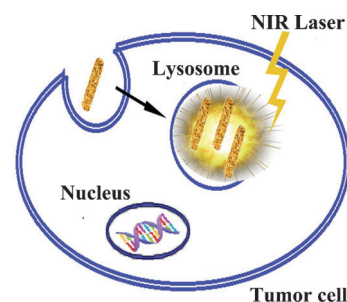


Nanomedicine

L. Meng, L. Niu, L. Li, Q. Lu,* Z. Fei, P. J. Dyson*

Gold Nanoparticles Grown on Ionic Liquid-Functionalized Single-Walled Carbon Nanotubes: New Materials for Photothermal Therapy

Growing for gold: Gold nanoparticles were grown on single-walled carbon nanotubes (SWNTs) coated with a thiol-functionalized ionic liquid glue resulting in the formation of core-shell nanohybrid materials (denoted as SWNT-IL-Au). The SWNT-IL-Au nanohybrids are bio-compatible and have an enhanced near infrared absorption that is effectively transferred into heat to cause localized hyperthermia, resulting in rapid cell death (see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201201811

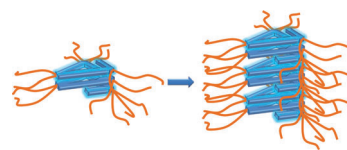


Foldamers

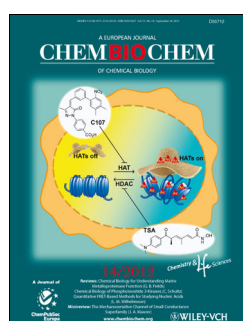
N. Zhu, Q. Yan, Z. Luo, Y. Zhai, D. Zhao*

Helical Folding of Conjugated Oligo(phenyleneethynylene): Chain-Length Dependence, Solvent Effects, and Intermolecular Assembly

In the fold: As a representative folding system featuring a conjugated backbone, a series of monodispersed (*o*-phenyleneethynylene)-*alt*-(*p*-phenyleneethynylene) oligomers were studied (see figure). Various parameters that influence the folding stability, such as the oligomer chain length and solvent effect, were systematically examined.



Chem. Asian J.
DOI: 10.1002/asia.201200430

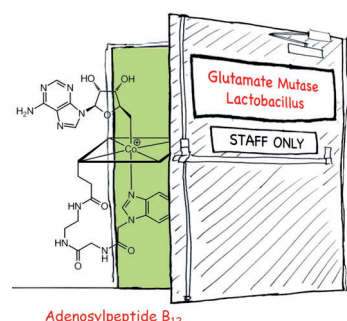


Vitamin B12

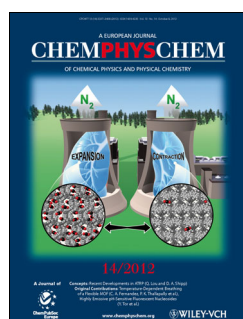
K. Zhou, R. M. Oetterli, H. Brandl, F. E. Lyatuu, W. Buckel, F. Zelder*

Chemistry and Bioactivity of an Artificial Adenosylpeptide B₁₂ Cofactor

Artificial influence: We describe a semi-artificial adenosylpeptide B₁₂ that behaves as a cofactor in B₁₂-dependent enzymatic reactions and demonstrate that the peptide backbone influences its chemical properties and modulates its bioactivity in vitro and in vivo. Inhibition of the growth of *L. delbrueckii* is demonstrated, thus providing a potentially powerful approach for the development of antibacterial and anti-proliferative compounds.



ChemBioChem
DOI: 10.1002/cbic.201200429

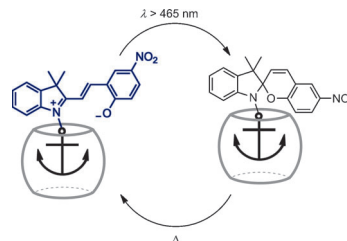


Supramolecular Chemistry

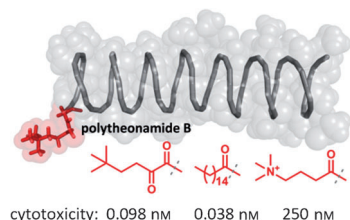
J. R. Nilsson, C. Parente Carvalho, S. M. Li, J. P. Da Silva, J. Andréasson,* U. Pischel*

Switching Properties of a Spiropyran-Cucurbit[7]uril Supramolecular Assembly: Usefulness of the Anchor Approach

All change! The switching properties of anchor-substituted photo- and acidochromic spiropyrans in the presence of cucurbit[7]uril were investigated. Encapsulation of the anchor resulted in accelerated ring opening to the merocyanine form, which was stable in the presence of the host and could be efficiently photoswitched back to the spiro form with high fatigue resistance (see picture).



ChemPhysChem
DOI: 10.1002/cphc.201200468



ChemMedChem

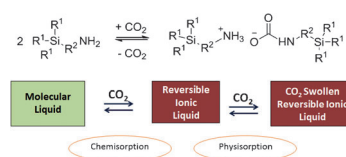
DOI: 10.1002/cmdc.201200142

Natural Products

N. Shinohara, H. Itoh, S. Matsuoka, M. Inoue*

Selective Modification of the N-Terminal Structure of Polytheonamide B Significantly Changes its Cytotoxicity and Activity as an Ion Channel

Chemical point mutation: Polytheonamide B is a naturally occurring polypeptide containing 48 amino acids. It both displays potent cytotoxicity and acts as a monovalent cation channel in vitro. Chemoselective methods to modify the 44th, N-, and C-terminal residues of the natural product have been developed, and evaluation of the resultant derivatives suggests that the intrinsic activities of the peptide can only be altered by switching its N-terminal substitution.

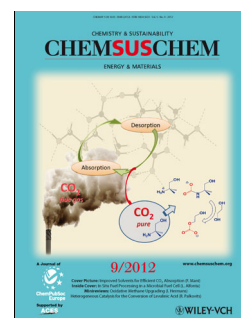


Carbon Dioxide Capture

A. L. Rohan, J. R. Switzer, K. M. Flack, R. J. Hart, S. Sivaswamy, E. J. Biddinger, M. Talreja, M. Verma, S. Faltermeier, P. T. Nielsen, P. Pollet, G. F. Schuette, C. A. Eckert, C. L. Liotta*

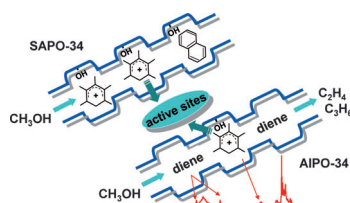
The Synthesis and the Chemical and Physical Properties of Non-Aqueous Silylamine Solvents for Carbon Dioxide Capture

Silylamine molecular liquids reversibly react with CO₂ to form the corresponding ammonium carbamates (reversible ionic liquids). The molecular liquid is easily regenerated quantitatively from the reversible ionic liquid upon heating. The ability to tune bulk properties by making structural changes presents an opportunity for optimization by developing a system that balances conversion with viscosity and minimizes the energy required for regeneration.



ChemSusChem

DOI: 10.1002/cssc.201200393

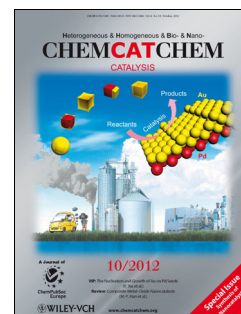


Methanol-to-Olefin Conversion

W. Dai, X. Wang, G. Wu, L. Li,* N. Guan, M. Hunger*

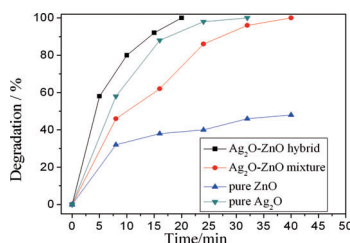
Methanol-to-Olefin Conversion Catalyzed by Low-Silica AlPO-34 with Traces of Brønsted Acid Sites: Combined Catalytic and Spectroscopic Investigations

Less silicon, more action: Chabazite-type silicoaluminophosphate with low molar silicon content is a methanol-to-olefin conversion catalyst with high activity and prolonged lifetime. Traces of Brønsted acid sites and benzene-based carbenium ions are responsible for this interesting catalytic property.



ChemCatChem

DOI: 10.1002/cctc.201100503

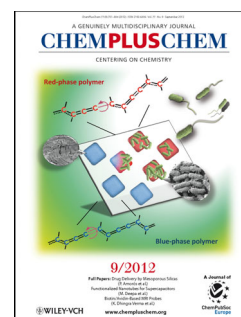


Photocatalysis

M. Wu, J.-M. Yan,* M. Zhao, Q. Jiang*

Facile Synthesis of an Ag₂O-ZnO Nanohybrid and Its High Photocatalytic Activity

Be active! A facile, basic coprecipitation-assisted hydrothermal strategy has been employed to prepare an Ag₂O-ZnO (0.3:0.7) nanohybrid. The nanohybrid shows excellent photocatalytic properties for degradation of rhodamine B, even under visible light irradiation. This effect is much better than pure or a physical mixture of Ag₂O and ZnO (see graph).



ChemPlusChem

DOI: 10.1002/cplu.201200159

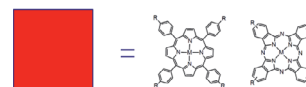


Hybrid Materials

J. Demel, K. Lang*

Layered Hydroxide–Porphyrin Hybrid Materials: Synthesis, Structure, and Properties

We provide a comprehensive overview of the synthesis and structural alignment of bulky porphyrin molecules in the interlayer space of layered hydroxide–porphyrin hybrids. Emphasis is placed on the spectral and photophysical properties of intercalated porphyrins and phthalocyanines for photobactericidal purposes, catalysis, and sensing.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201200400

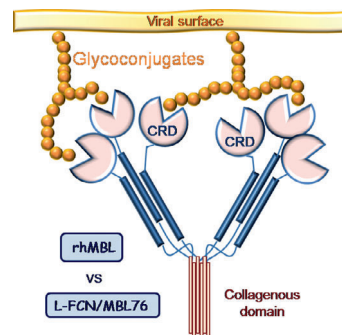


Lectin–Ligand Interactions

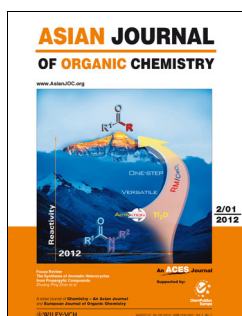
R. Marchetti, R. Lanzetta, I. C. Michelow, A. Molinaro, A. Silipo*

Structural Study of Binding of α -Mannosides to Mannan-Binding Lectins

We have used an NMR-based approach to study, at atomic level, the mannose-binding activities both of recombinant human MBL (rhMBL) and of the chimeric molecule L-FCN/MBL76, in order to find new therapeutic strategies against *N*-glycosylated viruses.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201200697

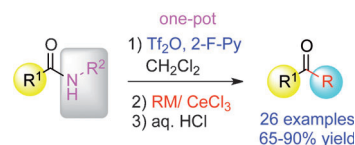


Deaminative Alkylation

K.-J. Xiao, A.-E. Wang, Y.-H. Huang, P.-Q. Huang*

Versatile and Direct Transformation of Secondary Amides into Ketones by Deaminative Alkylation with Organocerium Reagents

Cerium makes it simple: A simple, efficient, and versatile C–C bond-forming method for the direct transformation of secondary amides into ketones by Ti_2O_3 -mediated deaminative alkylation with organocerium reagents is described. A wide variety of ketones, including α,β -unsaturated ketones, β -chloroenones, diaryl ketones, and ynones were synthesized by using this method.



Asian J. Org. Chem.
DOI: 10.1002/ajoc.201200066



Microbes and Bioenergy

Gregor Cicchetti and Vera Koester

Are Microbes the Future of Bioenergy? – Interview with Gerhard Gottschalk

The recent Leopoldina report on the use of bioenergy was critical of the current alternative fuels policies of the EU and national governments. It generated a lot of interest among the press. Professor Gerhard Gottschalk, Germany, a leader in the field of microbiology, talks about the report and his views on bacteria's role in the future of bioenergy.



ChemViews magazine
DOI: 10.1002/chemv.201200098