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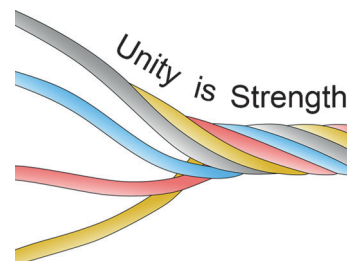


Supramolecular Chemistry

J.-F. Xu, L. Chen, X. Zhang*

How to Make Weak Noncovalent Interactions Stronger

Finding strength in weakness: In this Concept, four strategies are introduced for strengthening weak noncovalent interactions: 1) Preorganization of binding sites; 2) spatial confinement effects; 3) multivalent enhancement; 4) synergistic binding with multiple forces.



Chem. Eur. J.
DOI: 10.1002/chem.201500568

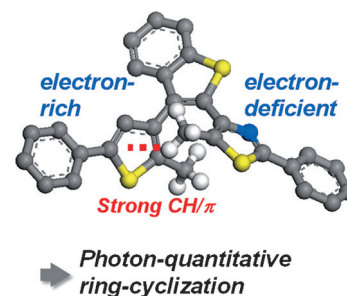


Electrocyclic Reactions

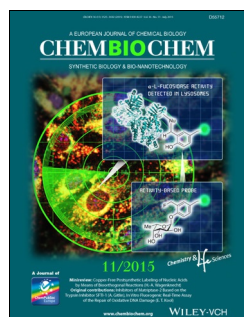
R. Li, T. Nakashima,* O. Galangau, S. Iijima, R. Kanazawa, T. Kawai*

Photon-Quantitative 6π -Electrocyclization of a Diarylbenzo[*b*]thiophene in Polar Medium

Get your piece of the π : A 2,3-diarylbenzo[*b*]thiophene with nonsymmetric side-aryl units showed a photon-quantitative 6π -cyclization reaction in methanol. The nonsymmetrical modification into the side-aryl units was considered to enhance the CH/ π interactions between side-aryl units to support a photoreactive conformation in methanol.



Chem. Asian J.
DOI: 10.1002/asia.201500328

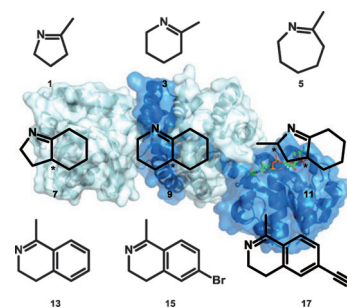


Biocatalysis

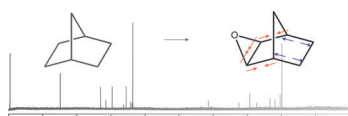
D. Wetzl, M. Berrera, N. Sandon, D. Fishlock, M. Ebeling, M. Müller, S. Hanlon, B. Wirz, H. Iding*

Expanding the Imine Reductase Toolbox by Exploring the Bacterial Protein-Sequence Space

IREd in the face: Twenty novel imine reductases (IREds) were characterized chemically by screening them against a set of cyclic imines and by applying bioinformatic methods. High yields of pure product were obtained from all of them. The IREds were subgrouped by an active-site clustering according to the experimental results.



ChemBioChem
DOI: 10.1002/cbic.201500218



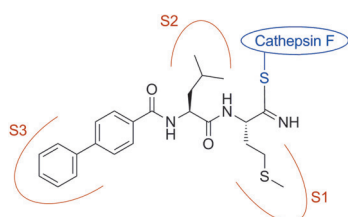
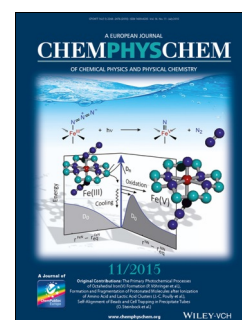
ChemPhysChem
DOI: 10.1002/cphc.201500334

Rotational Spectroscopy

P. Écija, I. Uriarte, F. J. Basterretxea, J. Millán, A. Lesarri, J. A. Fernández, E. J. Cocinero*

Structural Distortion of the Epoxy Groups in Norbornanes: A Rotational Study of *exo*-2,3-Epoxybornane

A strained relationship: The structure of *exo*-2,3-epoxybornane is determined through the detection of six isotopologues by rotational spectroscopy. Comparison with norbornane shows the influence of epoxy groups in this type of strained molecule.



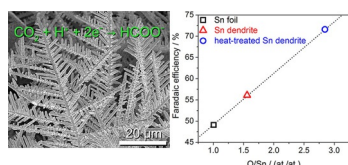
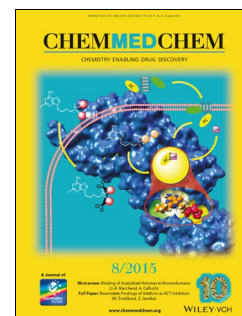
ChemMedChem
DOI: 10.1002/cmdc.201500151

Drug Design

J. Schmitz, N. Furtmann, M. Ponert, M. Frizler, R. Löser, U. Bartz, J. Bajorath, M. Gütschow*

Active Site Mapping of Human Cathepsin F with Dipeptide Nitrile Inhibitors

Mapping with nitriles: For human cathepsin F, low-molecular-weight inhibitors have not been developed so far. Therefore, a library of 52 dipeptide nitriles, known to interact in a covalent but reversible manner with the active site cysteine, was evaluated for cathepsin F inhibition. With the kinetic data in hand, optimized candidates were designed, synthesized, and tested to improve the activity profile as cathepsin F inhibitors.



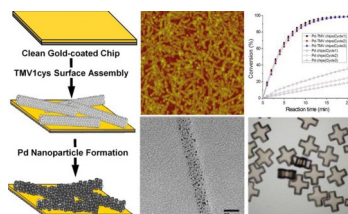
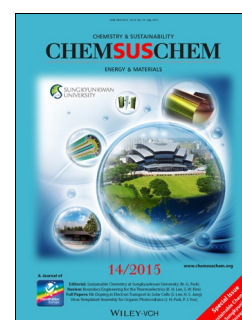
ChemSusChem
DOI: 10.1002/cssc.201500694

Carbon Dioxide Reduction

D. H. Won, C. H. Choi, J. Chung, M. W. Chung, E.-H. Kim, S. I. Woo*

Rational Design of a Hierarchical Tin Dendrite Electrode for Efficient Electrochemical Reduction of CO₂

Not exactly what it says on the tin: Rational design principles for tin electrodes to be used in selective CO₂ reduction to formate are suggested using hierarchical tin dendrite electrodes (multi-branched conifer-like structure) that show remarkable activity and stability. The initial oxygen content of the tin electrode is set as “selectivity descriptor” and the architecture is manipulated to maximize the number of active sites.



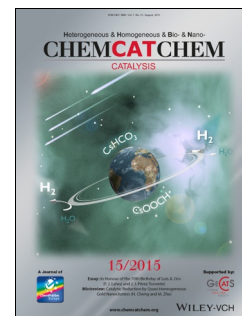
ChemCatChem
DOI: 10.1002/cctc.201500381

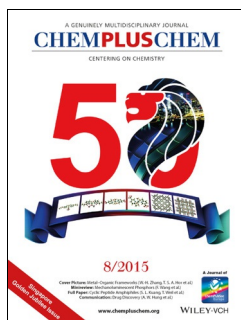
Nanocatalysis

C. Yang, H. Yi*

Viral Templated Palladium Nanocatalysts

Toot, toot! Pd nanoparticles: Robust nanotubular tobacco mosaic virus (TMV) templates enable efficient synthesis of catalytically active palladium nanoparticles in a controlled manner.



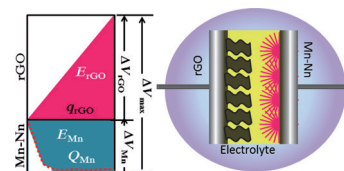


Capacitors

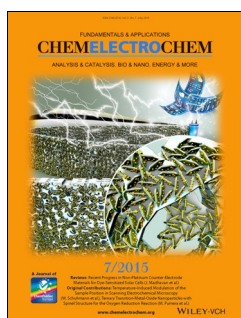
D. P. Dubal*, R. Holze, P. Gomez-Romero*

Three-Dimensional Arrays of 1D MnO_2 Nanocrystals for All-Solid-State Asymmetric Supercapacitors

New builders on the block: The synthesis of 3D hierarchical structures based on 1D MnO_2 nanobuilding blocks by means of a facile and scalable coprecipitation method and their use as electrodes for the assembly of all-solid-state supercapacitors is described. The figure shows an example of an asymmetric device based on hierarchical nanoneedle (Nn)-like MnO_2 and reduced graphene oxide.



ChemPlusChem
DOI: 10.1002/cplu.201500054

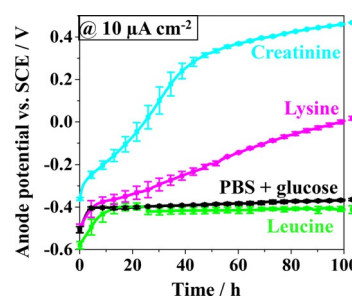


Biofuel Cells

C. Köhler, L. Bleck, M. Frei, R. Zengerle, S. Kerzenmacher*

Poisoning of Highly Porous Platinum Electrodes by Amino Acids and Tissue Fluid Constituents

Who's to blame? Implantable glucose fuel cells based on platinum electrodes suffer heavily from poisoning at the anode if operated in a simulated physiological environment. Herein, we quantify the poisoning effect of 28 important tissue fluid constituents under conditions relevant for application. These results are highly important for the future development of implantable glucose fuel cells and their long-term stable operation in body fluids (PBS = phosphate-buffered saline).



ChemElectroChem
DOI: 10.1002/celec.201500215

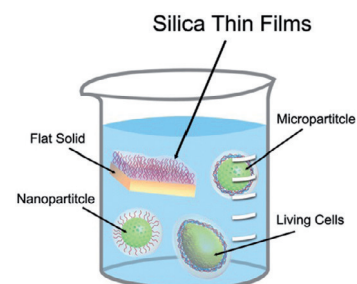


Magnetic Colloids

B. Sanz*, M. P. Calatayud, N. Cassinelli, M. R. Ibarra, G. F. Goya*

Long-Term Stability and Reproducibility of Magnetic Colloids are Key Issues for Steady Values of Specific Power Absorption Over Time

The poly(ethyleneimine)-coated magnetic nanoparticles (PEI-MNPs) prepared in this work by oxidative hydrolysis show good reproducibility of size and size distribution. In addition, these PEI-MNPs show only a moderate decrease in the specific power absorption when they aggregate over time. These results render these particles suitable for applications in magnetic hyperthermia.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201500303

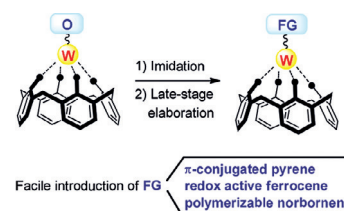


Metalated Cavittands

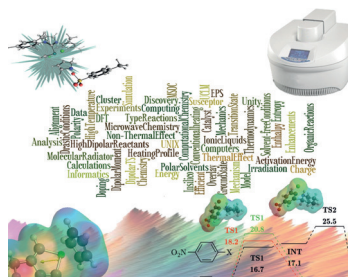
Y. Zhao, T. M. Swager*

Functionalized Metalated Cavittands via Imidation and Late-Stage Elaboration

Efficient methods to functionalize metalated cavittands are described. By using diversified iminophosphorane ($\text{PPh}_3 = \text{NR}$) reagents, π -conjugated pyrene, redox active ferrocene, and polymerizable norbornene moieties were successfully introduced. Furthermore, late-stage elaboration of the imido ligand provides facile access to complex architectures containing metalated cavittands.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201500714



Microwave-Assisted Synthesis

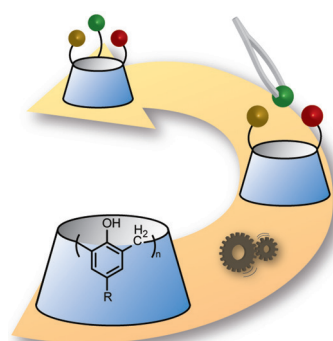
A. M. Rodríguez, P. Prieto,* A. de la Hoz, Á. Díaz-Ortiz, R. Martín, J. I. García

Influence of Polarity and Activation Energy in Microwave-Assisted Organic Synthesis (MAOS)

Mastering microwaves: This work sought to determine parameters that have decisive roles in microwave-assisted organic reactions (MAOS) and to develop a model, using computational chemistry, to predict the type of reactions that can be improved by using microwave irradiation. Parameters such as polarity, activation energy, and enthalpy were found to be important in the improvement of MAOS.

ChemistryOpen

DOI: 10.1002/open.201402123



Supramolecular Chemistry

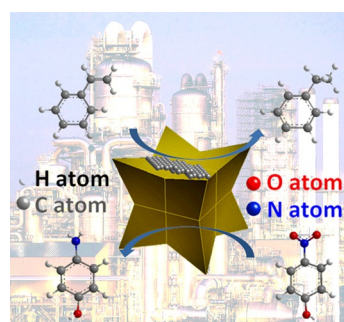
R. Lavendomme, S. Zahim, G. De Leener, A. Inthasot, A. Mattiuzzi, M. Luhmer, O. Reinaud, I. Jabin*

Rational Strategies for the Selective Functionalization of Calixarenes

Tailored calixarenes: Calixarenes are widely used as molecular platforms in supramolecular chemistry. Due to the presence of multiple identical functional groups, their selective functionalization is highly challenging. This review describes rational methods leading to a high degree of selectivity and classifies them into strategies. Many of these strategies are conceptually general and could be applied to other macrocyclic platforms.

Asian J. Org. Chem.

DOI: 10.1002/ajoc.201500178



High-Index Surfaces

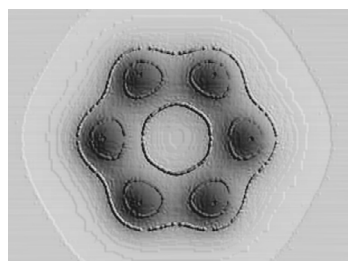
C. Wang, C. Lin, B. Zhao, L. Zhang, A. Kumbhar, G. Fan, K. Sun, J. Zhang, S. Chen, J. Fang*

High-Indexed Pt₃Fe Nanocatalysts and Their Enhanced Catalytic Performance in Dual Organic Reactions

Monodisperse Pt₃Fe concave nanocubes with high-index surfaces and a combination of sub-facets {hk0} were synthesized using a high-temperature solution approach, and show the highest turnover frequency for the hydrogenation of styrene and a promoted reaction rate for 4-nitrophenol reduction in comparison with their counterparts.

ChemNanoMat

DOI: 10.1002/cnma.201500048



π Interactions

D. Bradley

The Silvery Life of Pi

Interactions between a metal atom and an aromatic molecule are found throughout biological processes, in supramolecular chemistry, and in many catalytic reactions. To better understand these bonds, the strength of silver-pi interactions was measured using molecular torsion balances with an *N*-arylimide bicyclic framework.

ChemViews magazine

DOI: 10.1002/chemv.201500052

