



Wageningen Paper and Board

Newsletter for the paper and board industry and its suppliers
March 2006, number 6

Smart solutions

Functional paper properties by controlled release

The technology of controlled release (CR) and/or micro-encapsulation offers new chances for paper and board product development. It is a powerful technique to develop products with tailor-made properties. CR-systems come in different shapes and sizes, such as tiny particles (microcapsules or microspheres), emulsions, matrix systems or coatings.

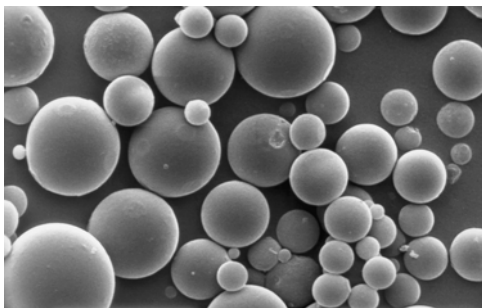
The reasons for choosing CR-systems are numerous. Sometimes it is necessary to improve the stability of an active ingredient by protecting it against oxygen, light, moisture, or a certain pH or temperature. Other reasons include improvement of handling of components (e.g. by converting a liquid to a solid), safety purposes (reduction of toxicity by encapsulation), or separation of incompatible compounds. Often controlled release of an active ingredient is desired. This means that the ingredient is being released via a trigger such as pressure, shear, pH-change, heat, light, enzymatic or chemical attack.

Gülden Yilmaz has been active on this topic for many years at Wageningen UR: "The field of paper and board is relatively new to me.

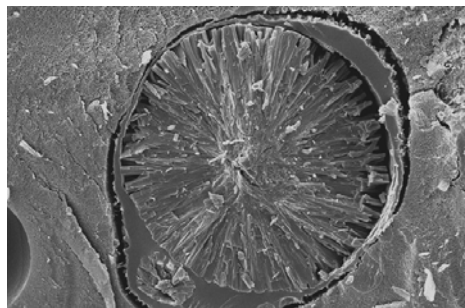
Although my expertise is mainly on CR-technologies and bioplastics, I know that innovations happen in the interface of different expertise fields. Therefore I hope to take part in a fruitful cooperation with the paper industry, leading to better products and new markets."



Gülden Yilmaz



Microspheres



Microcapsule

Known applications of CR- or encapsulation techniques in paper and board are for example carbonless pressure-sensitive copy paper or perfumed paper. Gülden Yilmaz is convinced that this can be expanded: "Specific paper properties via incorporation of antimicrobial or antifungal components in pulp or on finished paper in the form of a coating are interesting for hygiene paper applications or packaging. Other opportunities are the possibility of adding reactive components which become active at a certain time or place by triggered release. The benefits of CR are the possibility to use less expensive materials, and to control product quality. It may provide a large flexibility in product properties and functions."

Gülden Yilmaz recently joined the team of Wageningen UR Paper and Board. She will be responsible for customer contacts and the coordination of new project proposals.

More information: Gulden Yilmaz (<mailto:gulden.yilmaz@wur.nl>)

Events

Presentations

Effects of recycling on fibre and paper properties, A. Westenbroek, Sustainpack training course, Delft, The Netherlands, 10 January 2006

Increase energy efficiency by optimal fibre selection and processing, A. Westenbroek, Workshop Ecotarget, Delft, The Netherlands, 11 January 2006

PIRA conference 'Scientific and technical advances in refining and mechanical pulping', Vienna, Austria, 22-23 February 2006

- *Strategic overview - the future needs of refining*, A. Westenbroek.
- *Energy consumption due to refining*, J. Dekker.

Energy reduction by control of recycled fibre selection and processing, A. Westenbroek, J. Dekker, 4th CTP/PTS Packaging paper and board recycling conference, Grenoble, France, 21-23 March 2006

Workshop

On the 5th of April, the Centre of Competence Paper and Board organizes a workshop 'Cost reduction additives'.

This workshop for paper engineers, production managers, and purchasers aims at exchanging experience and expertise on strategies for an optimal cost structure of additives.

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

New initiative

Wageningen UR is setting up projects aiming at the development and application of high consistency dispersions and powder coatings.

For expression of interest or more information: Gülden Yilmaz (<mailto:gulden.yilmaz@wur.nl>)

COST Action E48

The limits of paper recycling

Being an important raw material for both economical and ecological reasons, the share of recycled fibres as fibre raw material source for papermaking is increasing rapidly. Although the efforts to recover paper and board products were strengthened significantly, this strong demand causes the economical advantage of recovered paper against virgin fibres gradually becoming smaller while quality simultaneously is getting worse.

The future of paper recycling depends on many difficult to assess factors, the most important of which are:

- World-wide fibre market developments
- Quality requirements for new paper products
- Society's attitude towards recycling in general and products made from recycled raw materials in particular
- Efficiency of recovery strategies and recycling technology.

Wageningen UR participates in the COST Action E48, which is a European network of universities, research organisations and industrial partners engaged in paper recycling. It generates a trans-European cooperation aiming at developing scenarios about the future of paper recycling within Europe and the role recovered paper and board will play as a raw material source for the European paper industry.



More information: www.cost-e48.net
<mailto:annita.westenbroek@wur.nl>

Facilities

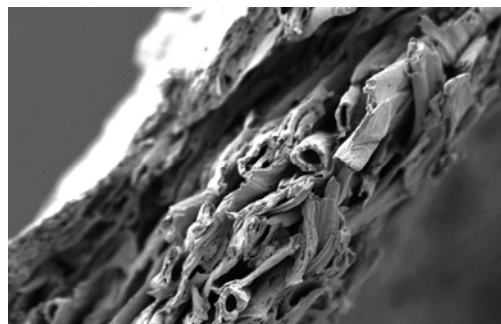
Scanning Electron Microscopy

Scanning Electron Microscopy (SEM) is invaluable in quality assessment in many research fields because it provides high quality images of surface structures and fracture faces.

It reveals the location of specific components, interactions and hidden defects on µm- or nm-scale. This information can be essential as a fast quality check in engineering or manufacturing, and for the interpretation of research data.



Working with the SEM



SEM-picture of cross-section paper sheet

For paper and board research, SEM can provide valuable information on paper and board properties on fibre-level. Especially for paper coating research, the electron microscope has proven its usefulness. The combination of physical data and surface morphology given by SEM is a powerful tool in elucidating paper coating properties.

More information: Jacqueline Donkers (<mailto:jacqueline.donkers@wur.nl>)

International activities

Strategic Research Agenda

Recently the Strategic Research Agenda of the Forest-based Sector Technology Platform, an initiative at European level based on public-private partnership, has been finalized.

The proposals in this agenda are coming from all over Europe and encompass the full range of complexity and variety the sector represents, from paper to packaging, from building with wood to bio-energy from wood, from trees to new trends. Stakeholders from all areas including industry, forest owners, researchers, and public bodies have taken an active part in this process with representatives from the European Commission observing.

The Strategic Research Agenda and it's annex can be downloaded at www.forestplatform.org/index.php?mid=102

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.
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