Angewandte Spotlights

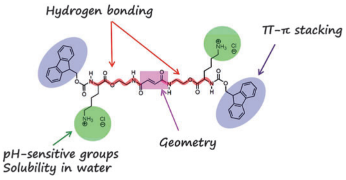
On these pages, we feature a selection of the excellent work that has recently been published in our sister journals. If you are reading these pages on a computer, click on any of the items to read the full article. Otherwise please see the DOIs for easy online access through Wiley Online Library.

Hydrogels

M. Mba,* A. I. Jiménez, A. Moretto*

Templating the Self-assembly of Pristine Carbon Nanostructures in Water

Research on carbon nanostructures faces two challenges: first their low solubility in water and second, the need of ordered architectures at the nanoscale level. It is shown that a novel amino acid based low-molecular-weight gelator (see figure) can be used to effectively disperse pristine carbon nanostructures in water and to drive their ordered self-assembly into supramolecular hydrogels by a noncovalent mechanochemical approach.



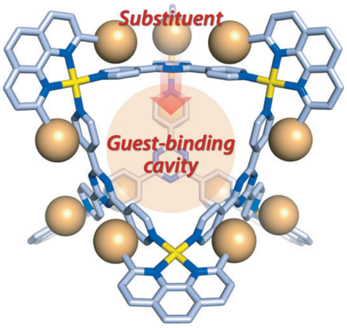
Chem. Eur. J.
DOI: **10.1002/chem.201304912**

Host–Guest Systems

Y. Fang, T. Murase, M. Fujita*

Remote Impacts of Methyl Substituents on the Guest-Binding Ability of Self-Assembled Cages

A butterfly effect: The guest-binding ability of a self-assembled cage was remotely and subtly tuned by the pendant substituent groups (see figure) on the metal corners of the cage. Bulky aromatic substituents push the cage framework inward to shrink the cage cavity. A single methyl group difference at the remote site makes a significant difference in guest species and motions within the cages.



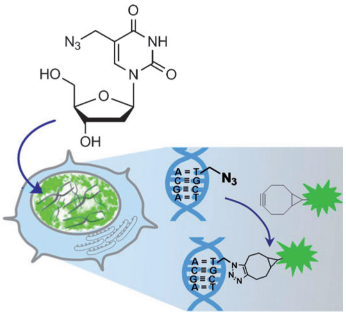
Chem. Asian J.
DOI: **10.1002/asia.201301642**

Fluorescent Probes

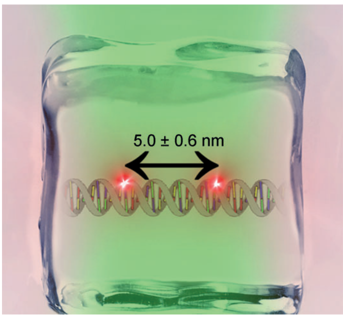
A. B. Neef, N. W. Luedtke*

An Azide-Modified Nucleoside for Metabolic Labeling of DNA

Clicking cellular DNA: 5-(Azidomethyl)-2′-deoxyuridine (AmdU) is chemically and metabolically stable, and allows copper-free detection of DNA synthesis upon addition of a fluorescent cyclooctyne. In addition to providing the first examples of metabolic incorporation and detection of azide groups in cellular nucleic acids, these results highlight the general importance of assessing azide group stability in bioorthogonal chemical reporter strategies.



ChemBioChem
DOI: **10.1002/cbic.201400037**



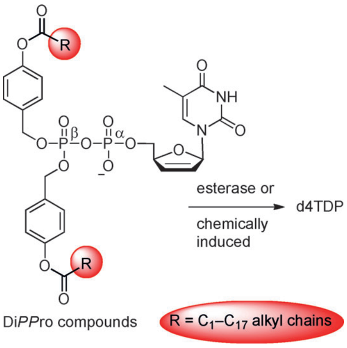
Colocalization Microscopy

S. Weisenburger,* B. Jing, D. Hänni, L. Reymond, B. Schuler, A. Renn, V. Sandoghdar*

Cryogenic Colocalization Microscopy for Nanometer-Distance Measurements

With Angstrom accuracy: A cryogenic single-molecule colocalization technique for identifying two fluorescent labels on the backbone of a double-stranded DNA is demonstrated (see picture). By measuring the separations between fluorophore pairs placed at various design distances in the nanometer range, the authors verify the feasibility of their method for intramolecular distance measurements with Angstrom accuracy.

ChemPhysChem
DOI: **10.1002/cphc.201301080**



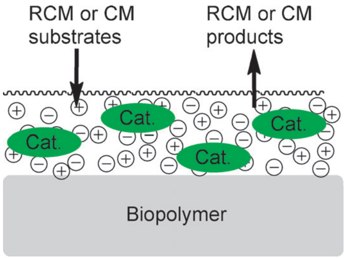
Antiviral Prodrugs

T. Schulz, J. Balzarini, C. Meier*

The Di*PP*ro Approach: Synthesis, Hydrolysis, and Antiviral Activity of Lipophilic d4T Diphosphate Prodrugs

NDPs delivered! A structure–activity relationship of bioreversibly protected Di*PP*ro–d4TDP was performed. The stability of the compounds was studied in various media such as cell extracts. Stability increased with increasing lipophilicity of the acyl chain. D4TDP was released as main product. Compounds with long acyl residues showed good anti-HIV activities in TK-deficient cells, proving intracellular uptake of the compounds.

ChemMedChem
DOI: **10.1002/cmdc.201300500**



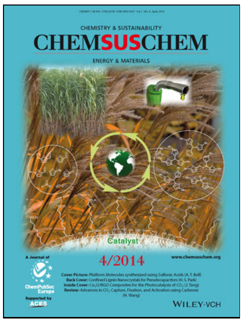
Olefin Metathesis

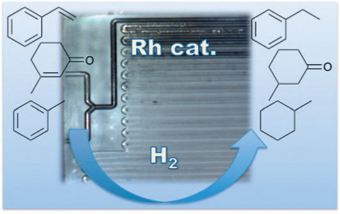
N. Clousier, A. Filippi, E. Borré, E. Guibal, C. Crévisy, F. Caijo, M. Mauduit,* I. Dez,* A.-C. Gaumont*

Biopolymer-Supported Ionic-Liquid-Phase Ruthenium Catalysts for Olefin Metathesis

Powerful, reusable, and recyclable catalytic materials based on supported ionic liquid phase (SILP) technology for ruthenium ring-closing metathesis (RCM) and cross metathesis (CM) reactions are reported. The materials use alginate, a cheap, renewable and easily conditioned biopolymer, as support. Their excellent recyclability (15 cycles) combined with their high reactivity in either monophasic or biphasic conditions (use of cyclohexane) makes them excellent choices for RCM and CM reactions.

ChemSusChem
DOI: **10.1002/cssc.201300804**





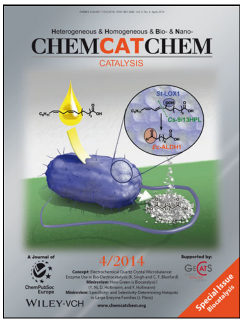
On-Chip-Hydrogenation

T. Haywood, P. W. Miller*

Microfluidic Hydrogenation Reactions by using a Channel-Supported Rhodium Catalyst

Chips away! A glass-fabricated microfluidic chip coated with a catalytically active layer of Rh effectively hydrogenates a range of alkenes at low hydrogen pressures (<0.2 MPa) and within short reaction times (2 min). Good to excellent conversions are achieved under these reaction conditions, including modest conversions of toluene into methylcyclohexane.

ChemCatChem
DOI: **10.1002/cctc.201301109**

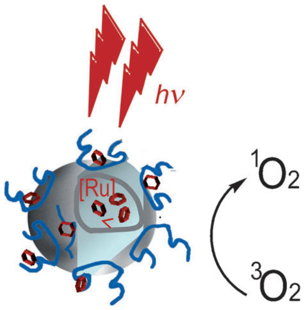


Photodynamic Therapy

G. Bœuf, G. V. Roullin, J. Moreau, L. Van Gulick, N. Zambrano Pineda, C. Terryn, D. Ploton, M. C. Andry, F. Chuburu, S. Dukic, M. Molinari, G. Lemercier*

Encapsulated Ruthenium(II) Complexes in Biocompatible Poly(D,L-lactide-*co*-glycolide) Nanoparticles for Application in Photodynamic Therapy

Leading light: Encapsulation and confinement of ruthenium complexes in biocompatible poly(D,L-lactide-*co*-glycolide) (PLGA) nanoparticles has been performed. The Ru complex@PLGA nanosuspensions are stable. Once gathered in tumor tissues, irradiation would autoaccelerate the release and hence the toxicity of the Ru complex (see figure), thus making these nanoparticles candidates for photodynamic therapy (PDT) and two-photon excited PDT.



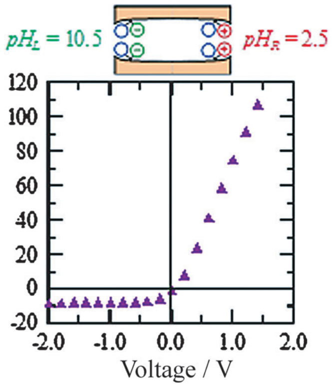
ChemPlusChem
DOI: **10.1002/cplu.201300242**

Electrochemical Transducers

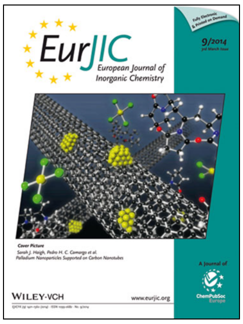
P. Ramirez, J. Cervera, M. Ali, W. Ensinger, S. Mafe*

Logic Functions with Stimuli-Responsive Single Nanopores

Porefection: Electrochemical transducers based on single stimuli-responsive polymeric nanopores can support a complete set of logic functions. Thermal, chemical, electrical, and optical stimuli are the input signals required to externally tune the pore conductance (i.e. the logical output).



ChemElectroChem
DOI: **10.1002/celc.201300255**

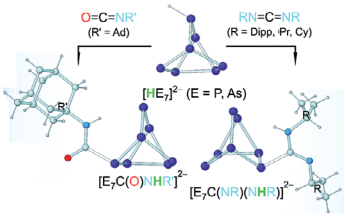


Zintl Anions

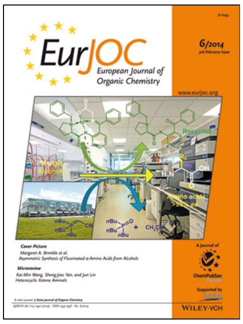
R. S. P. Turbervill, J. M. Goicoechea*

Hydropnictination Reactions of Carbodiimides and Isocyanates with Protonated Heptaphosphide and Heptaarsenide Zintl Ions

The protic Zintl ion cages $[HP_7]^{2-}$ (**1**) and $[HAs_7]^{2-}$ (**2**) were employed for the hydropnictination of heteroallenes to afford the *exo*-functionalized dianions $[As_7C(NHR)(NR)]^{2-}$ [R = Dipp (**3**), *i*Pr (**4**) and Cy (**5**); Dipp = 2,6-diisopropylphenyl] and $[E_7C(CO)(NHAd)]^{2-}$ [E = P (**6**) and As (**7**)].



Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201301011**

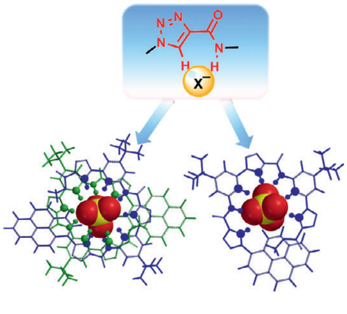


Nickel Catalysis

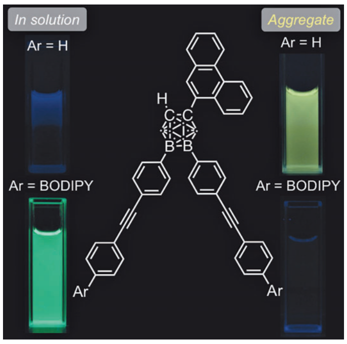
A. R. Martin, D. J. Nelson, S. Meiries, A. M. Z. Slawin, S. P. Nolan*

Efficient C–N and C–S Bond Formation Using the Highly Active [Ni(allyl)Cl(IPr*^{OMe})] Precatalyst

In the Nick of time: Two [Ni(allyl)Cl(NHC)] complexes with the bulky yet flexible N-heterocyclic carbene (NHC) ligands IPr* and IPr*^{OMe} are reported. An assessment of the catalytic performance of these complexes in Buchwald–Hartwig and thiophenol arylation reactions is described, with the precatalyst [Ni(allyl)Cl(IPr*^{OMe})] exhibiting outstanding activity.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201402022**



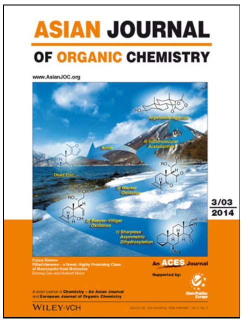
Carborane Dyes

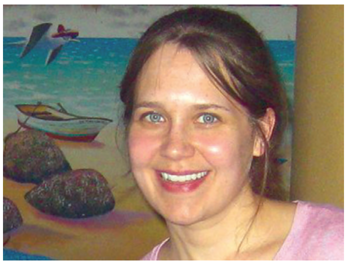
M. Tominaga, H. Naito, Y. Morisaki,* Y. Chujo*

Control of the Emission Behaviors of Trifunctional *o*-Carborane Dyes

Emission control! A series of organic dyes that contain an *o*-carborane unit were synthesized, and the emission behaviors of these compounds were investigated. As shown, the aggregation-induced emission (AIE) of these dyes can be controlled by the substituents at the *o*-carborane core.

Asian J. Org. Chem.
DOI: **10.1002/ajoc.201300280**





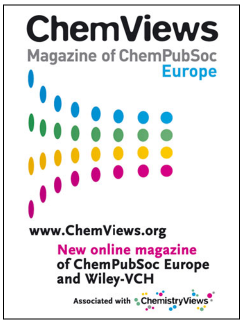
Organocatalysis

Richard Threlfall

Stereoselective N–H Insertion-Arylation Reactions of Nitrodiazoesters

With organocatalysis being a popular research topic, Professor Anita Mattson, USA, tells Dr. Richard Threlfall, Managing Editor for the Asian Journal of Organic Chemistry, what is particularly significant about her latest article on phosphoric acid catalysis. She discusses how she harnessed the power of organocatalysis to achieve reactivity patterns usually dominated by transition-metal catalysts.

ChemViews magazine
DOI: **10.1002/chemv.201400014**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