Multicatalysis

C. C. J. Loh, D. Enders*

Merging Organocatalysis and Gold Catalysis—A Critical Evaluation of the Underlying Concepts

A 'golden' handshake: While organocatalysis and gold catalysis have evolved as pivotal areas in modern organic synthesis, a novel niche area, namely, the merger of both catalytic systems in the same reaction flask has not been put under the spotlight until the last four years. Moreover, the synthetic utility of this young emerging concept has permeated major areas of organocatalysis and therefore a systematic minireview of this rapidly growing arena is presented.

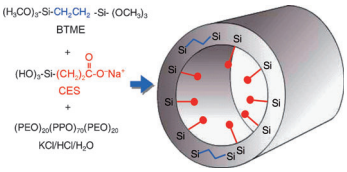
Chem. Eur. J.
DOI: **10.1002/chem.201200287**

Mesoporous Materials

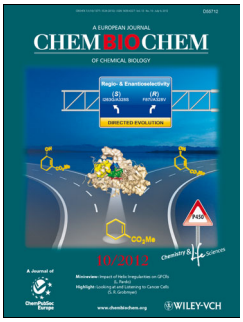
H.-M. Kao,* C.-H. Chung, D. Saikia, S.-H. Liao, P.-Y. Chao, Y.-H. Chen, K. C.-W. Wu*

Highly Carboxylic-Acid-Functionalized Ethane-Bridged Periodic Mesoporous Organosilicas: Synthesis, Characterization, and Adsorption Properties

A bridge to nowhere? Well-ordered ethane-bridged periodic mesoporous organosilicas that were functionalized with unprecedented loadings of pendant carboxylic acid groups (up to 80 mol% based on silica) were synthesized by the co-condensation of 1,4-bis(trimethoxysilyl)-ethane (BTME) and carboxyethylsilanetriol sodium salt (CES) with Pluronic P123 as a template and KCl as an additive under acidic conditions.



Chem. Asian J.
DOI: **10.1002/asia.201200244**

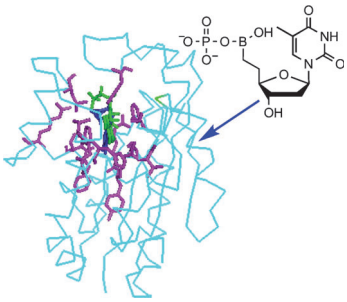


NMP Kinases

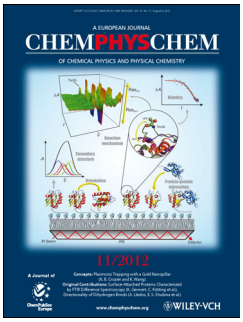
C. El Amri,* A. R. Martin, J.-J. Vasseur, M. Smietana*

Bononucleotides as Substrates/Binders for Human NMP Kinases: Enzymatic and Spectroscopic Evaluation

B–O–P it! The ability of a series of 5′-boronoisosteric NMP analogues to bind the NMP site of selected human NMP kinases was evaluated. A bononucleotide thymidine analogue was shown to behave as substrate of human TMP kinase: the first example of a boronic acid phosphorylated by a kinase and leading to an unstable and reversible B–O–P connection.



ChemBioChem
DOI: **10.1002/cbic.201200199**

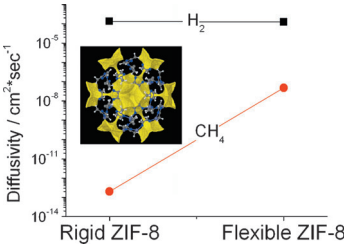


Metal-Organic Frameworks

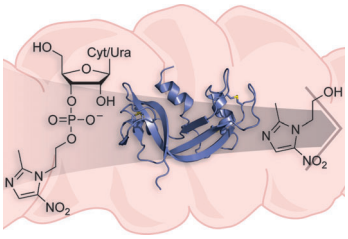
E. Haldoupis, T. Watanabe, S. Nair, D. S. Sholl*

Quantifying Large Effects of Framework Flexibility on Diffusion in MOFs: CH_4 and CO_2 in ZIF-8

Breathe in, breathe out: Efficient methods are introduced for assessing the role of framework flexibility on molecular diffusion in metal-organic frameworks (MOFs) that does not require defining a classical forcefield for the MOF. These methods combine ab initio MD of the MOF with classical MD simulation of the diffusing molecules. The effects of flexibility are shown to be large for CH_4, but not for CO_2, in ZIF-8 (see picture).



ChemPhysChem
DOI: **10.1002/cphc.201200529**



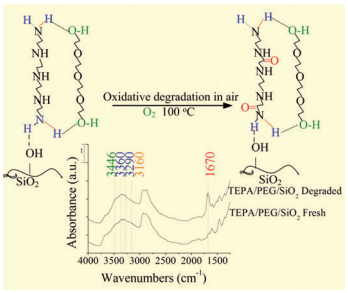
ChemMedChem
DOI: **10.1002/cmdc.201200243**

Prodrugs

M. J. Palte, A. K. F. Davis, N. A. McGrath, C. A. Spiegel, R. T. Raines*

Ribonucleoside 3′-Phosphates as Pro-Moieties for an Orally Administered Drug

A matter of timing: Ribonucleoside 3′-phosphates are promising pro-moieties for the timed release of orally available drugs. The pro-moiety enhances the aqueous solubility of a model drug, metronidazole, and masks its activity until release by human pancreatic ribonuclease. The rate of drug release can be tuned by changing the nucleobase.



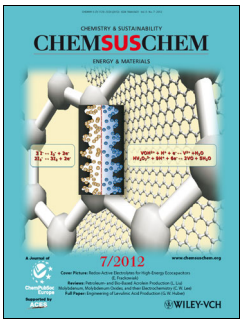
ChemSusChem
DOI: **10.1002/cssc.201100662**

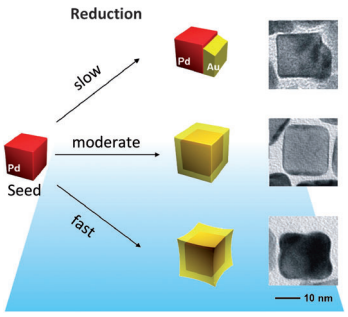
Carbon Dioxide Capture

C. S. Srikanth, S. S. C. Chuang*

Spectroscopic Investigation into Oxidative Degradation of Silica-Supported Amine Sorbents for CO_2 Capture

Supporting the mix: Oxidative degradation of tetraethylenepentamine (TEPA) occurs through oxidation of the methylene groups in TEPA to C=O, forming imides/amides or amines, or to O–N=O, forming nitrite species (see picture). The presence of polyethylene glycol (PEG) slowed down the oxidative degradation of TEPA by hydrogen bonding.





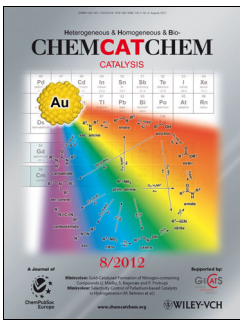
ChemCatChem
DOI: **10.1002/cctc.201200205**

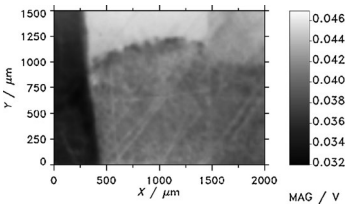
Gold

G. He, J. Zeng, M. Jin, H. Zhang, N. Lu, J. Wang, M. J. Kim, Y. Xia*

A Mechanistic Study on the Nucleation and Growth of Au on Pd Seeds with a Cubic or Octahedral Shape

Among the seeds of gold: The seed-mediated growth of Pd–Au bimetallic nanocrystals can be controlled by manipulating the reaction kinetics. As a result, a range of controlled morphologies can be obtained. For the first time, Pd–Au crystals with concave faces are produced. These are found to have a higher catalytic activity than their counterparts with flat faces or cubic Pd seeds.





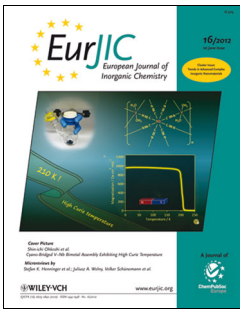
ChemPlusChem
DOI: **10.1002/cplu.201200091**

Corrosion Science

J. J. Santana, M. Pähler, W. Schuhmann,* R. M. Souto*

Investigation of Copper Corrosion Inhibition with Frequency-Dependent Alternating-Current Scanning Electrochemical Microscopy

Corrosion science: The inhibition of copper corrosion by the organic inhibitors benzotriazole (BTAH), 5-methyl-benzotriazole (MBTAH), 2-mercaptobenzimidazole (MBI), and ethyl xanthate (EX) was investigated by alternating-current scanning electrochemical microscopy (AC-SECM; see figure). These inhibitors form a thin passivating layer on the copper surface, which can be analysed by measuring the local electrochemical activity with AC-SECM.

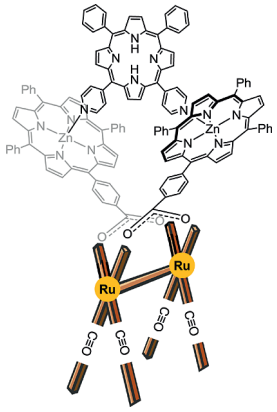


Supramolecular Chemistry

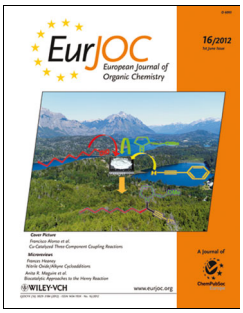
J. P. Johnpeter, J. Mohanraj, N. Armaroli,* B. Therrien*

Sawhorse-Type Tetracarbonyldiruthenium Tweezers

A series of bis(porphyrin) molecular tweezers built from sawhorse-type tetracarbonyldiruthenium moieties is presented. An excellent binding affinity between 5,10-bis(4-pyridyl)-15,20-diphenyl-21,23*H*-porphyrin and $[\{Ru_2(CO)_4(PPh_3)_2\}_2(O_2CC_{44}H_{26}N_4ZnCO_2)_2]$ was observed, which opens new possibilities for sawhorse-type diruthenium complexes.



Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201200318**

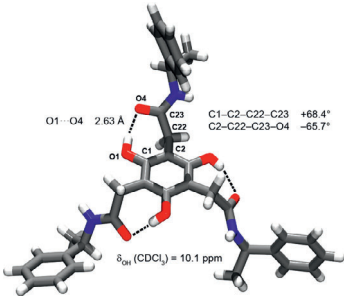


Intramolecular Hydrogen Bonding

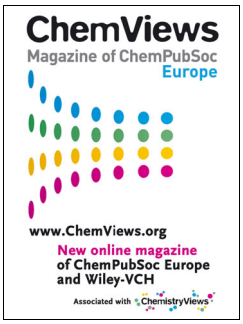
R. K. Castellano,* Y. Li, E. A. Homan, A. J. Lampkins, I. V. Marín, K. A. Abboud

Seven-Membered Intramolecular Hydrogen Bonding of Phenols: Database Analysis and Phloroglucinol Model Compounds

The structural and spectroscopic consequences of seven-membered intramolecular hydrogen bonding of phenols have been elucidated through crystallographic database searching and model compound investigation. The resulting H-bond geometries closely match peptide γ-turns, and the interactions are persistent in both solution and the solid state.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201200438**

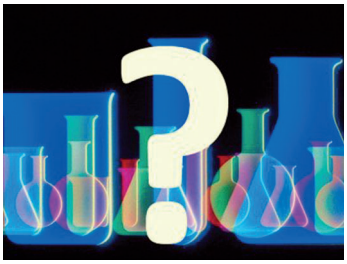


Amino Acid Separation

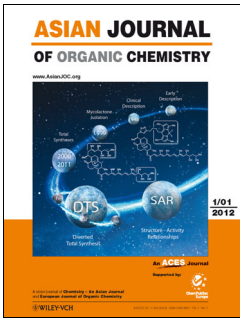
ChemViews

Guess the Chemist (7)

The main body of this person's work concerned the amino acids present in wool fiber proteins. Due to the similarity of their structures, this person had to devise a new method to separate the amino acids. They did this by exposing them to different solvents - a technique that is widely used today in chemistry, biochemistry, and medicine. Who are we looking for?



ChemViews magazine
DOI: **10.1002/chemv.201200072**

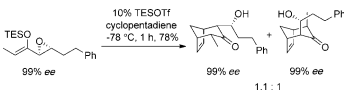


Cycloadditions

S. Lam, B. Lo, W.-T. Wong, P. Chiu*

Enantiomerically Enriched (4+3) Cycloadducts from Optically Active Epoxy Enolsilanes

Pure chemistry: Intermolecular (4+3) cycloadditions of optically active epoxy enolsilanes and dienes afford cycloadducts with near complete conservation of enantiomeric purity, in up to 99% *ee*. This reaction is a general method to obtain optically active bicyclic compounds for synthesis. TESOTf = triethylsilyl trifluoromethanesulfonate.



Asian J. Org. Chem.
DOI: **10.1002/ajoc.201200038**