

# CONFERENCE REPORT

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## abc Technologies 2004 Basel (Switzerland), January 22–23, 2004

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For the fourth successive year, Merck Biosciences AG and Chemspeed Ltd. have come together to organize what has become one of the most important scientific events to take place in the early New Year. The positive experiences of past conferences, which were characterized by stimulating presentations coupled with high levels of audience participation, have motivated the organizers to continue this series of conferences in Basel. With the financial support of Maybridge and Merck CSS, *abc Technologies 2004* took place at the Basel Hilton Hotel on January 22–23. 150 attendees enjoyed two days of lectures in the fantastic Auditorium Baloise. The aim of the conference, now called *abc Technologies – abc* stands for *accelerated bio* and *chemical* – is to provide a showcase for innovative technologies that accelerate the process from discovery to production in chemistry and biology.

Prof. **Manfred T. Reetz** from the Max-Planck-Institute in Mülheim/Ruhr (Germany) opened the conference with an excellent plenary lecture on combinatorial and evolution-based methods in asymmetric catalysis. He introduced a new principle



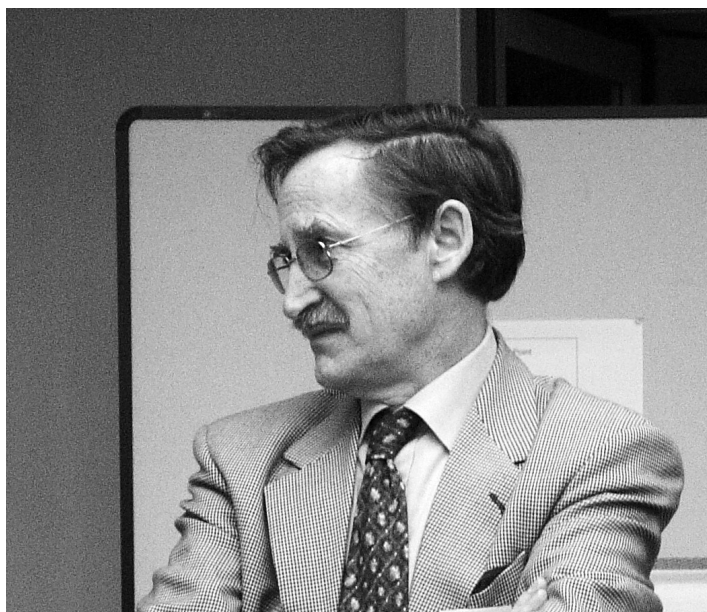
Lecture Hall of the *abc Technologies 2004* at the Basel Hilton Hotel

in asymmetric catalysis which uses a binary mixture of two different chiral monodentate phosphite ligands based on the binol backbone to achieve higher enantioselective excesses in transition-metal catalytic reactions than when two identical ligands are used. This approach is ideally suited for application of automation and parallel synthesis techniques. He believes this new concept, which he termed ‘simulation of chelation’, has tremendous potential in enantioselective catalysis. The second part of the presentation was dedicated to directed evolution of enantioselective enzymes. Using evolutionary pressure for the generation of libraries of mutated enzymes and applying

them in biotechnologically significant enzymatic reactions, he could screen ten thousands of enzymes. This ‘Darwinism in the test tube’ is one of the very hot spots in research to find new, highly active and superior catalysts for chemical reactions.

The second plenary lecture was given by Prof. **Peter Hofmann** from the University of Heidelberg (Germany). With the help of rational catalyst design, synthesis and optimization, a new class of tailor-made cationic ruthenium carbene complexes was created. A detailed analysis of mechanism coupled with careful synthesis led to new findings about ring opening metathesis polymerization (ROMP). The second part

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Manfred T. Reetz



Peter Hofmann



Intensive discussions during exhibition and poster session

of his inspiring lecture showed new highly active and selective ligands for the hydroformylation of olefins, which are of special interest to the polymer industry. Prof. Hofmann manages on a high level to integrate quantum chemical calculations, mechanistic information and structural behavior for the optimization of relevant catalytic systems.

On the afternoon of the first day was a poster session. Posters from 18 authors were presented in an informal atmosphere. Conference attendees were given the opportunity to spend a relaxing afternoon in detailed technical discussions with poster presenters and exhibitors. The possibility to gain hands-on experience with Chem-speed's highly innovative products de-

signed to increase the throughput in dispensing, synthesis, and process optimization attracted numerous interested customers. At the Merck Bioscience's booth, many scientists stopped by to discuss the latest developments in the field of solid supports and building blocks. The sponsors of this year's conference, Maybridge (England) and Merck CSS (Germany), a department of the Merck Life Science division, were also present with small booths.

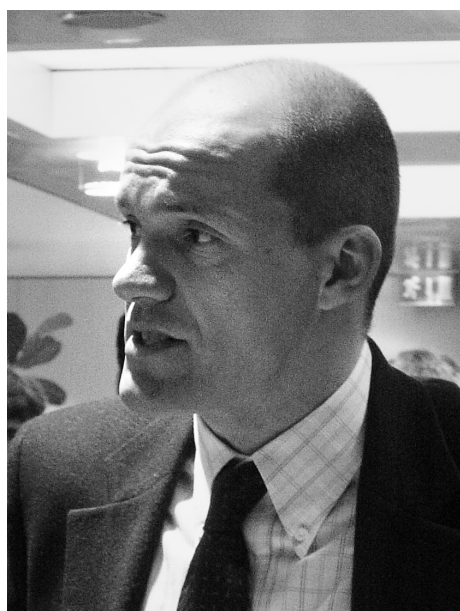
Undoubtedly one of the highlights of *abc Technologies 2004* was the night at the St. Jakob Stadium. The social event included a guided tour of the new soccer arena built by the star architects Herzog & De Meuron, where the local soccer team, FC Basel, celebrated its greatest victories. A

wonderful dinner in the Gourmet restaurant Premium Lounge, the VIP lounge with a spectacular view over the soccer field, put the finishing touch to this extraordinary night.

The first talk on Friday morning discussed recent achievements in using microwave heating in solid- and solution-phase synthesis. On the basis of an analysis of published papers dealing with microwave technology, Prof. *C. Oliver Kappe* from the University of Graz (Austria) expects that most of the conference attendees will use the microwave approach in the near future. Prof. Kappe showed impressive results of different types of organic reactions accelerated by applying microwave heating. He tried to convince the audience that



Fantastic dinner at the St. Jakob Stadium



C. Oliver Kappe



Ulrich S. Schubert



Fernando Albericio

Merrifield resins. His intensive plenary lecture nicely showed that complex peptides and small molecules can be synthesized in a powerful way on solid support.

Over the two days parallel sessions were held which gave the opportunity for speakers from both academia and industry to present cutting-edge technologies and state-of-the-art methods. Amongst the many interesting topics were presentations on the use of microreaction technology for electronic materials (Dr. M. Grund, Merck KGaA), the combinatorial synthesis and screening of pigments for automotive coatings (Dr. H.T. Schacht, G. Folly, Ciba SC), and the process optimization of physical and functional properties of bread additives by parallel synthesis (Dr. Y. Kegelaers, Puracor). Prof. **Ulrich S. Schubert** from the Eindhoven University of Technology (The Netherlands) showed recent results on how high-throughput experimentation can be successfully applied in academia for the synthesis and characterization of polymeric materials. He highlighted that knowledge can be generated in a much faster and more efficient way using a combinatorial approach. Sophisticated approaches to novel heterocyclic compounds (Dr. T. Forshaw, Maybridge), automation screening systems for catalytic reactions (Dr. U. Nettekoven, Dr. F. Naud, Solvias) which led in combination with intuition and serendipity to the discovery of new, industrially relevant catalysts, grafting of dendritic polyols onto a solid-phase polystyrene (Prof. R. Haag, University of Dortmund), and functional profiling for spatially addressable small molecule microarrays from split-pool libraries (Prof. N. Winssinger, University of Strasbourg) were also amongst the stimulating topics presented during this conference.

Most lectures are available as PDF-files on the conference web-site [www.abctechnologies.ch](http://www.abctechnologies.ch) for download.

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no magic lies behind this technology and that most of the effect result from selective heating, inverted temperature gradients, and elimination of wall effects. The latter is especially important with transition-metal catalyzed reactions which often fail due to decomposition of the catalyst on the wall of hot glass reactors used in classical synthesis.

Prof. **Fernando Albericio** from the University of Barcelona (Spain) started his plenary lecture with a short review of the history of combinatorial chemistry over the last 20 years. During his lecture, he showed impressive details about the challenges and strategies of synthesizing Tentoxins on solid phase. The second part of his talk described the synthesis of Lamellarins, a group of hexacyclic alkaloids with interesting and significant biological activities. His synthetic strategy notably included a Baeyer-Villiger oxidation on Wang and