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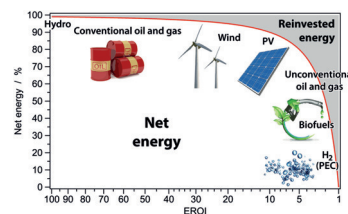


Solar Energy

N. Armaroli,* V. Balzani*

Solar Electricity and Solar Fuels: Status and Perspectives in the Context of the Energy Transition

On the move: The energy transition to renewables has started and the development of solar electricity is much more consolidated than that of solar fuels. The transition process suffers two key constraints, that is, relatively low net energy gains and the limited availability of mineral resources to manufacture converters and accumulators.



Chem. Eur. J.
DOI: 10.1002/chem.201503580

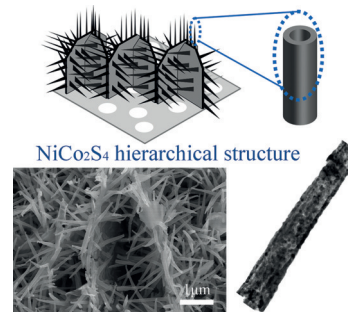


Electrode Materials

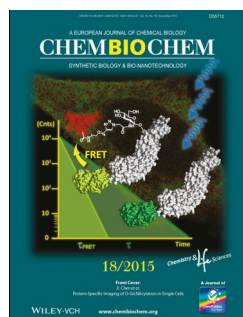
H. Chen,* S. Chen, H. Shao, C. Li, M. Fan, D. Chen, G. Tian, K. Shu*

Hierarchical NiCo_2S_4 Nanotube@ NiCo_2S_4 Nanosheet Arrays on Ni Foam for High-Performance Supercapacitors

Power-up: Hierarchical NiCo_2S_4 nanotube@ NiCo_2S_4 nanosheet arrays on Ni foam have been successfully synthesized, which demonstrate superior specific capacitance combined with excellent long-term cycling stability. The mechanism for superior cycling stability has been unveiled by examining the morphology and crystal structure.



Chem. Asian J.
DOI: 10.1002/asia.201500972

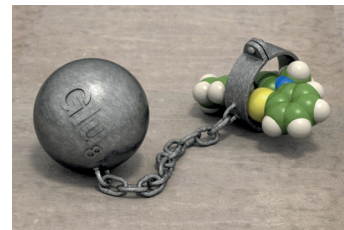


Photocaged compounds

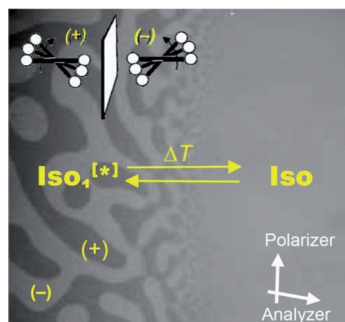
C. Penas, M. I. Sánchez, J. Guerra-Varela, L. Sanchez, M. E. Vázquez,* J. L. Mascareñas*

Light-Controlled Cellular Internalization and Cytotoxicity of Nucleic Acid-Binding Agents: Studies in Vitro and in Zebrafish Embryos

DNA binding and cell internalization of oligoarginine conjugates of some DNA-binding agents can be modulated by appending a negatively charged oligoglutamic tail through a photolabile linker. Assays with zebrafish embryos demonstrate the potential of this strategy for controlling in vivo cytotoxicity.



ChemBioChem
DOI: 10.1002/cbic.201500455



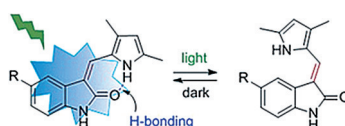
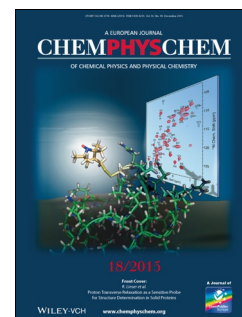
ChemPhysChem
DOI: 10.1002/cphc.201500601

Chirality

C. Tschierske,* G. Ungar*

Mirror Symmetry Breaking by Chirality Synchronisation in Liquids and Liquid Crystals of Achiral Molecules

Spontaneously chiral fluids: Spontaneous mirror symmetry breaking in liquids and liquid crystals based on chirality synchronisation of transiently chiral molecules is reviewed. These symmetry-broken fluids are capable of extraordinary strong chirality amplification, eventually leading to homochirality and providing a new view on the discussion of emergence of uniform chirality in prebiotic systems.



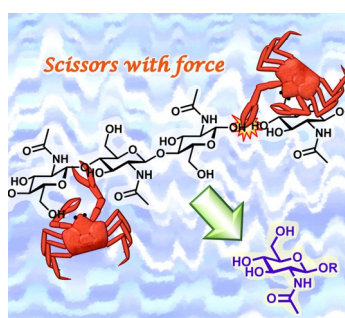
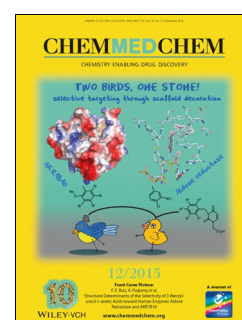
ChemMedChem
DOI: 10.1002/cmdc.201500475

Kinetics

M. H. Ngai, C. L. So, M. B. Sullivan, H. K. Ho, C. L. L. Chai*

Photoinduced Isomerization and Hepatotoxicities of Semaxanib, Sunitinib and Related 3-Substituted Indolin-2-ones

Light, isomerization, toxicity: The kinetics of photoisomerization and cytotoxicity of a series of semaxanib analogues were studied. No direct correlation between the rate of photoisomerization and the nature of the C5 substituent was observed. Theoretical calculations predicted that high oscillator strength would lead to photoisomerization. Compounds with a pyrrolic *N*-methyl substituent were found to be less toxic.



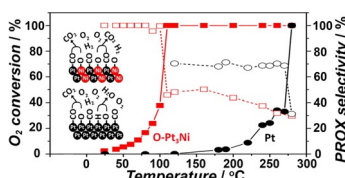
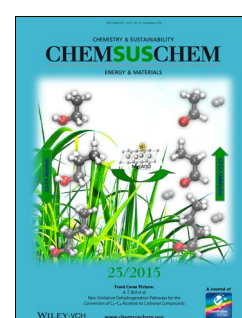
ChemSusChem
DOI: 10.1002/cssc.201501224

Renewable Resources

M. Yabushita, H. Kobayashi,* K. Kuroki, S. Ito, A. Fukuoka*

Catalytic Depolymerization of Chitin with Retention of *N*-Acetyl Group

Preserving *N*-acetyl groups: Chitin is depolymerized to *N*-acetylated monomers in good yields by combining mechanochemistry and homogeneous catalysis. The first mechanocatalytic hydrolysis of chitin provides water-soluble oligomers, which are more reactive than chitin. The subsequent solvolysis of the oligomers easily produces monomers without deacetylation.



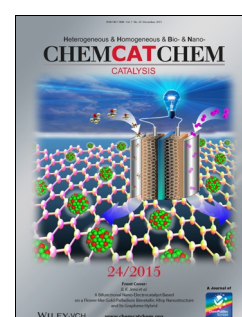
ChemCatChem
DOI: 10.1002/cctc.201500783

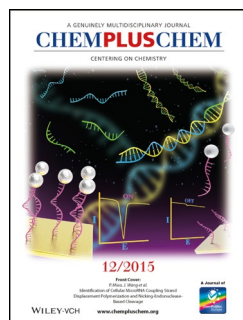
Preferential Oxidation

S. Y. Hwang, E. Yurchekfrödl, C. Zhang, Z. Peng*

Low-Temperature Preferential Oxidation of Carbon Monoxide on Pt₃Ni Alloy Nanoparticle Catalyst with Engineered Surface

Engineering PROX: Octahedral Pt-Ni alloy nanoparticle catalyst, benefiting from bifunctional active sites and unique surface geometry, exhibits not only much improved activity, but also excellent selectivity property in CO preferential oxidation (PROX) comparing to pure Pt catalyst.



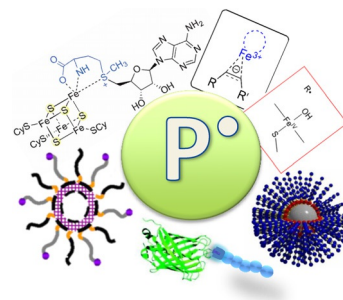


Radical Reactions

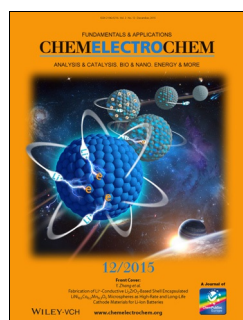
C. Chatgililoglu,* C. Ferreri,* K. Matyjaszewski*

Radicals and Dormant Species in Biology and Polymer Chemistry

Radical innovation: The past two decades have witnessed significant advances in the understanding of the role and methods of creation and control of free radicals in biological and polymerization processes. A commonality between polymers and life sciences, distant fields at first glance, can be found in their controlled radical reactivity, that is, the persistency of radical species. They resemble “Sleeping Beauty” to give marvelous results upon their awakening. The relevant convergences have been highlighted in this Review with seminal examples and parallelisms, thereby providing multidisciplinary as a necessary driver of radical innovation in basic and applied science.



ChemPlusChem
DOI: 10.1002/cplu.201500271

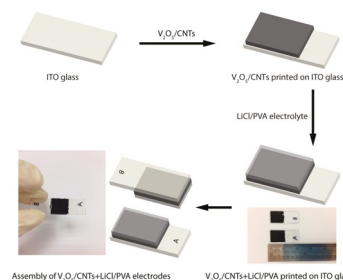


Supercapacitors

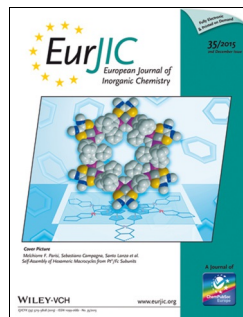
G. Yilmaz, C. X. Guo, X. Lu*

High-Performance Solid-State Supercapacitors Based on V_2O_5 /Carbon Nanotube Composites

Watts new? Solid-state supercapacitors are fabricated by printing a V_2O_5 /CNT composite on ITO glass with a gel electrolyte. By using an optimized V_2O_5 -to-CNT ratio, the supercapacitors exhibit high energy (1.47 mWh cm^{-2}) and power densities (0.27 W cm^{-2}) with good cycling stability (91.2% capacitance retention after 5000 cycles).



ChemElectroChem
DOI: 10.1002/celec.201500334

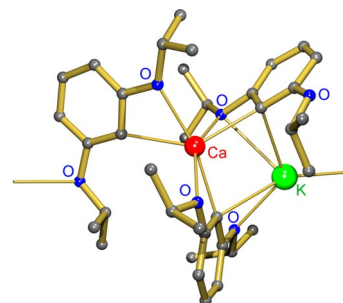


Synthesis of Arylcalcium Species

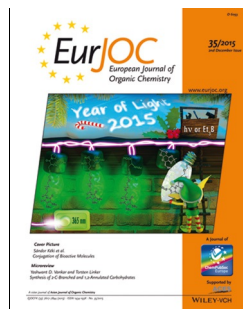
S. Harder,* C. Ruspig

Probing the Salt-Metathesis Route to Bis(aryl)calcium Compounds: Structure of an Arylcalcate Complex

Salt metathesis is not the method of choice for the preparation of arylcalcium complexes. The first example of an arylcalcate complex has been isolated and structurally characterized. ^{13}C NMR analysis indicates increased aryl-metal bond polarity in the arylcalcate complex in comparison with arylcalcium complexes.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201501178

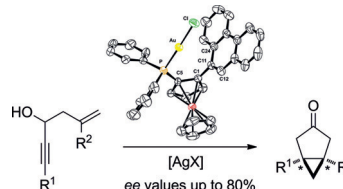


Gold Catalysis

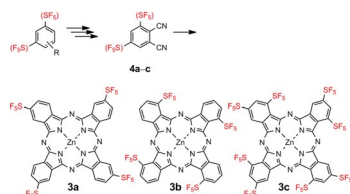
Z. Wu, P. Retailleau, V. Gandon, A. Voituriez,* A. Marinetti*

Use of Planar Chiral Ferrocenylphosphine-Gold(I) Complexes in the Asymmetric Cycloisomerization of 3-Hydroxylated 1,5-Enynes

Chiral monodentate phosphines have been prepared and used for the synthesis of gold(I) complexes. These complexes proved to be highly active catalysts for the first enantioselective gold-catalysed cycloisomerization reactions of 3-hydroxy-1,5-enynes (*ee*'s up to 80%).



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201501121



Fluorine Chemistry

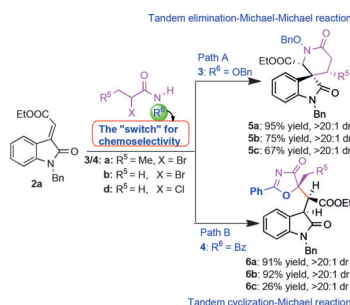
N. Iida, K. Tanaka, E. Tokunaga, S. Mori, N. Saito, N. Shibata*

Synthesis of Phthalocyanines with a Pentafluorosulfanyl Substituent at Peripheral Positions

Bigger and better: SF_5 is a “super” CF_3 group, and its inclusion in pharmaceuticals, agrochemicals and optoelectronic materials, e.g. phthalocyanines (Pcs), should impart novel properties. Here, the synthesis of SF_5 -Pcs **3** from key intermediates, SF_5 -phthalonitriles, is reported. The route was regio-controlled by a stepwise cyanation via *ortho*-lithiation/iodination from pentafluorosulfanyl arenes. The regio-specificity of these SF_5 -Pcs **3** observed by UV/Vis spectra and fluorescence quantum yields depend on the peripheral position of the SF_5 group.

ChemistryOpen

DOI: 10.1002/open.201500165



Spirooxindoles and Oxazolyloxindoles

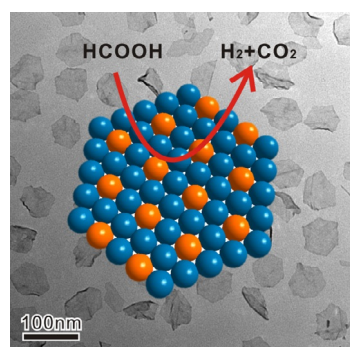
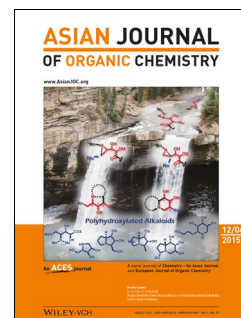
Y. Liu, J. Xue, Z. Sun, D. Liu, Y. Xing, Y. Li*

Substituent-Controlled Selective Synthesis of Spirooxindoles and Oxazolyloxindoles via Two Tandem Reactions

Selectivity in the N-d: A common synthetic method involving two tandem processes to prepare spirooxindoles, via elimination-Michael-Michael addition from N-benzyloxy- α -bromoamides, and oxazolyloxindoles, via cyclization-Michael addition from N-benzoyl- α -bromoamides, is described. The synthesis has excellent diastereoselectivity and clear chemoselectivity, which relies on different substituent groups at the nitrogen atoms of N-substituted α -bromoamides.

Asian J. Org. Chem.

DOI: 10.1002/ajoc.201500290



Bimetallic Nanocatalysts

C. Hu, X. Mu, J. Fan, H. Ma, X. Zhao, G. Chen, Z. Zhou, N. Zheng*

Interfacial Effects in PdAg Bimetallic Nanosheets for Selective Dehydrogenation of Formic Acid

PdAg bimetallic nanosheets were successfully prepared to serve as model catalysts to understand the synergetic effects in bimetallic nanocatalysts. The superior activity towards formic acid dehydrogenation is attributed to the electronic and geometric effect generated from the Pd–Ag interfaces in the catalysts.

ChemNanoMat

DOI: 10.1002/cnma.201500162



Astrochemistry

V. Koester, U. Meierhenrich

How Amino Acids Formed in the Universe

How did nature generate the first building blocks of life in the universe? Professor Uwe Meierhenrich co-designed the first GC-MS experiment that recorded spectra on a cometary nucleus, a part of the Rosetta mission. The mass spectra prove the presence of organic molecules, which were generated by photochemical reactions under interstellar conditions, above the comet's surface.

ChemViews magazine

DOI: 10.1002/chemv.201500104

