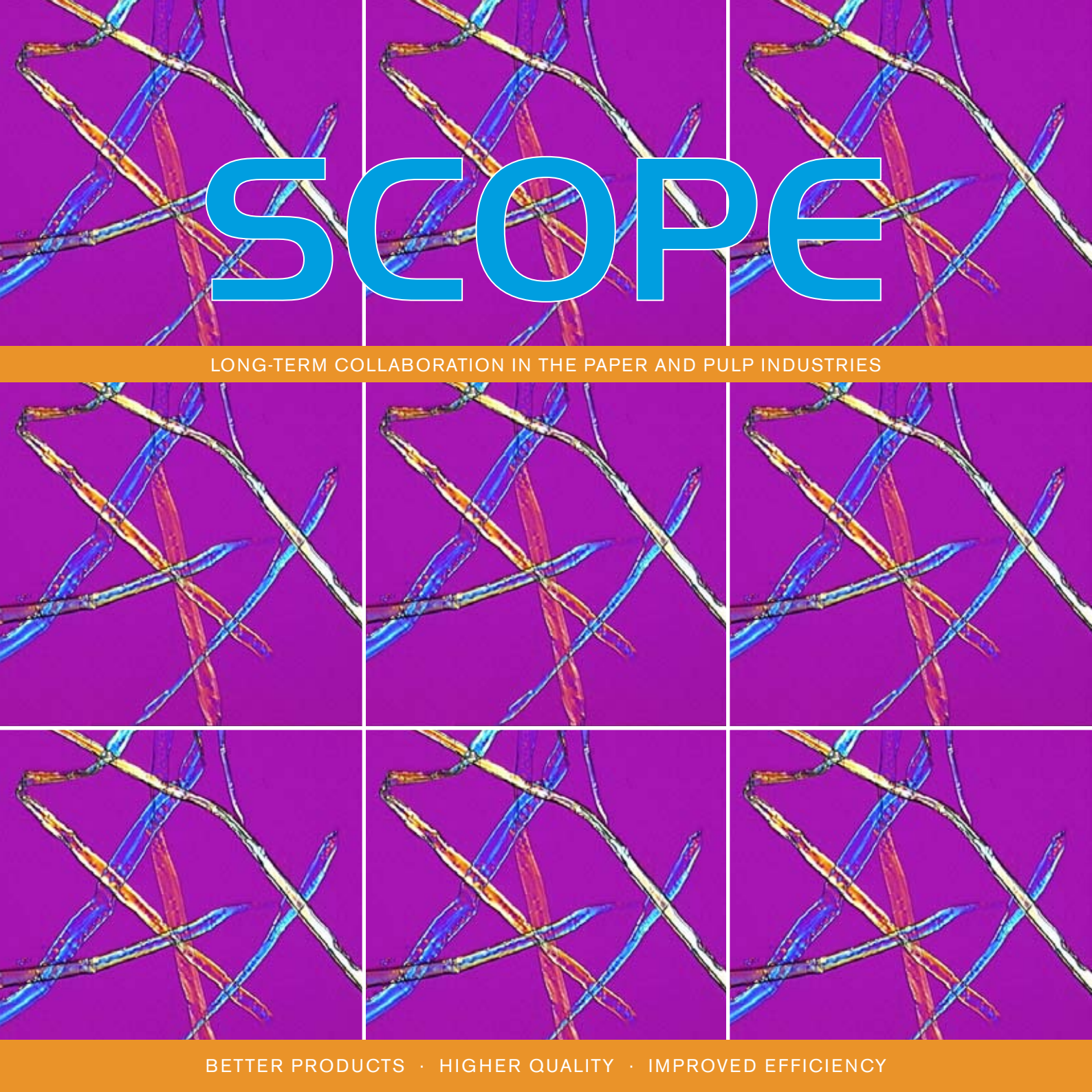
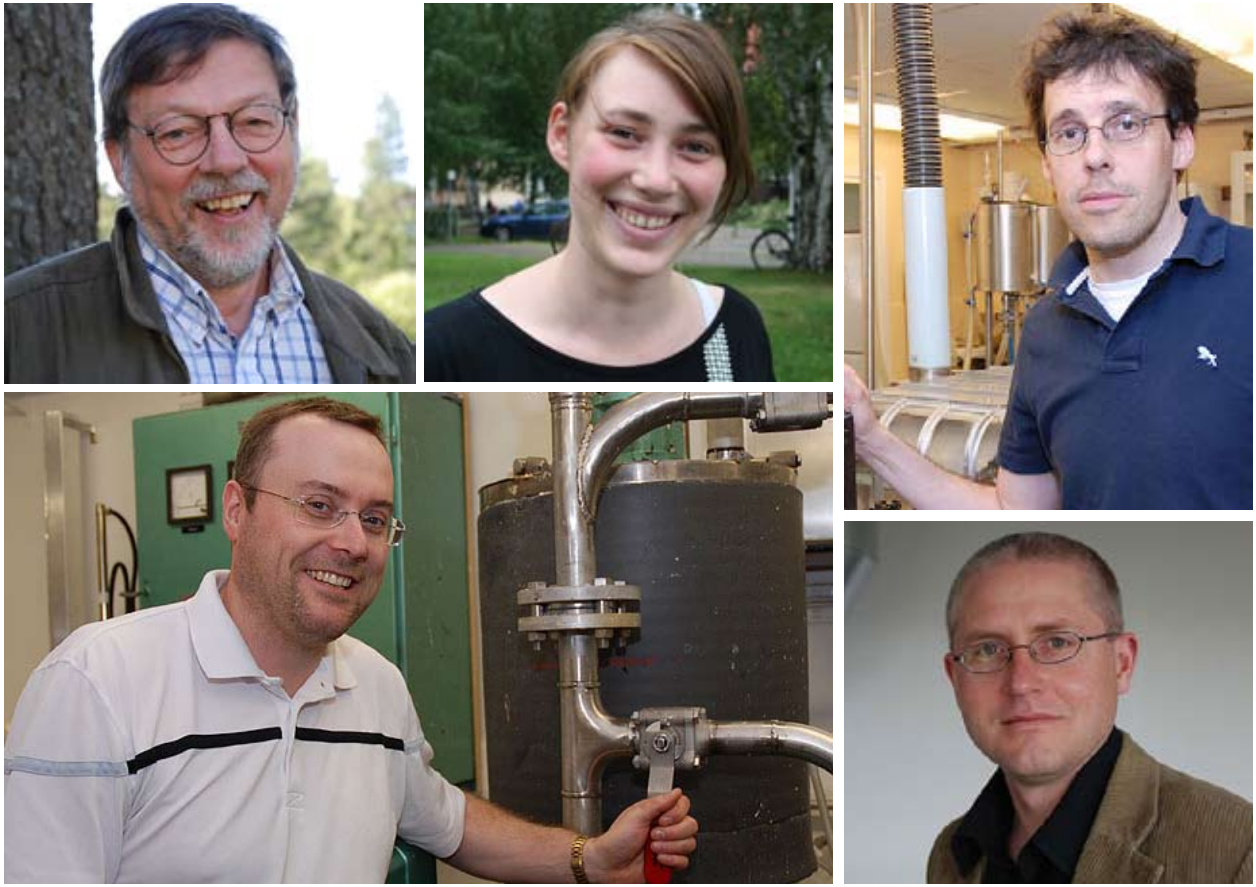


SCOPE

LONG-TERM COLLABORATION IN THE PAPER AND PULP INDUSTRIES

BETTER PRODUCTS · HIGHER QUALITY · IMPROVED EFFICIENCY

Pulp and paper industries in unique collaboration



One of the strengths of SCOPE is the competence of its contributors. Some of these are (left to right) Harry Forsgren, Eurocon Optimation, Tilda Nordin, SCA Packaging, Obbola, Torbjörn Löfqvist, Luleå University of Technology, Jan Niemi, Luleå Technical University, and Stefan Svensson, MoRe Research.

Better products, higher quality and improved efficiency. These are the unique competitive advantages being created by the pulp and paper industries of northern Sweden together with ProcessIT Innovations and the region´s universities in the collaboration SCOPE (Structural Control Optimisation and Paper Quality Estimation in Pulping).

Together with ProcessIT Innovations, the pulp and paper industries of northern Sweden have initiated a research and development collaboration under the name SCOPE. It is hoped that this collaboration will lead to several different R&D projects which in turn can generate better products and higher quality in the pulp and paper industries.

All projects carried out in the collaboration have a prior connection to the refinement process which provides increased understanding and knowledge about the processes that lead to finished paper.

'We want to operate research projects along the whole value chain, from wood to finished paper', says Pär-Erik Martinsson, ProcessIT Innovations Manager of SCOPE.

The participants in SCOPE represent various pulp and paper firms and associated industries that have a shared need to improve the overall process from raw forest materials to paper products. They include a number of firms in the pulp and paper industries in northern Sweden such as SCA Packaging, Munksund; SCA Packaging, Obbola; Smurfit Kappa Kraftliner, Piteå; Mondi Packaging Dynäs, Kramfors; and Billerud Karlsborg near Kalix.

The solid basis in research is guaranteed by the fact that a number of researchers from the region's universities with an interest in studying industrial problems are taking part in the collaboration. In this way, results are anchored into the regional economy, which is expected to lead to a series of new products and services and new business opportunities for MoRe Research, Eurocon Analyzer, and Eurocon Optimation both within the region and outside it.

COMMON GROUND FOR SCOPE

Objectives

Increased productivity, ever higher quality, and greater understanding of the refining process.

Task

To operate relevant R&D projects, be a reference group, and guarantee that the industry's interests are facilitated.

Common ground

Common interest in the refining process of raw materials to paper products within the forestry sector.

Areas of interest

Fibre analysis, process modelling, pulp index, and structural analysis and optimisation.

Participants

In addition to the universities, a further eight representatives of regional industry are involved:

- Billerud Karlsborg
- Eurocon Analyzer
- Eurocon Optimation
- Mondi Packaging Dynäs
- MoRe Research
- SCA Packaging, Munksund
- SCA Packaging, Obbola
- Smurfit Kappa Kraftliner, Piteå

FOUR AREAS OF INTEREST

Four areas of interest have been identified in SCOPE as important in increasing the efficiency of the refining process.

Fibre analysis

New measurement methods for pulp and fibre properties.

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Pulp index

Relation between pulp properties and paper quality.

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Process modelling

Models for selected process stages.

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Structural analysis and optimisation

New methods and tools for structural optimisation of control in pulping.

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Together we can do more

'Collaboration is important. You can't do everything yourself. SCOPE gives us a strong common involvement in, for example, fibre measurement', says Öjvind Sundvall, Development Manager at Eurocon Analyzer.

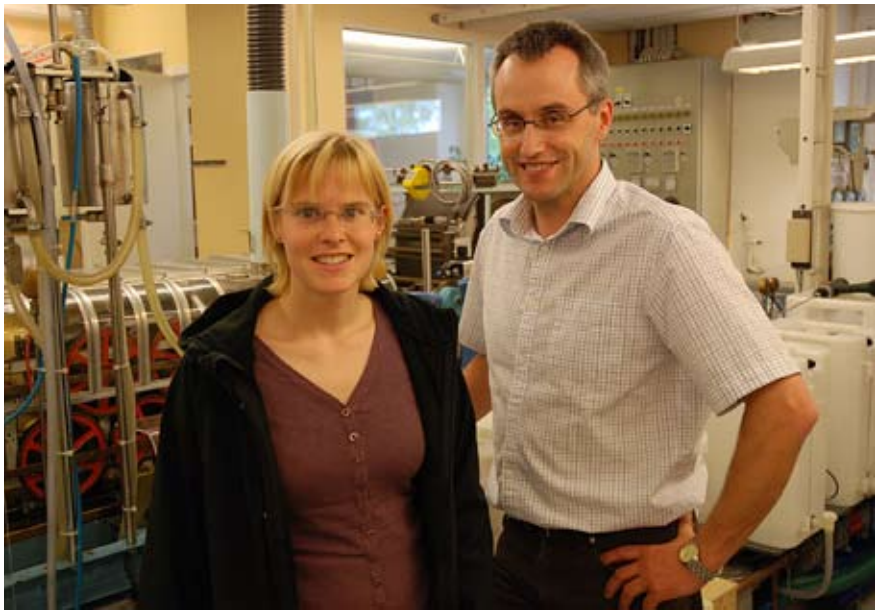
Eurocon Analyzer is one of eight partners from the pulp and paper industries that are involved in the collaboration in the ProcessIT project SCOPE. Eurocon has an important task within this collaborative effort. From its many years of experience and wide knowledge base in the process industry, Eurocon Analyzer offers, amongst other services, fiber measurement.

If the size and properties of the fibres are known, the pulp process can be controlled more effectively, so that the raw material can be used more efficiently. But for Eurocon's services to be developed, they need to work with other partners in the region, particularly those working with ongoing applied research.

'Today, we can offer the world's fastest fibre measurement and we want to continue to be first and best. But to achieve this, research must be close to the mill', believes Öjvind Sundvall.

Tilda Nordin, SCA Packaging, Obbola, also feels there are great advantages in collaboration with the universities' researchers.

'Researchers often have the opportunity to think rather more unconventionally. This inspires us at the papermill where we otherwise risk doing what we have always done and continuing down the same rut. This is a very promising collaboration in which the universities can



Lisa Nordin and Öjvind Sundvall at Eurocon Analyzer, a major participant in the SCOPE collaboration.

provide the research and we can play our part by testing and evaluating the results.

One of the researchers involved in the SCOPE collaboration is Jan Niemi, postgraduate student at Luleå University of Technology. As a researcher, he is developing sensor technology for fibre characterisation for the paper and pulp industries by using a combination of ultrasound, optical, and opto-acoustic measurement technologies.

'I can do better research based on the SCOPE collaboration. As a researcher, I find I have a better understanding of industry's problems and requirements.

Together we complement one another, and can see the problem from different angels. This gives us new ways on how products and processes can be developed'.

MEASUREMENT DATA LINKED TO OPTIMISATION OF CONTROL

A four-year project has been started within SCOPE to develop new methods and tools for process optimisation in paper-mills. Control systems in mills consist of thousands of control loops. It is difficult to keep an overview and to understand the complex interconnections between the various process stages. With the new tools, it will be possible to analyse structures and generate better control strategies for improved efficiency along the production line.

Those actively involved in the project are SCA Obbola, Billerud Karlsborg, Eurocon Optimation, and researchers from Luleå University of Technology. The project is supported by funds from VINNOVA.

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SOUND AND LIGHT CAPTURE THE MECHANICS OF FIBRES

In order to determine the properties of paper pulp, researchers use the sound generated by short laser pulses. The sound-field which is propagated captures information such as concentration, fibre material, and fibre sizes. Advanced opto-acoustic models developed at Luleå University of Technology are used to determine, among other things, the mechanical properties of the fibres. The method that has been developed is very suitable for on-line measurements in real time.

Those actively involved in the project are SCA Munksund and Eurocon Analyzer, plus researchers from Luleå University of Technology. The project is supported by the Norrbotten Research Council, ProcessIT, and Kempe Foundations.

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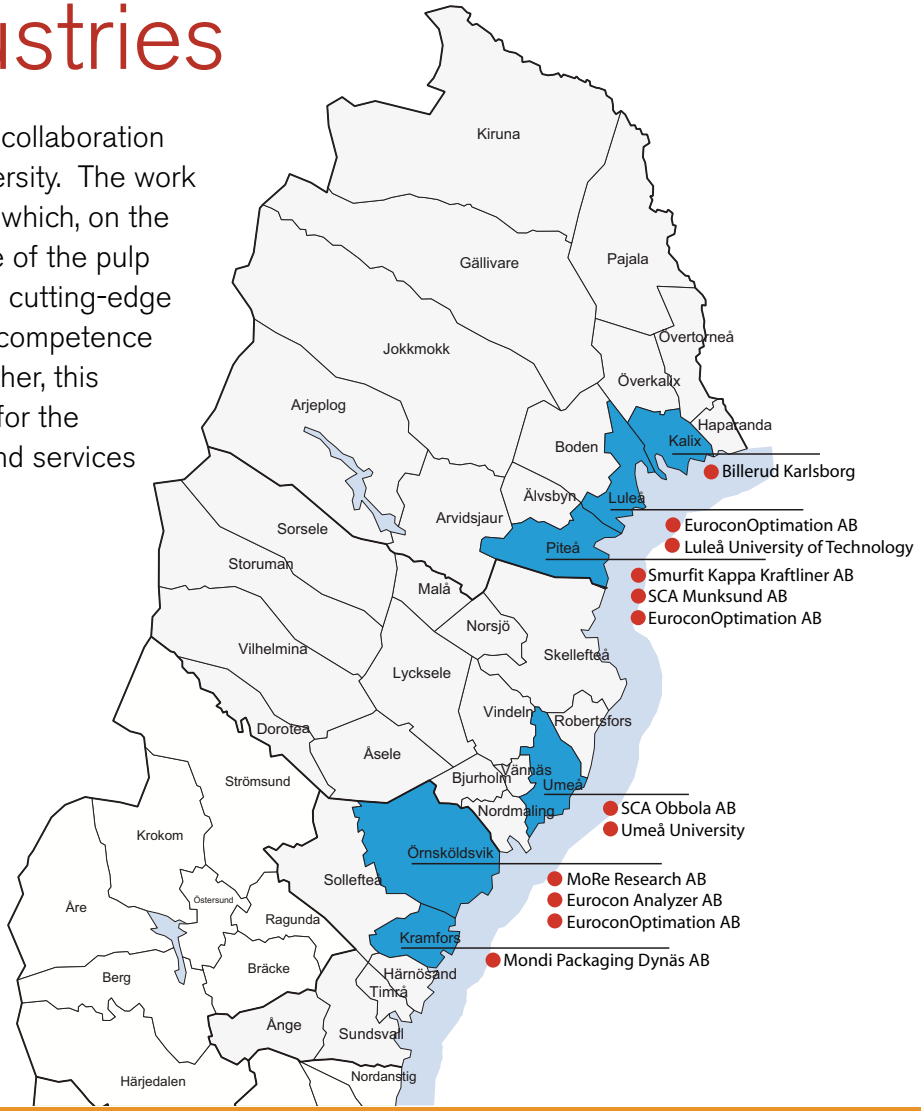
A long-term collaboration in the paper and pulp industries

SCOPE is built on a sound collaboration between industry and University. The work is led by a reference group which, on the basis of its wide experience of the pulp and paper industries and of cutting-edge research, provides a broad competence to the network. Taken together, this generates ideal conditions for the creation of new products and services in the region.



MAPPING THE VALUE GENERATION IN FORESTRY

In the region the increased competition for biomass between the pulp, energy and wood industries have raised the price of raw material and this trend has been steady for the last 5 years. Understanding and mapping of the value creating processes is fundamental for apprasing the aimed research efforts which have been identified by ProcessIT Innovations. An extensive mapping of the physical flow, quality measures, and the production steps involved in the refinement of wood have therefore been initiated by the partners. Those actively involved in the project are MoRe Research and ProcessIT. The project is supported by funds from ProcessIT.

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LINKING PULP CHARACTERISTICS TO PAPER QUALITY

Paper manufacturing is a complex process and industry still lack reliable tools for linking pulp properties with paper quality in real time. We aim to develop a quality index for pulp which captures its principal properties. Important characteristics are the ability to describe pulp variability and correlate it with specific products. The starting point is measurements and first principle process models. Targeted applications are is the improved steering of processes towards a desired product as well as the minimizing of production variation. All SCOPE partners are actively involved in the project. The project is supported by funds from ProcessIT.

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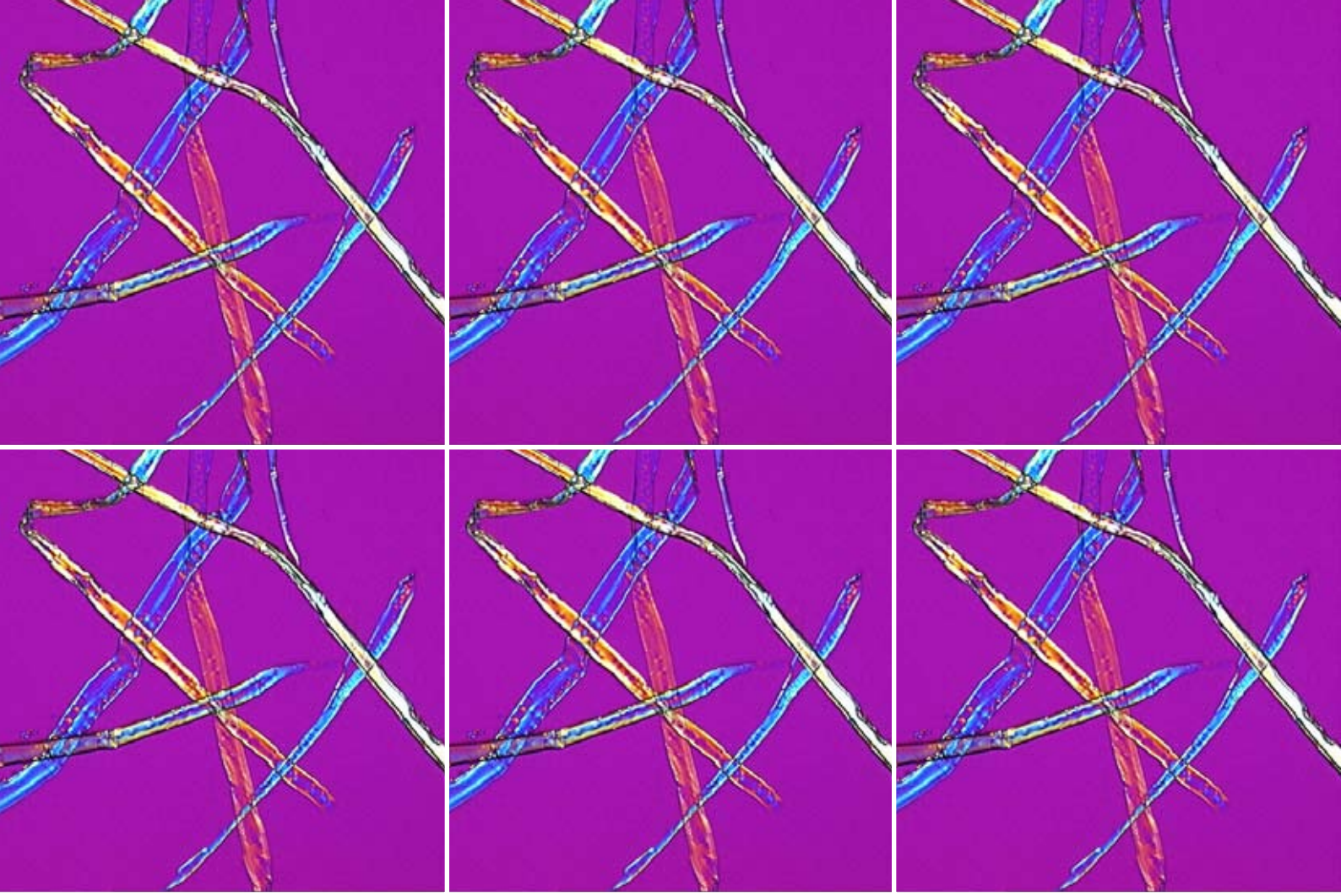

SCOPE – A SOLID COLLABORATION IN PROCESSIT INNOVATIONS

Collaboration in ProcessIT Innovations gives SCOPE its strength. By bringing together northern Sweden's process and manufacturing industries with the region's IT companies and its University, ProcessIT Innovations wishes to strengthen the industrial base and develop the region's IT industry to a level of international competitiveness. ProcessIT Innovations was designated in 2004, at a time of very stiff competition, as VINNVÄXT winner of the national VINNOVA. Those selected as VINNVÄXT winners must be able to show that they have the ability to promote sustainable growth through developing internationally competitive research and innovation environments in specific growth areas. ProcessIT Innovations demonstrated this, and SCOPE is now part of this success.

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