

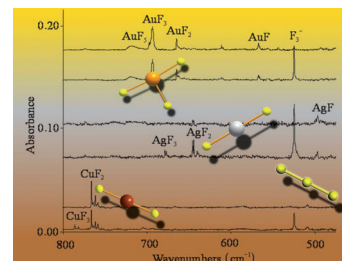


Metal Fluorides

X. Wang, L. Andrews,* F. Brosi, S. Riedel*

Matrix Infrared Spectroscopy and Quantum-Chemical Calculations for the Coinage-Metal Fluorides: Comparisons of Ar–AuF, Ne–AuF, and Molecules MF₂ and MF₃

To coin a phrase: Experiments in solid neon and argon under cryogenic conditions led to the formation and characterization of MF₂ and MF₃ molecules (M = Au, Ag, Cu), NgAuF complexes (Ng = Ne, Ar), and AuF₅ (see figure), whilst also providing evidence for the formation of Au₂F₆. IR spectra were in excellent agreement with state-of-the-art quantum-chemical calculations.



Chem. Eur. J.

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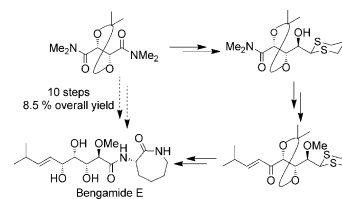


Total Synthesis

P. K. Metri, R. Schiess, K. R. Prasad*

Enantiospecific Total Synthesis of (–)-Bengamide E

Concise approach with control: A total synthesis of the polyhydroxy caprolactam amide natural product bengamide E from tartaric acid has been described. The key reactions include the elaboration of the bis(dimethylamide) unit of tartaric acid and involves 1,3-dithiane addition and a Horner–Wadsworth–Emmons olefination.



Chem. Asian J.

DOI: 10.1002/asia.201200999

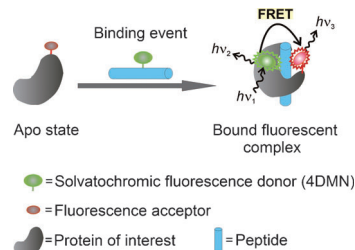


Protein Interactions

E. Socher, B. Imperiali*

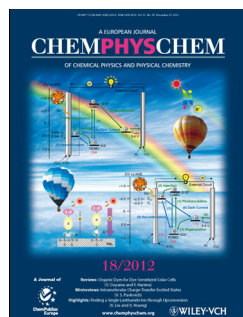
FRET-Capture: A Sensitive Method for the Detection of Dynamic Protein Interactions

Caught in the act: The FRET-Capture approach exploits a bound solvatochromic fluorophore, 4-*N,N*-dimethylamino-1,8-naphthalimide, as a FRET donor in both inter- and intramolecular energy transfer. A unique feature of this method is the additional level of signal selectivity as the FRET signal is only turned on when the donor is specifically bound to the protein of interest, eliminating high background and false positive signals.



ChemBioChem

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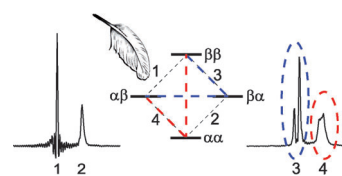


NMR Spectroscopy

T. F. Segawa,* D. Carnevale, G. Bodenhausen

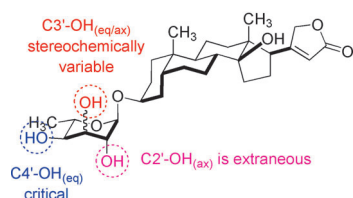
How to Tickle Spins with a Fourier Transform NMR Spectrometer

Tickling transitions: When a nuclear magnetic resonance is irradiated with a weak radio-frequency amplitude $\omega_2/(2\pi) \leq J$, all connected transitions split. The type of the connectivity can be identified by the line broadening (see picture).



ChemPhysChem

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ChemMedChem

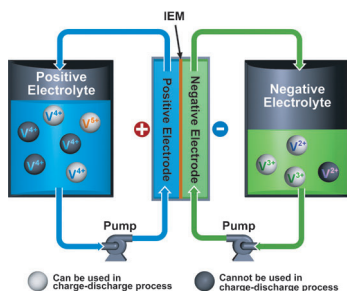
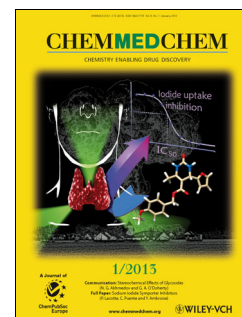
DOI: 10.1002/cmdc.201200465

Carbohydrate Chemistry

J. W. Hinds, S. B. McKenna, E. U. Sharif, H.-Y. L. Wang, N. G. Akhmedov,* G. A. O'Doherty*

C3'/C4'-Stereochemical Effects of Digitoxigenin α -L-/ α -D-Glycoside in Cancer Cytotoxicity

Sweet'n low in stereo: A Wharton reaction was employed along with a diastereoselective palladium-catalyzed glycosylation and other post-glycosylation transformations to synthesize digitoxin analogues. Cytotoxic evaluation against a panel of cancer cell lines uncovered the stereochemical and substitutional limits of the C3'/C4'-hydroxy functionality in digitoxin monosaccharide.



ChemSusChem

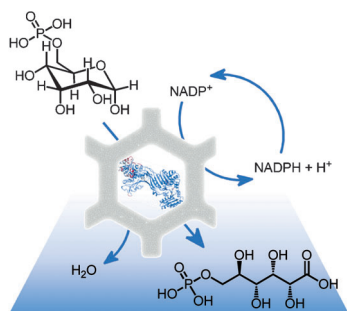
DOI: 10.1002/cssc.201200730

Vanadium Redox Flow Batteries

Q. Luo, L. Li, W. Wang,* Z. Nie, X. Wei, B. Li, B. Chen, Z. Yang, V. Sprenkle

Capacity Decay and Remediation of Nafion-based All-Vanadium Redox Flow Batteries

All-vanadium redox flow batteries are considered to be one of the most promising technologies for large-scale stationary energy storage. Nevertheless, constant capacity decay severely jeopardizes their long-term stability. The capacity-decay mechanism of vanadium flow batteries using a Nafion membrane is investigated and elucidated. Capacity-restoration methods are proposed and experimentally validated.



ChemCatChem

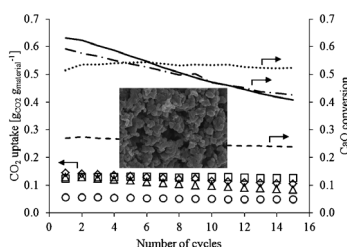
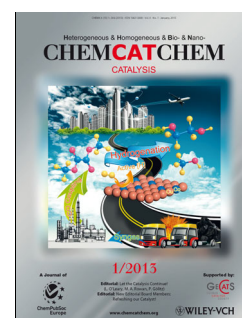
DOI: 10.1002/cctc.201200416

Enzyme Immobilization

D. I. Fried, K. Tropp, M. Fröba*

On the Way to Cofactor Regeneration in Nanopores: Tailoring Porous Materials for Glucose-6-phosphate Dehydrogenase Immobilization

Biocatalysis in tailored nanoparticles: Immobilization of glucose-6-phosphate dehydrogenase (G6PDH) from *Leuconostoc mesenteroides* in mesoporous cellular siliceous foams and hierarchical porous carbons increases the protein stability dramatically. Interactions between G6PDH and the surface of the porous supports are tailored by modification of the support surfaces. This nanobiocatalyst is used to generate the cofactor NADPH in the conversion of glucose-6-phosphate to 6-phosphogluconate.



ChemPlusChem

DOI: 10.1002/cplu.201200232

Sorbents for CO₂ Capture

A. M. Kierzkowska, C. R. Müller*

Sol-Gel-Derived, Calcium-Based, Copper-Functionalised CO₂ Sorbents for an Integrated Chemical Looping Combustion–Calcium Looping CO₂ Capture Process

In the loop: Combining chemical looping combustion and the calcium looping CO₂ capture scheme allows use of the exothermic reduction reaction of CuO to provide the heat required to calcine CaCO₃. A sol-gel technique has been developed to synthesize new materials containing both CuO and CaO. The addition of Mg²⁺ stabilizes the cyclic CO₂ uptake and minimizes carbon formation (see figure).





Heterocyclic Sandwich Complexes

M. Maschke, M. Lieb, N. Metzler-Nolte*

Biologically Active Trifluoromethyl-Substituted Metallocene Triazoles: Characterization, Electrochemistry, Lipophilicity, and Cytotoxicity

A series of new trifluoromethylated metallocene triazoles was synthesized using "click" chemistry (copper-catalyzed azide-alkyne cycloaddition). The new triazoles display suitable lipophilic character and exert promising antiproliferative activities against a range of cancer cell lines.



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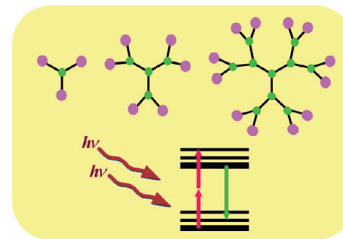


Two-Photon Chromophores

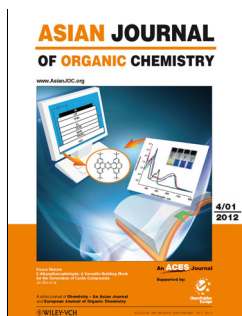
T.-C. Lin,* C.-Y. Liu, B.-R. Huang, J.-H. Lin, Y.-K. Shen, C.-Y. Wu

Synthesis and Two-Photon Absorption Properties of Star-Shaped Chromophores Derived from Functionalized Fluorene Units

A set of star-shaped chromophores containing functionalized fluorene units were synthesized and shown to possess ascending two-photon absorptivities with the growth of their π systems. The observed effective optical power-limiting and stabilization behaviors in the nanosecond time domain indicate that these dye molecules have potential as broadband and quick-responding optical limiters.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201201236

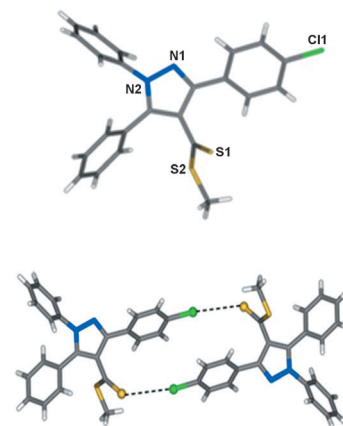


Pyrazoles

A. T. Khan,* A. Ghosh, S. Basha R, M. H. Mir

Synthesis of Trisubstituted 1*H*-Pyrazole-4-carbodithioates in a One-Pot Three-Component Reaction Catalyzed by Ferric Sulfate

An efficient synthesis of substituted-1*H*-pyrazole-4-carbodithioates is accomplished through the one-pot reaction of phenyl hydrazine, aldehydes, and alkyl-3-oxo-3-arylpropanedithioates by using ferric sulfate ($\text{Fe}_2(\text{SO}_4)_3 \cdot x\text{H}_2\text{O}$) at 80 °C. Mild reaction conditions, good yields, and shorter reaction times are some of the salient features of the present protocol. One of the products has a Cl...S interaction in its crystal structure.



Asian J. Org. Chem.
DOI: 10.1002/ajoc.201200148



Yeast Research

G. Cicchetti, V. Köster

H. Feldmann on the Oldest Domesticated Organism: Yeast

Yeast is a single-celled, eukaryotic microorganism best known for its use in baking and fermentation. It is one of the best characterized organisms in the world and used as a model organism in molecular cell biology. Horst Feldmann, Ludwig-Maximilians University Munich, coordinator of the EU project "Sequencing and Analysis of the Yeast Genome", talks about the past, present, and future of yeast research.



ChemViews magazine
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