



Porphyrinoids

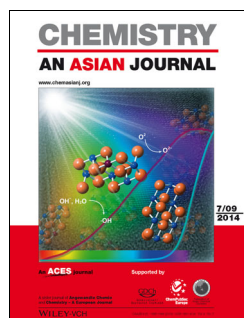
S.-i. Ishida, T. Tanaka, J. M. Lim, D. Kim,* A. Osuka*

Si^{IV} Incorporation into a [28]Hexaphyrin That Triggered Formation of Möbius Aromatic Molecules

Very aromatic! [28]Hexaphyrin Si^{IV} complexes **2** and **4** were synthesized by the reaction of [28]hexaphyrin **1** with CH₃SiCl₃ and DIPEA. Both complexes are Möbius aromatic molecules, in which the five-coordinated Si^{IV} atom adopts a trigonal bipyramidal coordination and assists molecular twist. Oxidation of **2** with H₂O₂ gave β-hydroxy [28]hexaphyrin **5**, which is also a Möbius aromatic species in solution at room temperature (see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201402929

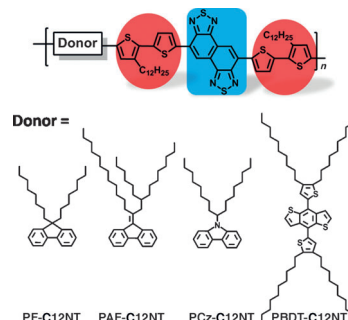


Polymers

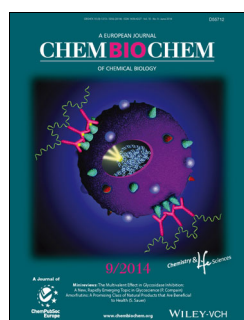
L.-Q. Liu, G.-C. Zhang, P. Liu, J. Zhang, S. Dong, M. Wang, Y.-G. Ma, H.-L. Yip,* F. Huang*

Donor–Acceptor-Type Copolymers Based on a Naphtho[1,2-c:5,6-c']bis(1,2,5-thiadiazole) Scaffold for High-Efficiency Polymer Solar Cells

Walking on sunshine: Four donor–acceptor-type low-bandgap conjugated polymers based on a naphtho[1,2-c:5,6-c']bis(1,2,5-thiadiazole) acceptor and different donors with a bithiophene spacer have been synthesized. The best device performance was achieved by **PF-C12NT**, with V_{oc} = 0.87 V, J_{sc} = 12.19 mA cm⁻², FF = 61.36%, and PCE = 6.51% (100 mW cm⁻², AM 1.5G).



Chem. Asian J.
DOI: 10.1002/asia.201402019

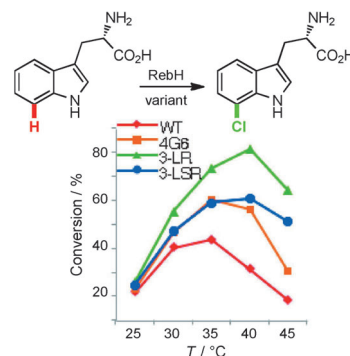


Directed Evolution

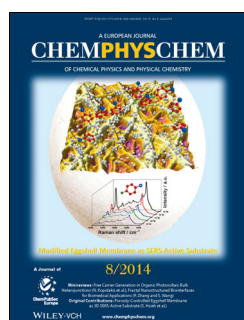
C. B. Poor, M. C. Andorfer, J. C. Lewis*

Improving the Stability and Catalyst Lifetime of the Halogenase RebH By Directed Evolution

Evolving halos: We have used directed evolution to engineer an RebH halogenase variant with a T_{opt} more than 5 °C higher than that of wild-type RebH, and a second variant with a T_m 18 °C higher. These enzymes provided significantly improved conversion for halogenation of tryptophan and several non-natural substrates.



ChemBioChem
DOI: 10.1002/cbic.201300780

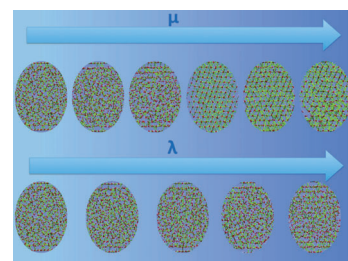


Ice Nucleation

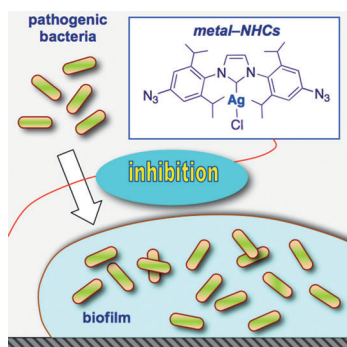
S. Deshmukh, G. Kamath, S. K. R. S. Sankaranarayanan*

Effect of Nanoscale Confinement on Freezing of Modified Water at Room Temperature and Ambient Pressure

Creating ice at room temperature: At room temperature, ice nucleation is a very rare event and extremely high pressures in the GPa–TPa range are required to freeze water. Computer experiments are performed to artificially alter the balance between electrostatic and dispersion interactions between water molecules, and nucleation and growth of ice at room temperature in a nanoconfined environment is demonstrated.



ChemPhysChem
DOI: 10.1002/cphc.201400016



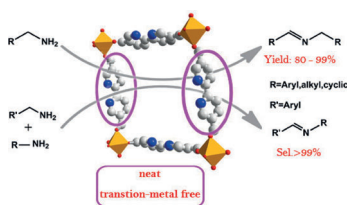
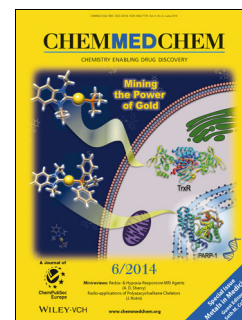
ChemMedChem
DOI: 10.1002/cmdc.201402012

Metals in Medicine

T. Bernardi,* S. Badel, P. Mayer, J. Groelly, P. de Frémont, B. Jacques, P. Braunstein, M.-L. Teyssot, C. Gaulier, F. Cisnetti, A. Gautier,* S. Roland*

High-Throughput Screening of Metal-N-Heterocyclic Carbene Complexes against Biofilm Formation by Pathogenic Bacteria

Film screening: Metal-N-heterocyclic carbene (NHC) complexes of group 11 metals (Ag, Au, Cu) strongly inhibit biofilm formation by representative pathogenic bacteria at low concentrations. The highest and broadest activities are obtained with silver as the metal complexed with lipophilic NHCs. This opens new perspectives to develop alternative drugs to treat biofilm-associated pathogens.



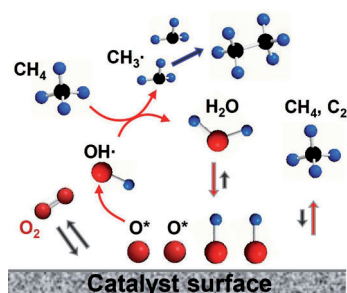
ChemSusChem
DOI: 10.1002/cssc.201301340

Metal-Organic Frameworks

X. Qiu, C. Len, R. Luque,* Y. Li*

Solventless Oxidative Coupling of Amines to Imines by Using Transition-Metal-Free Metal-Organic Frameworks

Neat couple! A metal-organic framework with open 2,2'-bipyridine sites offers a new, simple, and green protocol for the selective synthesis of imines from oxidative coupling of various amines under mild solvent-free conditions in the absence of transition metals. In addition, this catalyst is also capable of catalyzing the cross-coupling of two different amines to synthesize asymmetrical imines with unprecedented selectivity.



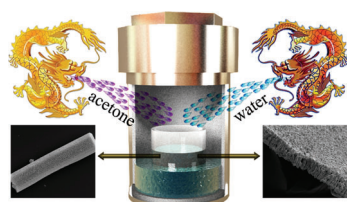
ChemCatChem
DOI: 10.1002/cctc.201400018

Methane Coupling

Y. Liang, Z. Li, M. Nouridine, S. Shahid, K. Takane*

Methane Coupling Reaction in an Oxy-Steam Stream through an OH Radical Pathway by using Supported Alkali Metal Catalysts

Make it methane: A universal reaction mechanism involved in the oxidative coupling of methane is demonstrated under oxy-stream conditions by using alkali-metal-based catalysts. Rigorous kinetic measurements indicated a reaction mechanism that is consistent with OH radical formation from an H₂O–O₂ reaction, followed by C–H activation in CH₄ with an OH radical.



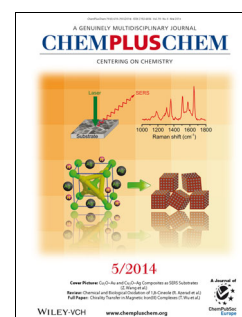
ChemPlusChem
DOI: 10.1002/cplu.201300420

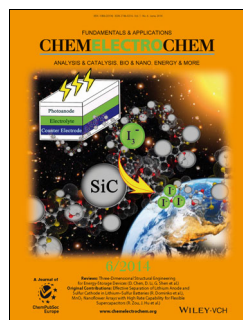
Photochemistry

Y. Wang, G. Chen,* A. Di, H. Xu

A Facile, Template-Free Synthesis of AgCl Hierarchical Architectures: Precursors of Highly Efficient Visible-Light Plasmonic Photocatalysts of Ag@AgCl

Morph into shape: A facile template-free method is employed to prepare AgCl hierarchical architectures that are the precursors of highly efficient photocatalysts Ag@AgCl. The morphology of the product is altered upon changes to the solvent used in the preparation procedure (see picture).



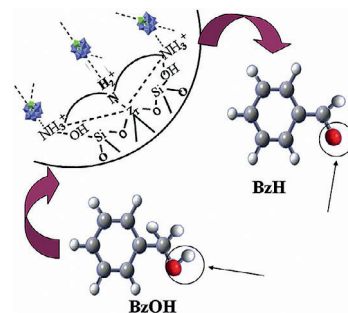


Tungstophosphoric Acid Catalysts

L.-Y. Meng, S.-R. Zhai,* S. Li, B. Zhai, Q.-D. An,* X.-W. Song

Synthesis and Characterization of Tungstophosphoric Acid/Pentaethylenehexamine/ZrSBA-15 and Its Use in the Selective Oxidation of Benzyl Alcohol under Solvent-Free Conditions

A layer-by-layer deposition strategy was used for the preparation of a tungstophosphoric acid/pentaethylenehexamine/ZrSBA-15 composite. This recyclable material was stable at high temperatures and in polar solvents, and it exhibited excellent catalytic properties (84.7% conversion, > 99% selectivity) in the selective oxidation of benzyl alcohol (BnOH) to benzaldehyde (BzH).



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201402028

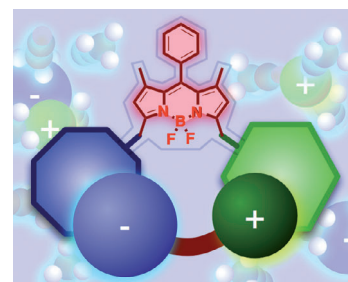


Sensors

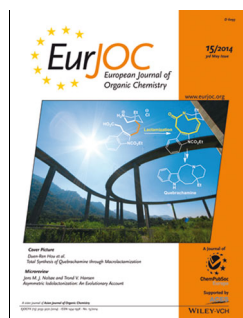
R. Gotor, A. M. Costero,* S. Gil, P. Gaviña, K. Rurack*

On the Ion-Pair Recognition and Indication Features of a Fluorescent Heteroditopic Host Based on a BODIPY Core

Catching two balls: A BODIPY derivative bearing two independent yet complimentary hosts for anions and cations displays distinct absorption and fluorescence signalling patterns for different alkali metal halides. The compound also recognizes zwitterionic compounds such as amino acids and γ -aminobutyric acid (GABA).



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201402214

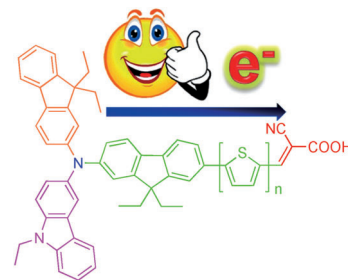


Solar Cells

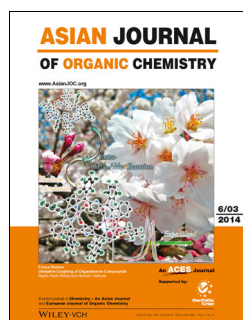
A. Baheti, K. R. Justin Thomas,* L.-C. Lin, K.-M. Lee*

Monoanchoring (D-D- π -A) and Dianchoring (D-D-(π -A)₂) Organic Dyes Featuring Triarylamine Donors Composed of Fluorene and Carbazole

Less is more: Difluorenylamine-based dyes containing carbazole as an auxiliary donor, oligothiophene linkers, and cyanoacrylic acid acceptor/anchoring groups featuring two different architectures (D-D- π -A and D-D-(π -A)₂) have been synthesized, characterized, and used in dye-sensitized solar cells (DSSCs). DSSCs based on the D-D- π -A-configured monoanchoring dyes are two to fivefold more efficient than those with the corresponding dianchoring congeners.



Asian J. Org. Chem.
DOI: 10.1002/ajoc.201402073



Food Science

K. Roth

The Biochemistry of Peppers

Capsaicin is only produced by the plant genus *Capsicum* and is the compound responsible for the spiciness of chili peppers. Klaus Roth discusses its discovery and synthesis and looks at the chemical origin of the color, aroma, and flavor of various fruit of this plant genus. These chemicals include the colorful paprika ketones capsanthin and capsorubin and aromatic 2-methoxy-3-isobutylpyrazine.



ChemViews magazine
DOI: 10.1002/chemv.201400031