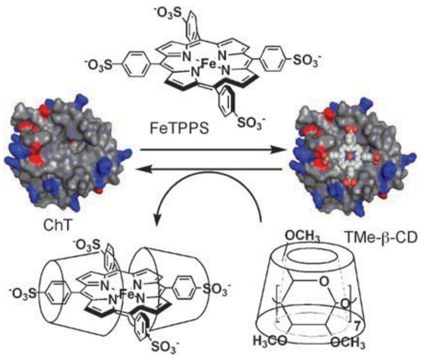
SPOTLIGHTS …

Enzyme Catalysis

K. Kano,* Y. Ishida

Regulation of α-Chymotrypsin Catalysis by Ferric Porphyrins and Cyclodextrins

Chem. Asian J.
DOI: **10.1002/asia.200700383**



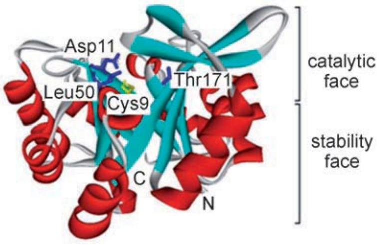
Put the stopper on: The anionic ferric porphyrin FeTPPS inhibits the catalysis of α-chymotrypsin (ChT) by covering the catalytic site with its rigid porphyrin ring. The inhibited catalysis is completely recovered by per-*O*-methylated β-cyclodextrin (TMe-β-CD), which detaches FeTPPS from the protein surface. These results led to the preparation of a more useful inhibitor.

Directed Evolution

M. T. Reetz,* M. Rentzsch,
A. Pletsch, A. Taglieber,
F. Hollmann, R. J. G. Mondière,
N. Dickmann, B. Höcker, S. Cerrone,
M. C. Haeger, R. Sterner

A Robust Protein Host for Anchoring Chelating Ligands and Organocatalysts

ChemBioChem
DOI: **10.1002/cbic.200700413**



Robust hybrid catalysts: A platform for directed evolution of hybrid catalysts has been optimized and miniaturized by using a thermostable enzyme, tHisF (see figure) from *Thermotoga maritima*. A tHisF mutant with a strategically placed cysteine was identified and subjected to bioconjugation by introducing a variety of ligands for metal ligation, a ligand/metal moiety, and several organocatalysts such as flavin and thiazolium entities.

Atomic Force Microscopy

J. Sotres, A. Lostao, L. Wildling,
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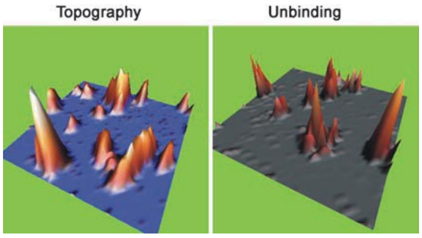
Unbinding Molecular Recognition Force Maps of Localized Single Receptor Molecules by Atomic Force Microscopy

ChemPhysChem
DOI: **10.1002/cphc.200700597**



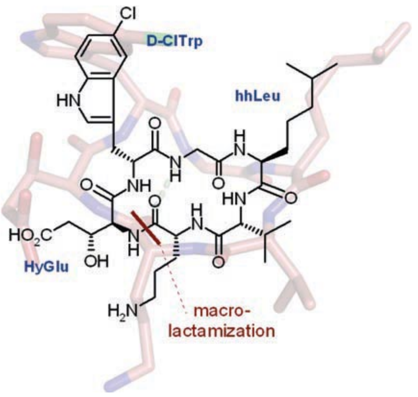
Simultaneous recordings: Molecular recognition forces on ligand-receptor pairs (biotin-avidin) are measured by AFM simultaneously with the topography of the receptor molecules (see figure). Spatially resolved ligand unbinding events in single molecules of 5 nm diameter are obtained.

Antibiotics Synthesis

F. von Nussbaum,* S. Anlauf,
C. Freiberg, J. Benet-Buchholz,
J. Schamberger, T. Henkel,
G. Schiffer, D. Häbich

Total Synthesis and Initial Structure–Activity Relationships of Longicatenamycin A

ChemMedChem
DOI: **10.1002/cmdc.200700297**



What is the active principle of the "S-520 longicatenamycin antibiotic complex"? Longicatenamycin A (shown) is the first defined longicatenamycin congener that has been totally synthesized and tested in pure form.

Enzyme Inhibitors

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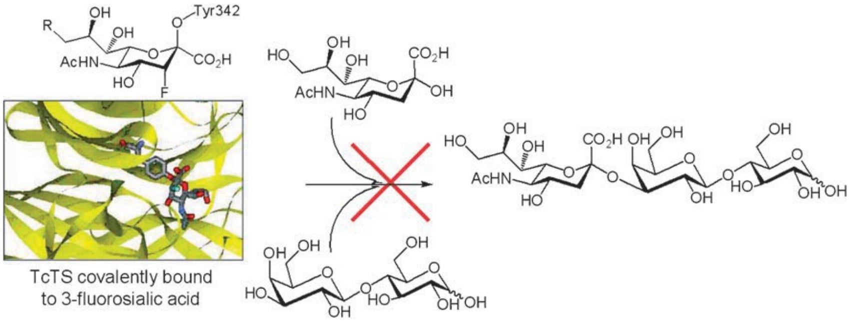
A New Generation of Specific *Trypanosoma cruzi trans*-Sialidase Inhibitors

Angew. Chem. Int. Ed.
DOI: **10.1002/anie.200705435**



A substitution for inhibition: The incorporation of an aryl substituent at C9 of 3-fluorosialyl fluorides provides specificity and dramatically slows the reactivation of the glycosylphosphatidylinositol-anchored surface protein *Trypanosoma cruzi trans*-sialidase (TcTS) by transglycosylation (see picture). X-ray crystallographic analysis of the trapped intermediate has provided a structural rationale for this behavior.

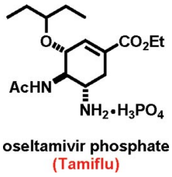
Anti-influenza Drugs

M. Shibasaki,* M. Kanai

Synthetic Strategies for Oseltamivir Phosphate

Eur. J. Org. Chem.
DOI: **10.1002/ejoc.200800033**

Synthetic strategies for oseltamivir phosphate, an important orally active anti-influenza drug, are reviewed.

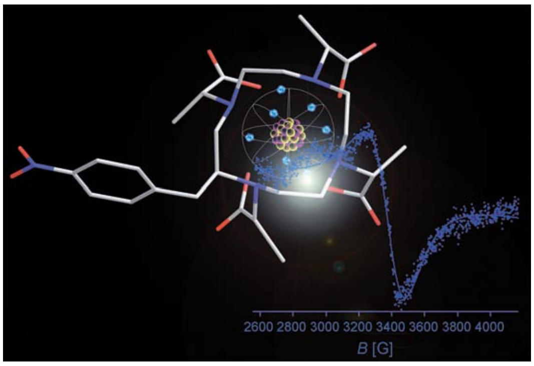


Contrast Agents

A. Borel,* J. F. Bean, R. B. Clarkson,
L. Helm, L. Moriggi, A. D. Sherry,
M. Woods*

Towards the Rational Design of MRI Contrast Agents: Electron Spin Relaxation Is Largely Unaffected by the Coordination Geometry of Gadolinium(III)–DOTA-Type Complexes

Chem. Eur. J.
DOI: **10.1002/chem.200701747**



Electron-spin relaxation is a key parameter in the design of advanced MRI contrast agents. EPR has been used to probe the relationship between this key parameter and the coordination environment of gadolinium in complexes with DOTA-type ligands (see figure).

Industrial Chemistry

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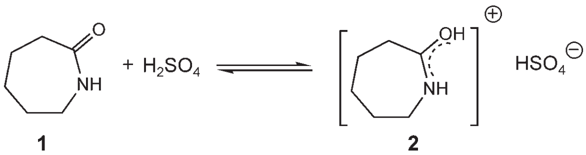
A.-M. Bálint, L. T. Mika,
O. E. Sielcken, A. Cuiper,
I. T. Horváth*

ε-Caprolactamium Hydrogen Sulfate: An Ionic Liquid Used for Decades in the Large-Scale Production of ε-Caprolactam

ChemSusChem
DOI: **10.1002/cssc.200700135**



An iconic liquid: Investigation of the mechanism of the Beckmann rearrangement of cyclohexanone oxime to ε-caprolactam (**1**) in sulfuric acid or oleum has led to the conclusion that the manufacturing process for ε-caprolactam is in fact the largest-scale industrial technology that has been using an ionic liquid, caprolactamium hydrogen sulfate (**2**), as the reaction medium for decades.