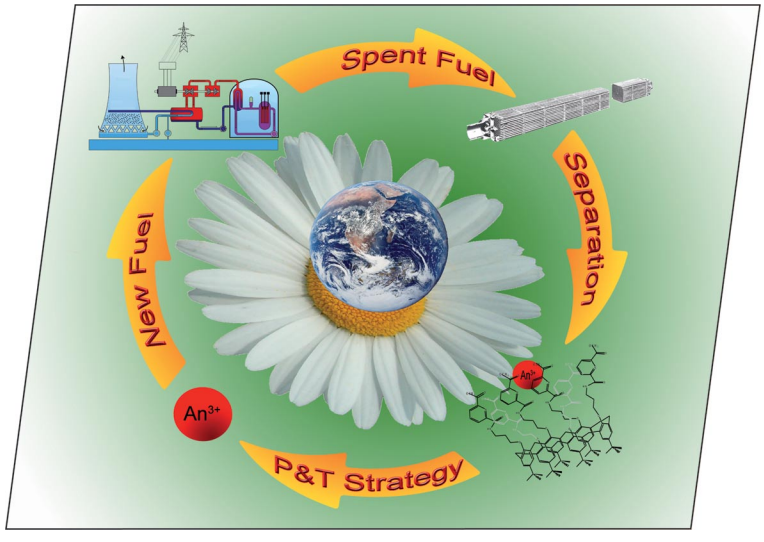
COVER PICTURE

The cover picture shows the complexation of actinide metal ions by picolinamide-based calix[6]arenes. These ligands possess remarkable efficiency in the extraction of trivalent metal ions even at very high HNO_3 concentration and fair selectivity for actinide ions over lanthanide ions, which is useful in the recycling of the spent nuclear fuel. The Partitioning and Transmutation (P&T) strategy would allow the long-lived minor actinides (Np, Am, Cm) in fast nuclear reactors to be separated and transmutated and would also allow the radiotoxicity in the ultimate waste to be minimized, making nuclear power plants more efficient and sustainable. Details are discussed in the article by M. Mariani, A. Casnati et al. on p. 2675ff.



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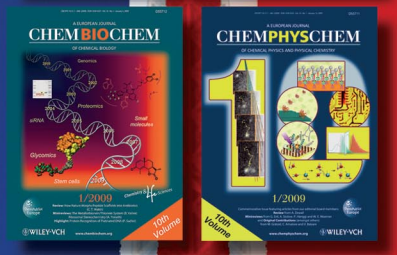
FULL PAPERS

Frontiers of Chemistry:
From Molecules to Systems
A One-Day Symposium

Celebrating 10 Years of



On 21st May 2010 in Paris
at the Maison de la Chimie
(near the Eiffel Tower and Les Invalides)

Speakers

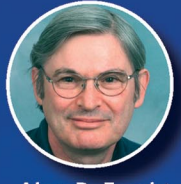

Gerhard Ertl
Nobel Prize 2007


Jean-Marie Lehn
Nobel Prize 1987


Roger Y. Tsien
Nobel Prize 2008


Ada Yonath
Nobel Prize 2009


Luisa De Cola


Alan R. Fersht


Marc Fontecave


Michael Grätzel


Michel Orrit


Nicolas Winssinger

Posters
will be displayed also online from 1st April

www.chembiophyschem.org

Scientific committee
E. Amouyal, M. Che,
F. C. De Schryver,
A. R. Fersht, P. Gölitz,
J. T. Hynes, J.-M. Lehn

Topics
catalysis, biochemical imaging,
chemical biology, bionanotechnology,
proteomics, spectroscopy, solar cells

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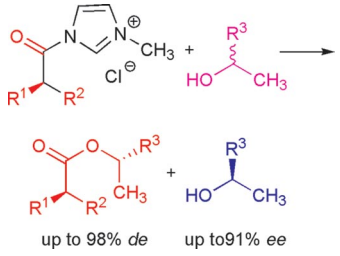
557101001

Kinetic Resolution

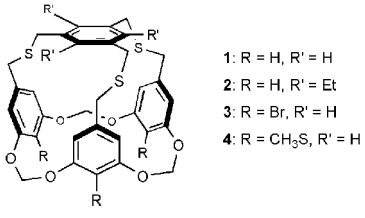
N-Methylimidazole was used to carry out the kinetic resolution of secondary alcohols during transfer of chiral acyl residues in either a stoichiometric or a catalytic manner.



Keywords: Acylation / Nitrogen heterocycles / Alcohols / Carboxylic acids / Kinetic resolution

Conformations of π-Basic Receptors

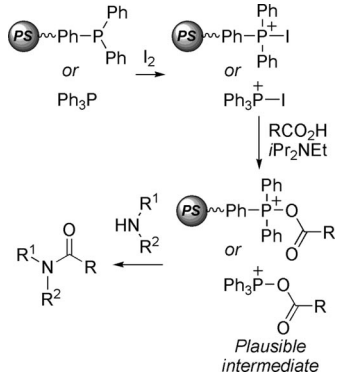
Macrotricycles **1**–**4** incorporate resorcinol- and mesitylene-derived "walls" and "cap" respectively. Whereas unsubstituted **1** has a flexible and collapsed cavity, ethyl substitution of the "cap" (in **2**) or substitution of the bottom part of the "walls" by Br (in **3**) or CH_3S (in **4**) imparts high rigidity to the molecules leading to a cylindrical cavity.



Keywords: Cyclophanes / Receptors / Conformation analysis / Steric hindrance / Substituent effects

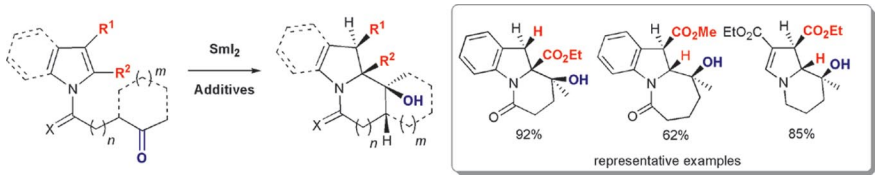
Amide Synthesis

Pure and simple. Carboxylic acids can be easily converted into amides and Weinreb amides by using PPh_3 or polymer-supported PPh_3, I_2, and iPr_2NEt. An acyl phosphonium species is possibly the intermediate in these reactions. Applicability of this simple method to the synthesis of some natural products has also been demonstrated.



Keywords: Amides / Phosphanes / Supported reagents / Iodine / Synthetic methods

Indole and Pyrrole Derivatives



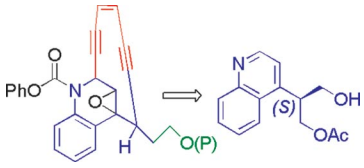
SmI_2-induced 5-*exo*-*trig* to 8-*exo*-*trig* cyclisations of *N*-alkylated and *N*-acylated indole and pyrrole precursors furnished polycyclic compounds in high yields and as single diastereomers. Subsequent trapping of intermediate samarium enolates provided highly functionalised indole derivatives. These methods provide a simple and stereoselective route to complex substituted nitrogen heterocycles.

Keywords: Samarium diiodide / Radical reactions / Ketyl coupling / Cyclization / Indoles / Pyrroles / Nitrogen heterocycles

CONTENTS

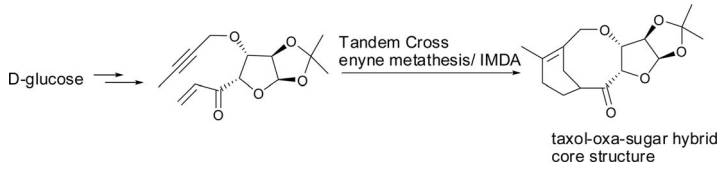
Simplified Enediynes

The first enantioselective synthesis of a simplified dynemicin analogue is described. The obtained product has a functionalised side-arm that can be exploited either for attaching DNA-complexing moieties or for exploring innovative triggering devices.



Keywords: Antitumor agents / Diastereoselectivity / Nitrogen heterocycles / Alkynes / Enediynes

Taxol-Sugar Hybrid

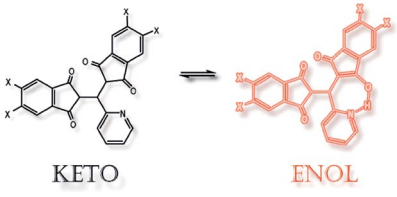


Construction of the core structure of a taxol-oxa-sugar hybrid through a tandem cross metathesis/intramolecular Diels–Alder (IMDA) reaction approach starting from D-glucose has been achieved. We also disclose our design and efforts in synthesizing new scaffolds with taxol-eleutherobin hybrid core structures and a taxol-sugar hybrid.

Keywords: Antitumor agents / Taxol / Eleutherobin / Hybrid structure / Metathesis / Cycloaddition

Diketone Tautomerism

Herein we present a comprehensive study of the enol form of indanedione adducts and the factors that determine their keto–enol tautomerism, namely electronic effects, solvent, temperature, and hydrogen bonds. The structures and the relative stabilities of the possible tautomers are supported by DFT calculations.



Keywords: Ketones / Enols / Tautomerism / Hydrogen bonds / Structure elucidation / Zwitterions

* Author to whom correspondence should be addressed.

Supporting information on the WWW (see article for access details).

If not otherwise indicated in the article, papers in issue 13 were published online on April 15, 2010

