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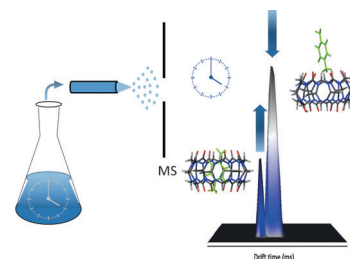


Mass Spectrometry

G. Carroy, C. Daxhelet, V. Lemaux, J. De Winter, E. De Pauw, J. Cornil, P. Gerbaux*

Influence of Equilibration Time in Solution on the Inclusion/Exclusion Topology Ratio of Host–Guest Complexes Probed by Ion Mobility and Collision-Induced Dissociation

If you have the time, we have the theory! Is the topology of gas-phase ions dependent on the equilibration time in solution? Ion mobility and collision-induced dissociation experiments are combined with density functional chemistry to decipher the evolution over time of the exclusion/inclusion ratio of charged binary complexes transferred to the gas phase of a mass spectrometer (see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201504758

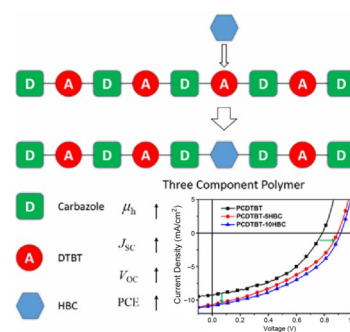


Polymerization

C. Gao, P. Jiang, K. Shi, D. Ma, Y. Li,* G. Yu,* X. Li,* H. Wang*

Incorporation of Hexa-*peri*-hexabenzocoronene (HBC) into Carbazole–Benzo-2,1,3-thiadiazole Copolymers to Improve Hole Mobility and Photovoltaic Performance

Circuit training: Two conjugated terpolymers were synthesized by incorporating different amounts of hexa-*peri*-hexabenzocoronene (HBC) as the third component into poly[N-9'-heptadecan-yl-2,7-carbazole-*alt*-5,5'-(4',7'-di-2-thienyl-2',1',3'-benzothiadiazole)] through Suzuki coupling polymerization. The solar cells fabricated with the polymers as donor demonstrated gradual improvement of open-circuit voltage and short-circuit current with the increase in HBC content.



Chem. Asian J.
DOI: 10.1002/asia.201501271

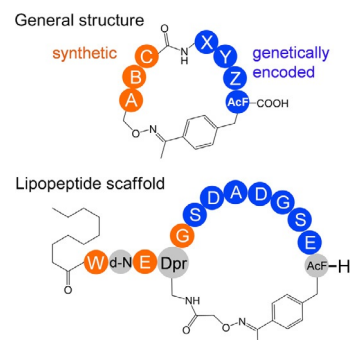


Antibiotics

S. Palei, H. D. Mootz*

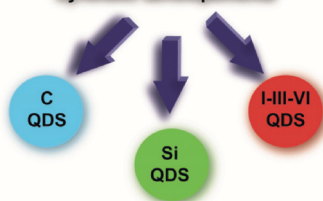
Cyclic Peptides Made by Linking Synthetic and Genetically Encoded Fragments

The best of both worlds: A new approach to covalently constrained, semisynthetic macrocycles uses protein *trans*-splicing and oxime ligation. Various sequences and ring sizes were efficiently prepared, including a set of daptomycin-inspired lipopeptides. Diversification in both the synthetic and genetic components will provide new opportunities for the discovery of bioactive peptides.



ChemBioChem
DOI: 10.1002/cbic.201500673

Synthetic developments



ChemPhysChem

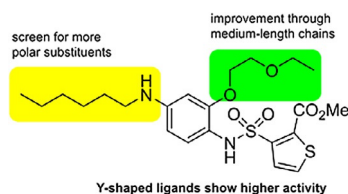
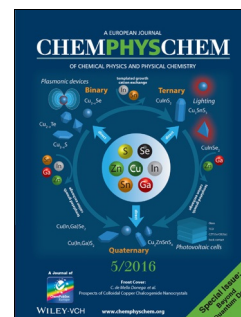
DOI: 10.1002/cphc.201500837

Quantum Dots

A. Das, P. T. Snee*

Synthetic Developments of Nontoxic Quantum Dots

No heavy metal here: Semiconductor quantum dots devoid of heavy/toxic elements are attractive for use in a variety of applications. The synthetic details of three major groups of nontoxic quantum dots, namely carbon, silicon and the I–III–VI group semiconductor family are reviewed. The procedures are grouped by their common features, and how various physical properties result from the synthetic protocol is elucidated when possible. Applications for nontoxic quantum dots are also discussed.



ChemMedChem

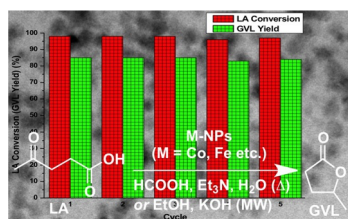
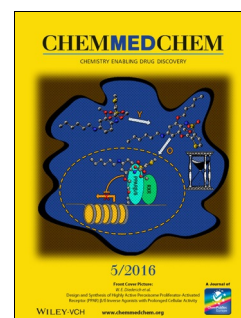
DOI: 10.1002/cmdc.201500594

Nuclear Receptors

P. M. Toth, S. Lieber, F. M. Scheer, T. Schumann, Y. Schober, W. A. Nockher, T. Adhikary, S. Müller-Brüsselbach, R. Müller, W. E. Diederich*

Design and Synthesis of Highly Active Peroxisome Proliferator-Activated Receptor (PPAR) β/δ Inverse Agonists with Prolonged Cellular Activity

Endurance counts! The structural optimization of ST247, a recently described peroxisome proliferator-activated receptor (PPAR) β/δ -selective inverse agonist, resulted in a series of ligands that display higher cellular activity than ST247. Moreover, with **9u** (PT-S264, shown), biologically relevant plasma concentrations in mice were achieved.



ChemSusChem

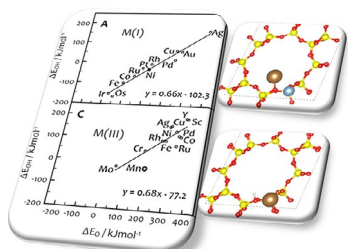
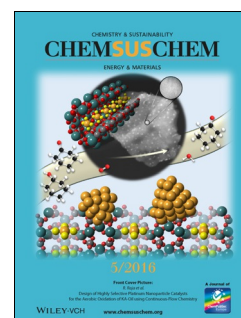
DOI: 10.1002/cssc.201501402

Renewables

R. R. Gowda, E. Y.-X. Chen*

Recyclable Earth-Abundant Metal Nanoparticle Catalysts for Selective Transfer Hydrogenation of Levulinic Acid to Produce γ -Valerolactone

Nano for Bio: Nanoparticles (NPs) derived from earth-abundant metal(0) carbonyls catalyze the conversion of bio-derived levulinic acid into γ -valerolactone in up to 93 % isolated yield. Generation of non-precious metal NPs using microwave irradiation greatly enhances the rate of the conversion, enables the use of ethanol as both solvent and hydrogen source without forming the undesired ethyl levulinate, and affords recyclable polymer-stabilized NPs.



ChemCatChem

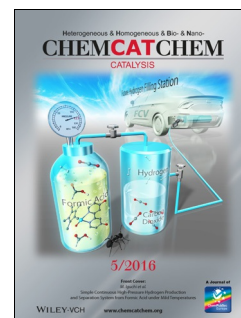
DOI: 10.1002/cctc.201501049

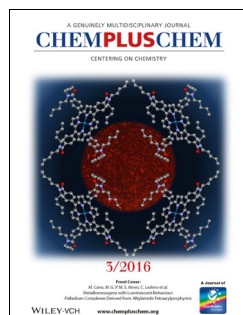
Zeolites

S. Siahrostami, H. Falsig, P. Beato, P. G. Moses, J. K. Nørskov, F. Studt*

Exploring Scaling Relations for Chemisorption Energies on Transition-Metal-Exchanged Zeolites ZSM-22 and ZSM-5

Checking affinity for chemisorption: Scaling relations for the binding energies of different adsorbed species in the transition-metal-exchanged zeolites are investigated. Color code: yellow = silicon, red = oxygen, brown = copper, blue = aluminum



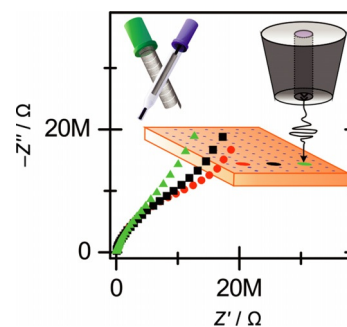


Electrochemistry

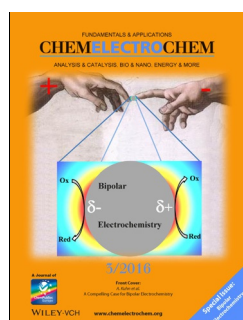
V. Kuznetsov, A. Estrada-Vargas, A. Maljusch, B. B. Berkes, A. S. Bandarenka, R. M. Souto, W. Schuhmann*

Kinetic Passivation Effect of Localized Differential Aeration on Brass

Waterline passivation: A differential aeration cell formed at the meniscus between air and electrolyte invokes local corrosion of brass. In the presence of inhibitors, a short-term passivation effect takes place that can be analyzed by spectroscopic and local electrochemical techniques (see figure). Simultaneous rapid cathodic alkalization and dezincification lead to the rapid formation of a barrier layer that is temporarily superior to the bulk layer.



ChemPlusChem
DOI: 10.1002/cplu.201500398

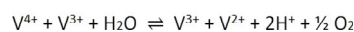
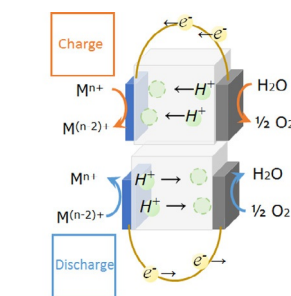


Energy Storage

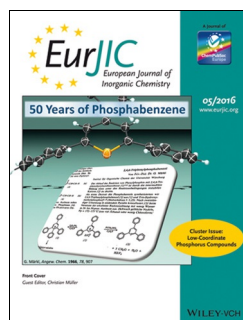
M. Nagao, K. Kobayashi, Y. Yamamoto, T. Yamaguchi, A. Oogushi, T. Hibino*

Rechargeable Metal–Air Proton-Exchange Membrane Batteries for Renewable Energy Storage

Positive exchange: A proton-exchange membrane fuel cell is integrated with active anode materials including vanadium and tin ions, for which redox reactions occur at more positive potentials than for hydrogen reduction. These redox couples are demonstrated to function as promising energy-storage media with excellent reversibility and good cyclability.



ChemElectroChem
DOI: 10.1002/celc.201500473

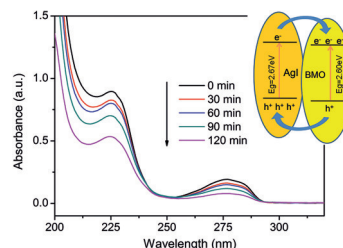


Heterogeneous Photocatalysts

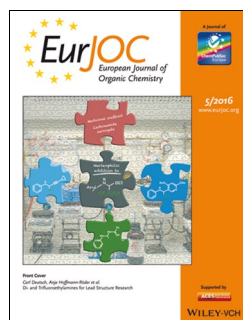
M. Xu, W.-D. Zhang*

Facile Preparation of AgI/Bi₂MoO₆ Heterostructured Photocatalysts with Enhanced Photocatalytic Activity

Bi₂MoO₆ microspheres were modified by loading AgI nanoparticles on their surfaces by a facile deposition/precipitation approach. The AgI/Bi₂MoO₆ heterostructured photocatalysts exhibit high photocatalytic activities and high stabilities towards the degradation of rhodamine B and bisphenol A.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201501260

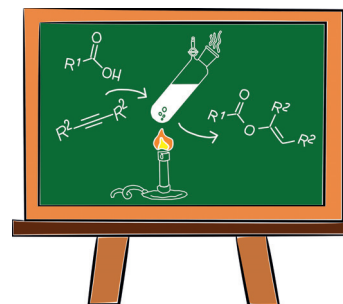


Ruthenium Catalysis

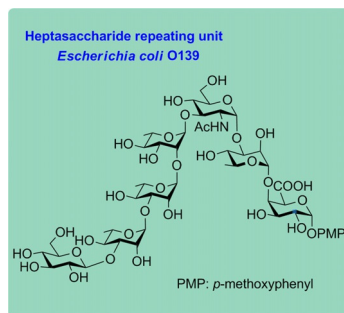
J. Jeschke, T. B. Engelhardt, H. Lang*

Ruthenium-Catalyzed Hydrocarboxylation of Internal Alkynes

The metal complex [Ru(CO)₂{P(p-CF₃-C₆H₄)₃}₂(O₂CPh)₂] is demonstrated to be a highly efficient catalyst in the challenging hydrocarboxylation of internal alkynes. Using this catalyst, a diverse array of substrates were selectively converted to their trisubstituted (E)-enol esters.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201501583



ChemistryOpen

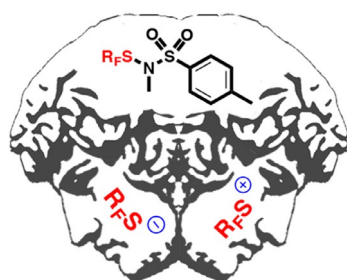
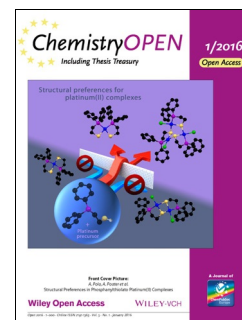
DOI: 10.1002/open.201500164

Carbohydrate Synthesis

T. Ghosh, A. K. Misra*

Synthesis of the Heptasaccharide Repeating Unit of the Cell Wall O-Polysaccharide of Enterotoxigenic *Escherichia coli* O139

Hello heptasaccharide! *Escherichia coli* O139 belongs to the enterotoxigenic subgroup mostly responsible for traveler's diarrhea and some animal intestinal diseases. A heptasaccharide repeating unit of the lipopolysaccharide of *E. coli* O139 strain has been efficiently synthesized via one-pot reactions. A *p*-methoxybenzyl (PMB) group was used as a protecting group, and all glycosylation steps gave high yields and good stereoselectivity.



Asian J. Org. Chem.

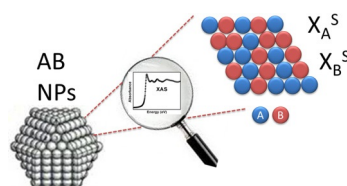
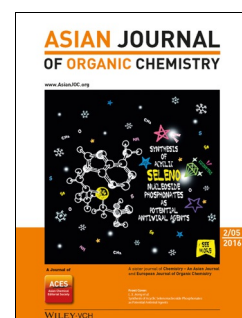
DOI: 10.1002/ajoc.201600003

Nucleophilic Perfluoroalkylthiolation

Q. Glenadel, M. Bordy, S. Alazet, A. Tlili, T. Billard*

Metal-Free Direct Nucleophilic Perfluoroalkylthiolation with Perfluoroalkanesulfenamides

Janus faces of perfluoroalkanesulfenamides: Initially developed as electrophilic reagents, perfluoroalkanesulfenamides can participate in metal-free nucleophilic substitution reactions with the loss of various leaving groups to provide perfluoroalkylthiolated compounds.



ChemNanoMat

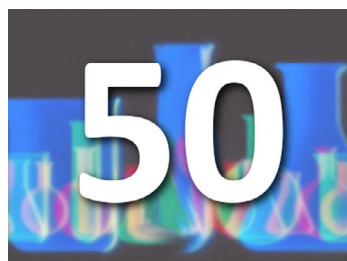
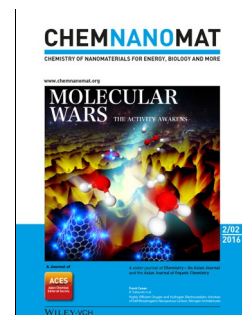
DOI: 10.1002/cnma.201500190

Noble Metal Nanocrystals

C.-H. Chen, C.-J. Pan, W.-N. Su, L. S. Sarma, C. C. A. Andra, H.-S. Sheu, D.-G. Liu, J.-F. Lee, B.-J. Hwang*

Unravelling Surface Composition of Bimetallic Nanoparticles

More than skin-deep: The estimation of surface and core composition is critical in developing highly efficient bimetallic nanoparticles (NPs) for many important catalytic reactions and plasmonics. This work presents a methodology based on X-ray absorption fine structure (EXAFS) techniques to quantitatively determine the compositions of bimetallic NPs. This method utilizes the relationships between the synthesis, compositions, and properties of bimetallic NPs.



ChemViews magazine

DOI: 10.1002/chemv.201600009

Quiz

ChemViews

50th Guess the Chemist

ChemViews Magazine recently published the 50th "Guess the Chemist". The series tells the stories of famous scientists who were behind important discoveries in chemical research or significant inventions for everyday life.

