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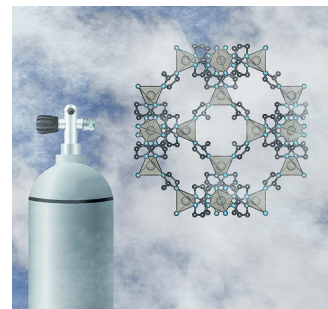


Metal–Organic Frameworks

I. Stassen, D. De Vos, R. Ameloot*

Vapor-Phase Deposition and Modification of Metal–Organic Frameworks: State-of-the-Art and Future Directions

Vaporising stuff! Metal–organic frameworks (MOFs) are a class of nanoporous crystalline materials on the brink of breakthrough in many application areas. Vapor deposition of MOF thin films will facilitate their implementation in micro- and nanofabrication research and industries. The recent progress in vapor processing of MOFs, the underpinning chemistry and principles, and promising directions for future research are highlighted in this Concept article.



Chem. Eur. J.
DOI: 10.1002/chem.201601921

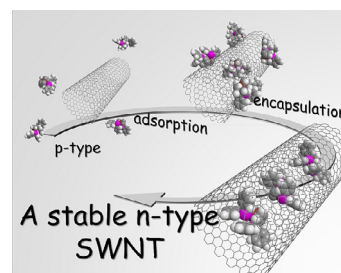


Thermoelectric Materials

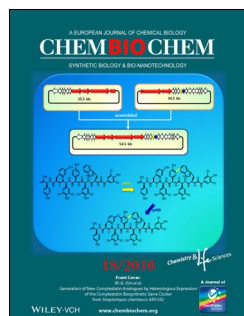
Y. Nonoguchi,* Y. Iihara, K. Ohashi, T. Murayama, T. Kawai*

Air-tolerant Fabrication and Enhanced Thermoelectric Performance of n-Type Single-walled Carbon Nanotubes Encapsulating 1,1'-Bis(diphenylphosphino)ferrocene

Stay inside: The stable n-type doping of single-walled carbon nanotubes is demonstrated by the encapsulation of a redox-active compound, 1,1'-bis(diphenylphosphino)ferrocene. The composite material shows an excellent power factor exceeding approximately $240 \mu\text{W mK}^{-2}$.



Chem. Asian J.
DOI: 10.1002/asia.201600810

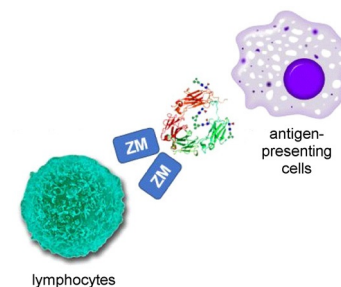


Enzyme Inhibitors

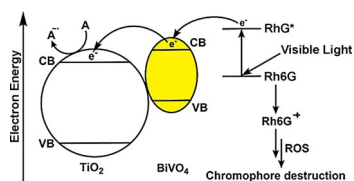
P.-Y. Hsiao, J. H. Kalin, I.-H. Sun, M. N. Amin, Y.-C. Lo, M.-J. Chiang, J. Giddens, P. Sysa-Shah, K. Gabrielson, L.-X. Wang, J. D. Powell, P. A. Cole*

An Fc–Small Molecule Conjugate for Targeted Inhibition of the Adenosine 2A Receptor

Bigger is better: By using a semisynthetic approach, an Fc–small molecule conjugate, Fc–ZM, was developed for targeted inhibition of the adenosine 2A receptor ($A_{2A}R$). Fc–ZM displayed superior pharmacologic properties compared to ZM alone and was able to functionally interact with $A_{2A}R$ and Fc receptors, present on lymphocytes and antigen-presenting cells, respectively.



ChemBioChem
DOI: 10.1002/cbic.201600337



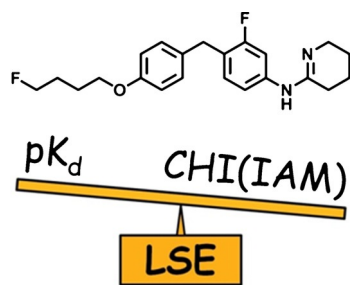
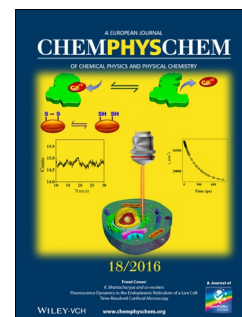
ChemPhysChem
DOI: 10.1002/cphc.201600443

Photocatalysis

G. Odling, N. Robertson*

BiVO₄-TiO₂ Composite Photocatalysts for Dye Degradation Formed Using the SILAR Method

The **SILAR technique** (sequential ionic layer adsorption reaction) is applied to prepare a heterojunction photocatalyst based on TiO₂-BiVO₄ for water purification. The photocatalyst is formed as a nanocrystalline film, ideal for separation and re-use. The authors employ a ZrO₂-BiVO₄ control to prove the heterojunction charge separation effect.



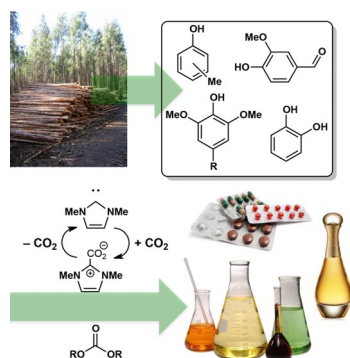
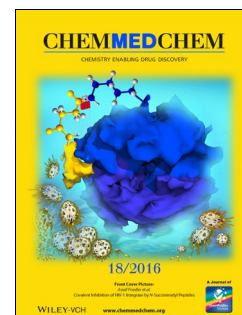
ChemMedChem
DOI: 10.1002/cmdc.201600112

Imaging Tracers

Y. P. Auberson,* E. Briard, D. Sykes, J. Reilly, M. Healy

Ligand Specific Efficiency (LSE) Index for PET Tracer Optimization

Striking a balance: Nonspecific binding cannot be predicted using in silico parameters and remains a major cause of failure for candidate PET imaging agents. We defined the ligand specific efficiency (LSE) index as a measure of affinity, normalized to nonspecific binding, and determined the minimal value for a successful PET tracer. The use of LSE to guide chemical optimization is illustrated with tracer candidates for prostacyclin receptors.



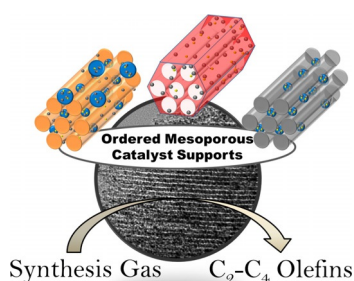
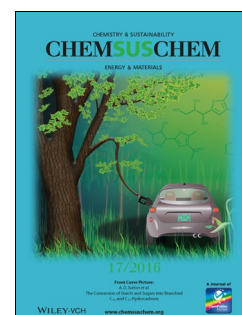
ChemSusChem
DOI: 10.1002/cssc.201600493

Carbonates

M. Y. Lui, A. K. L. Yuen, A. F. Masters, T. Maschmeyer*

Masked *N*-Heterocyclic Carbene-Catalyzed Alkylation of Phenols with Organic Carbonates

The **masked carbene**: Organic carbonates including dimethyl- and diethyl carbonate are safer, renewable, but less reactive alkylating agents than alkyl halides or sulfates. We unmask an *N*-heterocyclic carbene for the catalyzed alkylation of phenols, many of which can be derived from lignin, with these organic carbonates. The resulting aryl alkyl ethers are important for use in the flavor, fragrance, and pharmaceutical industries.



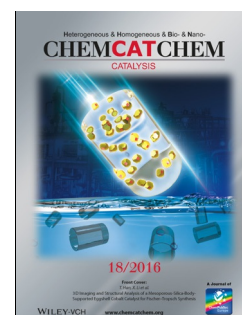
ChemCatChem
DOI: 10.1002/cctc.201600492

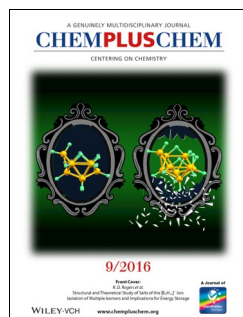
Fischer-Tropsch

M. Oschatz,* W. S. Lamme, J. Xie, A. I. Dugulan, K. P. de Jong*

Ordered Mesoporous Materials as Supports for Stable Iron Catalysts in the Fischer-Tropsch Synthesis of Lower Olefins

All about the support: Ordered mesoporous materials with comparable pore textures but different chemical properties are used as supports for Fe catalysts in the Fischer-Tropsch to olefins process under differential and industrially relevant conditions. The influence of the support on the catalytic properties is illuminated with this series of model catalysts.



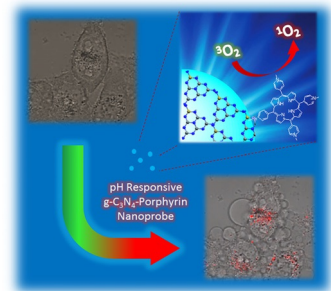


Photodynamic Therapy

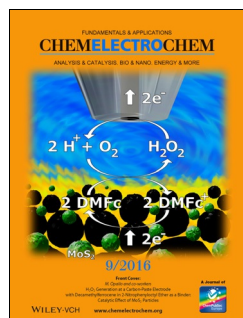
C.-F. Chan, Y. Zhou, H. Guo, J. Zhang,* L. Jiang, W. Chen,*
K.-K. Shiu, W.-K. Wong,* K.-L. Wong*

pH-Dependent Cancer-Directed Photodynamic Therapy by a
Water-Soluble Graphitic-Phase Carbon Nitride–Porphyrin Nanoprobe

To be taken lightly: A porphyrin-conjugated graphitic-phase carbon nitride ($g\text{-C}_3\text{N}_4$) nanoprobe was synthesized and it was found to generate singlet oxygen upon irradiation in a pH-dependent fashion in cancer cells. The synthesis, photophysical characterization and evaluation of the light-induced toxicity of this $g\text{-C}_3\text{N}_4$ –porphyrin conjugate in a range of cell types is reported.



ChemPlusChem
DOI: 10.1002/cplu.201600085

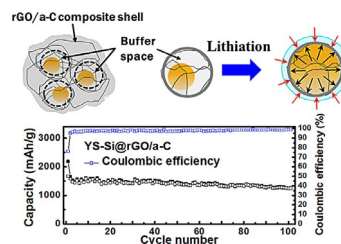


Amorphous Carbon Anodes

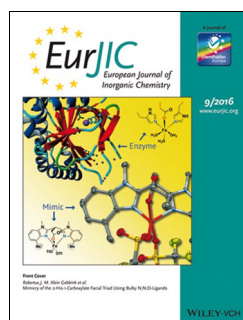
M.-H. Lin, S. Hy, C.-Y. Chen, J.-H. Cheng, J. Rick, N.-W. Pu, W.-N. Su,
Y.-C. Lee, B.-J. Hwang*

Resilient Yolk–Shell Silicon–Reduced Graphene Oxide/Amorphous
Carbon Anode Material from a Synergistic Dual-Coating Process for
Lithium-Ion Batteries

Battery eggs! An integrated process for the preparation of a dual coating for a composite Si anode is proposed. Reduced graphene oxide and amorphous carbon form a reinforced, conductive network. Significant enhancement of the cycling capability is achieved for the YS-Si@rGO/a-C composite.



ChemElectroChem
DOI: 10.1002/celec.201600254

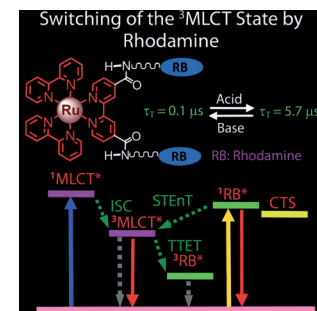


Upconversion

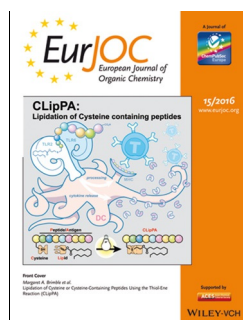
X. Cui, J. Zhao,* A. Karatay, H. G. Yaglioglu, M. Hayvali,* B. Küçüköz

A Ru(bipyridine)₃[PF₆]₂ Complex with a Rhodamine Unit – Synthesis,
Photophysical Properties, and Application in Acid-Controllable
Triplet–Triplet Annihilation Upconversion

A ruthenium(II) tris(bipyridine)–rhodamine triad is prepared, and the switching of the triplet excited state is studied through steady-state and time-resolved transient spectroscopy and electrochemistry. The switch mechanism is based on the acid-activated spiroactam→open-amide transformation of the rhodamine moiety.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201600755

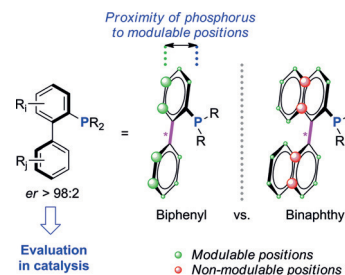


Chiral Phosphines

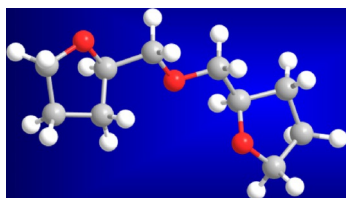
M. J. Fer, J. Cinquandre, J. Bortoluzzi, M. Chessé, F. R. Leroux,
A. Panossian*

When Chirality Meets “Buchwald-Type” Phosphines: Synthesis and
Evaluation in Frustrated Lewis Pair-, Lewis Base- and
Palladium-Promoted Asymmetric Catalysis

Axially chiral “Buchwald ligand”-like biphenylphosphines were prepared in highly enantioenriched form and were evaluated in phosphine-promoted organocatalysis and hydrosilylations catalyzed by Pd or by frustrated Lewis pairs (FLPs). The title phosphines are best suited for transition metal catalysis where asymmetric induction proved much higher.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201600727



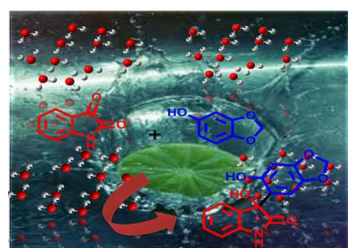
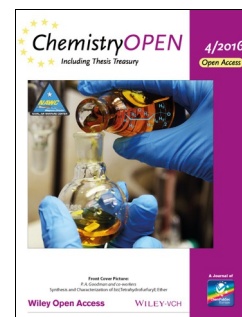
ChemistryOpen
DOI: 10.1002/open.201600013

Synthetic Methods

J. D. Stenger-Smith, L. Baldwin, A. Chafin, P. A. Goodman*

Synthesis and Characterization of bis(Tetrahydrofurfuryl) Ether

Finally! Many asymmetric alkyl tetrahydrofurfuryl ethers are available, and they have a wide range of potential applications. However, the preparation of the symmetric molecule, bis(tetrahydrofurfuryl) ether (BTHFE), has remained elusive, until now. High-purity BTHFE has been prepared and fully characterized for the first time. In addition, a preliminary investigation of BTHFE as a solvent in electrochemical supercapacitors is reported.



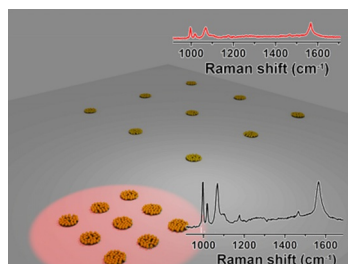
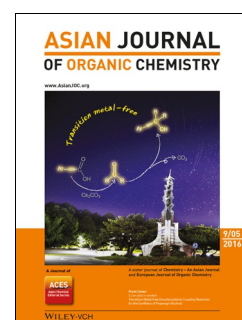
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201600346

Synthetic Methods

N. Kumar, J. Kaur, A. Kumar, N. Islam, S. S. Chimni*

Catalyst-Free Synthesis of 3-Aryl-3-hydroxy-2-oxindole Derivatives by Using Water as the Solvent: Experimental and DFT Studies

Cat on a hot isatin roof: A highly efficient catalyst-free Friedel–Crafts reaction between isatin and phenol by using water as the solvent provided 3-hydroxy-2-oxindole derivatives in excellent yields. DFT studies on various model systems suggested that the catalytic role of water involved activation of the reactant through hydrogen-bonding interactions.



ChemNanoMat
DOI: 10.1002/cnma.201600063

SERS Substrates

H. Liu, A. M. Schwenke, F. Kretschmer, S. Hoenpener,*
U. S. Schubert

Gold Nanoparticle Cluster Arrays for High-Performance SERS Substrates Fabricated by Electro-oxidative Lithography

A high-performance SERS substrate was fabricated by combining electro-oxidative lithography and self-assembly procedures. High SERS enhancement factors of 5×10^6 with good reproducibility were achieved by the interparticle and the intercluster plasmon coupling of the Au nanoparticle cluster arrays.



ChemViews magazine
DOI: 10.1002/chemv.201600069

Medicinal Chemistry

D. Peralta, S. Williams, G. Tarzia, A. Mai, R. Metternich

Medicinal Chemistry - Research and Publishing

ChemMedChem celebrates its 10th anniversary this year and takes the opportunity to look back at the journal's past and the development of medicinal chemistry. Editors David Peralta and Scott Williams interviewed former and present editorial board chairmen Giorgio Tarzia, Antonello Mai, and Rainer Metternich, who share their thoughts on research and publishing in the interdisciplinary field of medicinal chemistry.

