WAGENINGEN UR
For quality of life

Wageningen Paper and Board

Newsletter for the paper and board industry and its suppliers
October 2005, number 5

'Slimezymes'

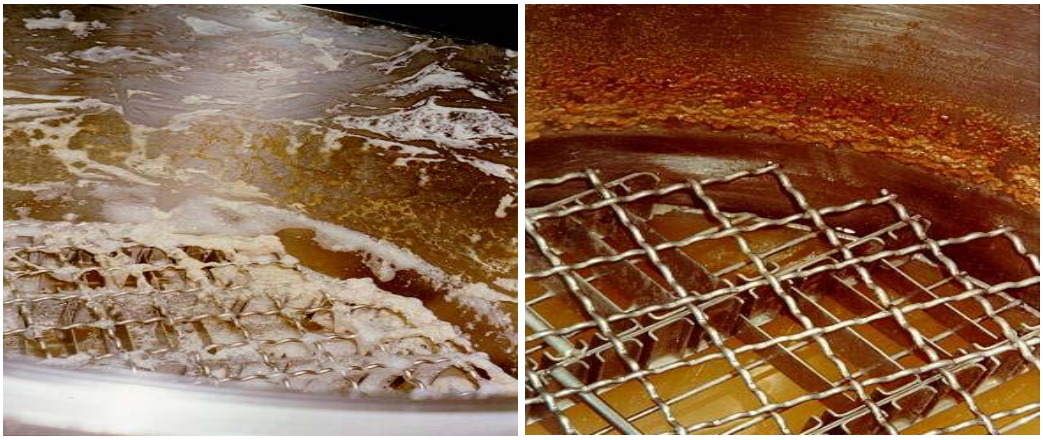
Novel enzymatic concepts for slime control

Due to more closed-loop water systems, paper mills encounter an increased number of problems resulting from slime deposits caused by microbiological activity. Recent studies have shown that specific enzymes are able to degrade these deposits.

Slime deposits at critical points within the paper machine cause serious operational problems such as clogging of filters, foul odours, and corrosion. The use of biocides to tackle this problem is becoming less attractive due to environmental legislation and increased costs. Alternative methods for slime control are required.

The overall objective of 'Slimezymes', a research project of four years funded by the European Commission, was to develop novel enzymatic approaches for efficient control of slimes in paper manufacture. The project was coordinated by Dr. Johanna Buchert of VTT, Finland.

Anti-fouling studies using specific enzymes in lab-scale bioreactors simulating a closed-loop paper machine have been successful. However, it was not possible to obtain large amounts of the enzyme; sequencing and cloning of the enzyme complex was not successful until now. Recent studies have also shown promising results using a commercial enzyme preparation able to prevent the growth of biofilms, both in lab scale studies and pilot plant studies using white water.



Slime-formation studies without and with the presence of enzymes

Henk Schols, assistant professor at the group of Food Chemistry of Wageningen UR and participant in this project: "Within the project, we learned that the enzymatic approach will be most effective in an early stage of slime formation, where it can be a valuable contribution to already developed enzymatic systems. But above all, a strict hygienic regime can prevent contamination to a great extent."

Part of the work was done by René Verhoef, who recently received his PhD under the guidance of Henk Schols. The work was described in a number of research articles and a PhD-thesis entitled 'Structural characterisation and enzymatic degradation of exopolysaccharides involved in paper mill slime deposition'.

More information:
www.vtt.fi/virtual/slimezymes, www.foodchemistry.wur.nl, or contact Henk Schols (henk.schols@wur.nl)

News

Forest-based sector Technology Platform (FTP) Event

On the 9th and 10th of November the European Forest-Based Sector Research Forum will organise a public meeting on "Innovative and sustainable use of forest resources" with major contributions from the European Commission, industry and research community.
The main goal of this meeting is to present the Strategic Research Agenda for the sector and how this agenda can be implemented through the Framework Programmes of the European Commission.
More information on this event can be found at www.fbs-research.com. In conjunction to this meeting several other meetings (COST E41, CEPI, ECOTARGET, EFPRO) will be organised.

More information:
Ed de Jong (ed.dejong@wur.nl)

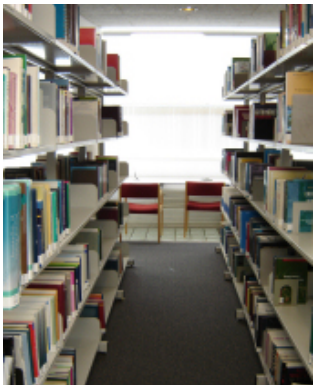
International activities

PhD-student Berdine Coetzee from the University of Pretoria, South Africa visited Wageningen UR from the 5th of September to the 10th of October to study the use of enzymes for the degradation of pectines in wood chips. The objective of using pectin-degrading enzymes is to reduce energy consumption during the TMP process.
She learned specific techniques to analyse pectines to be able to characterize and quantify the pectines in different wood species.
This mission was a close co-operation between Wageningen UR Paper and Board, Wageningen UR Food Chemistry, the University of Pretoria, and SAPPI.

More information:
Henry van der Valk (henry.vandervalk@wur.nl)

Library for the paper and board industry

The Wageningen UR library contains more than thousand titles of books, conference proceedings, and journals in the field of papermaking. Besides a lot of modern publications, also very old publications dating from 1904 are present.



Most titles can be explored in the Agralin-catalogue by anyone without costs (http://library.wur.nl/desktop). On this internet-site requests for lending and copies can be made on-line.

Corry Snijder, librarian: "You are welcome to visit our library. At present, the library has a subscription on ten journals related to the pulp and paper industry. Moreover, when visiting the library, extensive facilities for literature surveys can be used. Our library has a subscription to the databases Current Contents and Scopus, and it is also possible to use the databases of PIRA and PAPERCHEM2."

Also the archive of more than 300 reports of the former experimental station of the straw board industry (Nederlands Proefstation voor Stroverwerking) can be viewed at the library of Wageningen UR Paper and Board.

More information (location, opening hours etc.):
www.paperandboard.nl or contact Corry Snijder (corry.snijder@wur.nl)

Apparatus: Tensile tester

A new Zwick tensile tester, owned by the Centre of Competence Paper and Board, is recently installed at Wageningen UR Paper and Board. The following properties can be measured:

- Tensile strength (also in z-direction)
- Bending stiffness (2-point and 3-point)
- Compression strength (FCT, SCT)
- Wet web strength

The tensile tester is equipped with a climate chamber, which makes it possible to perform measurements from -40 to 190 °C, and at a relative humidity between 10 and 95% (within a temperature range of 10 to 60 °C). Furthermore, it has a non-contact optical extensiometer, and grooved specimens can be made for e.g. creasability studies.

More information: Jocco Dekker (jocco.dekker@wur.nl)

Events

Publication
Fibre raw material technology for sustainable paper and board production, Westenbroek, A.P.H. *et al.*, Paper Technology, Volume 46, number 7, September 2005, p.17-24

Presentation
Reduced energy consumption in/by fibre processing, Westenbroek, A.P.H., Dekker, J.C., PTS Pulp Technology Symposium, Dresden, Germany, 24-26 October 2005

Theme meeting 'Odour reduction'
On the 1st of November a theme meeting on odour reduction is organized in cooperation with the Centre of Competence Paper and Board.
The following questions will be discussed:

- What is the cause of odours in the paper industry?
- What methods are available to reduce odours?

More information: Annita Westenbroek (annita.westenbroek@wur.nl)

Wageningen UR Paper and Board

Major Research Themes

Fibre Raw Materials
Fibre quality and choice related to processing and end product requirements
Fibre Processing
Reduced energy consumption during fibre processing and in the total paper production line
Papermaking Chemistry
Synthesis of new or more effective chemicals based on natural raw materials
End Product Quality
Insight in product requirements based on converting and consumer demands, enhancing end product performance and development of packaging
By-stream Upgrading / Processing
Creating commercial value for solid by-streams from pulp and paper production processes

Colophon
Wageningen Paper and Board is meant to inform all contacts of WUR Paper and Board about research activities, new developments and projects. The newsletter will be issued 3 times a year and is also available on the website, www.paperandboard.nl.
Editor: P.F.H. Harmsen, tel. +31 317 475328, P.O.Box 17, 6700AA Wageningen, paulien.harmsen@wur.nl

WAGENINGEN UR
For quality of life