SPOTLIGHTS …

Magnetic Materials

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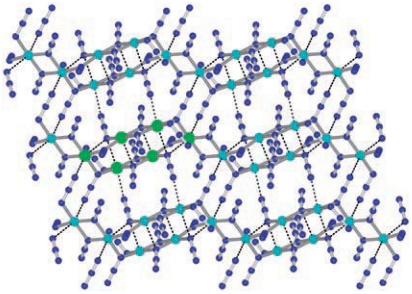
Two Diammonium Copper Azides with Similar Layerlike Magnetic Substructures Made of Chains of Serially Connected Cu_6 Rings Show Cation-Modulated Magnetism

Chem. Asian J.
DOI: **10.1002/asia.200800012**

Tuning through spacing: Two compounds, each with a cationic diammonium ion and an anionic copper azide layer ($[Cu_6(N_3)_{14}]^{2-}$) with serially connected elongated Cu_6 rings (see anionic structure; Cu green and cyan, N blue), display magnetic properties that are tuned by the nature of the diammonium countercations located in the interlayer spacing.



Enzyme Catalysis

T. R. M. Barends, T. Domratcheva,
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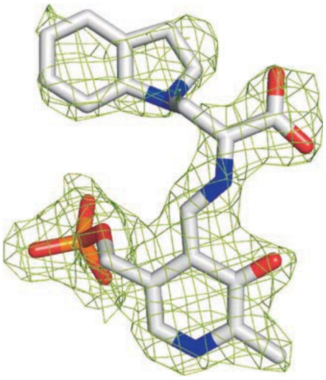
Structure and Mechanistic Implications of a Tryptophan Synthase Quinonoid Intermediate

ChemBioChem
DOI: **10.1002/cbic.200700703**



Way station. Quinonoid intermediates play a key role in the catalytic mechanism of pyridoxal 5′-phosphate (PLP)-dependent enzymes. Whereas structures of other PLP-bound reaction intermediates have been determined, a high-quality structure of a quinonoid species has not been reported. We present the crystal structure of the indoline quinonoid intermediate of tryptophan synthase (see figure) and discuss its implications for the enzymatic mechanism and allosteric regulation.

Metal Surfaces

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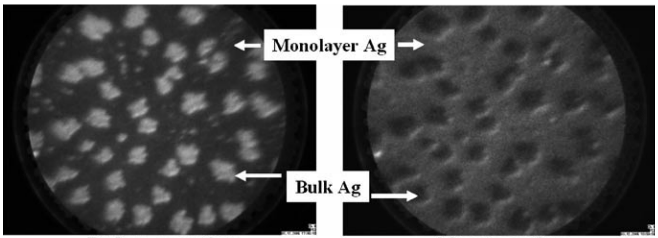
Unique Reactivity of Confined Metal Atoms on a Silicon Substrate

ChemPhysChem
DOI: **10.1002/cphc.200700840**



Before reaction After reaction

Electronic effects: The unusual reactivity of the Ag monolayer compared to the bulk Ag surface on Si(111) (see figure) is due to the confinement of the 5sp electrons. This change in reactivity has significant effects on the surface activity and selectivity, which could result in novel catalytic properties.

Molecular Design

I. Reulecke, G. Lange, J. Albrecht,
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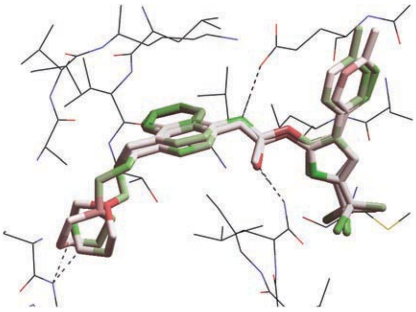
Towards an Integrated Description of Hydrogen Bonding and Dehydration: Decreasing False Positives in Virtual Screening with the HYDE Scoring Function

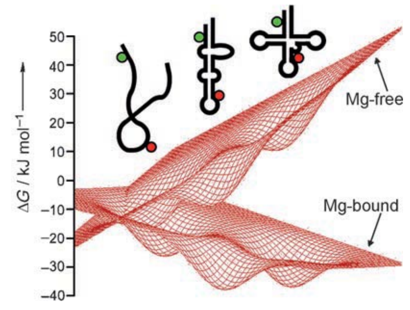
ChemMedChem
DOI: **10.1002/cmdc.200700319**



HYDE is a new empirical scoring function for the evaluation of protein–ligand complexes that estimates binding free energy based on two terms for dehydration and hydrogen bonding only. In contrast to other scoring functions, HYDE accounts for destabilizing dehydration effects in a consistent manner, thereby decreasing the rate of false positive hits in virtual screening.

RNA Conformations

With or without Me: The effect of a single methyl group on the free energies of functional and nonfunctional conformations of human mitochondrial lysine transfer RNA ($tRNA^{Lys}$) has been studied. The stabilization of the three distinct conformations by Mg^{2+} ion binding and free energy changes resulting from methylation were characterized and revealed a preference for the functionally relevant cloverleaf-shaped tRNA form (see picture).



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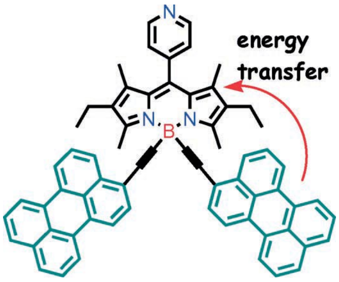
Sculpting an RNA Conformational Energy Landscape by a Methyl Group Modification—A Single-Molecule FRET Study

Angew. Chem. Int. Ed.
DOI: **10.1002/anie.200705675**

Fluorescent Sensor

Rapid electronic energy transfer occurs from the appended perylene units to the BODIPY-based dye, which itself is equipped with an ancillary binding unit. Cations can coordinate to the pyridine N atom and thereby switch on an intramolecular charge-transfer process. On cation binding, fluorescence from perylene increases and that from BODIPY decreases.

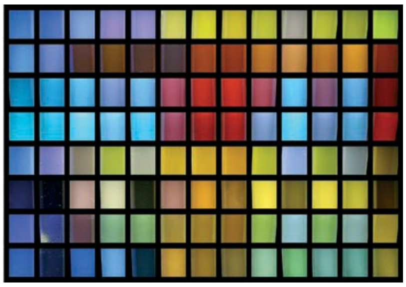


M. A. H. Alamiry, A. Harriman,*
L. J. Mallon, G. Ulrich, R. Ziessel*

Energy- and Charge-Transfer Processes in a Perylene–BODIPY–Pyridine Tripartite Array

Eur. J. Org. Chem.
DOI: **10.1002/ejoc.200800159**

Hydroxycruciforms



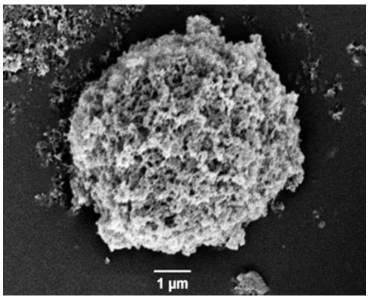
Amine detection made easy: One fluorophore in eight different solvents (columns in graphic) allows the unambiguous identification of twelve different amines (along one row) based on the distinct fluorescence changes through excited-state proton transfer.

P. L. McGrier, K. M. Solntsev,
S. Miao, L. M. Tolbert,
O. R. Miranda, V. M. Rotello,
U. H. F. Bunz*

Hydroxycruciforms: Amine-Responsive Fluorophores

Chem. Eur. J.
DOI: **10.1002/chem.200800296**

Mesoporous Materials



Holey starch! Mesoporous materials with tuneable characteristics have been prepared from biomass-derived α-D-polysaccharides by a microwave-assisted strategy. Careful selection of the preparation temperature allows control of the crystallinity, particle morphology and textural properties of the resulting materials, leading to surface areas approaching 200 $m^2 g^{-1}$ and mesopore volumes over 0.6 $cm^3 g^{-1}$.

R. J. White, V. L. Budarin,
J. H. Clark*

Tuneable Mesoporous Materials from α-D-Polysaccharides

ChemSusChem
DOI: **10.1002/cssc.200800012**

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