

Exclusive Interview with Bjarne Holmbom

Professor Bjarne Holmbom from PCC received the 2005 Finnish Science Award (85 000 €) for his pioneering research work within the field of wood chemistry. The prize is granted every second year for international and high-quality scientific research. Some years ago Holmbom and his group discovered high concentrations of the anticarcinogenic HMR lignan in wood knots. The group has investigated over 50 different wood species and there are indications that several health-promoting products can be found in the wood. HMR lignan will soon be available on the market in the USA.



Prof. Bjarne Holmbom is the head of the Wood and Paper Chemistry Group. (Photo: Andreas Bernas)

What is the Finnish Science Award?

A price installed by the Finnish Government and in the background the Ministry of Education in 1995. Such a price is awarded every second year and also the sum is regulated. The price can go to any scientist and it is not given for any particular invention but more for a long term action.

Motivation?

Behind glass and frame but actually not very specific: "Long term successful research act on high international level".

You have been Academy Professor for some time and you are known for several innovations, for example the tall oil process, discovery of carcinogenic compounds, and recently the knot-story. Was it clear that you should become a scientist?

All children are curious and I was especially curious. I wanted to get involved in academic activity although I did not know the significans of it as a child.

What was your first project?

Before the military service my first job was at Pargas Kalkbergs AB where I was working with cement, lime, and bricks.

And after that?

In the army I discovered the meaning of life in the deep Finnish forests. I realized that I am more interested in wood than in lime and cement. I

returned to civilization in -69 and got first involved with carbohydrate chemistry. The tall oil project came in -71 and I did my doctoral thesis. The aim was to remove sterols and make the tall oil acceptable for distillation and get good resin and fatty acid products. A pilot plant was first tested in Lappeenranta and later a factory was built. I started a company in -75 manufacturing GC capillary columns. After that I went to Canada to identify the structure a mutagenic compound present in bleaching waters which we called MX, which we later found also in drinking water.

How do you define "green chemistry"?

The first criteria is that one should use renewable resources. The process should be green, having low energy consumption and not produce hazardous byproducts. However, most important are the molecules, which have to be well suited for the ecologic system and harmless to life and nature. If a substance foreign and harmful to nature is produced, this is not green chemistry no matter how green the process is. Properties and function of the product should be brought into focus.

Prof. Bjarne Holmbom was interviewed by
Dr. Andreas Bernas
Editor

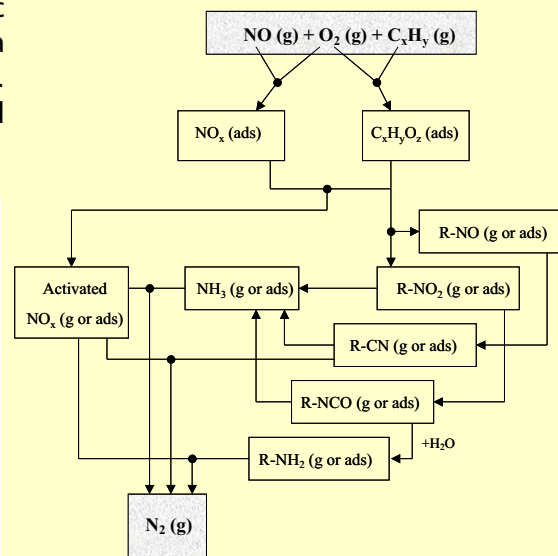
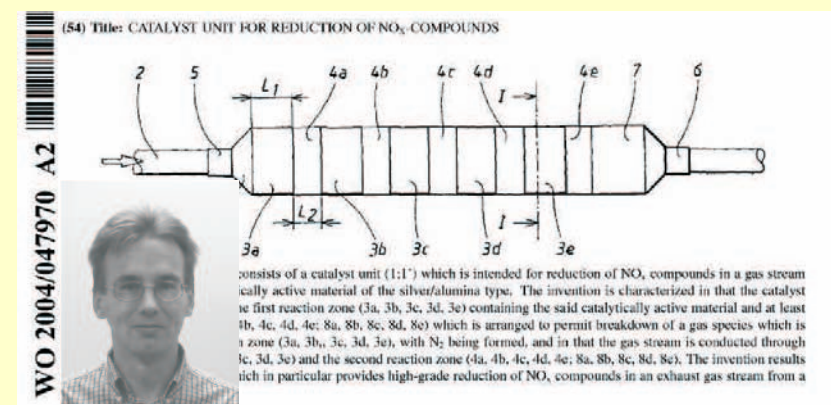
NEW PERIOD OF CoE STATUS FOR PCC

The Centre of Excellence status continues for the coming six years period. On the basis of the evaluations of Prof. Hans Theljander (Sweden) and Prof. Jean Claude Charpentier (France), the Åbo Akademi Process Chemistry Centre was granted the status of a National Centre of Excellence for the years 2006-2011 by the Academy of Finland on June 7, 2005.

PRICE WINNING DOCTORAL THESIS

Doctor Kari Eränen has been awarded the Harry Elving Prize (6000€) at the Åbo Akademi University's inscription on September 1, 2005 for his doctoral thesis "Abatement of Nitric Oxide by Catalytic Decomposition and Selective Reduction with Hydrocarbons". The annual prize is granted by Åbo Akademi University and was this year given to three outstanding doctoral theses.

Eränen's thesis deals with a new scientific technology for catalytic decomposition and reduction of nitric oxides. The work involves a world patent application for a new concept in exhaust cleaning. He is a versatile researcher, especially skillful in construction and run of experimental equipment as well as fundamental aspects.



EUROPACAT VIII 2007 - www.europacat.org

In November 2004, we got good news from Berlin. The council of the European Federation of Catalysis (EFCATS) decided by an overwhelming majority that the largest European event in catalysis - EUROPACAT - in 2007 will take place at the Turku Fair and Congress Centre. The congress organization a common Scandinavian effort (Denmark, Finland, Norway, and Sweden). Welcome to EUROPACAT VIII, August 26-31, 2007, Åbo/Turku. The deadline for submission of abstracts is January 31, 2007.



SUNDBERG, MÄKI-ARVELA, AND BOBACKA WERE APPOINTED LECTURERS

Dr. Anna Sundberg, Dr. Päivi Mäki-Arvela, and Dr. Johan Bobacka were appointed academic lecturers on August 1, 2005. Dr. Stefan Willör was appointed Academic Researcher Follow 1.8.2005-31.7.2010.

PEDRO FARDIM AND RON ZEVENHOVEN NEW PROFESSORS

Two new professors with close contacts to PCC were appointed at Åbo Akademi University. Pedro Fardim was appointed professor at the Laboratory of Fire and Cellulose Technology on August 1, 2005. Ron Zevenhoven was appointed professor in technical thermodynamics and modeling at the Laboratory of Heat Engineering.

PCC WORKSHOP SERIES

All PCC members are welcome to join our new PCC Workshop Series. Scientific and technical workshops will be regularly arranged for all PCC members starting from October 2005. The attendants should expect to gain knowledge on the intellectual and instrumental resources available at PCC or via collaborating institutions. All workshops will start with invited presentations on the topic of the day, and will continue with questions, comments, and group discussions. Discussions will be the core of each workshop, giving everybody the chance to share knowledge and to learn from all other attendants. We therefore welcome an active participation. Depending on the extent of the discussion, the workshops will last two to four hours. Coffee and pastry will be served during the workshops. It is expected that especially younger researchers and Ph.D. students will participate in the PCC workshops covering different common PCC topics and instrumental aspects. The main purpose of the workshops is to increase the scientific interaction and knowledge within the PCC. The first part dealing with INSTRUMENTAL METHODS took place on Friday, October 14, 2005. Speakers were Dr. Leif Kronberg (Organic chemistry) "*HPLC-MS*", Dr. David Kubicka (Kinetics & Catalysis) "*CHEMOMETRICS*", Mr. Jyrki Kuusisto (Kinetics & Catalysis) "*General Aspects of HPLC*", Mr. Markku Reunanen (Wood & Paper Chemistry) "*GC-MS*", and Mr. Johan Werkelin (Comb. & Mat. Chem.) "*ION CHROMATOGRAPHY*". The second part of the PCC workshops was arranged on Friday, November 18, 2005. Speakers were Dr. Mikael Bergelin (Comb. & Mat. Chem.) "*Confocal Optical Microscopy*", Dr. Carita Kvarnström (Process Analytical Chemistry) "*FTIR and Raman Spectroscopy*", Dr. Rainer Sjöholm (Wood and paper Chemistry) "*NMR Spectroscopy*", and Dr. Lari Vähäsalo (Wood and Paper Chemistry) "*Flow Cytometry*". For more information contact the PCC Scientific Task Force (STF): Stefan Willför (Wood and Paper Chemistry), Edgardo Coda Zabetta (Combustion and Materials Chemistry), Jyri-Pekka Mikkola (Kinetics and Catalysis), Tom Lindfors (Process Analytical Chemistry).

FINNISH LIGNAN MEETING

The Finnish Lignan Meeting 2005 was held August 1, 2005. Reasecrhers, industrial representants as well as Tekes attended.

PCC ANNUAL SEMINAR

The Åbo Akademi Process Chemistry Centre Annual Meeting was held in the new ÅÅ building Arken on Thursday, Augusts 18, 2005. The 2004 activities were presented by the group leaders and moreover selected technical presentations were held. According to tradition, also young PCC scientists had a chance to show their results in the form of a poster session. Later in the evening the participants had the pleasure to visit Ruissalo by MS Lily, where the dinner was arranged at the Spahotel Ruissalo Restaurant.



Distinguished Lecture Series

- November 23, 2005 **Prof. Lothar Dunsch**, Leibnitz-Institute for Solid State Materials Research, Dresden, Germany.
- December 2, 2005 **Prof. Robbie Burch**, Queen's University of Belfast, Northern Ireland.
- November 2005
Or March 2006 **Prof. Gordon Wallace**, University of Wollongong, Australia.
- *To be announced* **Prof. Roger Sheldon**, Delft University of Technology, Delft, the Netherlands.

Doctoral Defenses

- **Patrik Eklund**: "*Synthetic Modification of the Natural Lignan Hydroxymatairesinol*" on October 7, 2005. Opponent: Prof. Em. Gösta Brunow, University of Helsinki, Finland.
- **Kalle Arve**: "*Catalytic Diesel Exhaust Aftertreatment: From Reaction Mechanism to Reactor Design*" on December 2, 2005. Opponent: Prof. Robbie Burch, Queen's University of Belfast, Northern Ireland.
- **Henrik Backman**: "*Kinetic Modelling and Parameter Estimation of Organic and Inorganic Heterogeneous Catalytic Gas Phase Reactions*" on December 3, 2005. Opponent: Prof. Lachezar Petrov, Bulgarian Academy of Sciences, Sofia, Bulgaria.
- **Suvi Pietarinen**: "*Extractives in Stemwood and Knots of Acacia and Aspen Trees*" in December, 2005. Opponent: Teris van Beek, Wageningen Universiteit, The Netherlands.

PCC Scientific and Industrial Advisory Boards

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PCC Facts and Mission

The Åbo Akademi Process Chemistry Centre (ÅA-PCC) studies physico-chemical processes at the molecular level in environments of industrial importance, in order to meet the needs of tomorrow's process and product development. Our particular focus on the understanding of complex process chemistry we call

Molecular Process Technology

The Centre consists of four research groups at the Chemical Engineering Faculty of Åbo Akademi University: *Combustion & Materials Chemistry* (Prof. Hupa), *Kinetics & Catalysis* (Prof. Salmi), *Process Analytical Chemistry* (Prof. Ivaska) and *Wood and Paper Chemistry* (Prof. Holmbom). In the year 2005, about 130 persons (including about 20 senior researchers) took part in the PCC activities with a total funding of approximately 6 Million €.

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