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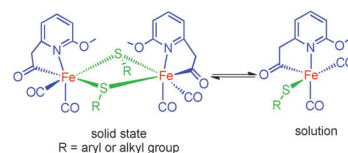


Enzyme Models

B. Hu, D. Chen,* X. Hu*

Reversible Dimerization of Mononuclear Models of [Fe]-Hydrogenase

Enzyme models on the catwalk! A series of new model complexes of the active site of [Fe]-hydrogenase have been synthesized and characterized. These complexes are monomeric in solution, but dimeric in the solid state.



Chem. Eur. J.
DOI: 10.1002/chem.201300495

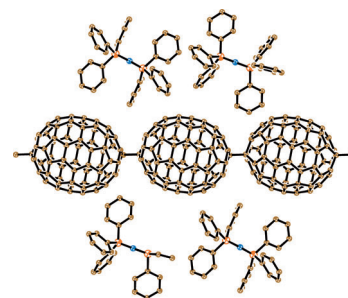


Solid-State Structures

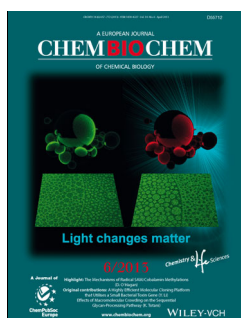
D. V. Konarev,* S. I. Troyanov, S. S. Khasanov, A. Otsuka, H. Yamochi, G. Saito, R. N. Lyubovskaya

Structure, Optical, and Magnetic Properties of $(PPN^+)_2(C_{70}^{2-}) \cdot 2C_6H_4Cl_2$, which Contains Dianionic Polymeric $(C_{70}^{2-})_n$ Chains

The cocoon chain: A new salt, $(PPN^+)_2(C_{70}^{2-}) \cdot 2C_6H_4Cl_2$ (**1**), which contains polymeric zigzag $(C_{70}^{2-})_n$ chains, was obtained; the fullerene C_{70}^{2-} units are bonded in the polymer through single C–C bonds of length 1.581(5)–1.586(6) Å. Salt **1** shows broad absorption in the NIR region, with maxima at 890, 1200, and 1550 nm. The $(C_{70}^{2-})_n$ polymer is diamagnetic and EPR silent, with a negative molar magnetic susceptibility of $-3.82 \times 10^{-4} \text{ emu mol}^{-1}$.



Chem. Asian J.
DOI: 10.1002/asia.201300086

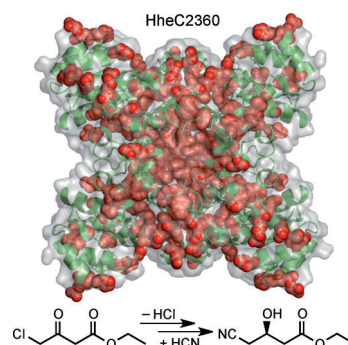


Protein Engineering

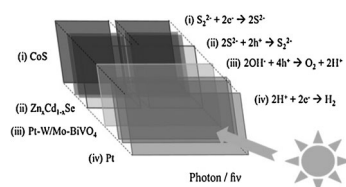
M. Schallmeyer, R. J. Floor, B. Hauer, M. Breuer, P. A. Jekel, H. J. Wijma, B. W. Dijkstra, D. B. Janssen*

Biocatalytic and Structural Properties of a Highly Engineered Halohydrin Dehalogenase

Synergistic mutations: A halohydrin dehalogenase with 37 mutations and improved catalytic properties for statin side chain synthesis has been biochemically characterized. Crystal structures with different ligands in the active site give insight into the way in which individual mutations contribute to enhanced stability and faster cyanolysis of epoxides and illustrate the importance of synergistic mutations in directed evolution.



ChemBioChem
DOI: 10.1002/cbic.201300005



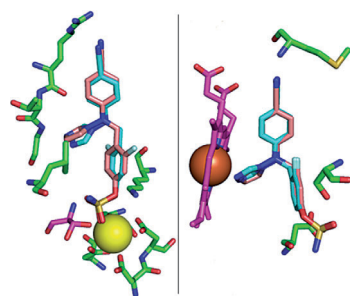
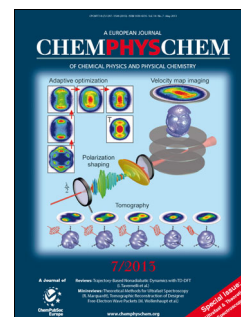
ChemPhysChem
DOI: 10.1002/cphc.201201044

Water Splitting

H. S. Park, H. C. Lee, K. C. Leonard, G. Liu, A. J. Bard*

Unbiased Photoelectrochemical Water Splitting in Z-Scheme Device Using W/Mo-Doped BiVO₄ and Zn_xCd_{1-x}Se

Water splitting to generate H₂ and O₂ using only photon energy (with no added electrical energy) is demonstrated with dual n-type-semiconductor (or Z-scheme) systems. The authors investigate two different Z-scheme systems; one is comprised of two cells with the same metal-oxide semiconductor, and the other is comprised of the metal oxide and a chalcogenide semiconductor.



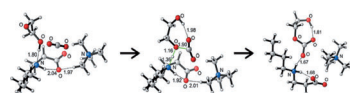
ChemMedChem
DOI: 10.1002/cmdc.201300015

Endocrine Therapeutics

L. W. L. Woo, P. M. Wood, C. Bubert, M. P. Thomas, A. Purohit, B. V. L. Potter*

Synthesis and Structure–Activity Relationship Studies of Derivatives of the Dual Aromatase–Sulfatase Inhibitor 4-[[[(4-Cyanophenyl)(4*H*-1,2,4-triazol-4-yl)amino]methyl]phenyl]sulfamate

A new head! Derivatives of dual steroid sulfatase and aromatase inhibitor 4-[[[(4-cyanophenyl)(4*H*-1,2,4-triazol-4-yl)amino]methyl]phenyl]sulfamate were prepared, leading to a range of SAR information and a highly potent (in vitro) imidazole congener which can be further developed for potential use in treating hormone-dependent diseases.



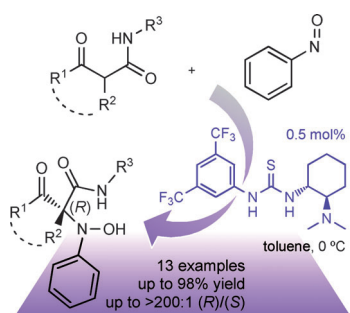
ChemSusChem
DOI: 10.1002/cssc.201200971

Carbon Capture

S. Y. Hong, Y. Cheon, S. H. Shin, H. Lee, M. Cheong,* H. S. Kim*

Carboxylate-Assisted Formation of Alkylcarbonate Species from CO₂ and Tetramethylammonium Salts with a β -Amino Acid Anion

Catch me if you can: Tetramethylammonium salts bearing a β -amino acid anion (TMAAs) are synthesized through Michael addition reactions of amines with methyl acrylate, subsequent hydrolysis, and neutralization with aqueous tetramethylammonium hydroxide. These TMAAs interact with CO₂ in a 1:1 mode in ethylene glycol, which forms hydroxyethylcarbonate species. The driving force for the 1:1 bonding appears to be the intramolecular hydrogen bonding network exerted through the carboxylate group.



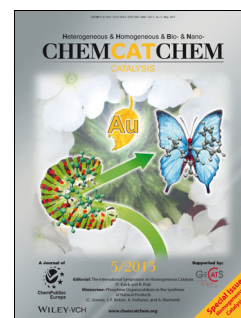
ChemCatChem
DOI: 10.1002/cctc.201200723

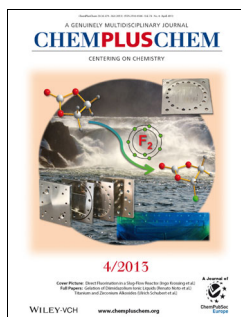
Organocatalysis

D. Mailhol, J.-C. Castillo, K. Mohanan, R. Abonia, Y. Coquerel,* J. Rodriguez*

Practical and Efficient Organocatalytic Enantioselective α -Hydroxyamination Reactions of β -Ketoamides

Constrained chiral center: The first general, efficient and highly enantioselective α -hydroxyamination reactions of carbonyl compounds are described, securing a practical synthetic access to conformationally constrained α -amino acid derivatives exhibiting a quaternary chiral center at the α -position.



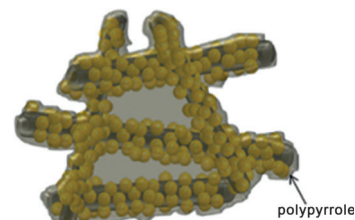


Lithium-Sulfur Batteries

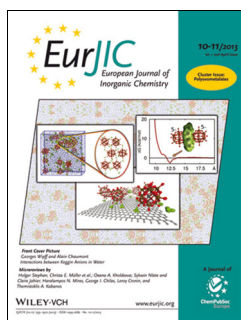
J. Wang,* L. Lu, D. Shi, R. Tandiono, Z. Wang, K. Konstantinov, H. Liu

A Conductive Polypyrrole-Coated, Sulfur–Carbon Nanotube Composite for Use in Lithium–Sulfur Batteries

Battery powered: The title composite (see figure) was prepared and investigated as a cathode material for Li–S batteries. The conducting polypyrrole coating serves to confine polysulfides and prevent them from dissolving into the electrolyte. The capacity of S-CNT-PPy is about 600 mAh g^{-1} after 40 cycles, which is much higher than for the S-CNT composite (430 mAh g^{-1})



ChemPlusChem
DOI: 10.1002/cplu.201200293

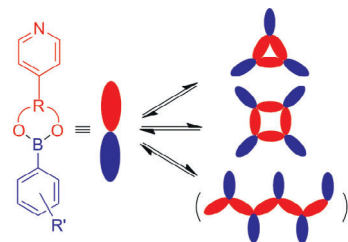


Supramolecular Chemistry

E. Sheepwash, K. Zhou, R. Scopelliti, K. Severin*

Self-Assembly of Arylboronate Esters with Pyridyl Side Chains

Dioxaborinanes and benzodioxaboroles containing pyridyl side chains were synthesized. The boronate esters can aggregate through dative boron–nitrogen bonds to give trimeric and tetrameric macrocycles as well as polymeric structures. The assembly process was found to depend to a large extent on electronic effects.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201300084

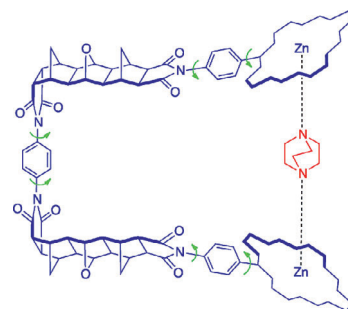


Molecular Tweezers

R. B. Murphy, D.-T. Pham, S. F. Lincoln, M. R. Johnston*

Molecular Tweezers with Freely Rotating Linker and Porphyrin Moieties

Usually molecular tweezers possess a high degree of preorganisation, but we have found that the introduction of several rotational degrees of freedom has little impact on association constant strength.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201300207

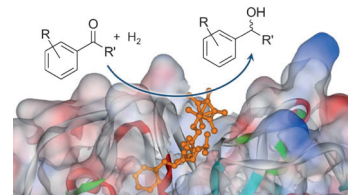


Artificial Enzymes

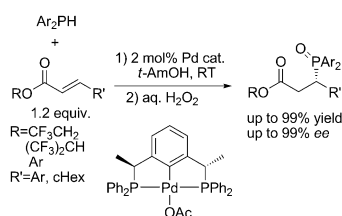
T. Reiner, D. Jantke, A. N. Marziale, A. Raba, J. Eppinger*

Metal-Conjugated Affinity Labels: A New Concept to Create Enantioselective Artificial Metalloenzymes

How to train a protein: Metal-conjugated affinity labels were used to selectively position catalytically active metal centers in the binding pocket of proteases. The resulting artificial metalloenzymes achieve up to 82% e.r. in the hydrogenation of ketones. The modular setup enables a rapid generation of artificial metalloenzyme libraries, which can be adapted to a broad range of catalytic conditions.



ChemistryOpen
DOI: 10.1002/open.201200044



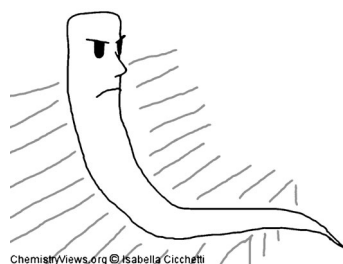
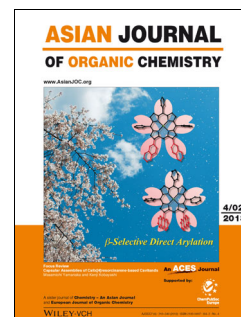
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201300021

Asymmetric Addition

D. Du, Z.-Q. Lin, J.-Z. Lu, C. Li, W.-L. Duan*

Palladium-catalyzed Asymmetric 1,4-Addition of Diarylphosphines to α,β -Unsaturated Carboxylic Esters

Pincer my ride: A highly stereoselective asymmetric 1,4-addition of diarylphosphines to α,β -unsaturated carboxylic esters catalyzed by a PCP pincer–Pd complex has been developed for the synthesis of chiral phosphines in up to 99% *ee*.



ChemViews magazine
DOI: 10.1002/chemv.201300040

Polymerase Chain Reaction

G. Cicchetti, V. Köster, C. Mayer, F. Wolter

Interview with James T. Aquaticus

As a central pillar of modern biology, medicine, and forensic sciences, countless careers have been based on the Polymerase Chain Reaction (PCR). Yet the owner of the Taq enzyme that makes the PCR possible is poorly known. On April 1st, ChemViews magazine was granted an interview with this reclusive but interesting Gram-negative rod-shaped bacterium, James Thermus (T.) Aquaticus.

