bond with a 1,6-heptadiene reagent. This carbocyclization is completely diastereoselective and creates at least three stereogenic centers from simple prochiral substrates. The directing group can easily be converted into other functional groups.



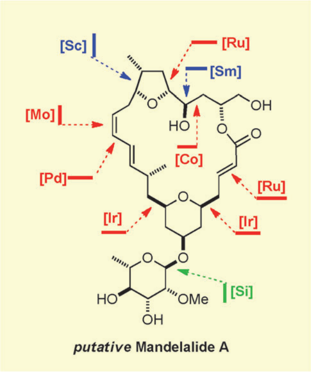
A new construct: The asymmetric total synthesis of the antibiotic kendomycin was accomplished by using a highly stereocontrolled convergent route. The key feature of the synthetic strategy is the construction of an 18-membered carbocycle based on an intramolecular Tsuji–Trost etherification/transannular Claisen rearrangement sequence. TBS = *tert*-butyldimethylsilyl.

Natural Products

T. Sengoku, S. Xu, K. Ogura, Y. Emori,
K. Kitada, D. Uemura,
H. Arimoto* ______ **4213 – 4216**

Total Synthesis of the Antibiotic Kendomycin: A Macrocyclization Using the Tsuji–Trost Etherification

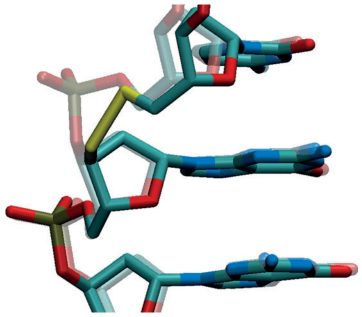
Bitter and sweet: The synthesis of the proposed structure of the cytotoxic macrolide mandelalide A reiterates the notion that structure elucidation of architecturally complex natural products is not always reliable. From the chemical viewpoint, the chosen route attests to the power of (transition) metals as catalysts for stereoselective synthesis. Most notable is the first application of terminal-acetylene metathesis to natural product chemistry.



Total Synthesis

J. Willwacher, A. Fürstner* _ **4217 – 4221**

Catalysis-Based Total Synthesis of Putative Mandelalide A



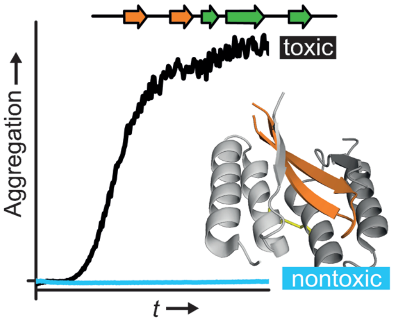
Thiolated oligonucleotides show unprecedented high reaction rates in chemical ligation experiments. The influence of temperature on the templated reaction is shown with a system designed for fluorescence monitoring. Side reactions and the nontemplated ligation reactions are efficiently suppressed by the choice of DNA modification and the activation site.

Chemical DNA Ligation

V. Patzke,* J. S. McCaskill,
G. von Kiedrowski ______ **4222 – 4226**

DNA with 3′-5′-Disulfide Links—Rapid Chemical Ligation through Isosteric Replacement

Wrapping the hairpin: NMR spectroscopy identifies a β-hairpin conformation of α-synuclein in complex with an engineered β-wrapin. The β-wrapin inhibits α-synuclein aggregation and toxicity at substoichiometric concentration. Sequestration of a β-hairpin is a novel approach to interfere with the initial steps of the aggregation reaction.



Protein Aggregation

E. A. Mirecka, H. Shaykhalishahi,
A. Gauhar, Ş. Akgül, J. Lecher, D. Willbold,
M. Stoldt, W. Hoyer* ______ **4227 – 4230**

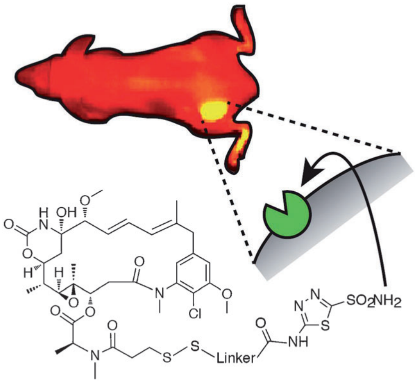
Sequestration of a β-Hairpin for Control of α-Synuclein Aggregation

Cancer Therapy

N. Krall, F. Pretto, W. Decurtins,
G. J. L. Bernardes, C. T. Supuran,
D. Neri* ———— **4231 – 4235**

A Small-Molecule Drug Conjugate for the Treatment of Carbonic Anhydrase IX Expressing Tumors

Size advantage: Antibodies are currently the most widely used vehicles for drug-delivery applications. Small-molecule ligands, however, may have improved pharmacokinetics and better tissue penetration. Targeted small-molecule drug conjugates directed against the tumor marker carbonic anhydrase IX were synthesized, characterized in vitro, and tested in vivo.

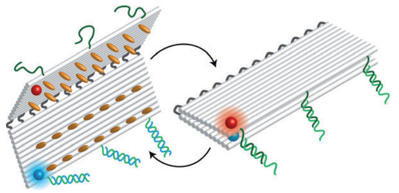


Bionanotechnology

J. List, M. Weber,
F. C. Simmel* ———— **4236 – 4239**

Hydrophobic Actuation of a DNA Origami Bilayer Structure

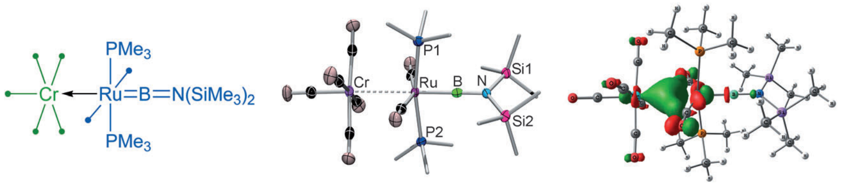
Hydrophobic interactions within cholesterol-modified DNA origami structures can induce large conformational changes, which can be used as the basis of a novel molecular switching mechanism. Intramolecularly folded DNA bilayer sheets are shown to unfold in the presence of surfactants and lipid membranes. Hydrophobic switching can be combined with a DNA-based lock and key mechanism, resulting in the conditional opening of the DNA bilayer structures.



Borylene Exchange

S. Bertsch, R. Bertermann,
H. Braunschweig,* A. Damme,
R. D. Dewhurst, A. K. Phukan,
C. Saalfrank, A. Vargas, B. Wennemann,
Q. Ye ———— **4240 – 4243**

Metal-Only Lewis Pairs by Reversible Insertion of Ruthenium and Osmium Fragments into Metal–Boron Double Bonds

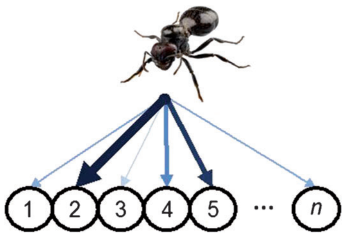


Separation anxiety: The insertion of a zerovalent ruthenium or osmium complex into the chromium–boron double bond of a borylene complex leads to new metal-only Lewis pairs (MOLPs: Ru→Cr and Os→Cr). The reaction creates new borylene complexes and is crystallization-controlled. A mechanism is proposed based on DFT calculations, along with a computational study of the unusual MOLPs.

Combinatorial Chemistry

M. Reutlinger, T. Rodrigues, P. Schneider,
G. Schneider* ———— **4244 – 4248**

Multi-Objective Molecular De Novo Design by Adaptive Fragment Prioritization



Finding the best way: A molecular design method inspired by ant colony optimization generated novel, highly potent, drug-like ligands for the sigma-1 and dopamine D_4 receptors. The computational approach is readily applicable to combinatorial chemistry and delivers focused compound libraries profiled for desired target-panel activities.

Angewandte Corrigendum

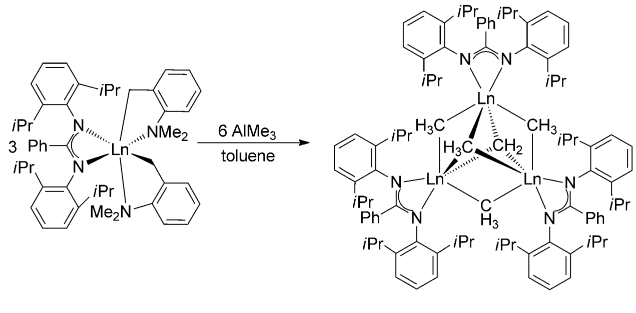
Rare-Earth-Metal Methylidene Complexes

J. Kratsch, P. W. Roesky* ______ **376–383**

Angew. Chem. Int. Ed. **2014**, *53*

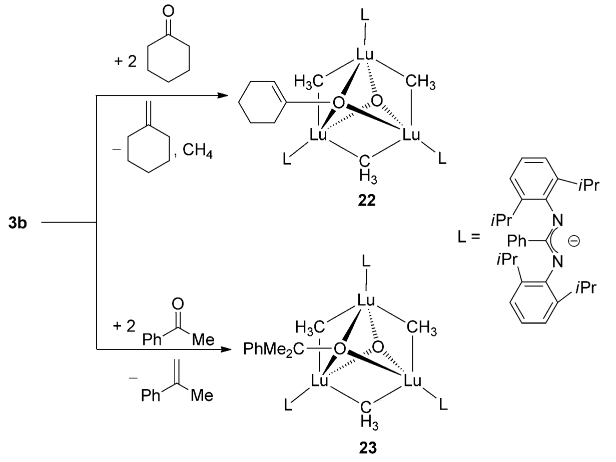
DOI: 10.1002/anie.201303761

In this Minireview, trinuclear methylidene complexes by Zhou et al. (**3a**, **3b**) were described, but the ligand system was incorrectly reported. As supporting ligand *N*,*N*′-bis(diisopropylphenyl)benzamidinate was used. Schemes 3 and 14 also contain this error. The correct schemes are shown below.



Ln = Sc (**3a**), Lu (**3b**)

Scheme 3.



Scheme 14.
