

Nonlinear Phenomenon in Heterogeneous Enantioselective Catalysis

Other Conference Item**Author(s):**

Balazs, Lucia; Mallat, Tamas; Baiker, Alfons 

Publication date:

2005-10-01

Permanent link:

<https://doi.org/10.3929/ethz-b-000163197>

Rights / license:

[Creative Commons Attribution-NonCommercial 4.0 International](#)

Originally published in:

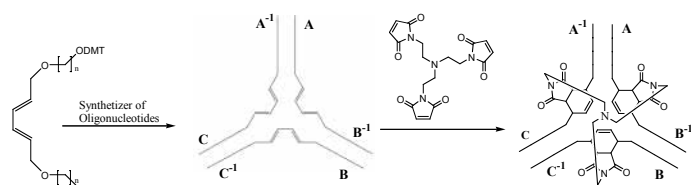
Chimia 59(9)

Formation and stabilization of a three-way junction via the Diels Alder reaction

Nicolas Bouquin, Robert Häner

University of Bern, Freiestrasse 3, 3012 Bern, Switzerland

A diene building block was synthesized and incorporated into three oligonucleotides, which form a three-way junction. A trifunctional dienophile was synthesized, which is designed to react via Diels Alder reactions on this three-way junction. Thermal melting experiments and gel electrophoresis were used to characterize this kind of structure. The results of these studies will be shown and discussed.



Nonlinear Phenomenon in Heterogeneous Enantioselective Catalysis

Lucia Balazs, Tamas Mallat and Alfons Baiker*

Department of Chemistry and Applied Biosciences, Swiss Federal Institute of Technology, ETH Hönggerberg, CH-8093 Zürich, Switzerland.

The nonlinear effect in asymmetric catalysis has been a topic of great interest [1]. Here we present a study of the nonlinear phenomenon in heterogeneous enantioselective hydrogenation. The transformation of ketopantolactone to pantolactone was investigated over Pt/Al₂O₃ and the catalyst was modified by mixtures of enantiomers, diastereomers, and chemically different chiral compounds possessing the same or different "anchoring moiety". Significant deviation from the ideal behavior was observed for all cases (see e.g. Fig.1) except when two enantiomers were applied.

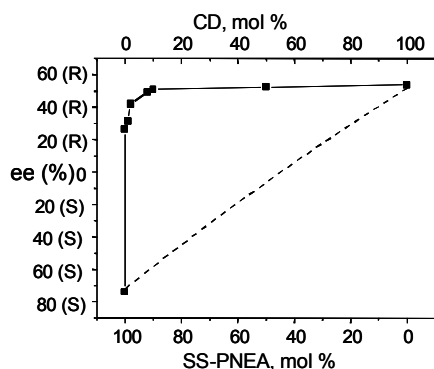


Figure 1. Non-linear behavior of the CD (cinchonidine) + (*S,S*)-PNEA ((1'*S*, 2*S*)-*N*-[1'-(1-naphthyl)ethyl]-2-amino-3,3-dimethyl- γ -butyrolactone) mixture. The dashed line indicates the ee calculated for an ideal behaviour of the modifier mixture.

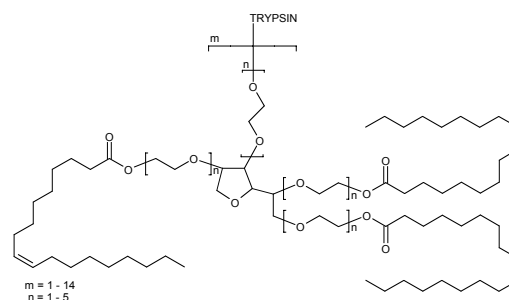
[1] C. Puchot, O. Samuel, E. Dunach, S. Zhao, C. Agami, H.B. Kagan, *J. Am. Chem. Soc.* **1986**, *108*, 2353.

Immobilisation of Trypsin by Activated Tween 85™

Valentin Herbez^a, Clément Bordier^b, Fabian Fischer^{a*}

^aLife Technologies Institute, University of Applied Sciences Sion, Route du Rawyl 47, 1950 Sion, Switzerland; ^bBordier Affinity Products, Chatanerie 2, 1023 Crissier, Switzerland

The immobilisation of enzymes for industrial applications is an important issue to facilitate product isolation. Trypsin was immobilised by Tween 85, a polyoxyethylene surfactant. It contains a single specific group (hydroxyl), which can be functionalised with various ligands. In particular an enzyme, an affinity ligand or other molecule [1]. We found that derivatized trypsin is in most cases less active than in its native form but more thermo stable [2].



Tween 85-Bioconjugates may be employed in enzymatic catalysis or affinity precipitation for down stream processing purposes in Biotechnology.

[1] Bharda D., Bharda S., Jain P., Jain N.K., *Pharmazie* **2002**, *57*, 5.

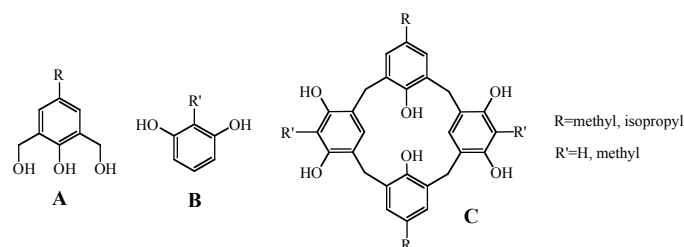
[2] Murphy A., Fágáin C.Ó., *Journal of Biotechnology* **1996**, *49*, 163.

Synthesis of intermeditates between resorcinarenes and calixarenes

Nicolas Charbonnet, Jean-Marc Bourgeois*

Ecole d'Ingénieurs et d'Architectes de Fribourg, Bd de Pérolles 80, CH-1705 Fribourg, Switzerland

Calixarenes and resorcinarenes play an important role in supramolecular chemistry [1]. The synthesis, the structures, the complexing properties and thermal decomposition of some new resorcinarenes have recently been studied in our laboratory [2]. To our knowledge, intermediate structures between resorcinarenes and calixarenes, such as compound **C** were never described.



Compounds **A** can be brought to reaction with compounds **B** in hot, slightly acid aqueous medium to produce macrocycles of the type **C** in good yields. The ¹H-NMR spectra are perfectly in agreement with this structure. We currently continue this research in order to describe a maximum of mixed compounds and to optimize the synthesis.

[1] J. L. Irwin, M.S. Sherburn, *J. Org. Chem.* **2000**, *65*, 602.

[2] J.-M. Bourgeois, H. Stoeckli-Evans, Synthesis of New Resorcinarenes Using Alkaline Conditions, currently submitted for publication in *Helvetica Chimica Acta*.