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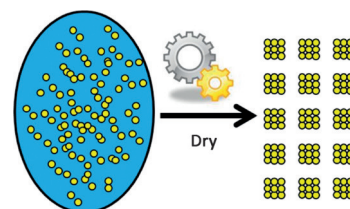


Plasmonic Nanoparticles

C. Hamon,* L. M. Liz-Marzán*

Hierarchical Assembly of Plasmonic Nanoparticles

Held in suspense: The figure illustrates the assembly of metallic nanoparticles upon drying a colloidal suspension. In this Minireview, the main parameters and methods that can be tuned to achieve such organized networks are defined.



Chem. Eur. J.
DOI: 10.1002/chem.201500149

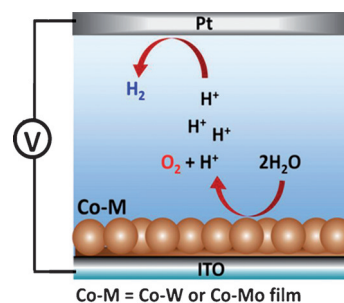


Heterogeneous Catalysis

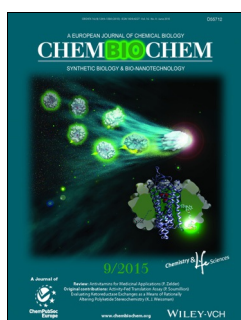
B. Zhang, X. Wu, F. Li,* F. Yu, Y. Wang, L. Sun

In Situ Formation of Efficient Cobalt-Based Water Oxidation Catalysts from Co^{2+} -Containing Tungstate and Molybdate Solutions

Accelerated break up: Two amorphous cobalt oxide catalysts (Co–W and Co–Mo films) with low overpotential and high activity for electrocatalytic water oxidation have been developed by electrodeposition from aqueous solutions of Na_2WO_4 and Na_2MoO_4 containing Co^{2+} (see figure; ITO = indium tin oxide). In long-term electrolysis, the Co–W film exhibits improved stability in cobalt-free buffer solution.



Chem. Asian J.
DOI: 10.1002/asia.201500099

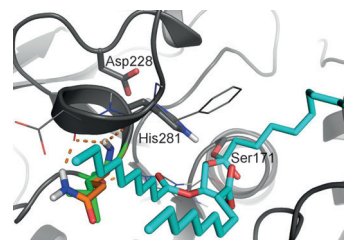


Protein Engineering

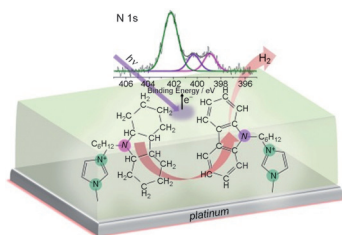
D. Lan, G. M. Popowicz, I. V. Pavlidis, P. Zhou, U. T. Bornscheuer, Y. Wang*

Conversion of a Mono- and Diacylglycerol Lipase into a Triacylglycerol Lipase by Protein Engineering

A mono- and diglyceride lipase was engineered to a triacylglyceride lipase by introducing a single point mutation (Q282L). The variant has broad substrate specificity on triacylglycerides. The results indicate that the main reason that the wild-type enzyme does not accept triacylglycerides is not their bulkiness, but specific hydrophobic interactions.

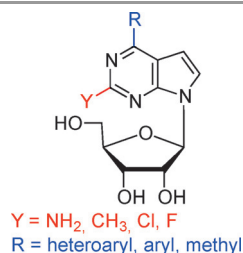


ChemBioChem
DOI: 10.1002/cbic.201500163



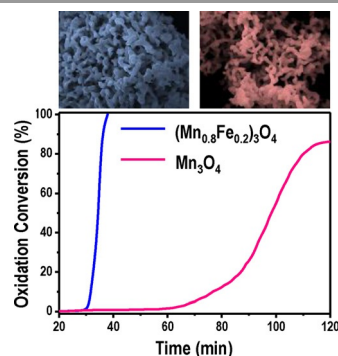
ChemPhysChem

DOI: 10.1002/cphc.201500236



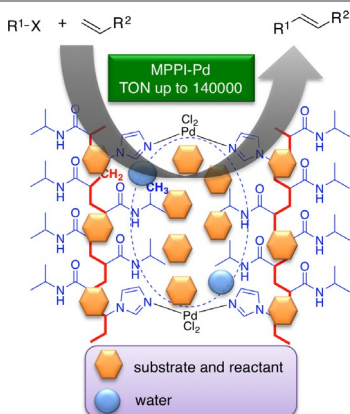
ChemMedChem

DOI: 10.1002/cmdc.201500081



ChemSusChem

DOI: 10.1002/cssc.201500148



ChemCatChem

DOI: 10.1002/cctc.201500249

Heterogeneous Catalysis

T. Matsuda, N. Taccardi, J. Schwegler, P. Wasserscheid, H.-P. Steinrück, F. Maier*

Vacuum Surface Science Meets Heterogeneous Catalysis: Dehydrogenation of a Liquid Organic Hydrogen Carrier in the Liquid State

This is no joke: Catalysis in the liquid state is probed in vacuum. Vacuum surface science techniques such as X-ray photoelectron spectroscopy and thermal desorption spectroscopy probe in situ the dehydrogenation of the liquid organic hydrogen carrier (LOHC) perhydrocarbazole close to equilibrium reaction conditions of real heterogeneous catalysis. The otherwise volatile LOHC is linked to an imidazolium cation, forming a non-volatile LOHC ionic liquid.

Antimycobacterial Agents

V. Malnuit, L. P. Slavětínská, P. Nauš, P. Džubák, M. Hajdúch, J. Stolaříková, J. Snášel, I. Pichová, M. Hocek*

2-Substituted 6-(Het)aryl-7-deazapurine Ribonucleosides: Synthesis, Inhibition of Adenosine Kinases, and Antimycobacterial Activity

Specific for Mtb ADK: A series of diverse 2-substituted 6-heteroaryl-7-deazapurine ribonucleosides was prepared and the title compounds were found to be potent and selective inhibitors of *Mycobacterium tuberculosis* (but not human) adenosine kinase. Unfortunately, their antimycobacterial activity was observed to be weak, probably due to poor uptake or parallel biosynthesis.

Energy Storage

A. J. Carrillo, D. P. Serrano, P. Pizarro,* J. M. Coronado

Improving the Thermochemical Energy Storage Performance of the Mn₂O₃/Mn₃O₄ Redox Couple by the Incorporation of Iron

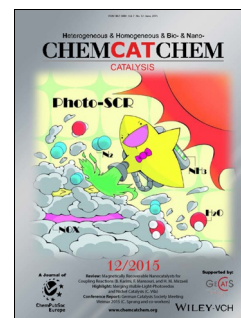
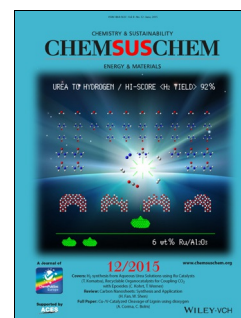
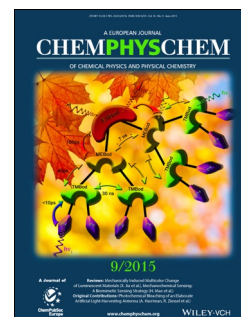
Iron out the creases: The performance of the Mn₂O₃/Mn₃O₄ redox couple for thermochemical heat storage is improved significantly by Fe incorporation. The presence of such metal cations is especially beneficial to enhance the oxidation kinetics and counteracts the limitations caused by particle sintering. In particular, addition of 20% Fe boosts the efficiency, resulting in high cyclability, improved kinetics, and an elevated energy storage density.

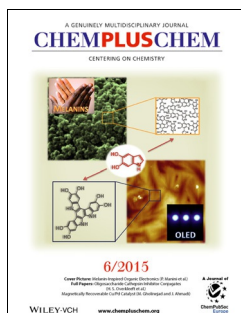
Nanostructures

T. Sato, A. Ohno, S. M. Sarkar, Y. Uozumi,* Y. M. A. Yamada*

A Convoluted Polymeric Imidazole Palladium Catalyst: Structural Elucidation and Investigation of the Driving Force for the Efficient Mizoroki–Heck Reaction

Pd polymer provides products: MPPI-Pd, prepared from poly(*N*-isopropylacrylamide-*co*-*N*-vinylimidazole) and (NH₄)₂PdCl₄ by our molecular convolution method, promotes the Mizoroki–Heck reaction in water to give the corresponding coupling products with high yield and reusability.



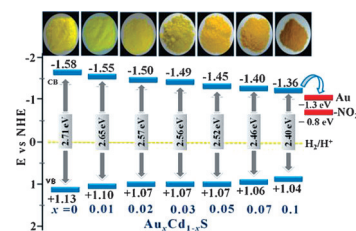


CdS Nanostructures

R. Singh, B. Pal*

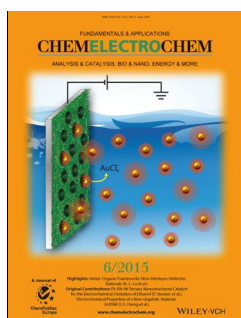
Preparation, Surface and Crystal Structure, Band Energetics, Optoelectronic, and Photocatalytic Properties of $\text{Au}_x\text{Cd}_{1-x}\text{S}$ Nanorods

Tuning bands: The positions of the conduction and valence bands of CdS nanorods can be manipulated by Au^{3+} doping (see picture) The physicochemical properties in the series $\text{Au}_x\text{Cd}_{1-x}\text{S}$ ($x=0$ to 0.1) could be modified as a result of surface-structural distortion. The ease of charge separation and facile transfer to the reactant species results in long-term activity and stability under sunlight irradiation.



ChemPlusChem

DOI: 10.1002/cplu.201402388

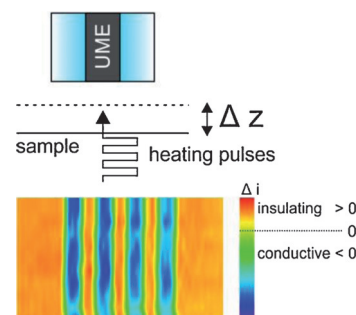


Scanning Electrochemical Microscopy

J. Clausmeyer, D. Schäfer, M. Nebel, W. Schuhmann*

Temperature-Induced Modulation of the Sample Position in Scanning Electrochemical Microscopy

Hot shivers: Scanning electrochemical microscopy at elevated temperatures provides increased imaging contrast by exploiting the intrinsic temperature-induced oscillation of the sample. From a single array scan the slope of local approach curves is estimated and used for discrimination of conductive and insulating areas on the sample.



ChemElectroChem

DOI: 10.1002/celec.201500087

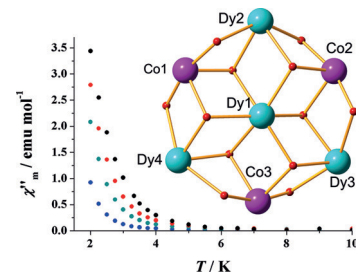


Single Molecule Magnets

E. Loukopoulou, B. Berkoff, A. Abdul-Sada, G. J. Tizzard, S. J. Coles, A. Escuer,* G. E. Kostakis*

A Disk-Like $\text{Co}^{\text{II}}_3\text{Dy}^{\text{III}}_4$ Coordination Cluster Exhibiting Single Molecule Magnet Behavior

The use of (E)-4-(2-hydroxy-3-methoxybenzylideneamino)-2,3-dimethyl-1-phenyl-1,2-dihydropyrazol-5-one (HL) in Co/Ln chemistry for the first time affords a disk-like heptanuclear $\text{Co}^{\text{II}}_3\text{Dy}^{\text{III}}_4$ coordination cluster displaying single molecule magnet (SMM) behavior. This topology is hitherto unobserved in $\text{Co}^{\text{II}}/\text{Dy}^{\text{III}}$ chemistry.



Eur. J. Inorg. Chem.

DOI: 10.1002/ejic.201500241

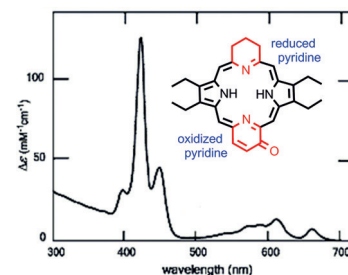


Porphyrinoid Aromaticity

S. Neya,* M. Suzuki, T. Mochizuki, T. Hoshino, A. T. Kawaguchi

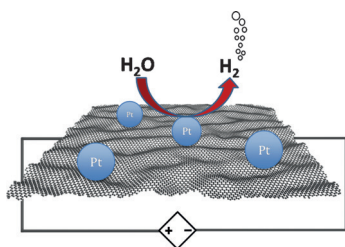
Porphyrinoid Aromaticity Induced by the Interaction between Oxidized and Reduced Pyridine Subunits

Coupling of 3-hydroxypyridine-2,6-dicarbaldehyde with a tripyrrane-like precursor bearing a central pyridine ring afforded a new porphyrinoid with two pyridine-related subunits. Spectroscopic and theoretical analyses demonstrate that the aromaticity of this porphyrinoid is fulfilled by the cooperative interaction between the two pyridinoid rings.



Eur. J. Org. Chem.

DOI: 10.1002/ejoc.201500260



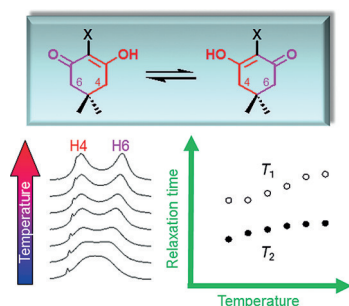
ChemistryOpen
DOI: 10.1002/open.201402151

Electrocatalysis

R. Mazzaro, A. Boni, G. Valenti,* M. Marcaccio, F. Paolucci, L. Ortolani, V. Morandi,* P. Ceroni, G. Bergamini*

Uniform Functionalization of High-Quality Graphene with Platinum Nanoparticles for Electrocatalytic Water Reduction

A composite material comprised of monodispersed platinum nanoparticles on high-quality graphene was synthesized using two different exfoliating techniques. The material's performance as a catalyst in the electrocatalytic production of hydrogen from water at neutral pH is subsequently evaluated. The material exhibited a remarkably high turn-over frequency at zero overpotential ($\sim 4600 \text{ h}^{-1}$ at pH 6.8). The material has potential in the development of robust and scalable water-splitting devices.



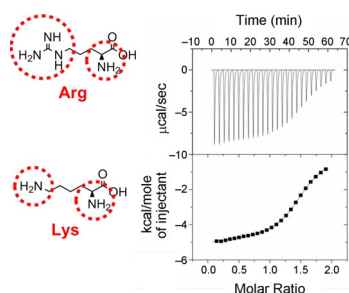
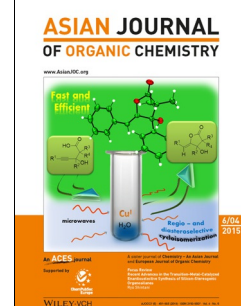
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201500069

Isomerization

H. China,* Y. Okada*

Suppression Mechanism for Enol–Enol Isomerization of 2-Substituted Dimedones

Sommer days: Dynamic NMR spectroscopy of the intramolecular chemical exchange in enol–enol isomerism of cyclic β -diketones showed a link between the isomerization rate and intermolecular hydrogen bond formation in solution. Suppression of isomerizations that have negative activation energy enabled the analysis of several 2-substituted enolic dimedones, for which equalization of two resonance signals in the isomerism interferes with the usual NMR analysis.



ChemNanoMat
DOI: 10.1002/cnma.201500018

Host–Guest Systems

T. Ooya,* H. Lee

Amino Acid-Dependent Host–Guest Interaction: Polyglycerol Dendrimer of Generation 3 Encapsulates Amino Acids Bearing Two Amino Groups

Talkin' 'bout my generation 3: Polyglycerol dendrimer of generation 3 was found to interact with basic α -amino acids including L-arginine and L-lysine in water. The results of isothermal titration calorimetry and ^1H - ^1H NOESY NMR measurements revealed that two basic groups in α -amino acids are essential for binding to PGD-G3.



ChemViews magazine
DOI: 10.1002/chemv.201500037

Amino Acids

S. Wilkinson

Flow Synthesis of Fluorinated α -Amino Acids

In "Behind the Science", *ChemViews Magazine* gives readers a peek behind the scenes of a research article. This time, Susan Wilkinson, *European Journal of Organic Chemistry*, talks to Professors Beate Koksche and Peter Seeberger about their recent article on the protecting-group free continuous synthesis of fluorinated amino acids.

