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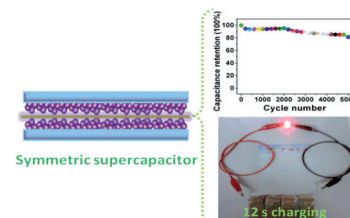


Supercapacitors

G.-F. Chen, Y.-Z. Su, P.-Y. Kuang, Z.-Q. Liu,* D.-Y. Chen, X. Wu, N. Li, S.-Z. Qiao*

Polypyrrole Shell@3D-Ni Metal Core Structured Electrodes for High-Performance Supercapacitors

Composite electrode: A PPy shell@3D-Ni core composite is synthesized successfully through a simple two-step electrodeposition process. The unique PPy shell@3D-Ni core structure shows an excellent rate capability and cycle stability (a decrease in C_{sp} of just 4.2% after 1000 cycles at a scan rate of 100 mVs^{-1}). Moreover, the symmetric supercapacitor based on the PPy@3D-Ni composite electrode exhibits a high specific energy ($\approx 21.2 \text{ Wh kg}^{-1}$) and outstanding cycling life (only 4.4% and 18.6% loss in C_{sp} after 2000 and 5000 cycles, respectively; see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201405976

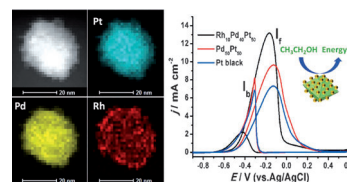


Alloys

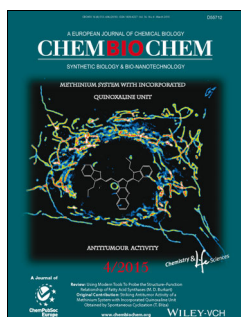
D.-B. Huang, P.-L. He, Q. Yuan,* X. Wang*

Size-Controllable Synthesis of Trimetallic RhPdPt Island-Shaped Nanoalloys with Enhanced Electrocatalytic Performance for Ethanol Oxidation in Alkaline Medium

Better together: High-yield, island-shaped RhPdPt trimetallic nanoalloys with sub-2.0 nm islands were achieved through a facile, environmentally friendly, aqueous approach. Due to the special structure and intermetallic synergies, the $\text{Rh}_{10}\text{Pd}_{40}\text{Pt}_{50}$ nanoalloys exhibited an enhanced catalytic activity and durability relative to island-shaped $\text{Pd}_{50}\text{Pt}_{50}$ bimetallic nanoalloys and commercial Pt black for ethanol oxidation in alkaline medium.



Chem. Asian J.
DOI: 10.1002/asia.201403310

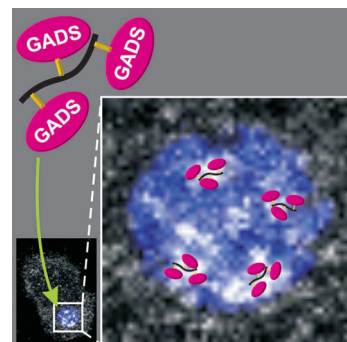


Synthetic Biology

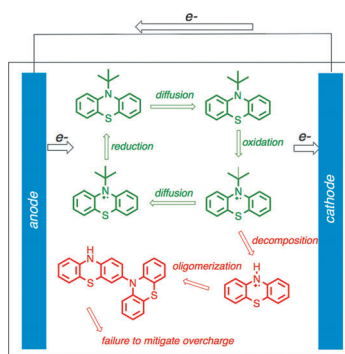
J. J. Witsenburg, M. D. Sinzinger, O. Stoevesandt, I. R. Ruttekolk, G. Roth, M. J. W. Adjobo-Hermans, R. Brock*

A Peptide-Functionalized Polymer as a Minimal Scaffold Protein To Enhance Cluster Formation in Early T Cell Signal Transduction

Synthetic scaffold proteins have the potential to modulate signal transduction pathways: In T cell lysates the synthetic, multivalent scaffold *N*-(2-hydroxypropyl)methacrylamide (HPMA)-SLP228 augmented complex formation of the signaling protein GRB2-related adaptor downstream of SHC (GADS). In living cells, HPMA-SLP228 increased the assembly of GADS microclusters.



ChemBioChem
DOI: 10.1002/cbic.201402622



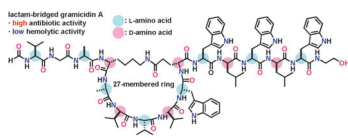
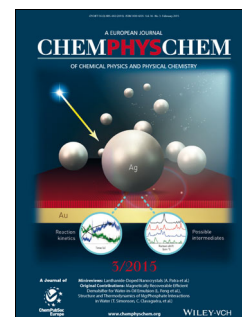
ChemPhysChem
DOI: 10.1002/cphc.201402674

Batteries

K. A. Narayana, M. D. Casselman, C. F. Elliott, S. Ergun, S. R. Parkin, C. Risko,* S. A. Odom*

N-Substituted Phenothiazine Derivatives: How the Stability of the Neutral and Radical Cation Forms Affects Overcharge Performance in Lithium-Ion Batteries

Redox shuttles are electrolyte additives that can prevent overcharge in batteries. They travel between the anode and cathode in their neutral and oxidized forms, mitigating excess current and stabilizing cell voltage. However, if the neutral or radical cation form of the shuttle decomposes, products can form that no longer protect the battery from overcharge, as is observed in the case of *N-tert*-butylphenothiazine.



ChemMedChem
DOI: 10.1002/cmdc.201402473

Antibiotics

J. Mao, T. Kuranaga, H. Hamamoto, K. Sekimizu, M. Inoue*

Rational Design, Synthesis, and Biological Evaluation of Lactam-Bridged Gramicidin A Analogues: Discovery of a Low-Hemolytic Antibacterial Peptide

Channel your inner helix: The antibiotic gramicidin A (GA) folds into a $\beta^{6.3}$ helix and functions as an ion channel in the cell membrane. We describe the rational design, synthesis, and biological evaluation of lactam-bridged GA analogues. One of them, with a 27-membered macrolactam ring, not only adopts a stable $\beta^{6.3}$ -helical conformation, but also exhibits high antibacterial activity and significantly decreased hemolytic/cytotoxic activities. This study charts a rational path forward for the development of new ion-channel-based antibiotics.



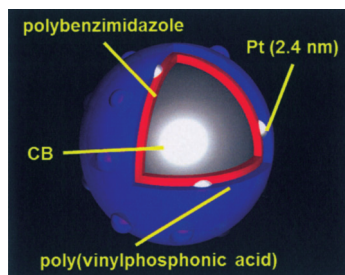
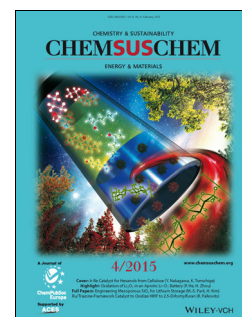
ChemSusChem
DOI: 10.1002/cssc.201403364

Carbon Supports

J. Hoekstra, M. Versluijs-Helder, E. J. Vlietstra, J. W. Geus, L. W. Jenneskens*

Carbon-Supported Base Metal Nanoparticles: Cellulose at Work

Mutually beneficial: Pyrolysis under inert conditions of base-metal-salt-loaded (Cu^{II} , Ni^{II} , Co^{II} or Fe^{III}) microcrystalline cellulose spheres gives homogeneously distributed carbon-supported base metal nanoparticles. Cellulose is converted into an amorphous carbon, which concurrently acts both as support and reductant. The nickel, cobalt, or iron nanoparticles catalyze the graphitization of the amorphous carbon support.



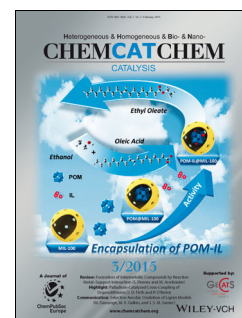
ChemCatChem
DOI: 10.1002/cctc.201402917

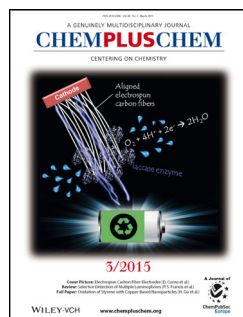
Fuel Cells

Z. Yang, I. H. Hafez, M. R. Berber, N. Nakashima*

An Enhanced Anode based on Polymer-Coated Carbon Black for use as a Direct Methanol Fuel Cell Electrocatalyst

Fuel cell royale: A newly fabricated direct methanol fuel cell electrocatalyst composed of Pt (2.4 nm)/carbon black/polybenzimidazole/poly(vinylphosphonic acid) showed enhancements in durability and catalytic activity.



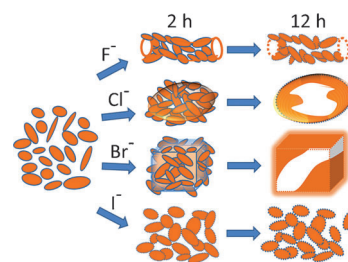


Hollow Nanostructures

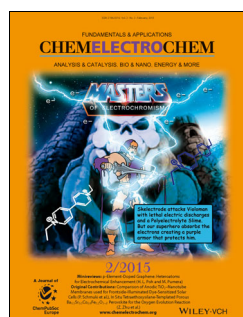
R. Ma, M. Wang, D. T. Dam, Y. Dong, Y. Chen, S. K. Moon, Y.-J. Yoon,* J.-M. Lee*

Halide-Ion-Assisted Synthesis of Different α -Fe₂O₃ Hollow Structures and Their Lithium-Ion Storage Properties

A hollow victory: Hollow α -Fe₂O₃ self-assemblies with different structures have been synthesized by a halide-ion-assisted solvothermal method. Selective absorption of halide ions plays an important role in shaping the self-assemblies (see scheme), and Ostwald ripening speeded up by acidic etching determines the final hollow structures.



ChemPlusChem
DOI: 10.1002/cplu.201402236

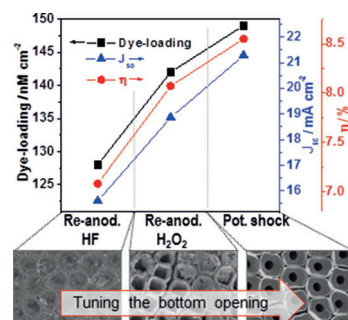


Dye-Sensitized Solar Cells

F. Mohammadpour, M. Moradi, G. Cha, S. So, K. Lee, M. Altomare, P. Schmuki*

Comparison of Anodic TiO₂-Nanotube Membranes used for Frontside-Illuminated Dye-Sensitized Solar Cells

We have lift-off! Frontside-illuminated dye-sensitized solar cells are fabricated from TiO₂ nanotube array membranes. Different TiO₂-nanotube lift-off strategies are explored to fabricate tube membranes. An optimized potential step approach leads to membranes with complete bottom opening. This configuration markedly increases the efficiency of the solar cell.



ChemElectroChem
DOI: 10.1002/celec.201402368

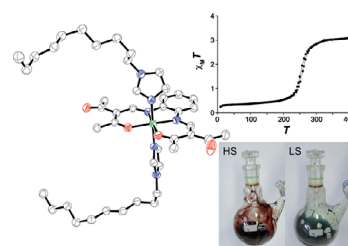


Spin-Crossover Complexes

S. Schlamp, C. Lochenie, T. Bauer, R. Kempe, B. Weber*

Iron(II) Spin-Crossover Complexes with Schiff Base Like Ligands and N-Alkylimidazoles

Iron(II) spin-crossover complexes with Schiff base like equatorial ligands and alkylimidazole axial ligands are synthesised. The alkyl chain length is varied from 5 to 7 and 10 carbon atoms. The crystal structures of the C₇ and C₁₀ compounds are described. There is an increased cooperativity in spin-crossover behaviour for the compound with the longer C₁₀ alkyl chain than for the C₅ compound.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201403021

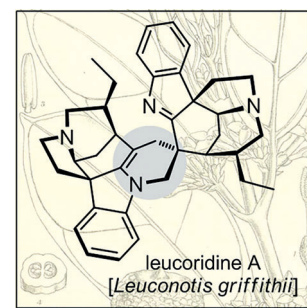


Biomimetic Synthesis

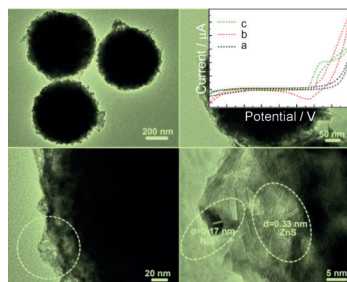
S. Benayad, M. A. Beniddir, L. Evanno,* E. Poupon*

Biomimetic Assembly of Leucoridine A

The biomimetic cascade assembly of leucoridine A, a pseudosymmetric bisindole of *Leuconotis griffithii* (Apocynaceae) is described. The semisynthetic route provides suitable conditions toward the central 3-spiro-1,2,3,4-tetrahydropiperidine ring connecting the two subunits of the highly congested structure. The biomimetic assembly by an imino-Rauhut–Currier reaction affords the natural (S)-diastereomer of leucoridine A as the sole product.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201500041



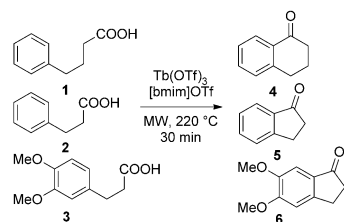
ChemistryOpen
DOI: 10.1002/open.201402044

Electrochemical Sensors

C. Wei, C. Cheng, J. Zhao, Z. Wang, H. Wu, K. Gu, W. Du, H. Pang*

Mesoporous ZnS–NiS Nanocomposites for Nonenzymatic Electrochemical Glucose Sensors

Sensing something sweet: Mesoporous ZnS–NiS composites, prepared via ion-exchange reactions using ZnS as the precursor, exhibited a high specific surface area and a rational composition of the two constituents. Electrochemical sensors based on these composites exhibited high selectivity, a stable signal, and a low detection limit of 0.125 μM for glucose, providing an alternative to enzyme-based glucose sensors.



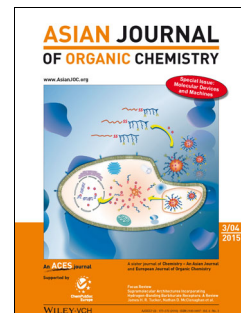
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201402274

Synthetic Methods

P. H. Tran, V. H. Huynh, P. E. Hansen, D.-K. N. Chau, T. N. Le*

An Efficient and Green Synthesis of 1-Indanone and 1-Tetralone via Intramolecular Friedel–Crafts Acylation Reaction.

Unper-terb-ed: Terbium triflate catalyzes the intramolecular Friedel–Crafts acylation of 3-arylpropanoic and 4-arylbutanoic acids in ionic liquids under microwave irradiation.



ChemViews magazine
DOI: 10.1002/chemv.201500005

Conferences

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