Presentation of Partnership, Competences and Facilities

InTechFibres
research in fibres

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What's this partnership ?

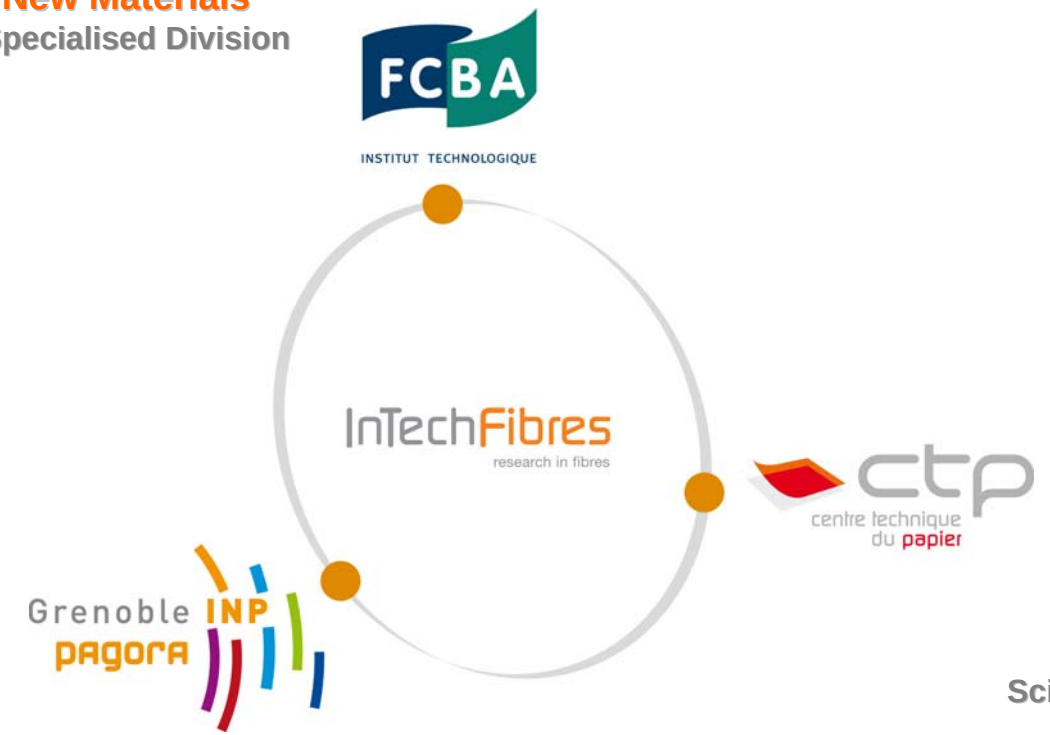
- General information
  - InTechFibres is the partnership combining the complementary skills of **CTP** (*French Pulp and Paper Research and Technical Center*), **FCBA** (*French Institute of Technology for Forest-based and furniture sectors*) and **Grenoble INP-PAGORA** (*International School for Paper, Printed Information and Biomaterials*), through:
    - ✓ The scientific and technological unit Proess-Pulps&Functional Fibres at CTP,
    - ✓ The New Materials technical division at FCBA
    - ✓ The department of Pulping Chemistry at PAGORA
  - Partnership created in late 2004.
  - ~40 people from different educations (chemistry, pulp&paper, wood, biochemistry, physico-chemistry) – 2/3 are PhD engineers.
  - The partnership has reached a critical size to be considered as the South European Research Group in virgin fibres and lignocellulosic materials.
- Objectives:
  - To propose expertise in fibres and pulps to help industrialists to take better advantage of lignocellulosic material diversity in their processes and end products now and in the future,
  - to further enhance the quality and efficiency of the support provided to industry all along the wood-forestry chain (pulp, paper, building wood, wood for furniture,…),
  - And to innovate in fibres and lignocellulosic materials.

What can the partnership bring to you?

- Some Skills
  - Forestry management and wood logistics, including woodyard management (in relation with FCBA's 4 territorial stations)
  - Intra- and inter-tree variability of wood and pulp quality for softwoods and hardwoods
  - Characterisation (components, fibres, pulps) of lignocellulosic materials and their upgrading (wood and annual plants)
  - Wood-Process and Process-Pulp relationships in terms of wood and pulp quality
  - Expertise in pulping and bleaching (chemical, semi-chemical, high-yield processes)
  - Expertise in wood, fibres and pulp characterisation
  - Expertise in the impact of wood species mixes in the manufacture of pulps
  - Development of processes based on new technologies (bivis, ozone, biotechnologies, …)
  - Understanding of fibre separation mechanisms from wood matrix and pulping mechanisms
  - Fractionation and cleaning of paper pulps
  - Impact of pulp&paper processes on the environment, including recalcitrant COD
  - Functionalisation/grafting onto lignocellulosic fibres
  - Manufacture of micro- and nano-objects from lignocellulosic materials

At the intersection of the three institutes

New Materials
Specialised Division



Process-Pulps & Functional Fibres
Scientific and Technological Unit

- **Chemistry of processes**
- Paper and Fibrous structures Physics
- Papermaking Engineering
- Converting, Biomaterials & Packaging
- Printing & Graphical arts

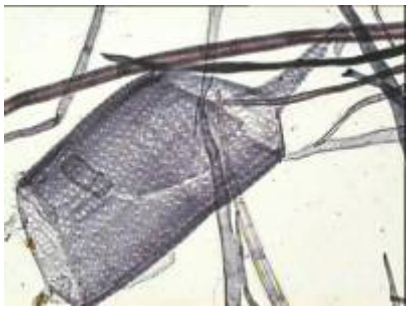
Main Laboratory and Pilot Facilities

- Laboratory facilities to simulate chemical pulping and bleaching processes at different scales
- Cooking plant
- Refiner Mechanical Pulping Pilot plants (5 kg and 40 kg/h).
- Bleaching pilot plants
- Screening systems

Wood, Pulp and Fibre characterisation

A large expertise is developed in the framework of previous and ongoing projects:

- Wood characterisation
- Image based analysers:
  - Cyberflex, Cybersize, Cyberbond
  - MorFi
  - MorFi Wall Thickness
- CyberVision analyser
- Analytical tools for fibre components analysis
- Optical and scanning electron microscopes (TEM, SEM, ESEM) are available for fibre examination
- Immunolabelling of cell wall components



Analytical tools

- Lignin extraction by acidolysis and by enzymatic dissolution of carbohydrates
- Lignin structure analysis by ^{13}C NMR and ^{19}F NMR
- Molecular weight distribution of lignin (GPC) and cellulose
- Functional groups on cellulose (carbonyl, carboxyl)
- Sugar analysis of lignocellulosics
- GC-Mass spectrometry
- Pyrolysis of lignocellulosics
- HPLC analysis with various detectors
- Ionic chromatography, electrophoresis
- Near InfraRed spectrometry