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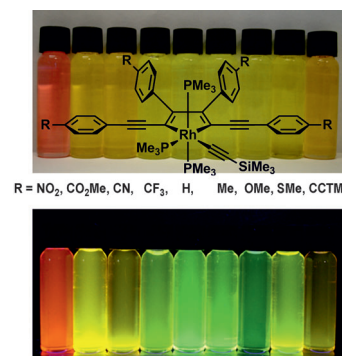


Fluorescence

A. Steffen, R. M. Ward, M. G. Tay, R. M. Edkins, F. Seeler, M. van Leeuwen, L.-O. Pålsson, A. Beeby, A. S. Batsanov, J. A. K. Howard, T. B. Marder*

Regiospecific Formation and Unusual Optical Properties of 2,5-Bis(arylethynyl)rhodacyclopentadienes: A New Class of Luminescent Organometallics

A single(t) light bulb! A series of 2,5-bis(arylethynyl)rhodacyclopentadienes has been prepared by a rare regiospecific reductive coupling of 1,4-aryl-1,3-butadiynes at a Rh^I precursor, giving the 2,5-bis(arylethynyl) isomer only (see figure). Despite the presence of the heavy rhodium atom, the metallacyclopentadienes exhibit highly unusual fluorescence with $\Phi_f = 1-18\%$, instead of phosphorescence, with an exceptionally slow triplet-state formation, occurring within nanoseconds.



Chem. Eur. J.
DOI: 10.1002/chem.201304068

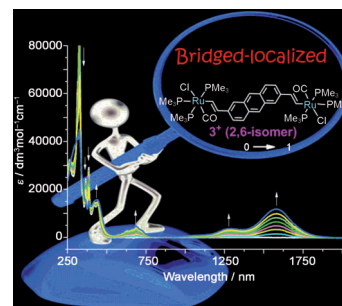


Bridging Ligands

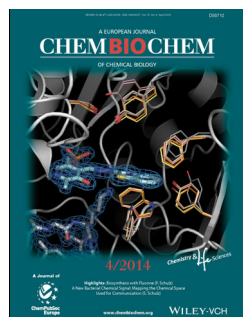
Y.-P. Ou, J. Zhang, M. Xu, J. Xia, F. Hartl, J. Yin, G.-A. Yu, S. H. Liu*

Bridge-Localized HOMO-Binding Character of Divinyanthracene-Bridged Dinuclear Ruthenium Carbonyl Complexes: Spectroscopic, Spectroelectrochemical, and Computational Studies

Spanning the gap: The electronic properties of four divinyanthracene-bridged diruthenium carbonyl complexes were investigated by IR and UV/Vis/near-IR spectroelectrochemistry (see picture). The results strongly support the redox noninnocent character of the bridging ligand. EPR spectroscopy of four singly oxidized complexes generated by a chemical oxidation method at room temperature reveals a largely ligand-centered spin.



Chem. Asian J.
DOI: 10.1002/asia.201301544

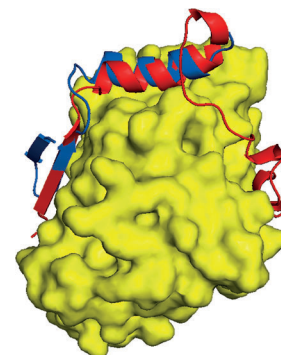


Protein-Protein Interactions

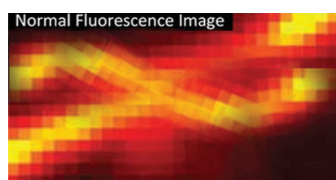
Y. Mesrouze, J. C. Hau, D. Erdmann, C. Zimmermann, P. Fontana, T. Schmelzle, P. Chène*

The Surprising Features of the TEAD4-Vgll1 Protein-Protein Interaction

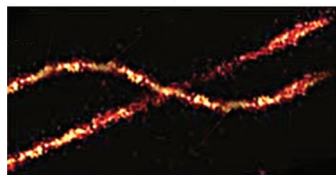
Shared interests: TEAD transcription factors are regulated by cofactors such as Vgll1, YAP, and TAZ. Vgll1 (blue) binds to TEAD at a similar site to YAP/TAZ (red) but lacks the Ω -loop that confers high affinity. Synthetic peptides mimicking Vgll1 also bind to TEAD with nanomolar affinity, and we reveal an unexpected difference between mouse and human Vgll1-derived peptides.



ChemBioChem
DOI: 10.1002/cbic.201300715



Super-resolution microscopy



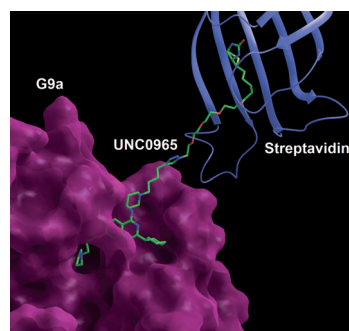
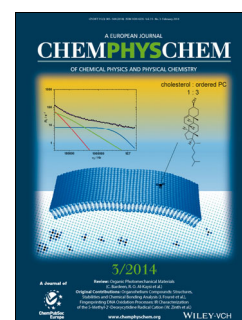
ChemPhysChem
DOI: 10.1002/cphc.201301041

Super-resolution Imaging

T. Tabarin, S. V. Pagoon, C. T. T. Bach, Y. Lu, G. M. O'Neill, J. J. Gooding, K. Gaus*

Insights into Adhesion Biology Using Single-Molecule Localization Microscopy

Lighting up focal adhesion organization: With recent advances in super-resolution microscopy, in particular with the emergence of single-molecule localization microscopy (SMLM), it has become possible to probe the spatial and temporal organization of focal adhesions at unprecedented resolution. Here, the applications of SMLM to focal adhesion structure and dynamics, as well as recent improvements in SMLM instrumentation and analysis are discussed.



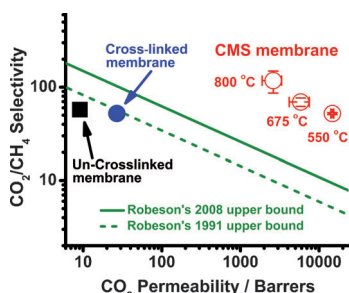
ChemMedChem
DOI: 10.1002/cmdc.201300450

Epigenetics

K. D. Konze, S. G. Pattenden, F. Liu, D. Barsyte-Lovejoy, F. Li, J. M. Simon, I. J. Davis, M. Vedadi, J. Jin*

A Chemical Tool for In Vitro and In Vivo Precipitation of Lysine Methyltransferase G9a

Pull it down! A biotinylated inhibitor of lysine methyltransferase G9a (UNC965, green) is conjugated to immobilized streptavidin (blue) for "chemiprecipitation" of G9a protein (purple) cross-linked to chromatin. This chemical inhibitor-based chromatin immunoprecipitation (chem-ChIP) method is useful for the determination of G9a occupancy on chromatin in an in vivo setting.



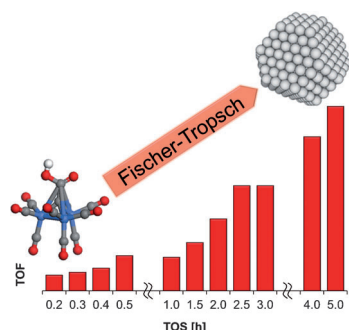
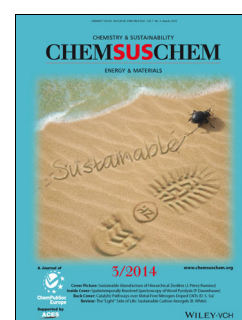
ChemSusChem
DOI: 10.1002/cssc.201300851

Membranes

W. Qiu, K. Zhang, F. S. Li, K. Zhang, W. J. Koros*

Gas Separation Performance of Carbon Molecular Sieve Membranes Based on 6FDA-mPDA/DABA (3:2) Polyimide

Permeating through: Polyimide-based uncross-linked, thermally cross-linked, and carbon molecular sieve (CMS) membranes are prepared. Variations in the *d* spacing, the formation of pore structures, and changes in the pore sizes of the CMS membranes are discussed in relation to pyrolysis protocols. Both the polymer and CMS membranes are very attractive in aggressive natural gas purification applications.



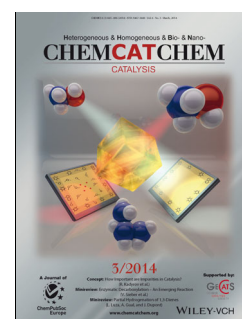
ChemCatChem
DOI: 10.1002/cctc.201300932

Fischer-Tropsch

N. Fischer, E. van Steen, M. Claeys*

Tri-cobalt Carboxylate as a Catalyst and Catalyst Precursor in the Fischer-Tropsch Synthesis

Size effect: A supported tri-cobalt carboxylate complex was chosen as a model catalyst to shed light on the structure sensitivity of the Fischer-Tropsch synthesis. In combination with previously published results on supported cobalt crystallites, the knowledge of the size effect of metallic cobalt on activity and selectivity could be extended to the sub-2 nm region. (TOS = time on stream, TOF = turnover frequency).



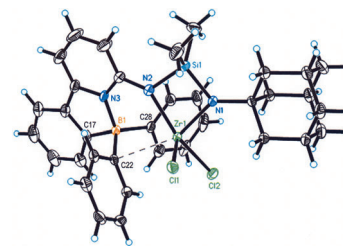


Polymerization

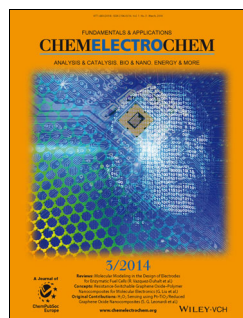
G. V. Narayana, G. Xu, D. Wang, W. Frey, M. R. Buchmeiser*

Access to Ultra-High-Molecular Weight Poly(ethylene) and Activity Boost in the Presence of Cyclopentene With Group 4 Bis-Amido Complexes

Flying high: Novel Group 4 bis-amido complexes bearing the 6-[2-(diethylboryl)phenyl]pyrid-2-ylamido motif (see figure) have been synthesized and used for the synthesis of ultra-high-molecular-weight poly(ethylene). Addition of cyclopentene (CPE) boosts polymerization activity. The role of CPE has been elucidated.



ChemPlusChem
DOI: 10.1002/cplu.201300378

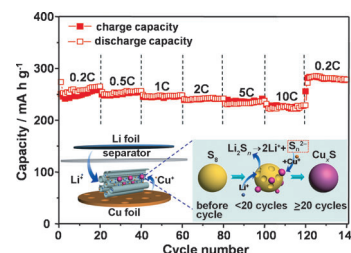


Batteries

F. Han, W.-C. Li, D. Li, A.-H. Lu*

In Situ Electrochemical Generation of Mesoporous $\text{Cu}_2\text{S}/\text{C}$ Composite for Enhanced Lithium Storage: Mechanism and Material Properties

Keeping an ion it: Dissolved polysulfide ions from sulfur are firmly anchored by the copper ions released from a copper foil for the in situ generation of tubular mesoporous carbon homogeneously encapsulating Cu_2S . The resulting $\text{Cu}_2\text{S}/\text{C}$ composite is used as the cathode in a lithium-ion battery and exhibits enhanced lithium storage with stable cycle performance and high rate capability.



ChemElectroChem
DOI: 10.1002/celc.201300182

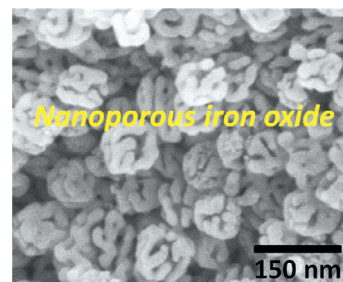


Nanoporous Iron Oxides

M. B. Zakaria, M. Hu, N. Hayashi, Y. Tsujimoto, S. Ishihara, M. Imura, N. Suzuki, Y.-Y. Huang, Y. Sakka, K. Ariga, K. C. -W. Wu, Y. Yamauchi*

Thermal Conversion of Hollow Prussian Blue Nanoparticles into Nanoporous Iron Oxides with Crystallized Hematite Phase

Hollow Prussian blue nanoparticles are calcined under various reaction conditions to prepare nanoporous Fe oxides with a crystallized $\alpha\text{-Fe}_2\text{O}_3$ (hematite) phase. The morphologies, surface areas, and degrees of crystallinity of the samples are varied by changing the number of hours of calcination. After calcination at 400 °C for 4 h, formation of a crystallized $\alpha\text{-Fe}_2\text{O}_3$ phase is confirmed.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201301307

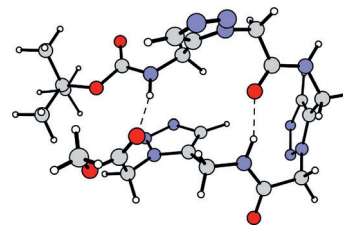


Non-natural Peptides

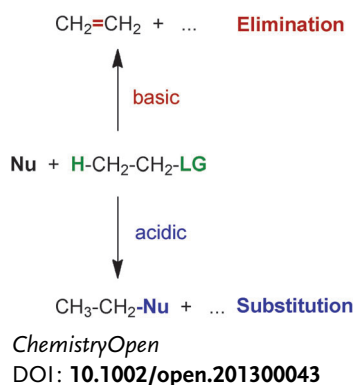
J. R. Johansson, E. Hermansson, B. Nordén, N. Kann, T. Beke-Somfai*

δ -Peptides from RuAAC-Derived 1,5-Disubstituted Triazole Units

A new set of non-natural peptides composed of 1,5-disubstituted 1,2,3-triazole amino acids is presented. These peptides benefit from: a) modular synthesis of the monomers, allowing variation of the side chains; b) increased solubility of the oligomers in water, irrespective of peptide length; c) flexibility of the backbone allowing these foldamers to adopt several conformations.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201400018

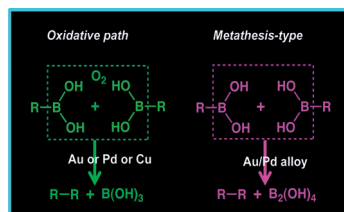
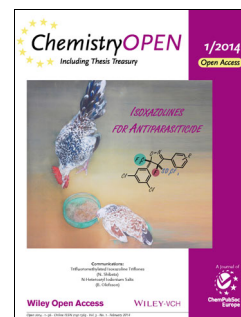


Computational Chemistry

L. P. Wolters, Y. Ren,* F. M. Bickelhaupt*

Understanding E2 versus S_N2 Competition under Acidic and Basic Conditions

Titration of the LUMO: The character of the LUMO of a substrate CH₃CH₂-LG (LG = leaving group) is found to be pH dependent: whereas it is C^β-H bonding under acidic conditions, it is C^β-H anti-bonding under basic conditions. This is an important factor behind the corresponding shift in reactivity towards an electron-donating agent Nu from substitution to elimination.

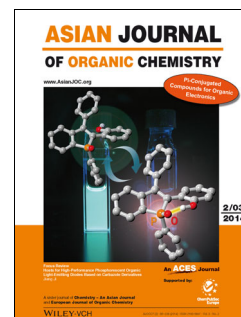


Organoboron Chemistry

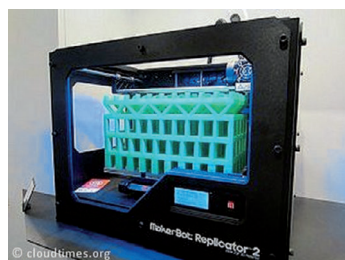
R. N. Dhital, H. Sakurai*

Oxidative Coupling of Organoboron Compounds

B on the oxidative path: The oxidative coupling of organoboron (C_{sp}²-B or C_{sp}³-B) nucleophiles is one of the most powerful protocols for the construction of carbon-carbon bonds in organic chemistry. This Focus Review summarizes both the seminal early work and recent developments in the field of transition-metal-catalyzed oxidative homocoupling reactions of organoboron nucleophiles along with the mechanistic details.



Asian J. Org. Chem.
DOI: 10.1002/ajoc.201300283



3D Printing

H. Dodziuk

What's New in 3D Printing?

With applications in diverse areas, such as the automobile industry, medicine, chemistry, and biology, 3D printing has the potential to greatly impact our lives. It is already used in chemistry to synthesize reactors; it is possible to design a reactor, print it, perform, and also monitor the reaction by using printed components. Future uses include the use of 3D-printed human organs for drug discovery.



ChemViews magazine
DOI: 10.1002/chemv.201300064