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Spotlight on Angewandte's Sister Journals

2314–2316

Service



"If I had one year of paid leave I would work for a Buddhist temple on a mountain whilst studying to become a priest. In a spare hour, I listen to 'new wave' music ..."
This and more about Norio Shibata can be found on page 2318.

Author Profile

Norio Shibata ————— 2318–2319

News



A. O'Mullane



B. J. Smith



M. G. Banwell



R. J. Payne

Royal Australian Chemical Institute Awards: A. O'Mullane, B. J. Smith, M. G. Banwell, R. J. Payne, D. M. D'Alessandro, and C. Wentrup ————— 2320

Swiss Chemical Society Awards: G. Gasser and N. Banerji ————— 2321



D. M. D'Alessandro



C. Wentrup

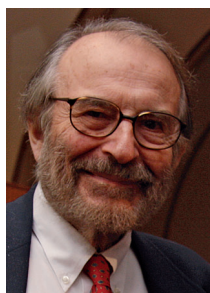


G. Gasser



N. Banerji

Obituaries



Paul von Ragué Schleyer, Graham Perdue Professor at the University of Georgia passed away on November 21, 2014. Schleyer was an eminent and prolific physical organic chemist, whose pioneering contributions included the application of computational chemistry to broad fields of physical organic, inorganic, organometallic, and mechanistic chemistry concepts.

Paul von Ragué Schleyer (1930–2014)

G. A. Olah,

G. K. S. Prakash* _____ 2322–2323

Books

Ligand Design in Medicinal Inorganic Chemistry

Tim Storr

reviewed by C. Hartinger _____ 2324

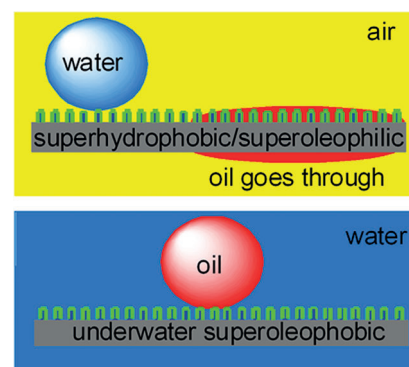
Reviews

Oil/Water Separation

Z. Chu, Y. Feng, S. Seeger* 2328–2338

Oil/Water Separation with Selective Superantiwetting/Superwetting Surface Materials

Stringent segregation: Superhydrophobic/superoleophilic surfaces and underwater superoleophobic surfaces have been successfully designed, fabricated, and employed in the separation of oil/water-free mixtures and emulsions on the basis of their selective superantiwetting/superwetting properties towards water and oil. Progress, remaining problems, and future challenges in this field are discussed in this Review.



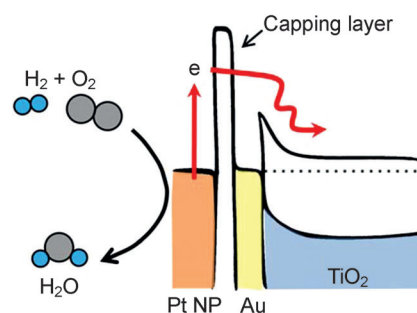
Communications

Hydrogen Oxidation

H. Lee, I. I. Nedrygailov, C. Lee, G. A. Somorjai,* J. Y. Park* 2340–2344

Chemical-Reaction-Induced Hot Electron Flows on Platinum Colloid Nanoparticles under Hydrogen Oxidation: Impact of Nanoparticle Size

Catalytic nanodiodes: Chemically induced hot electron flows on Pt nanoparticles were measured using Au/TiO₂ nanodiodes (see picture) and showed the correlation of chemicurrent with catalytic activity. The catalytic nanodiodes with smaller Pt nanoparticles lead to higher chemicurrent, and the temperature dependence is similar to that of the turnover frequency.



Frontispiece

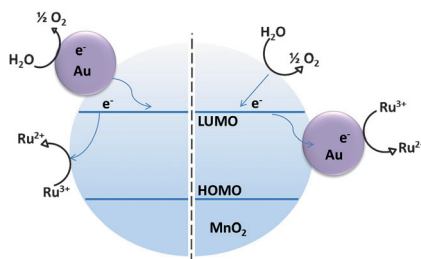
For the USA and Canada:

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paid at Emigsville, PA. US POSTMASTER: send address changes to *Angewandte Chemie*, John Wiley & Sons Inc., C/O The Sheridan Press, PO Box 465, Hanover, PA 17331. 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.

Just a pinch: A small amount of dopant gold nanoparticles (<5%) increased the catalytic activity of α -MnO₂ in water oxidation reactions with the established [Ru(bpy)₃]²⁺-S₂O₈²⁻ system (bpy = 2,2'-bipyridine) by up to 8.2-fold in the photochemical and sixfold in the electrochemical system. The nanoparticle dopant is thought to mediate the electron-transfer steps in the mechanism as shown.

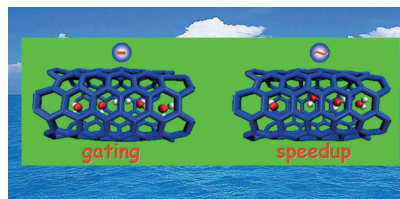


Water Oxidation Reaction

C.-H. Kuo, W. Li, L. Pahalagedara, A. M. El-Sawy, D. Kriz, N. Genz, C. Guild, T. Ressler, S. L. Suib,* J. He* **2345–2350**

Understanding the Role of Gold Nanoparticles in Enhancing the Catalytic Activity of Manganese Oxides in Water Oxidation Reactions

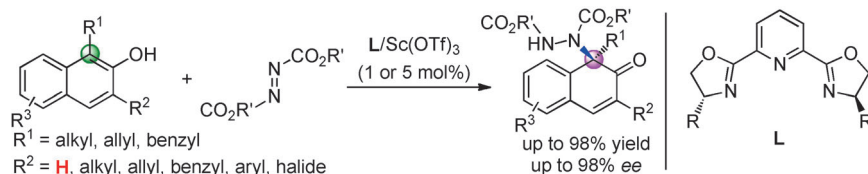
A vibrational charge outside a nanochannel can promote water flux within the channel. A decrease in the distance between the charge and the nanochannel causes an increase in the water net flux, which is contrary to that of the fixed-charge system. This electromanipulating transport phenomenon provides an important new mechanism of water transport confined in nanochannels.



Nanochannels

J. Kou, J. Yao,* H. Lu, B. Zhang, A. Li, Z. Sun, J. Zhang, Y. Fang, F. Wu, J. Fan **2351–2355**

Electromanipulating Water Flow in Nanochannels



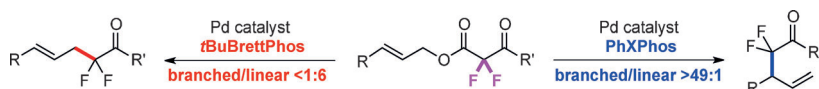
Asymmetric aminative dearomatization: The title reaction was successfully implemented with electrophilic azodicarboxylates under the catalysis of chiral Sc^{III}/pybox complexes. This reaction represents a hitherto unknown enantioselective

C–N bond-forming process through direct dearomatization of phenolic compounds to generate chiral nitrogen-containing quaternary carbon stereocenters. Tf = trifluoromethanesulfonyl.

Asymmetric Catalysis

J. Nan, J. Liu, H. Zheng, Z. Zuo, L. Hou, H. Hu, Y. Wang, X. Luan* **2356–2360**

Direct Asymmetric Dearomatization of 2-Naphthols by Scandium-Catalyzed Electrophilic Amination



α,α -Difluoroketones are useful building blocks for the synthesis of therapeutics and probes for chemical biology. To access this substructure, complementary palladium-catalyzed decarboxylative ally-

lation reactions were developed to provide linear and branched α -allyl- α,α -difluoroketones. The regioselectivity was enabled by the fluorine substituents of the substrate and controlled by the ligand.

Fluorine

M.-H. Yang, D. L. Orsi, R. A. Altman* **2361–2365**

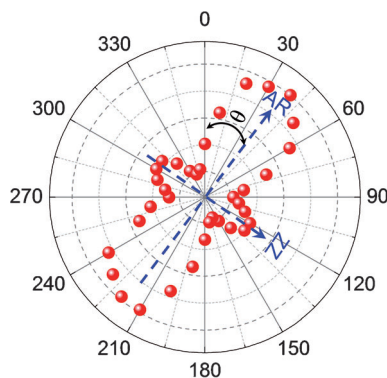
Ligand-Controlled Regiodivergent Palladium-Catalyzed Decarboxylative Allylation Reaction to Access α,α -Difluoroketones

Black Phosphorus

J. Wu, N. Mao, L. Xie, H. Xu,*
J. Zhang* 2366–2369



Identifying the Crystalline Orientation of Black Phosphorus Using Angle-Resolved Polarized Raman Spectroscopy



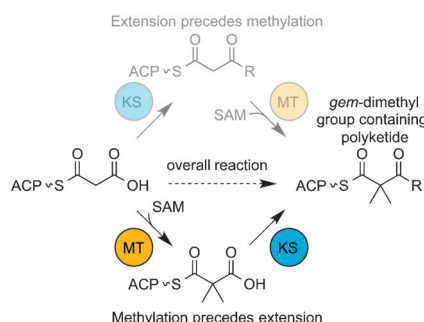
A **compass** to precisely identify the zigzag and armchair directions of black phosphorus (BP) sheets is provided by angle-resolved polarized Raman spectroscopy. The Raman modes of BP show periodic variation (90° or 180°) with the sample rotation angle. Under parallel polarization, the A_g^2 mode intensity achieves the larger (or smaller) local maximum when the armchair (or zigzag) direction is along the polarization direction of scattered light.

Biosynthesis

S. Poust, R. M. Phelan, K. Deng, L. Katz,
C. J. Petzold,*
J. D. Keasling* 2370–2373



Divergent Mechanistic Routes for the Formation of *gem*-Dimethyl Groups in the Biosynthesis of Complex Polyketides



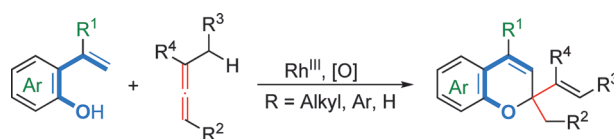
Order of events: In order to elucidate the mechanism of *gem*-dimethyl group formation in polyketides, the *gem*-dimethyl group producing polyketide synthase (PKS) modules of yersiniabactin and epothilone were characterized using mass spectrometry. The study demonstrated, contrary to the canonical understanding of reaction order in PKSs, that methylation can precede condensation in PKS modules that produce *gem*-dimethyl groups.

Synthetic Methods

N. Casanova, A. Seoane,
J. L. Mascareñas,*
M. Gulías* 2374–2377



Rhodium-Catalyzed (5+1) Annulations Between 2-Alkenylphenols and Allenes: A Practical Entry to 2,2-Disubstituted 2*H*-Chromenes



Skeleton crew: The synthesis of 2*H*-chromene skeletons was achieved by means of a rhodium(III)-catalyzed oxidative annulation of 2-alkenylphenols and allenes. This unconventional (5+1) process

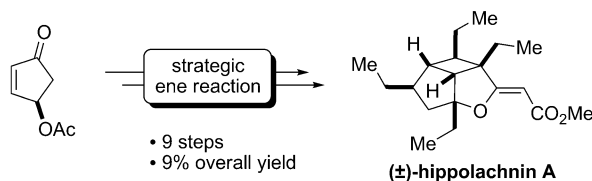
involves the cleavage of the terminal C–H bond of the alkenyl moiety and the participation of the allene as a one-carbon cycloaddition component.

Natural Product Synthesis

S. A. Ruider, T. Sandmeier,
E. M. Carreira* 2378–2382

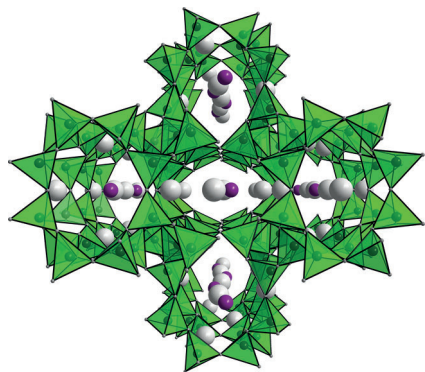


Total Synthesis of (±)-Hippolachnin A



Brevity makes sweetness! The first total synthesis of the marine polyketide (±)-hippolachnin A is realized in nine steps and an overall yield of 9%. The synthesis

relies on the strategic application of an ene cyclization, which provides rapid access to the oxacyclobutapentalene core skeleton.

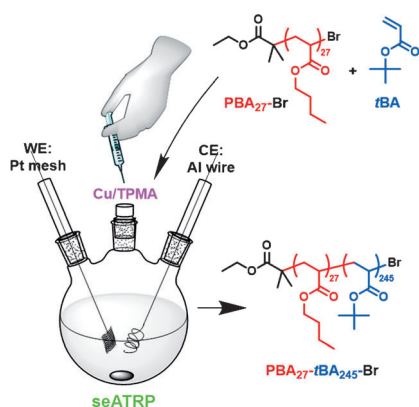


Under pressure: A nitridophosphate zeolite $\text{Ba}_3\text{P}_5\text{N}_{10}\text{Br}$ was synthesized by a high-pressure/high-temperature reaction at pressures between 1 and 5 GPa and 1000°C and investigated by single-crystal X-ray diffraction (see picture; Br = purple, Ba = gray, PN_4 tetrahedra = green). Doped with Eu^{2+} ions, it exhibits natural-white-light luminescence as a single emitter upon excitation by near-UV light.

Zeolite Synthesis

A. Marchuk, W. Schnick* — 2383–2387

$\text{Ba}_3\text{P}_5\text{N}_{10}\text{Br}:\text{Eu}^{2+}$: A Natural-White-Light Single Emitter with a Zeolite Structure Type

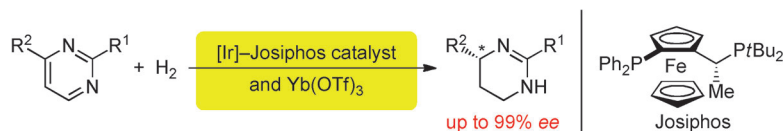


Take it easy: Simplification of electrochemically mediated atom transfer radical polymerization was achieved by using an aluminum wire sacrificial anode (seATRP) under potentiostatic or galvanostatic conditions. Homopolymerization and diblock copolymerization show good control of reaction kinetics, providing polymers with molecular-weight evolution close to theoretical values and with narrow molecular-weight distributions.

Electrochemical Polymerization

S. Park, P. Chmielarz, A. Gennaro, K. Matyjaszewski* — 2388–2392

Simplified Electrochemically Mediated Atom Transfer Radical Polymerization using a Sacrificial Anode



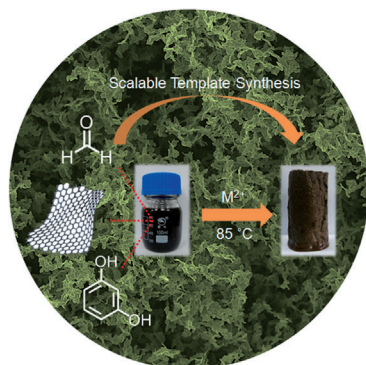
A chiral catalyst combining iridium and a lanthanide salt promotes the hydrogenation of pyrimidines to form 1,4,5,6-tetrahydropyrimidines. The reaction of 4-

substituted pyrimidines proceeded with high enantioselectivity (up to 99% ee) by using a chiral Josiphos ligand (see scheme) for the Ir catalyst.

Asymmetric Catalysis

R. Kuwano,* Y. Hashiguchi, R. Ikeda, K. Ishizuka — 2393–2396

Catalytic Asymmetric Hydrogenation of Pyrimidines



A composite aerogel consisting of resorcinol/formaldehyde and graphene oxide (GO) could be synthesized on large scale by using GO sheets as template skeletons and metal ions (Co^{2+} , Ni^{2+} , or Ca^{2+}) as catalysts and linkers. These compressible aerogels can tolerate a strain as high as 80% and quickly recover their original shapes.

Aerogels

X. Wang, L. L. Lu, Z. L. Yu, X. W. Xu, Y. R. Zheng, S. H. Yu* — 2397–2401

Scalable Template Synthesis of Resorcinol–Formaldehyde/Graphene Oxide Composite Aerogels with Tunable Densities and Mechanical Properties

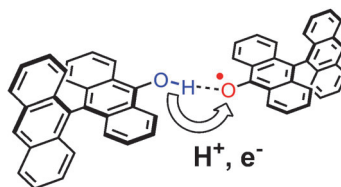


Stable Organic Radicals

Y. Hirao,* T. Saito, H. Kurata,
T. Kubo* 2402–2405



Isolation of a Hydrogen-Bonded Complex Based on the Anthranol/Anthroxyl Pair: Formation of a Hydrogen-Atom Self-Exchange System



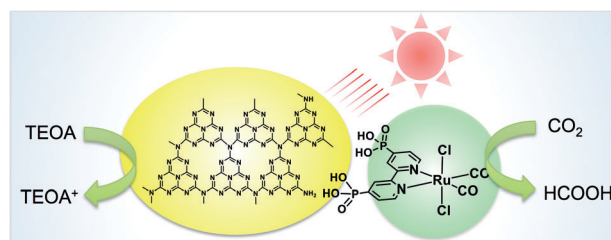
Self-exchange PCET: The stable anthroxyl radical was synthesized, and a hydrogen-bonded complex with anthranol was isolated in crystalline form. X-ray analysis at 200 K revealed the activation of the self-exchange proton-coupled electron transfer (PCET) reaction at the hydrogen bond. A strong intermolecular magnetic interaction between radicals causes a phase transition at 125 K that inactivates this reaction.

Carbon Dioxide Fixation

R. Kuriki, K. Sekizawa, O. Ishitani,
K. Maeda* 2406–2409



Visible-Light-Driven CO₂ Reduction with Carbon Nitride: Enhancing the Activity of Ruthenium Catalysts



A heterogeneous photocatalyst that is based on a carbon nitride material modified by a ruthenium complex enables the reduction of CO₂ into formic acid with a high turnover number (> 1000) and a good apparent quantum yield (5.7% at

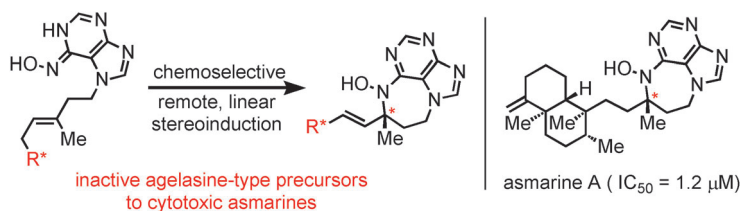
400 nm). These are the highest values that have been reported for CO₂ reduction by heterogeneous photocatalysts under visible-light irradiation to date (TEOA = triethanolamine).

Alkaloids

K. K. Wan, K. Iwasaki, J. C. Umotoy,
D. W. Wolan,* R. A. Shenvi* 2410–2415



Nitrosopurines En Route to Potently Cytotoxic Asmarines



Unnatural product: A nitrosopurine ene reaction easily assembles the asmarine pharmacophore and transmits remote stereochemistry to the diazepine-purine heterocycle. This reaction generates

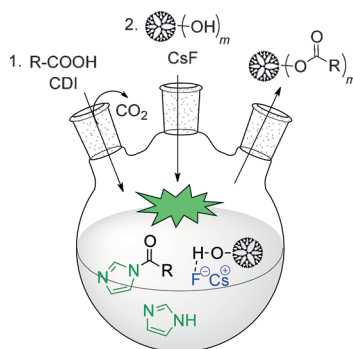
potent cytotoxins which exceed the potency of asmarine A and supersede the metabolites as useful leads for biological discovery.

Dendrimer Synthesis

S. García-Gallego, D. Hult, J. V. Olsson,
M. Malkoch* 2416–2419

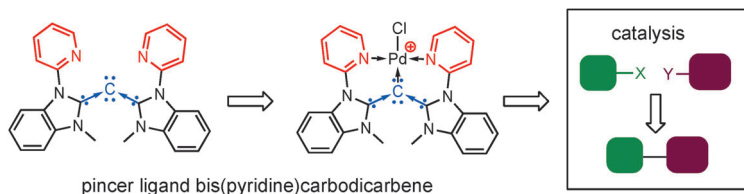


Fluoride-Promoted Esterification with Imidazolid-Activated Compounds: A Modular and Sustainable Approach to Dendrimers



Esterifications with 1,1'-carbonyldiimidazole (CDI) were significantly improved by the use of cesium fluoride as the catalyst, which drives these reactions to completion. Structurally flawless and highly functional polyester dendrimers were obtained through a divergent growth approach featuring the fluoride-promoted esterification of hydroxy-functionalized scaffolds with imidazolid-activated monomers.

Inside Cover



The acyclic pincer ligand bis(pyridine)-carbodiborane was synthesized, isolated, and characterized. It features a C-C-C angle of 143° , which is larger than that in

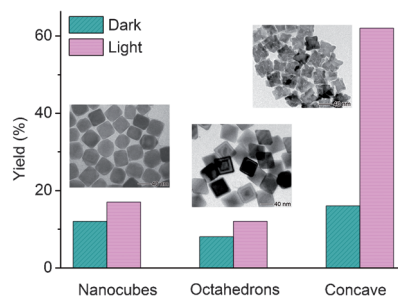
the monodentate framework. Palladium complexes supported by this ligand are active catalysts in Heck–Mizoroki and Suzuki–Miyaura coupling reactions.

Carbodiboranes

Y. Hsu, J. Shen, B. Lin, W. Chen, Y. Chan, W. Ching, G. Yap, C. Hsu,*
T. Ong* ————— **2420–2424**

Synthesis and Isolation of an Acyclic Tridentate Bis(pyridine)carbodiborane and Studies on Its Structural Implications and Reactivities

Taking shape: A Ru^{3+} -mediated synthesis has been developed for unique Pd concave nanostructures which can directly harvest UV-to-visible light for styrene hydrogenation (see figure). The catalytic efficiency under full-spectrum irradiation at room temperature turns out to be comparable to that of the thermally (70°C) driven reaction. The yields are higher than those obtained using Pd nanocrystals such as nanocubes and octahedrons.

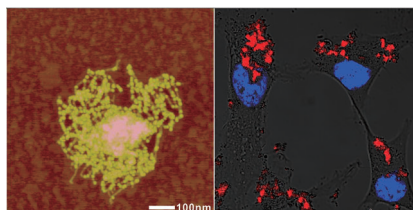


Heterogeneous Catalysis

R. Long, Z. Rao, K. Mao, Y. Li, C. Zhang, Q. Liu, C. Wang
Z.-Y. Li, X. Wu, Y. Xiong* — **2425–2430**

Efficient Coupling of Solar Energy to Catalytic Hydrogenation by Using Well-Designed Palladium Nanostructures

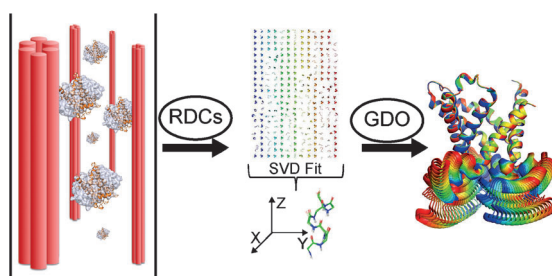
A novel 3D gold-DNA superstructure based on DNA growing and origami folding on gold nanoparticles had been fabricated. The new 3D superstructures exhibit great potential for high-efficiency molecule transport for use in cellular imaging and drug delivery.



3D Superstructures

J. Yan, C. Hu, P. Wang, B. Zhao, X. Ouyang, J. Zhou, R. Liu, D. He,* C. Fan, S. Song* ————— **2431–2435**

Growth and Origami Folding of DNA on Nanoparticles for High-Efficiency Molecular Transport in Cellular Imaging and Drug Delivery



Flexing domains: Liquid-state NMR spectroscopy has been used to study conformational heterogeneity of mitochondrial GTP/GDP transporter. The data reveal that the carrier is intrinsically

plastic. Despite the threefold pseudo-symmetry of the carrier, the plasticity is asymmetrically distributed among the domains. GDO = generalized degree of order, RDC = residual dipolar coupling.

Membranes

R. Sounier, G. Bellot, J. J. Chou* ————— **2436–2441**

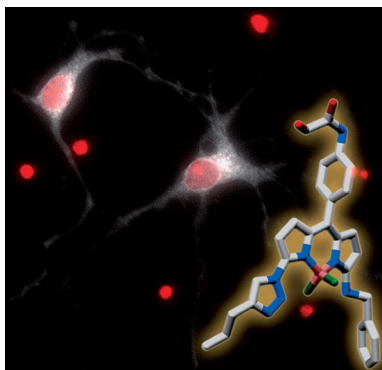
Mapping Conformational Heterogeneity of Mitochondrial Nucleotide Transporter in Uninhibited States

Neuron Imaging

J. C. Er, C. Leong, C. L. Teoh, Q. Yuan,
P. Merchant, M. Dunn, D. Sulzer,
D. Sames, A. Bhinge, D. Kim, S.-M. Kim,
M.-H. Yoon, L. W. Stanton, S. H. Je,
S.-W. Yun,* Y.-T. Chang* — **2442–2446**



NeuO: a Fluorescent Chemical Probe for
Live Neuron Labeling



Selective labeling of live neurons over other brain cells was achieved with a novel fluorescent probe, **NeuO**. It enables stable, live neuron imaging in vivo and in vitro across species, thus setting the stage for various neuronal targeting applications including the study of neuron development and degeneration.

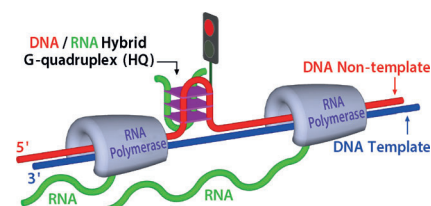
G-Quadruplexes

R.-y. Wu, K.-w. Zheng, J.-y. Zhang,
Y.-h. Hao, Z. Tan* — **2447–2451**



Formation of DNA:RNA Hybrid
G-Quadruplex in Bacterial Cells and Its
Dominance over the Intramolecular DNA
G-Quadruplex in Mediating Transcription
Termination

A transcription check-point: Transcription through guanine-rich regions produces DNA:RNA hybrid G-quadruplexes. In turn, these regulate transcription by mediating premature termination of transcription.



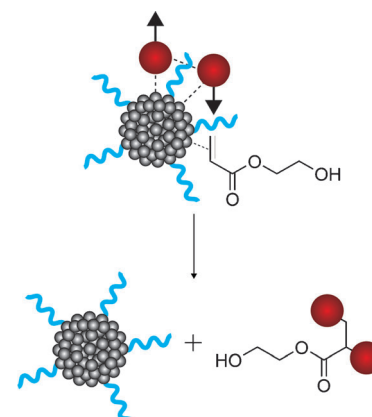
Nuclear-Spin Polarization

S. Glöggler, A. M. Grunfeld, Y. N. Ertas,
J. McCormick, S. Wagner,
P. P. M. Schleker,
L.-S. Bouchard* — **2452–2456**



A Nanoparticle Catalyst for
Heterogeneous Phase Para-Hydrogen-
Induced Polarization in Water

Hyperpolarization of molecules utilizing para-hydrogen (red spheres; see picture) and Pt nanoparticles (gray spheres) in water is described. The nanoparticles (diameter ≈ 2 nm) are capped with glutathione ligands (blue lines) to allow for the pairwise addition of para-hydrogen and create observable magnetization. As the solvent is biocompatible, the generation of new molecular imaging contrast agents can be envisioned.

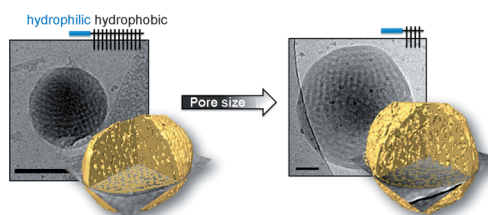


Supramolecular Chemistry

B. E. McKenzie, H. Friedrich,
M. J. M. Wirix, J. F. de Visser,
O. R. Monaghan, P. H. H. Bomans,
F. Nudelman, S. J. Holder,*
N. A. J. M. Sommerdijk* — **2457–2461**



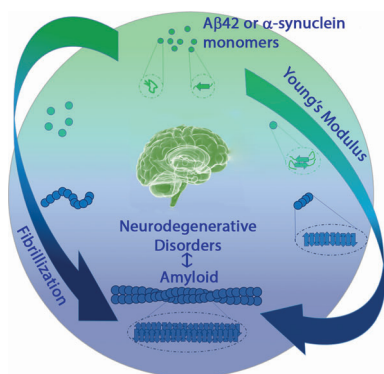
Controlling Internal Pore Sizes in
Bicontinuous Polymeric Nanospheres



Tailoring polymer nanospheres: The relative hydrophilic–hydrophobic content in amphiphilic comb-like block copolymers can be tailored in solution to produce polymeric nanospheres with complex

internal morphology. The size and internal pore diameter of the resulting bicontinuous nanospheres can be tuned, showing promise for the formation of nanoporous hybrid materials.

Back Cover

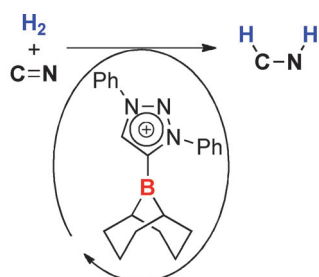


Inflexibility that comes with age: During amyloid fibrillization, which is associated with neurodegenerative disorders, initially formed oligomeric and protofibrillar species aggregate to form fibrils with a core cross- β -sheet structure (see picture). AFM peak force quantitative nanomechanical measurements revealed an increase in the Young's modulus during the fibrillization process in conjunction with an increase in the amyloid β -sheet content.

Biomaterials

F. S. Ruggeri, J. Adamcik, J. S. Jeong, H. A. Lashuel, R. Mezzenga,*
G. Dietler* — 2462 – 2466

Influence of the β -Sheet Content on the Mechanical Properties of Aggregates during Amyloid Fibrillization



Borenum-catalyzed hydrogenation

Size does matter after all: Tunable, comparatively robust mesoionic borenum ions catalyze the mild hydrogenation of N-containing unsaturated organic functionalities at ambient temperature and ambient pressure. These reactions proceed through a mechanism reminiscent of frustrated Lewis pair chemistry.

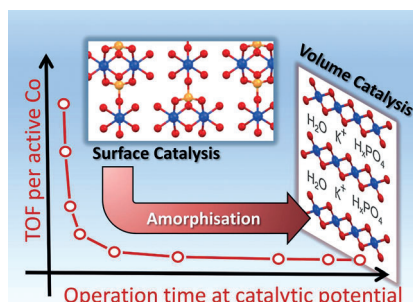
Hydrogenation Reactions

P. Eisenberger,* B. P. Bestvater, E. C. Keske, C. M. Crudden* — 2467 – 2471

Hydrogenations at Room Temperature and Atmospheric Pressure with Mesoionic Carbene-Stabilized Borenum Catalysts



The complete transformation during catalytic operation of crystalline and surface-active $\text{Co}_3(\text{PO}_4)_2 \cdot 8\text{H}_2\text{O}$ into amorphous and volume-active cobalt oxide reveals basic features of heterogeneous water oxidation catalysis, which is discussed as a convolution of three phenomena: surface catalysis, volume catalysis, and restructuring of the material under operation.



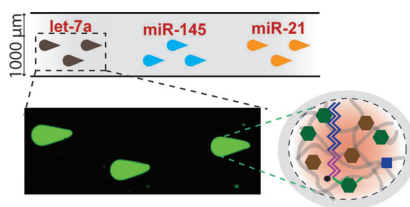
Heterogeneous Catalysis

D. González-Flores, I. Sánchez, I. Zaharieva, K. Klingan, J. Heidkamp, P. Chernev, P. W. Menezes, M. Driess, H. Dau,* M. L. Montero* — 2472 – 2476

Heterogeneous Water Oxidation: Surface Activity versus Amorphization Activation in Cobalt Phosphate Catalysts



miRNA profiling: A versatile hydrogel-based microfluidic approach and novel amplification scheme were used for entirely on-chip, sensitive, and highly specific miRNA detection (let-7a, miR-145, and miR-21; see picture) without the risk of sequence bias. The approach uses photopolymerized hydrogel microposts for miRNA capture and labeling with a universal sequence. Fluorescence products are concentrated into the completely isolated gel posts.



Diagnostics

H. Lee, R. L. Srinivas, A. Gupta, P. S. Doyle* — 2477 – 2481

Sensitive and Multiplexed On-chip microRNA Profiling in Oil-Isolated Hydrogel Chambers



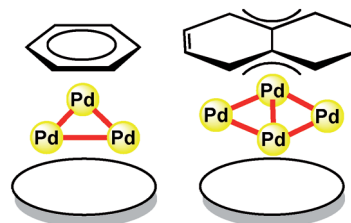
Cluster Binding

Y. Ishikawa, S. Kimura, K. Takase,
K. Yamamoto, Y. Kurashige, T. Yanai,
T. Murahashi* ————— 2482 – 2486



Modulation of Benzene or Naphthalene Binding to Palladium Cluster Sites by the Backside-Ligand Effect

The **backside-ligand** modulation strategy is used to enhance the substrate binding property of Pd clusters. The benzene or naphthalene binding ability of Pd₃ or Pd₄ clusters is enhanced significantly by the backside cyclooctatetraene ligand (see ovals in scheme), leading to the first isolable μ₃-benzene Pd₃ clusters or μ₄-naphthalene Pd₄ clusters.

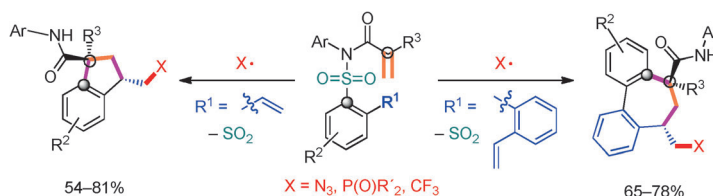


Radical Cascade Reactions

W. Kong, N. Fuentes,
A. García-Domínguez, E. Merino,
C. Nevado* ————— 2487 – 2491



Stereoselective Synthesis of Highly Functionalized Indanes and Dibenzocycloheptadienes through Complex Radical Cascade Reactions



Densely functionalized indanes and dibenzocycloheptadienes were produced through highly stereoselective radical-mediated reactions from *ortho*-vinyl- and *ortho*-vinylaryl-substituted *N*-(arylsulfonyl)acrylamides, respectively. The

chemoselective addition of in situ generated radicals (X•) onto the styrene moieties initiates a reaction cascade that results in the 5- and 7-membered ring carbocyclic products in a highly efficient manner.

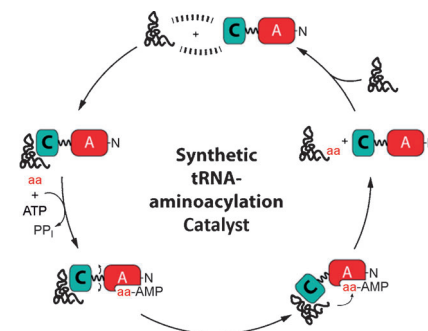
Biocatalysis

T. W. Giessen,* F. Altegoer, A. J. Nebel,
R. M. Steinbach, G. Bange,*
M. A. Marahiel* ————— 2492 – 2496



A Synthetic Adenylation-Domain-Based tRNA-Aminoacylation Catalyst

Best of both worlds: By fusing a eukaryotic tRNA-recruiting domain (C) to a prokaryotic adenylation domain (A) a new synthetic tRNA-aminoacylation catalyst was created. This catalyst was functionally characterized and was able to load proteinogenic and non-proteinogenic amino acids onto various tRNAs.



C–H Amination

D. Zhu, G. Yang, J. He, L. Chu, G. Chen,
W. Gong, K. Chen, M. D. Eastgate,
J.-Q. Yu* ————— 2497 – 2500

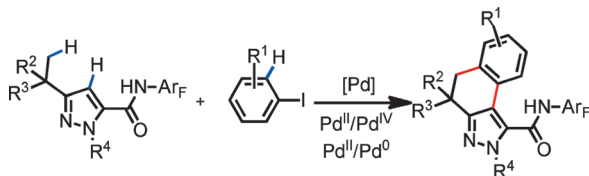


Ligand-Promoted *ortho*-C–H Amination with Pd Catalysts



Trimethoxypyridine is an efficient ligand for promoting Pd-catalyzed *ortho*-C–H amination of both benzamides and triflyl-protected benzylamines. This finding provides guidance for the development of

ligands that can improve or enable Pd^{II}-catalyzed C_{sp²}–H activation reactions directed by weakly coordinating functional groups.



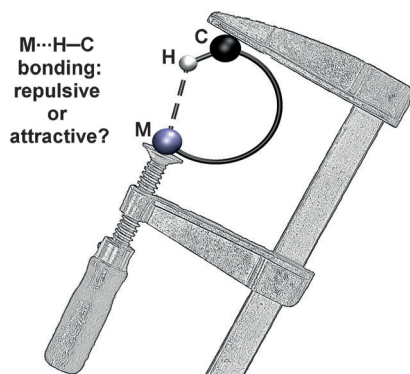
Benzo[e]indazole derivatives are obtained by a sequential triple C–H activation directed by a pyrazole and an amide group. This cascade reaction demonstrates that the often problematic competing C–H activation pathways in the

presence of multiple directing groups can be utilized to improve step economy in synthesis. Pyrazole as a relatively weak coordinating group is shown to direct C_{sp}³–H activation.

Cascade C–H Activation

W. Yang, S. Ye, D. Fanning, T. Coon, Y. Schmidt, P. Krenitsky, D. Stamos,* J.-Q. Yu* — 2501 – 2504

Orchestrated Triple C–H Activation Reactions Using Two Directing Groups: Rapid Assembly of Complex Pyrazoles



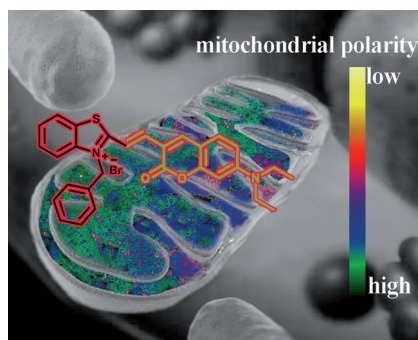
Weakly attractive 3c–2e M...H–C agostic interactions can be established in square-planar d⁸-ML₄ complexes. A new characterization method is used to probe these interactions under pressure by combined high-pressure IR and X-ray diffraction studies. The use of the sign of ¹H NMR shifts as major criterion to classify M...H–C interactions as attractive (agostic) or repulsive (anagostic) is called into question.

Agostic Interactions

W. Scherer,* A. C. Dunbar, J. E. Barquera-Lozada, D. Schmitz, G. Eickerling, D. Kratzert, D. Stalke, A. Lanza, P. Macchi,* N. P. M. Casati, J. Ebad-Allah, C. Kuntscher — 2505 – 2509

Anagostic Interactions under Pressure: Attractive or Repulsive?

... and BOB's your uncle: A fluorescent probe of mitochondrial polarity, termed BOB, showed a linear ratiometric fluorescence response to solution polarity. Various mitochondria of normal cells and cancer cells were examined, and it was found that mitochondrial polarity tends to be lower in cancer cells than in normal cells. The detection of mitochondrial polarity could thus be used as a method to distinguish cancer cells from normal cells.

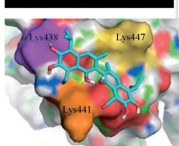


Cellular Imaging

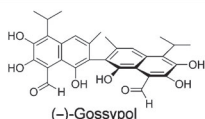
N. Jiang, J. Fan,* F. Xu, X. Peng, H. Mu, J. Wang, X. Xiong — 2510 – 2514

Ratiometric Fluorescence Imaging of Cellular Polarity: Decrease in Mitochondrial Polarity in Cancer Cells

PARP1 BRCT



First protein-protein-interaction inhibitor of PARP1



Array and break: By establishing a high-throughput microplate-based assay for screening potential inhibitors of protein–protein interactions of the PARP1 BRCT domain, (–)-gossypol was found to possess novel PARP1 inhibitory activity both

in vitro and in cancer cells, presumably by acting as a chemical dimerizer of the PARP1 BRCT domain, which causes disruption of protein–protein interactions and leads to inhibition of the enzymatic activity.

Protein–Protein Interactions

Z. Na, B. Peng, S. Ng, S. Pan, J.-S. Lee, H.-M. Shen, S. Q. Yao* — 2515 – 2519

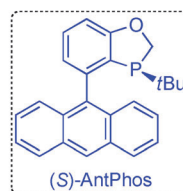
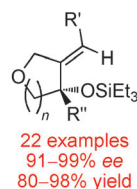
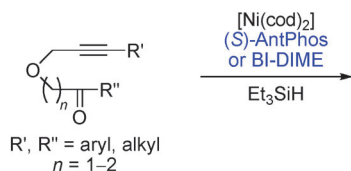
A Small-Molecule Protein–Protein Interaction Inhibitor of PARP1 That Targets Its BRCT Domain

Asymmetric Cyclization

W. Fu, M. Nie, A. Wang, Z. Cao,
W. Tang* — 2520–2524



Highly Enantioselective Nickel-Catalyzed
Intramolecular Reductive Cyclization of
Alkynones



A **P-chiral monophosphine** is used as the ligand in the first asymmetric nickel-catalyzed intramolecular reductive cyclization of alkynones. This transformation enabled the formation of a series of

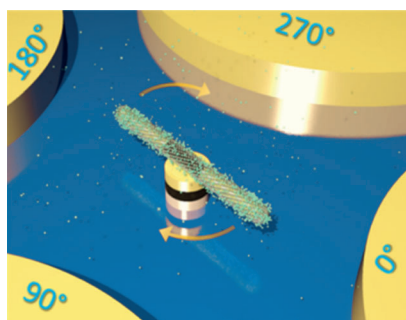
tertiary allylic alcohols bearing furan/pyran rings in excellent yields and enantioselectivities and the efficient synthesis of dehydroxycubebin and the chiral dibenzocyclooctadiene skeleton.

Nanorobotics

X. Xu, K. Kim, D. L. Fan* — 2525–2529



Tunable Release of Multiplex
Biochemicals by Plasmonically Active
Rotary Nanomotors



Motorized nanomotor sensors are used to tune the release rate of biochemicals and allow their real-time detection. The nanomotor sensors are assembled from designed nanoentities and can be rotated controllably. Both single and multiple biochemicals can be released from the rotating nanomotor sensors in a tunable fashion.

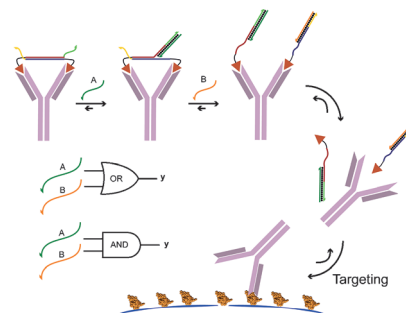
DNA Nanotechnology

B. M. G. Janssen, M. van Rosmalen,
L. van Beek, M. Merckx* — 2530–2533



Antibody Activation using DNA-Based
Logic Gates

Logic antibody locks: Bivalent peptide–DNA conjugates are presented as generic, noncovalent, and easily applicable molecular locks that allow the control of antibody activity using toehold-mediated strand displacement. By connecting antibody-based molecular recognition and DNA-based computing, this new approach allows the introduction of autonomous signal-processing in antibody-based targeting.



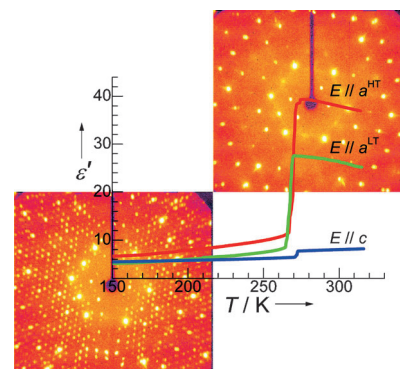
MOF Phase Transitions

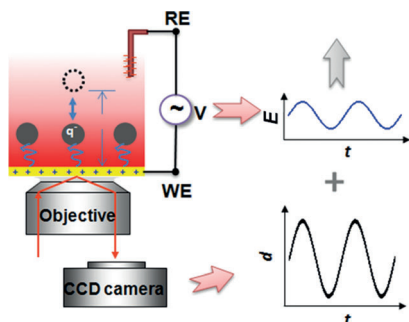
R. Shang, Z.-M. Wang,*
S. Gao* — 2534–2537



A 36-Fold Multiple Unit Cell and
Switchable Anisotropic Dielectric
Responses in an Ammonium Magnesium
Formate Framework

Multiply the unit cell: An ammonium Mg formate framework has a rare three-dimensional binodal framework with long cavities accommodating 1,3-propanediammonium and water. The framework displays a phase transition at 275 K to give a 36-fold multiple unit cell and anisotropic switchable dielectric responses.



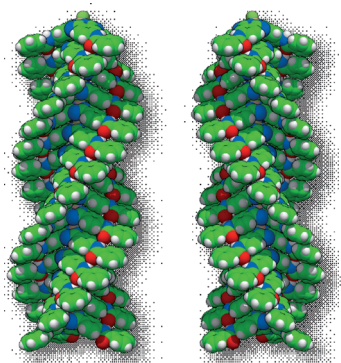


The phosphorylation kinetics of a few peptide molecules could be monitored in real time with self-assembled nano-oscillators. Each oscillator consists of a gold nanoparticle tethered to a gold chip with a molecular linker.

Charge-Based Detection

Y. Fang, S. Chen, W. Wang,* X. Shan,*
N. Tao ————— 2538–2542

Real-Time Monitoring of Phosphorylation Kinetics with Self-Assembled Nano-oscillators



Piling up rigid tetrahedral-shaped subphthalocyanine dye molecules in a convex-to-concave fashion results in the formation of unconventional homochiral non-centrosymmetric columnar assemblies (see picture). Assembly occurs through a cooperative supramolecular polymerization process driven by a combination of noncovalent interactions (C green, N blue, O red, H white).

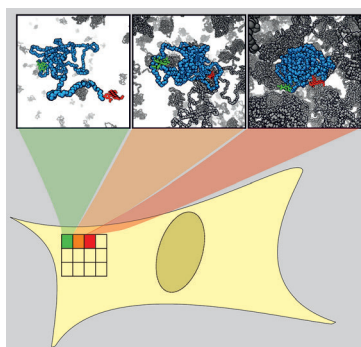
Supramolecular Chemistry

J. Guilleme, M. J. Mayoral, J. Calbo,
J. Aragón, P. M. Viruela, E. Ortí,* T. Torres,*
D. González-Rodríguez* — 2543–2547

Non-Centrosymmetric Homochiral Supramolecular Polymers of Tetrahedral Subphthalocyanine Molecules



Crowding in cells: A FRET-labeled homopolymer serves as a sensor to study macromolecular crowding in single living cells. Contrary to expectations, the cellular environment does not lead to a compression of the sensor. The sensor is further utilized to probe sub-cellular heterogeneities and crowding changes upon osmotic stress.

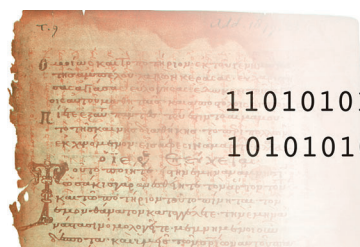


Macromolecule Biophysics

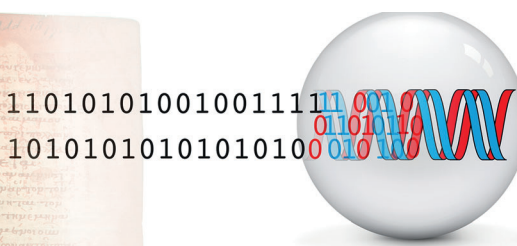
D. Gnutt, M. Gao, O. Brylski, M. Heyden,
S. Ebbinghaus* ————— 2548–2551

Excluded-Volume Effects in Living Cells

Inside Back Cover



Committing to memory: Digital information can endure thousands of years of storage when translated into ACGT nucleotide coding and encapsulated as



DNA in silica glass spheres. This method was demonstrated with the digitalized Archimedes Palimpsest.

Long-Term Memory

R. N. Grass,* R. Heckel, M. Puddu,
D. Paunescu, W. J. Stark — 2552–2555

Robust Chemical Preservation of Digital Information on DNA in Silica with Error-Correcting Codes



Front Cover



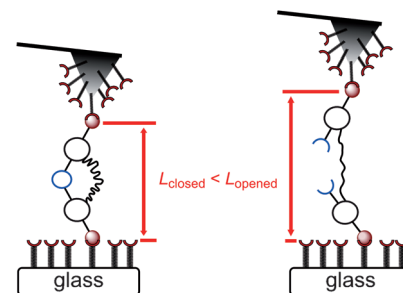
Mechanophores

D. Schütze, K. Holz, J. Müller,
M. K. Beyer,* U. Lüning,*
B. Hartke* **2556–2559**



Pinpointing Mechanochemical Bond
Rupture by Embedding the
Mechanophore into a Macrocycle

Caught in the act: A 1,4-diaryl-1,2,3-triazole was embedded in a poly(ethylene glycol) chain and additionally bridged by an aliphatic chain. Single polymer molecules were then stretched in an atomic force microscope. Mechanochemical bond rupture in the macrocycle leads to a defined length increase of the polymer of more than 1 nm, which is large enough to be measured directly for a single molecule.



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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