Staff in the biorefinery and fibre technology group

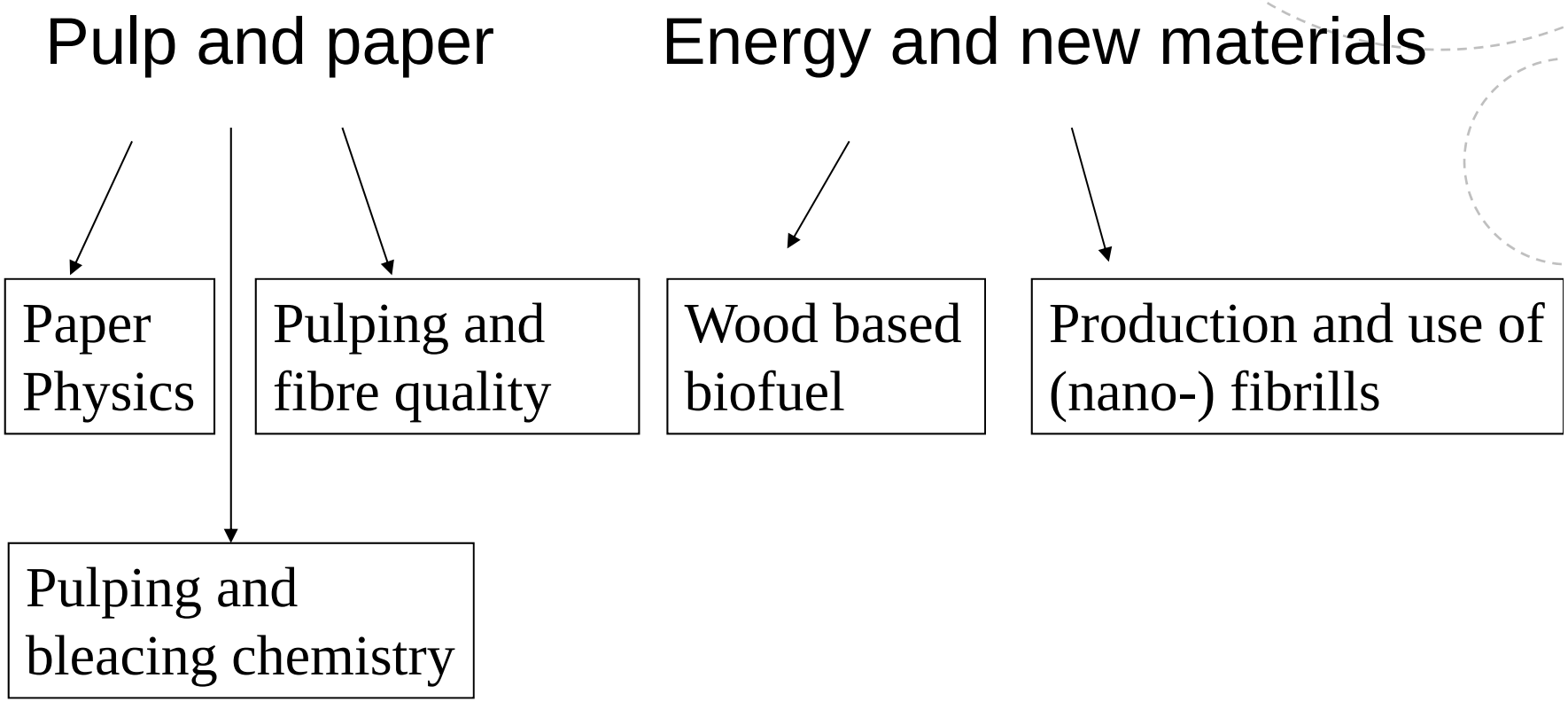
- **Størker Moe**
- Biorefinery
- Pulping
- Bleaching
- Wood chemistry
- Biofuel

- **Øyvind Gregersen**
- Paper physics
- Paper technology
- Cellulose material technology

- **Kristin Syverud**
- Nanocellulose
- Functionalization of cellulose
- New industrial applications of cellulose materials

- **Other people**
- Torbjørn Helle
- Berit Borthen
- Hanne Narvestad
- Tuan-Anh Ngyen

Main research areas



Research cooperation

- Tight cooperation with PFI in projects, with PhD students and master students.
- Cooperation with STFI-PF and Aalto university and Mid Sweden University through PhD and research projects
- Cooperation with industry partners like Norske Skog, Södra, Peterson, Borregaard and Vioth through research projects, PhD studies and master studies.

PFI

STFI-PACKFORSK

Mittuniversitetet
MID SWEDEN UNIVERSITY

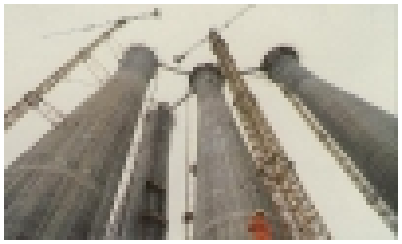
Aalto University
School of Science
and Technology

Where?

- PFI-building, Høgskoleringen 6B
- Built 1998
- Localized together with PFI
- Much common equipment with PFI, separate teaching labs
- Office space in the same areas as PhD students and researchers
- Student-PC’s

More than newsprint

- Current Norwegian wood based products
  - Specialty cellulose
  - Lignosulphonates
  - (Bio)-ethanol
  - Specialty chemicals
  - Energy
  - Corrugated board
  - Reinforcement cellulose
  - Short fibre cellulose
  - Tissue
  - Greaseproof paper
  - Magazine paper
  - Book paper
  - Newsprint
  - Solid board
  - Silk paper



Project topics 2013

- **99. Jatropha oil in developing countries (STM)**
- **100. Extraction of oil from jatropha seed presscake STM)**
- **101. Simple analysis methods for jatropha oil quality (STM)**
- **102. Use of mineral acid mixtures in concentrated acid hydrolysis of lignocellulose (STM)**
- **103. Method for producing cellulose insulation mats (ØWG)**
- **104. Application of nanocellulose fibrils in fibrous sheets for barrier property control (KS)**
- **105. Alternative fire retardants for cellulose insulation materials (KS)**
- **106. Extracting hemicellulose sugars from wood and wood fibres (KS)**

Biofuel in Kenya

- Initiated by ZERO – the Zero Emissions Resource Organisation
- Local bioenergy production in Kenya
- Challenges are testing of Jatropha oil quality with limited technological resources, and good yields during pressing of the seeds.
- Work entails a thorough literature study and testing of methods in the lab.

Concentrated acid hydrolysis of biomass for biofuel production

- Current academic knowledge is on sulfuric acid alone
- Sulfuric/phosphoric acid mixtures are less harsh on the carbohydrates
- Project: Investigation into reactions conditions suitable for sulfuric acid / phosphoric acid mixtures

TKP4180 Bioenergy and fibre technology

- Spring 4. year, 7,5 SP
- Processes for industrial utilization of wood
- Contents
  - Wood as raw material
  - Structure and chemical properties of wood
  - Properties of fibre suspensions
  - 2. generation biofuel
  - Wood composites
  - Pulping chemistry
  - Pulp and paper technology
  - Lab and exercises
- Introduction to specialization in pulping, papermaking and bioenergy
- Thought by Størker Moe og Øyvind Gregersen

TKP4565 – Biorefinery- and fibre technology

- Autumn, 5. year
- The subject shall give a thorough introduction to the production technology and chemistry needed to run a pulp, paper or biofuel production plant.
- Possible modules
  - Paper – Properties and production
  - Paper pulp – Properties and production
  - Biorefinery
  - Chemical engineering special topics