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

L. Xu, C. E. Doubleday, K. N. Houk**
Dynamics of 1,3-Dipolar Cycloadditions of Diazonium Betaines with Acetylene and Ethylene: Bending Vibrations Facilitate Reaction

*M. S. Nikolic, C. Olsson, A. Salcher, A. Kornowski, A. Rank, R. Schubert, A. Frömsdorf, H. Weller, S. Förster**
Micelle and Vesicle Formation of Amphiphilic Nanoparticles

*R. M. van der Veen, C. J. Milne, A. El Nahhas, F. A. Lima, V.-T. Pham, J. Best, J. A. Weinstein, C. N. Borca, R. Abela, C. Bressler, M. Chergui**
Structural Determination of a Photochemically Active Diplatinum Molecule by Time-Resolved EXAFS Spectroscopy

*G. Seidel, R. Mynott, A. Fürstner**
Elementary Steps of Gold Catalysis: NMR Spectroscopy Reveals the Highly Cationic Character of a Gold Carbenoid

*B. L. Merner, L. N. Dawe, G. J. Bodwell**
1,1,8,8-Tetramethyl[8](2,11)teropyrenophane: Half of an Aromatic Belt and a Segment of an (8,8) Single-walled Carbon Nanotube

*G. E. Sigmon, D. K. Unruh, J. Ling, B. Weaver, M. Ward, L. Pressprich, A. Simonetti, P. C. Burns**
Symmetry versus Minimal Pentagonal Adjacencies in Uranium-Based Polyoxometalate Fullerene Topologies

*J. H. Ahn, B. Temel, E. Iglesia**
Selective Homologation Routes to 2,2,3-Trimethylbutane on Solid Acids

*B. Brugger, S. Rütten, K.-H. Phan, M. Möller, W. Richtering**
Colloidal Suprastructure of Smart Microgels at Oil/Water Interfaces

*N. Sprutta, S. Maćkowiak, M. Kocik, L. Szterenberg, T. Lis, L. Latos-Grażyński**
Tetraazuliporphyrin Tetracation

*R. Masuo, K. Ohmori, L. Hintermann, S. Yoshida, K. Suzuki**
Stereoselective Total Synthesis of FD-594 Aglycon

News


K. Nozaki


J. F. Hartwig


S. Matsunaga


Y. Nakao

Author Profile

"My most exciting discovery to date has been that molecules can have a magnetic memory. The biggest challenge facing scientists is to find renewable and sustainable energy sources…"
This and more about Roberta Sessoli can be found on page 2265.

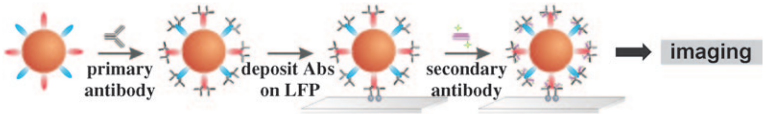
Books

Highlights

Drug Detection

O. S. Wolfbeis* ______ **2268 – 2269**

Nanoparticle-Enhanced Fluorescence Imaging of Latent Fingerprints Reveals Drug Abuse



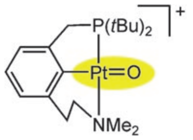
No sweat! The sweat in a latent fingerprint (LFP) can contain orally ingested drugs and their metabolites. In a new method for drug detection, primary antibodies (Abs) against drug metabolites are conjugated to magnetic nanoparticles (NPs). The LFP is incubated with the NPs, excess particles removed, and the LFP treated with a fluorescently labeled secondary antibody. Fluorescence imaging then allows characterization.

Platinum Oxo Complexes

C. Limberg* ______ **2270 – 2273**

What Does it Really Take to Stabilize Complexes of Late Transition Metals with Terminal Oxo Ligands?

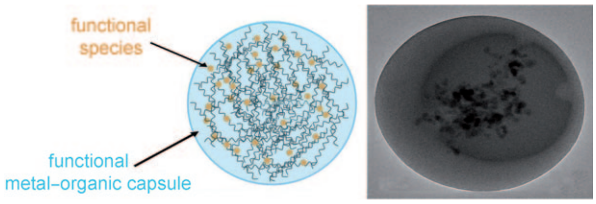
Surprisingly stable: Noble-metal complexes with terminal oxo ligands are frequently postulated as intermediates, but they are generally considered elusive, as their d electrons destabilize the M=O units. Until recently, the isolation of such compounds was thought to require strong acceptor ligands, but now a remarkably stable Pt=O complex has been obtained employing a simple pincer ligand.



Coordination Polymers

N. R. Champness* ______ **2274 – 2275**

Coordination Polymers: From Metal–Organic Frameworks to Spheres



Sphere of destiny: Metal–organic spheres with remarkable encapsulation properties are readily prepared and their ability to host a wide range of guest species, including nanoparticles, fluorescent dyes, and quantum dots, is demonstrated. Both the metal–organic spheres and the encapsulated species maintain their fluorescent or magnetic properties, highlighting the importance of these systems as new multifunctional materials.

For the USA and Canada:
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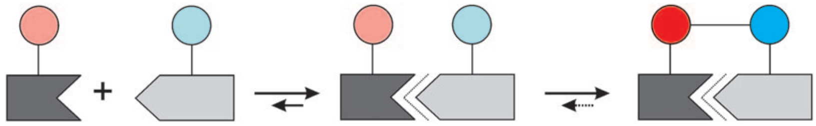
Minireviews

C–C Coupling

New kid on the block: The cross-coupling of thioorganic compounds with boronic acids under neutral conditions in the presence of catalytic palladium(0) and a stoichiometric amount of a copper(I) oxygenate has emerged as a very useful method for the construction of C–C bonds (see scheme). This intriguing and mechanistically unprecedented base-free coupling has distinct advantages, in particular when traditional Pd^0-catalyzed cross-coupling is not possible.

Reviews

Covalent Capture

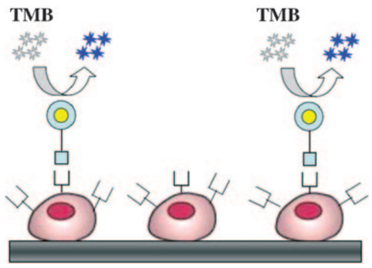


Coming together: The act of bringing the right molecules together is enough to induce irreversible or reversible formation of a covalent bond. The covalent capture strategy, in which a supramolecular interaction leads to the formation of a covalent bond (see scheme), can be utilized in very different biological and synthetic systems and can be used for numerous applications.

Communications

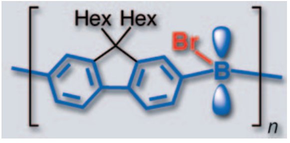
Nanoparticles

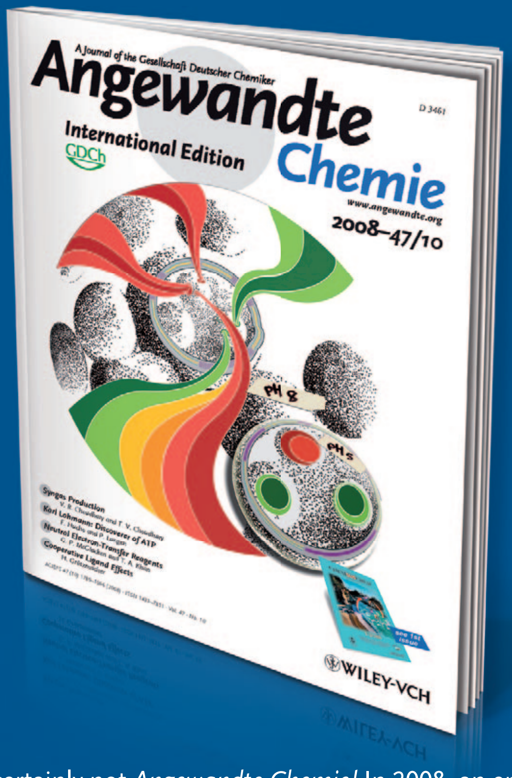
Inorganic enzyme? Ceria nanoparticles exhibit unique oxidase-like activity at acidic pH values. These redox catalysts can be used in immunoassays (ELISA) when modified with targeting ligands (see picture; light blue and yellow structures are nanoparticles with attached ligands). This modification allows both for binding and for detection by the catalytic oxidation of sensitive colorimetric dyes (e.g. TMB).



Organoborane Polymers

Pimp my polymer: A new versatile and strongly emissive conjugated polymer scaffold results when nucleophiles replace the labile bromine atoms on the fluorenylborane polymer backbone (see picture). Such modification allows facile tuning of the stability, thermal characteristics, and photophysical behavior of a diverse range of luminescent polymers with interesting optoelectronic properties and anion-binding behavior.





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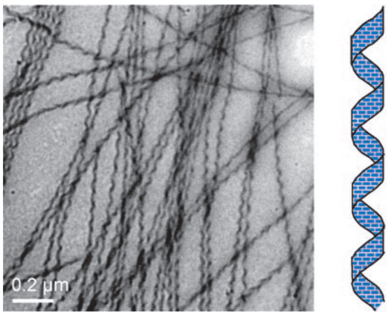

An addition to the family: The introduction of β-amino acid residues into a modified amyloid β peptide fragment resulted in well-defined helical nanoribbons (see cryo-TEM image) comprising β strands mainly oriented perpendicular to the ribbon axis. The nanoribbons order into a flow-aligning nematic phase at higher concentration. The β-strand nanoribbon structure is an addition to the known set of secondary structures adopted by β-peptides.

β-Sheet Self-Assembly

V. Castelletto, I. W. Hamley,* R. A. Hule,
D. Pochan ———— **2317 – 2320**

Helical-Ribbon Formation by a β-Amino Acid Modified Amyloid β-Peptide Fragment

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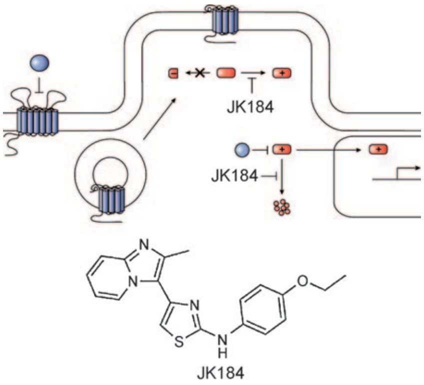


Eradicating hedgehogs: The title molecule has been previously identified as a potent inhibitor of the Hedgehog signaling pathway, which gives embryonic cells information needed to develop properly. This molecule is shown to modulate Hedgehog target gene expression by depolymerizing microtubules, thus revealing dual roles of the cytoskeleton in pathway regulation (see figure).

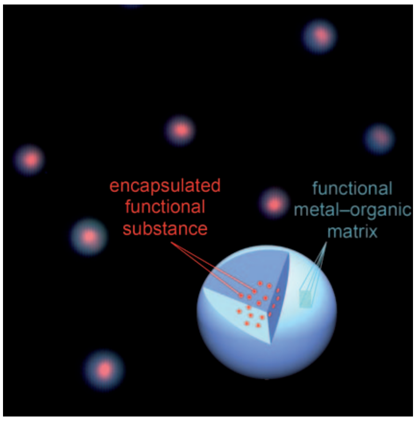
Cell Signaling

T. Cupido, P. G. Rack, A. J. Firestone,
J. M. Hyman, K. Han, S. Sinha,
C. A. Ocasio, J. K. Chen* —— **2321 – 2324**

The Imidazopyridine Derivative JK184 Reveals Dual Roles for Microtubules in Hedgehog Signaling

---

Music of the spheres: Infinite coordination polymerization of Zn^{2+} ions and a multitopic ligand produces metal–organic micro- and nanospheres that can be used as functional matrices. The spheres can encapsulate combinations of active substances, such as organic dyes, magnetic nanoparticles, or luminescent quantum dots (see image), which results in spheres that are luminescent in the blue, green, and red regions of the spectrum.



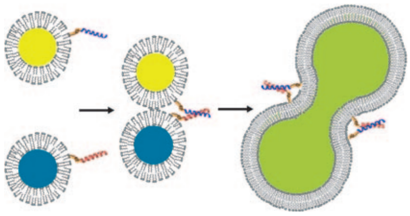
Metal–Organic Capsules

I. Imaz, J. Hernando, D. Ruiz-Molina,
D. Maspoch* ———— **2325 – 2329**

Metal–Organic Spheres as Functional Systems for Guest Encapsulation

---

Let's get together: A minimal model system was developed to mimic the SNARE-protein-mediated fusion of biological membranes (see picture). Fusion between two populations of liposomes is controlled by a pair of complementary lipidated oligopeptides that form non-covalent coiled-coil complexes and thereby force the membranes into close proximity to promote fusion. The model system displays the key characteristics of in vivo fusion events.



Synthetic Biology

H. Robson Marsden, N. A. Elbers,
P. H. H. Bomans, N. A. J. M. Sommerdijk,
A. Kros* ———— **2330 – 2333**

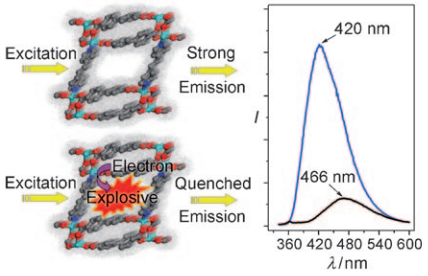
A Reduced SNARE Model for Membrane Fusion

Metal–Organic Frameworks

A. Lan, K. Li, H. Wu, D. H. Olson,
T. J. Emge, W. Ki, M. Hong,
J. Li* **2334–2338**

A Luminescent Microporous Metal–Organic Framework for the Fast and Reversible Detection of High Explosives

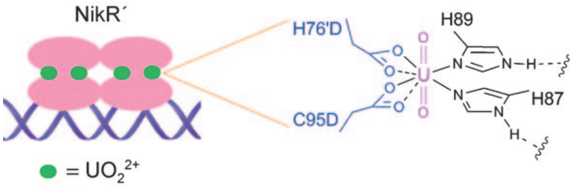
Sensors and sensitivity: A highly luminescent microporous metal–organic framework, [Zn$_2$(bpdc)$_2$(bpee)] (bpdc = 4,4′-biphenyldicarboxylate; bpee = 1,2-bipyridylethene), is capable of very fast and reversible detection of the vapors of the nitroaromatic explosive 2,4-dinitrotoluene and the plastic explosive taggant 2,3-dimethyl-2,3-dinitrobutane, through redox fluorescence quenching with unprecedented sensitivity (see spectra).



Metalloprotein Engineering

S. V. Wegner, H. Boyaci, H. Chen,
M. P. Jensen, C. He* **2339–2341**

Engineering A Uranyl-Specific Binding Protein from NikR



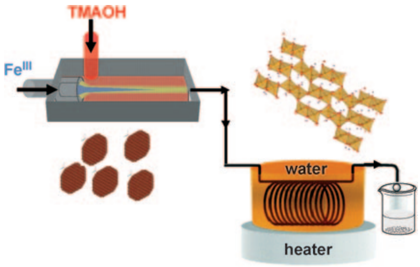
A new pick-up line: The first uranyl-selective DNA-binding protein is designed using the *E. coli* nickel(II)-responsive protein NikR as the template. The resulting NikR′ protein binds uranyl (see picture) with a dissociation constant K_d = 53 nM and selectively binds to DNA in the presence of uranyl.

Microreactors

A. Abou-Hassan,* O. Sandre, S. Neveu,
V. Cabuil **2342–2345**

Synthesis of Goethite by Separation of the Nucleation and Growth Processes of Ferrihydrite Nanoparticles Using Microfluidics

Microfluidic synthesis is used to form nanoparticles by separate nucleation and growth processes using two microreactors (see picture) operating under different temperature and flow conditions. Ferrihydrite nanoparticles precipitated in the first microreactor are aged under continuous flow in a second microtubular reactor, leading to goethite nanoparticles. TMAOH = tetramethylammonium hydroxide.

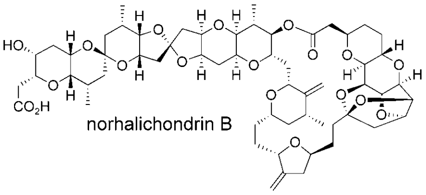


Natural Products

K. L. Jackson, J. A. Henderson,
H. Motoyoshi, A. J. Phillips* **2346–2350**

A Total Synthesis of Norhalichondrin B

Four corners: The syntheses of four key building blocks for the total synthesis of norhalichondrin B (see structure) are described. The assembly of these subunits into the natural product is also reported. Key features of the synthesis are the use of the Achmatowicz oxidation/ionic hydrogenation for the synthesis of pyrans and pyranopyrans, and the application of tandem metathesis for the synthesis of pyranopyrans.

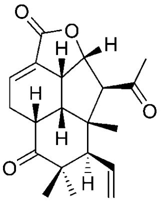


Natural Products

J.-Q. Dong, H. N. C. Wong* **2351 – 2354**

Biomimetic Total Synthesis of (±)-Pallavicinolide A

Piecing it together: The first total synthesis of naturally occurring diterpene pallavicinolide A was achieved. Notable features are highlighted by three key biomimetic transformations: a base-promoted Grob fragmentation, a singlet oxygen oxidation, and an intramolecular Diels–Alder cycloaddition.



Pallavicinolide A

Chemical Ligation

D. Crich,* I. Sharma **2355 – 2358**

Epimerization-Free Block Synthesis of Peptides from Thioacids and Amines with the Sanger and Mukaiyama Reagents

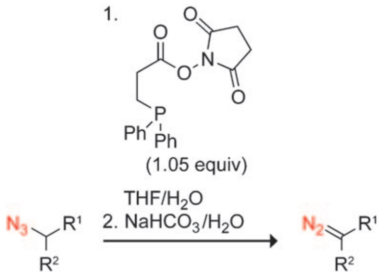
Highly activated thioesters formed by the rapid reaction of C-terminal thioacids derived from protected amino acids and peptides with the Sanger reagent and other electron-deficient aryl halides in the presence of a free amine immediately form a peptide bond with the amine. This essentially epimerization-free method was used for the 4+4 block synthesis of a hindered octapeptide (see scheme; Boc, Pbf, and Trt are protecting groups).

Diazo Compounds

E. L. Myers, R. T. Raines* **2359 – 2363**

A Phosphine-Mediated Conversion of Azides into Diazo Compounds

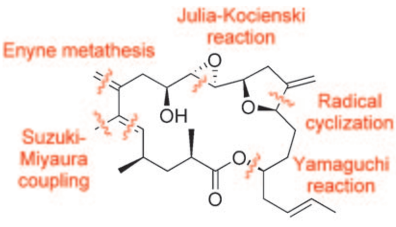
N2 the mild: Diazo compounds are extremely versatile intermediates for synthetic organic chemistry, but their synthesis can be challenging in the presence of delicate functional groups. The Staudinger ligation has inspired a mild method for the conversion of a broad range of azides into their diazo compound derivatives through an acyl triazene intermediate.



Natural Product Synthesis

H. M. Ko, C. W. Lee, H. K. Kwon, H. S. Chung, S. Y. Choi, Y. K. Chung, E. Lee* **2364 – 2366**

Total Synthesis of (−)-Amphidinolide K



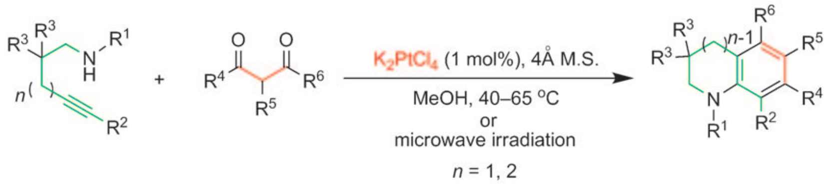
(−)-amphidinolide K

Macrolide magic: An enyne cross-metathesis reaction of an alkynyl boronate with an alkene derivative as well as a radical cyclization reaction of a homopropargylic β-alkoxyacrylate are the key transformations in the total synthesis of the cytotoxic macrolide (−)-amphidinolide K.

Synthetic Methods

X.-Y. Liu, C.-M. Che* ______ **2367 – 2371**

Highly Efficient and Regioselective Platinum(II)-Catalyzed Tandem Synthesis of Multiply Substituted Indolines and Tetrahydroquinolines

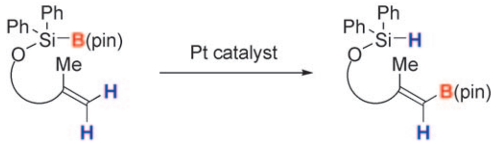


A special advantage: The platinum(II)-catalyzed tandem cyclization of aminoalkynes with 1,3-diketones offers a new and highly efficient method for the synthesis of indolines and tetrahydroquinolines (see scheme; M.S. = molecular sieves). This transformation affords good to excellent product yields with high regio- and chemoselectivity under mild reaction conditions.

C–H Functionalization

T. Ohmura, Y. Takasaki, H. Furukawa, M. Suginome* ______ **2372 – 2375**

Stereoselective Synthesis of *cis*-β-Methyl- and Phenyl-Substituted Alkenylboronates by Platinum-Catalyzed Dehydrogenative Borylation

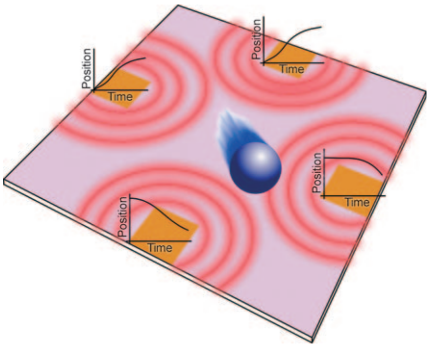


Changing places: Intramolecular B(pin)/H exchange took place in the presence of a platinum–phosphane catalyst, giving synthetically useful *cis*-β-methyl-substituted alkenylboronates stereoselectively (see scheme; B(pin) = 4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl).

Electrochemistry

N. V. Rees, S. M. Matthews, K. Yunus, A. C. Fisher, R. G. Compton* ______ **2376 – 2378**

A Method for the Positioning and Tracking of Small Moving Particles

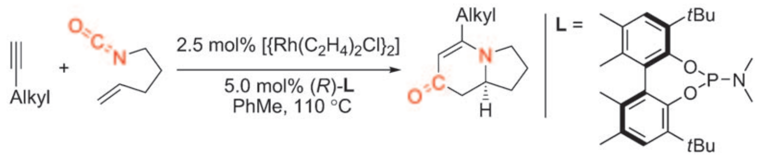


On the move: Electrochemistry has been used to detect and monitor the motion of a single 330 μm sphere in both time and space (see picture). The motion was recorded simultaneously by video and chronoamperometry, which showed an excellent correlation. The ability to fabricate electrode arrays capable of spatial resolution at the sub-micrometer scale opens the possibility of using this technique to monitor considerably smaller particles.

Asymmetric Catalysis

R. T. Yu, E. E. Lee, G. Malik, T. Rovis* ______ **2379 – 2382**

Total Synthesis of Indolizidine Alkaloid (−)-209D: Overriding Substrate Bias in the Asymmetric Rhodium-Catalyzed [2+2+2] Cycloaddition



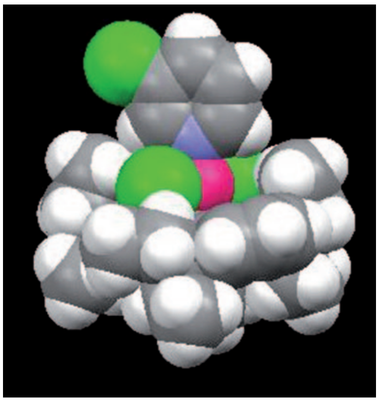
CO! You had me at hello: The use of chiral biphenyl-based phosphoramidite ligands on rhodium provides an efficient [2+2+2] cycloaddition between terminal alkyl alkynes and alkenyl isocyanates (see scheme). The cycloaddition proceeds through a CO migration pathway, and facilitates a rapid four-step asymmetric synthesis of indolizidine (−)-209D.

Synthetic Methods

M. G. Organ,* S. Çalimsiz, M. Sayah,
K. H. Hoi, A. J. Lough ______ **2383 – 2387**

Pd-PEPPSI-IPent: An Active, Sterically Demanding Cross-Coupling Catalyst and Its Application in the Synthesis of Tetra-*Ortho*-Substituted Biaryls

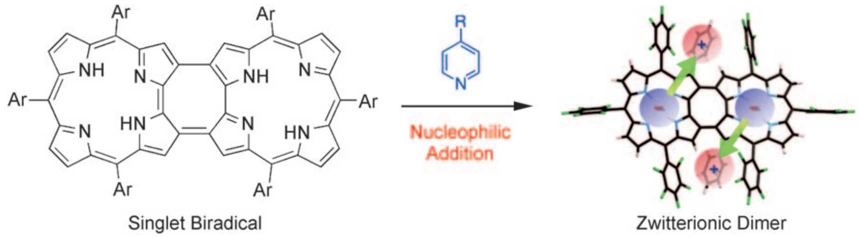
Incredible Bulk: A series of N-heterocyclic carbene catalysts (see picture) were prepared and evaluated in the Suzuki–Miyaura reaction. A variety of sterically encumbered tetra-*ortho*-substituted biaryl products were formed from unreactive aryl chlorides using the isopentyl-substituted catalyst at temperatures ranging from 65 °C to room temperature. The cyclopentyl-substituted catalyst was virtually inactive, demonstrating that “flexible bulk” is essential to promote these transformations.



π-Conjugated Systems

S. Hiroto, N. Aratani, N. Shibata,
Y. Higuchi, T. Sasamori, N. Tokitoh,
H. Shinokubo,* A. Osuka* _ **2388 – 2390**

Zwitterionic Corroles: Regioselective Nucleophilic Pyridination of a Doubly Linked Biscorrole



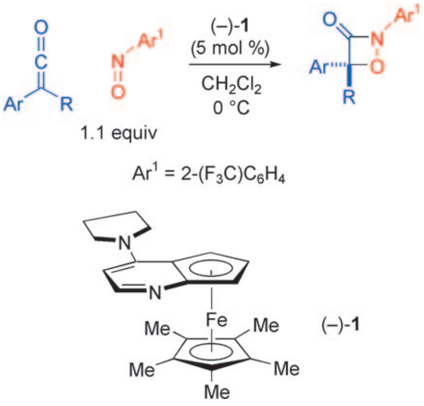
Pyridine attacks: Nucleophilic addition of pyridine derivatives to a doubly linked corrole, which is a stable singlet biradical species, occurs at the bay area with high regioselectivity to provide zwitterionic dimers (see picture; Ar = C_6F_5). Charge transfer between the anionic corrole and the pyridinium groups induces effective fluorescence quenching of the corrole dimer, which can be utilized for selective fluoride ion recognition.

Asymmetric Cycloadditions

M. Dochnahl, G. C. Fu* ______ **2391 – 2393**

Catalytic Asymmetric Cycloaddition of Ketenes and Nitroso Compounds: Enantioselective Synthesis of α-Hydroxycarboxylic Acid Derivatives

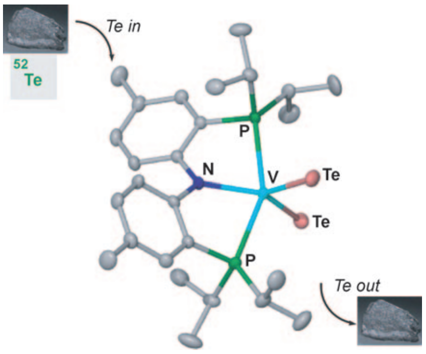
The appropriate choice of chiral catalyst and starting materials leads to the synthesis of 1,2-oxazetidin-3-ones by cycloadditions of ketenes with nitroso compounds with very good regioselectivity and enantioselectivity. In addition to serving as potentially bioactive target molecules, the products can be transformed into other important classes of compounds, such as α-hydroxycarboxylic acid derivatives.



Telluride Ligands

U. J. Kilgore, J. A. Karty, M. Pink, X. Gao,
D. J. Mindiola* ____________ **2394 – 2397**

Tellus in, Tellus out: The Chemistry of the Vanadium Bis(telluride) Functionality



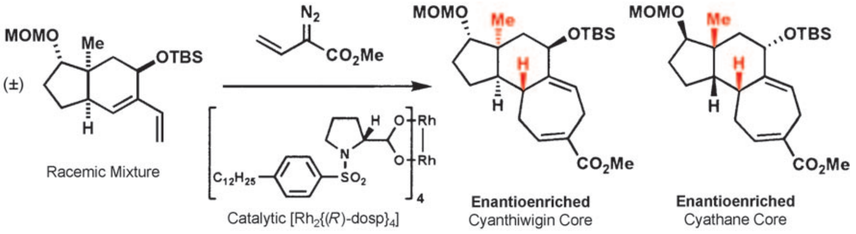
The vanadium–bis(telluride) complex, $[(PNP)V(Te)_2]$ (see picture), in which the terminal telluride units can act as leaving groups or protecting groups, is prepared by activation of elemental Te by V. The complex masks $\{(PNP)V^{I}\}$ or $\{(PNP)V^{III}\}$ sources when exposed to oxidants such as azides and diphenyldiazomethane. Isocyanides promote elimination of one Te ligand to furnish a V^{III} complex with a terminal telluride ligand.

Contents

Natural Products

L. C. Miller, J. M. Ndungu,
R. Sarpong* ________ **2398 – 2402**

Parallel Kinetic Resolution Approach to the Cyathane and Cyanthiwigin Diterpenes Using a Cyclopropanation/Cope Rearrangement

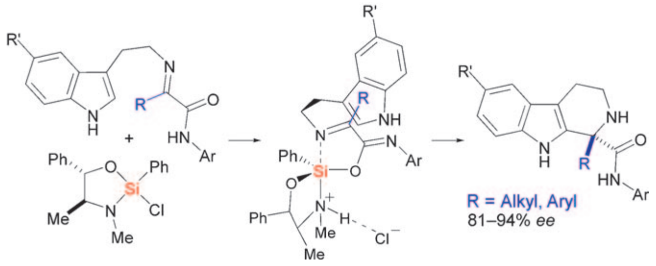


Parallel effort: Stereodivergent parallel kinetic resolution of a racemic mixture of dienes using Davies' $[Rh_2\{(S)\text{-dosp}\}_4]$ or $[Rh_2\{(R)\text{-dosp}\}_4]$ catalysts promotes a tandem vinyl diazoacetate cyclopropanation/Cope rearrangement sequence to afford two diastereomeric, enantioenriched cycloheptadienes, which correspond to the natural antipodes of the title diterpenoids (see scheme).

Synthetic Methods

F. R. Bou-Hamdan,
J. L. Leighton* ________ **2403 – 2406**

Highly Enantioselective Pictet–Spengler Reactions with α-Ketoamide-Derived Ketimines: Access to an Unusual Class of Quaternary α-Amino Amides



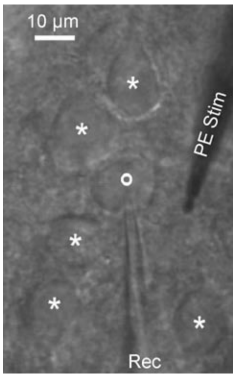
"Quat's" the story? *N*-Aryl amides are effective directing/activating groups for chlorosilane Lewis acids. This aspect has been exploited for the development of the first simple and general method for the highly enantioselective Pictet–Spengler reaction of ketimines derived from α-ketoamides leading to quaternary α-amino acid derivatives (see scheme).

Applications of Nanoparticles

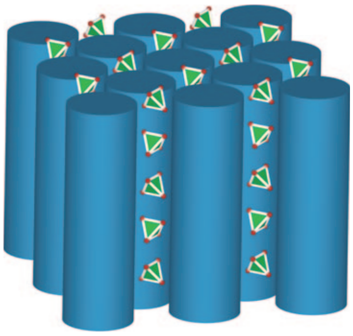
Y. Zhao, P. Larimer, R. T. Pressler,
B. W. Strowbridge,*
C. Burda* ________ **2407 – 2410**

Wireless Activation of Neurons in Brain Slices Using Nanostructured Semiconductor Photoelectrodes

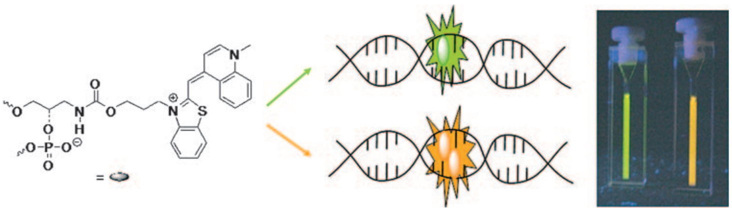
Light rather than electrical current: The inner or outer surfaces of glass micropipettes can be coated with nanoparticles of a narrow-band-gap semiconductor. When visible or near-infrared light is used for excitation, these micropipettes (labeled PE Stim in the image) can activate nearby neurons (labeled *) in brain tissue without the damage associated with electrical stimulation.



Block copolymers in seconds: Catalyst-free, ambient-temperature click conjugation of individual polymer strands becomes possible using novel ATRP-derived cyclopentadienyl-capped polymers in an extremely rapid hetero-Diels–Alder cycloaddition with macromolecules equipped with electron-deficient dithioester end groups prepared by the RAFT process.



Salty metal: In the suboxometallate Cs_9InO_4, metallic cesium columns (see picture; blue) lie next to ionic oxoindate(III) columns. The chemistry of the suboxides is thus expanded to structures containing complex anions.



A fluorescent chameleon: A single thiazole orange (TO) dye, when used as an artificial DNA base shows the typical green emission, whereas the interstrand TO dimer exhibits an orange excimer-type emission inside duplex DNA (see picture).

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

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

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