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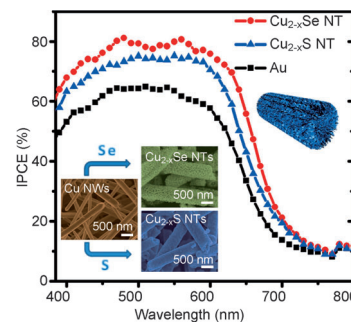


Nanotechnology

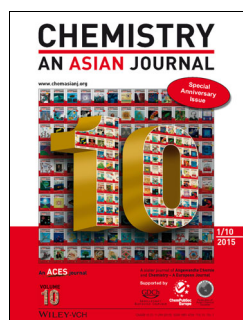
X. Q. Chen, Z. Li,* Y. Bai, Q. Sun, L. Z. Wang,* S. X. Dou

Room-Temperature Synthesis of Cu_{2-x}E ($\text{E} = \text{S}, \text{Se}$) Nanotubes with Hierarchical Architecture as High-Performance Counter Electrodes of Quantum-Dot-Sensitized Solar Cells

Cu_{2-x}E ($\text{E} = \text{S}, \text{Se}$) micro-/nanotubes (NTs) with a hierarchical architecture have been prepared by using copper nanowires (Cu NWs), stable sulfur and selenium powder as precursors at room temperature. The resultant nanotubes are fabricated into counter electrodes (CEs) of quantum-dot-sensitized solar cells (QDSSCs) to significantly boost the conversion efficiency of QDSSCs higher than that made from conventional noble metal CEs (see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201405354

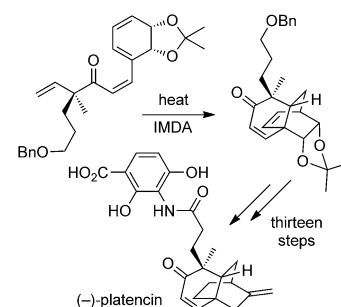


Total Synthesis

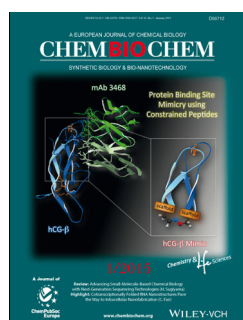
E. L. Chang, B. D. Schwartz, A. G. Draffan, M. G. Banwell,* A. C. Willis

A Chemoenzymatic and Fully Stereocontrolled Total Synthesis of the Antibacterial Natural Product (–)-Platencin

Just apply enzymes, metals, and heat: A reaction sequence that involves enzymatic dihydroxylation, auxiliary-controlled alkylation, directed metalation, then Stille cross-coupling protocols provides a tetraene that engages in a thermally induced intramolecular Diels–Alder cycloaddition reaction (see scheme). The resulting adduct can be elaborated to the potent antibacterial agent (–)-platencin.



Chem. Asian J.
DOI: 10.1002/asia.201403069

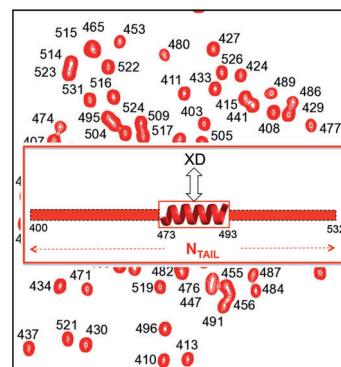


Intrinsically Disordered Proteins

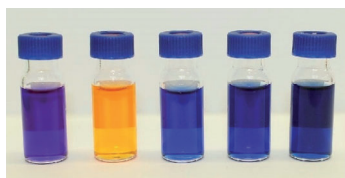
L. Baronti, J. Eroles, J. Habchi, I. C. Felli, R. Pierattelli,* S. Longhi*

Dynamics of the Intrinsically Disordered C-Terminal Domain of the Nipah Virus Nucleoprotein and Interaction with the X Domain of the Phosphoprotein as Unveiled by NMR Spectroscopy

The N_{TAIL} -XD complex—an antiviral drug target: We provide an NMR-based atomic-resolution description of the intrinsically disordered C-terminal domain of the Nipah virus nucleoprotein (N_{TAIL}), both in its isolated state and within the nucleocapsid (NC), and investigate its binding to the X domain (XD) of its phosphoprotein partner.



ChemBioChem
DOI: 10.1002/cbic.201402534



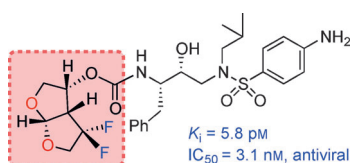
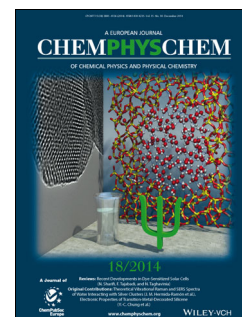
ChemPhysChem
DOI: 10.1002/cphc.201402568

Optoelectronics

Y. Fang, A. K. Pandey, D. M. Lyons, P. E. Shaw, S. E. Watkins, P. L. Burn,* S.-C. Lo, P. Meredith*

Tuning the Optoelectronic Properties of Nonfullerene Electron Acceptors

New acceptors: A series of small-molecule, nonfullerene electron acceptors containing the [(benzo[*c*][1,2,5]thiadiazol-4-yl)methylene]malononitrile unit is designed to possess different absorption profiles and optical gaps (see picture). When poly(3-*n*-hexylthiophene) (P3HT) is used as the standard electron donor, significant photocurrent generation in the near infrared region, with an external quantum yield reaching as high as 22 % at 700 nm and an onset > 800 nm are achieved.



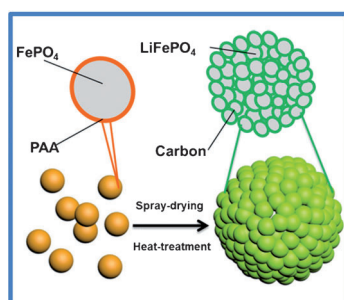
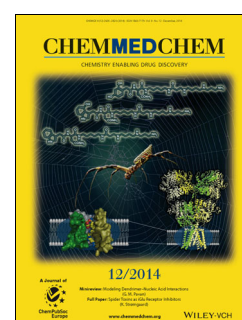
ChemMedChem
DOI: 10.1002/cmdc.201402358

Antiviral Agents

A. K. Ghosh,* S. Yashchuk, A. Mizuno, N. Chakraborty, J. Agniswamy, Y.-F. Wang, M. Aoki, P. M. S. Gomez, M. Amano, I. T. Weber, H. Mitsuya

Design of *gem*-Difluoro-*bis*-Tetrahydrofuran as P2 Ligand for HIV-1 Protease Inhibitors to Improve Brain Penetration: Synthesis, X-ray Studies, and Biological Evaluation

High-performance fluoros: We report the design, synthesis, biological, and X-ray structural studies of HIV-1 protease inhibitors (PIs) containing *gem*-difluoro-*bis*-THF as the P2 ligand. These PIs exhibited much better lipophilicity profiles and blood–brain barrier permeability than darunavir in an in vitro model. A high-resolution structure of a PI–HIV-1 protease complex shows ligand fluorine atoms involved in interesting interactions in the S2 subsite. The PIs also maintained excellent activity against multi-PI-resistant clinical HIV-1 variants.



ChemSusChem
DOI: 10.1002/cssc.201403060

Li-Ion batteries

D. Xu, Y.-B. He, X. Chu, Z. Ding, B. Li,* J. He, H. Du, X. Qin, F. Kang

Synthesis of Lithium Iron Phosphate/Carbon Microspheres by Using Polyacrylic Acid Coated Iron Phosphate Nanoparticles Derived from Iron(III) Acrylate

Under cover: Lithium iron phosphate/carbon (LiFePO₄/C) microspheres with high rate and cycling performances are synthesized from nanoparticles. A complete carbon coating on the surface of the primary nanoparticles, derived from carbonation of the in situ polymerized PAA layer, controls the grain growth effectively and greatly enhances the electronic and ionic conductivities of the LiFePO₄/C electrode.



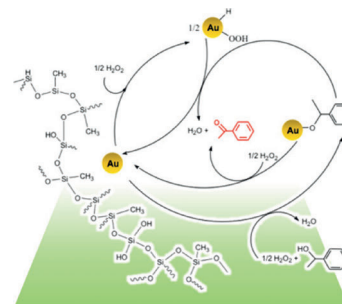


Carbon Dioxide Addition

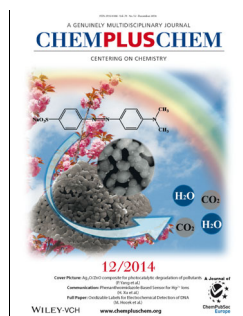
R. Ciriminna, A. Fidalgo, V. Pandarus, F. Béland, L. M. Ilharco,*
M. Pagliaro*

New Catalyst Series from the Sol–Gel-Entrapment of Gold Nanoparticles in Organically Modified Silica Matrices: Proof of Performance in a Model Oxidation Reaction

Time for gold catalysis to get real: The subtle encapsulation of gold nanoparticles in sol–gel organosilica opens the route to effective heterogeneous oxidation catalysts. The fine-tuneable hydrophilic and hydrophobic regions around the active metal site, the exceptionally high inner mesoporosity, and the enhanced chemical and physical stability of the organosilica matrix indicate forthcoming practical applications of redox catalysis based on gold.



ChemCatChem
DOI: 10.1002/cctc.201402861



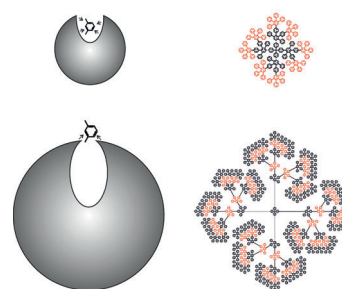
Dendrimers

M. Brutschy, R. Stangenberg, C. Beer, D. Lubczyk, M. Baumgarten,
K. Müllen,* S. R. Waldvogel*

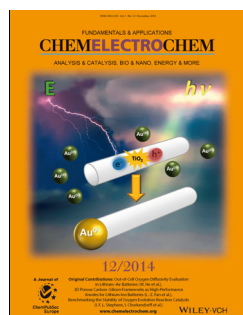
The Generation Effect: Cavity Accessibility in Dense-Shell Polyphenylene Dendrimers

It's all relative: The confined geometry of polyphenylene dendrimers leads to a clear generation effect because the size and access to the voids in these dendrimers is determined by their generation. Host–guest behavior to benzene, toluene, and xylenes (BTX) analytes was investigated by using quartz crystal microbalances.

Size does matter



ChemPlusChem
DOI: 10.1002/cplu.201402298

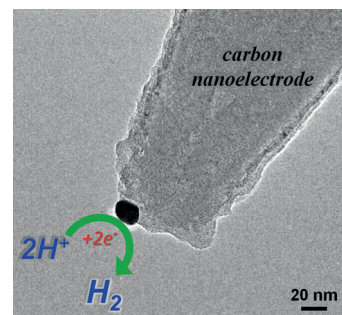


Nanoparticles

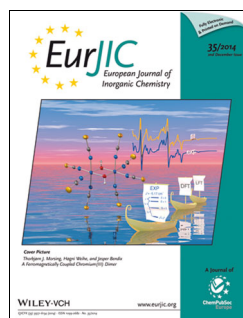
Y. Yu, Y. Gao, K. Hu, P.-Y. Blanchard, J.-M. Noël, T. Nareshkumar,
K. L. Phani, G. Friedman, Y. Gogotsi,* M. V. Mirkin*

Electrochemistry and Electrocatalysis at Single Gold Nanoparticles Attached to Carbon Nanoelectrodes

Only gold is good enough for HER: Extremely small carbon electrodes prepared by using chemical vapor deposition inside quartz nanopipettes enable the study of the hydrogen evolution reaction at single Au nanoparticles and atomic clusters.



ChemElectroChem
DOI: 10.1002/celec.201402312

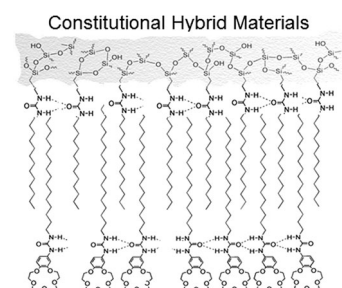


Supramolecular Chemistry

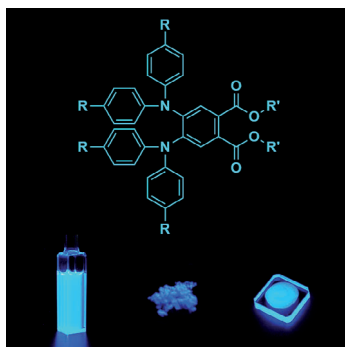
M. Barboiu*

Constitutional Hybrid Materials – Toward Selection of Functions

This review will focus on the implementation of constitutional dynamic chemistry (CDC) toward constitutional hybrid materials, emphasizing recent developments in biomimetic ion channels, membranes, and constitutional hybrid materials.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201402500



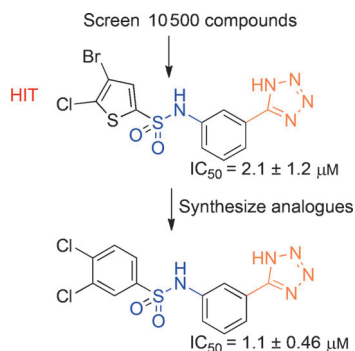
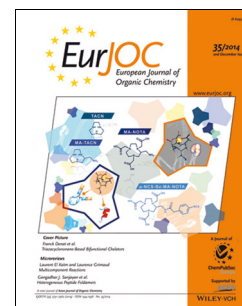
Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201403272

Fluorophores

M. Shimizu,* T. Tamagawa

Design and Characterization of 4,5-Bis(diarylamino)phthalic Acid Diesters as a New Class of Fluorophores Exhibiting Efficient Blue Emission in the Solid State

Diorgano 4,5-bis(diarylamino)phthalates exhibited blue fluorescence in solution and in the solid state with good efficiency. The emission spectra were finely shifted by changing the substituents in the *para* positions of each phenyl group of the diarylamino moieties as well as the carbonaceous moieties of the alkoxy carbonyl groups.



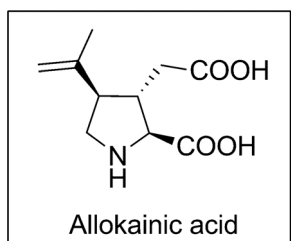
ChemistryOpen
DOI: 10.1002/open.201402027

Drug Design

S. R. Borhade, U. Rosenström, J. Sävmarker, T. Lundbäck, A. Jenmalm-Jensen, K. Sigmundsson, H. Axelsson, F. Svensson, V. Konda, C. Sköld, M. Larhed, M. Hallberg*

Inhibition of Insulin-Regulated Amino-peptidase (IRAP) by Arylsulfonamides

Hit optimization! The inhibition of insulin-regulated aminopeptidase (IRAP) by angiotensin IV is known to improve memory and learning in rats. Screening 10500 low-molecular-weight compounds as IRAP inhibitors provided an arylsulfonamide as a hit. Analogues of this hit were synthesized, and their inhibitory capacity and structure–activity relationships were determined. With further optimization, these new inhibitors can become potential cognitive enhancers.



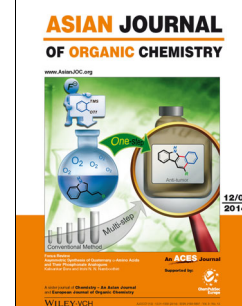
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201402250

Total Synthesis

C. Bhat,* A. Kumar*

The Synthesis of Allokainic Acid: A Review

Kain it: Allokainic acid, isolated along with kainic acid, attracted wide synthetic interest due its interesting structure and potent medicinal applications. The field of neuroscience is fascinated by the potential activity of kainoids and numerous syntheses have been reported worldwide. The global scarcity, significant commercial demand, lengthy synthetic routes, and high cost of kainoids kept the scientists alert in producing easier and shorter routes for the synthesis of these molecules.



ChemViews magazine
DOI: 10.1002/chemv.201400131

Medicinal Chemistry

Marisa Spiniello

Treatment of Caries with Silver Nanocomposites

In “Behind the Science”, *ChemViews Magazine* gives readers a peek behind the scenes of a research article. This time, Marisa Spiniello, *ChemPlusChem*, talks to Carla Meledandri about her article on treating tooth decay with silver nanoparticles.

