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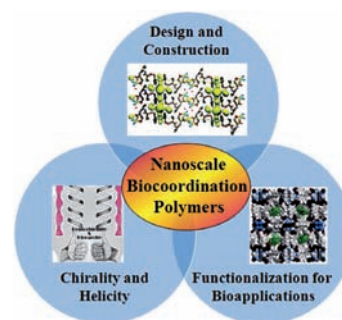


Biocoordination Polymers

Y. Liu, Z. Tang*

Nanoscale Biocoordination Polymers: Novel Materials from an Old Topic

Nature bestows many gifts upon us, among which countless biomolecules have the ability to bridge metal ions and exert important functions in biology. By taking advantage of specific interactions between metal ions and biomolecules, this article highlights a novel concept for the construction of nanoscale biocoordination polymers through replacement of synthetic organic molecules with natural biomolecules as building blocks. The most recent advances are summarized and future challenges are discussed.



Chem. Eur. J.
DOI: 10.1002/chem.201101520

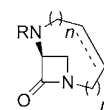


Antibiotics

A. Sliwa, G. Dive,* J. Marchand-Brynaert*

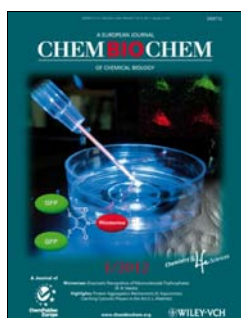
12- to 22-Membered Bridged β -Lactams as Potential Penicillin-Binding Protein Inhibitors

Bridging inhibition: A series of 12- to 22-membered bicyclic bridged β -lactams were synthesized with the aim of developing new inhibitors of penicillin-binding proteins and feature a planar amide function and no carboxy group (see picture; Boc = *tert*-butoxycarbonyl).



R = Boc, $n = 3, 4, 5, 6, 8$
R = PhOCH₂CO, $n = 3, 4, 5$

Chem. Asian J.
DOI: 10.1002/asia.201100732

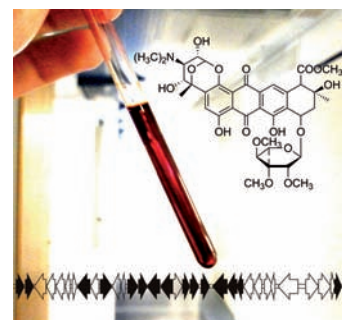


Glycosylation

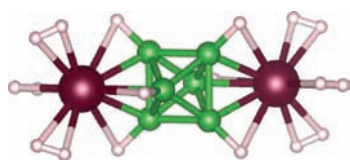
V. Siitonen, M. Claesson, P. Patrikainen, M. Aromaa, P. Mäntsälä, G. Schneider, M. Metsä-Ketelä*

Identification of Late-Stage Glycosylation Steps in the Biosynthetic Pathway of the Anthracycline Nogalamycin

Topoisomerase inhibition: Nogalamycin is an anthracycline antibiotic with an unusual structure and significant cytotoxicity. In this work the nogalamycin biosynthetic gene cluster has been expressed in a heterologous host, late-stage tailoring steps of nogalamycin biosynthesis have been investigated and new compounds have been isolated.



ChemBioChem
DOI: 10.1002/cbic.201100637



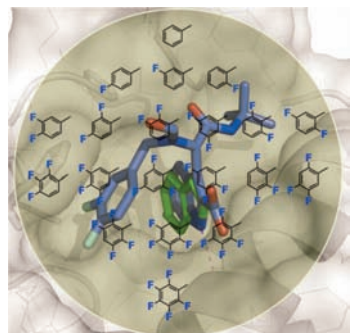
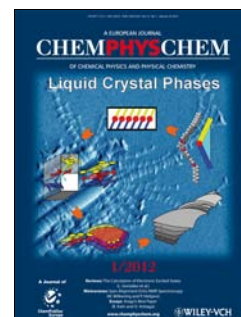
ChemPhysChem
DOI: 10.1002/cphc.201100585

Hydrogen Storage

B. Pathak, K. Pradhan, T. Hussain, R. Ahuja, P. Jena*

Functionalized Boranes for Hydrogen Storage

Li- and Mg-functionalized boranes (see picture) are promising materials for hydrogen storage. They can store up to 12 wt% hydrogen with a desorption energy of 0.07 eV–0.27 eV per H₂ molecule.



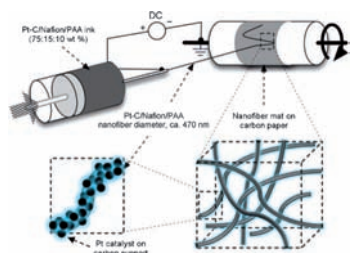
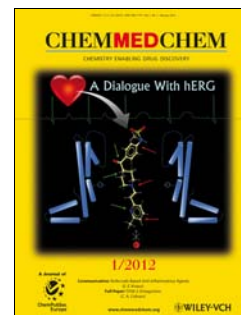
ChemMedChem
DOI: 10.1002/cmdc.201100428

Protein–Protein Interactions

Y. Huang, S. Wolf, D. Koes, G. M. Popowicz, C. J. Camacho, T. A. Holak, A. Dömling*

Exhaustive Fluorine Scanning toward Potent p53–Mdm2 Antagonists

Fluorine dance: We discovered potent p53–Mdm2 antagonists by systematically varying the fluorine substitution pattern around a benzyl group that undergoes stacking interactions with His 96 of Mdm2. The potency of the optimized enantiomer (**S**)-**7e** is > 50-fold better than the worst compound of the series. All compounds were efficiently synthesized by Ugi multicomponent reaction chemistry.



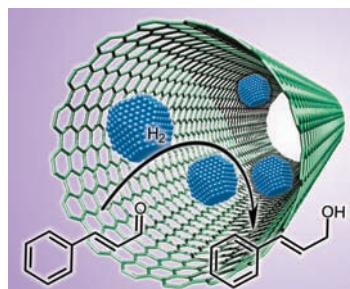
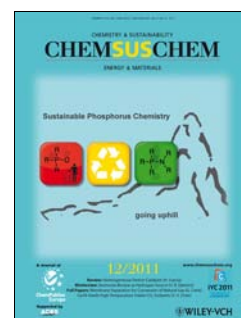
ChemSusChem
DOI: 10.1002/cssc.201100245

Fuel Cells

W. Zhang, P. N. Pintauro*

High-Performance Nanofiber Fuel Cell Electrodes

A nanofiber electrode is fabricated by electrospinning an ink composed of ;Pt/C catalyst particles in a solution of Nafion and poly-(acrylic acid). Exceptionally high power densities and platinum mass activity are achieved when using the mat as cathode in H₂/air and H₂/O₂ fuel cell membrane–electrode assemblies. The nanofiber cathode also exhibits outstanding stability in accelerated durability tests.



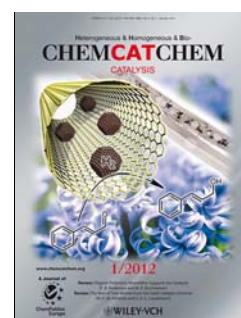
ChemCatChem
DOI: 10.1002/cctc.201100244

Hydrogenation

E. Castillejos, M. Jahjah, I. Favier, A. Orejón, C. Pradel, E. Teuma, A. M. Masdeu-Bultó, P. Serp,* M. Gómez*

Synthesis of Platinum–Ruthenium Nanoparticles under Supercritical CO₂ and their Confinement in Carbon Nanotubes: Hydrogenation Applications

Into the nanotube: Platinum–ruthenium nanoparticles confined into functionalized multiwalled carbon nanotubes were found to be efficient catalysts for the hydrogenation of cinnamaldehyde in contrast to the unsupported catalytic systems. Although bimetallic nanoparticles synthesized in supercritical CO₂ led to more agglomerated materials than those in THF, no important differences were observed in catalysis.



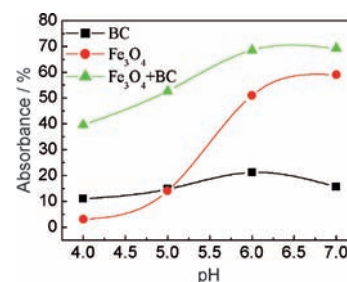


Nanocrystals

X.-H. Guan, B.-T. Zheng, M. Lu, X. Guan, G.-S. Wang,* L. Guo*

Highly Water-Dispersible Fe_3O_4 Single Nanocrystals: Gram-Scale Preparation by a Solution-Phase Route and Application for the Absorption of Cd^{2+} in Water

It's all under control: High-yield production of Fe_3O_4 (10–15 nm) was realized by using a simple solution-phase method at room temperature. The Fe_3O_4 nanocrystals were continually synthesized by controlling the pH value of the reaction solution. The SEM, TEM, and XRD studies reveal the particles to be single nanocrystals. New adsorbents of FNBC prepared by a simple blending method exhibit significantly higher property in removing the heavy metal Cd^{2+} than BC and Fe_3O_4 nanocrystals, and show excellent properties in removing Cd^{2+} .



ChemPlusChem
DOI: 10.1002/cplu.201100023

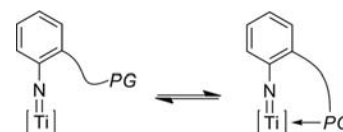


Titanium–Imido Complexes

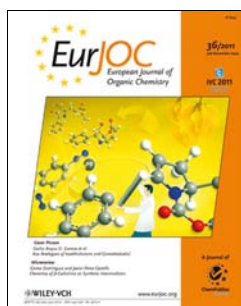
V.-H. Nguyen, L. Vendier, M. Etienne, E. Despagne-Ayoub, P.-A. R. Breuil, L. Magna, D. Proriot, H. Olivier-Bourbigou, C. Lorber*

Titanium–Imido Complexes with Pendant Groups – Synthesis, Characterization, and Evaluation of Their Role as Precatalysts for Ethylene Polymerization

A variety of new titanium imido complexes with different pendant groups have been synthesized from $\text{Ti}(\text{NMe}_2)_4$. The nature of the donor atom in the pendant group and the length of the side arm influence the coordination to the metal center. These compounds were evaluated as ethylene polymerization precatalysts.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201101005

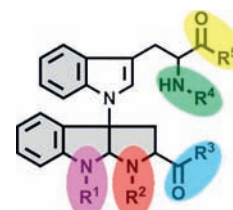


Orthogonal Protecting Groups

P. Ruiz-Sanchis, S. A. Savina, G. A. Acosta, F. Albericio,* M. Álvarez*

Orthogonal Protecting Groups in the Synthesis of Tryptophanyl-Hexahydropyrroloindoles

Several tryptophanyl-hexahydropyrroloindoles (Trp-HPI) with four or five orthogonal protecting groups have been synthesized. This polyheterocyclic system constitutes a scaffold for many natural products that have recently been isolated.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201101057



Food Chemistry

Klaus Roth

Pesto - Mediterranean Biochemistry

When we take pesto prepared from fresh basil, fold it into steaming pasta, and allow the inimitable fragrance to rise up, we ask ourselves: with what aromatic molecules is this plant blessing us? By uncovering the nature of this culinary-chemical marvel, we come to enjoy it all the more.



ChemViews magazine
DOI: 10.1002/chemv.201200001