
BOKU
University of Natural Resources and
Life Sciences Vienna /
Universität für Bodenkultur Wien

Mission statement

- **Education and research in renewable resources**
- **Protection of life resources** for future generations
- Connecting **natural sciences, engineering and economics**,

- **Ecologically and economically sustainable use of natural resources in a cultivated landscape**.

„Türkenschanze“ Site in Vienna

„Muthgasse“ Site in Vienna

„Tulln“ Site

BOKU Facts

- Established 1872
- **~ 13.000 students** in 8 Bachelor, 26 Master (plus: double degree programms; 11 Int. Master programs), PhD programs
- **~1613 graduates** per year; among 20% foreign students;
- **Greenmetric World University Ranking 2017**: rank 12 of 516 universities
- ~ 1600 employees (full time equivalent), **2550 employees** (head count); ~700 scientists employed on a project basis; **~ 75 full professors** (1/3 non Austrians), **~ 130 Assoc. Profs**

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BOKU Facts

- **~ 660 ongoing projects**, ~ 70 EU projects, many excellency programs, centers and consortia)
- **7 ERC Grants**
- ~ 115 Mio € GUF, **50,9 Mio € extramural funding** (2016)

- **~ 2500 scientific publications** / anno (**847 SCI**),
- ~ 1400 presentations / anno
- ~ 26.000 citations per year)

- organized in 15 departments

Bachelor programs

- Forestry
- Wood and Natural-Fibre Technology
- Environment and BioResources Management
- Environmental Engineering
- Food Sciences and Biotechnology
- Agricultural Sciences
- Landscape Architecture and Planning
- Equine Sciences

Master programs

- Agricultural and Food Economics (H 457)
- Alpine Natural Dangers/Watershed Regulation (477)
- Biotechnology (H 418)
- Crop Sciences (455)
- Environment and Bio Resources Management (H 427)
- Environmental Engineering (H 431)
- Food Science and Technology (H 417)
- Forest Science (H 425)
- Landscape Architecture and Planning (H 419)
- Livestock Sciences (456)
- Organic Agricultural Systems and Agroecology (H500)
- Phytomedizin (H 422)
- Wildlife Ecology and Wildlife Management (H 423)
- Wood Technology and Management (H 426)

International programs (master)

- Animal Breeding and Genetics
- Applied Limnology – Wetland Management
- Environmental Sciences – Soil, Water and Biodiversity
- European Forestry
- Horticultural Sciences
- Biomass Technology
- Mountain Forestry
- Natural Resources Management and Ecological Engineering
- Organic Agricultural Systems and Agroecology
- Safety in the Food Chain
- Sustainability in Agriculture, Food Production and Food Technology in the Danube Region
- Viticulture, Oenology and Wine Economy
- Water Management and Environmental Engineering

„Wood“ at Campus Tulln

Division Chemistry of Renewables

Prof. Rosenau
Prof. Potthast

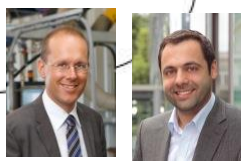
Institute of Wood Technology and Renewable Materials

Wood Technology/
Bio-based Fibres

Prof. Teischinger
Prof. Gindl-Altmutter
Prof. Wimmer

WOOD K PLUS

Kompetenzzentrum Holz
DI Hultsch
Dr. Hansmann



~100 people at campus Tulln work on chemistry of- and materials from renewables

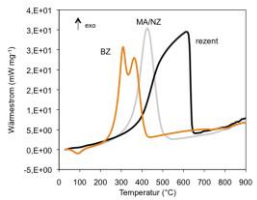
Institute of Natural Materials Technology
Dr. Mundigler
Prof. Wimmer

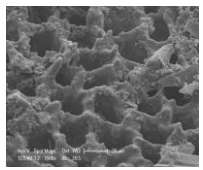
Chemistry of lignocellulosics

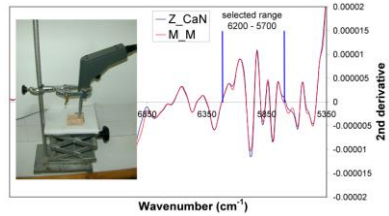
(Thomas Rosenau, Antje Potthast, Falk Liebner)

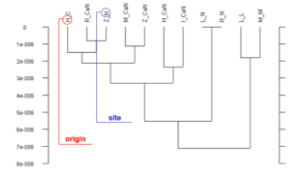
Chemical wood assessment

- FT-IR and FT-NIR: Trees4Future EU-Projekt FP7 284181 acquisition of calibration models
- FT-NIR and Hyperspectral Imaging: SLOPE EU-project FP7- Collab.Project –604129
- determination of wood quality for efficient utilization of harvested logs
- Wood resins: "Pech gehabt" tapped black pine resins and wood quality
- Lignin composition and structure, environmental conditions and genetic origin
- ageing of wood and charcoal

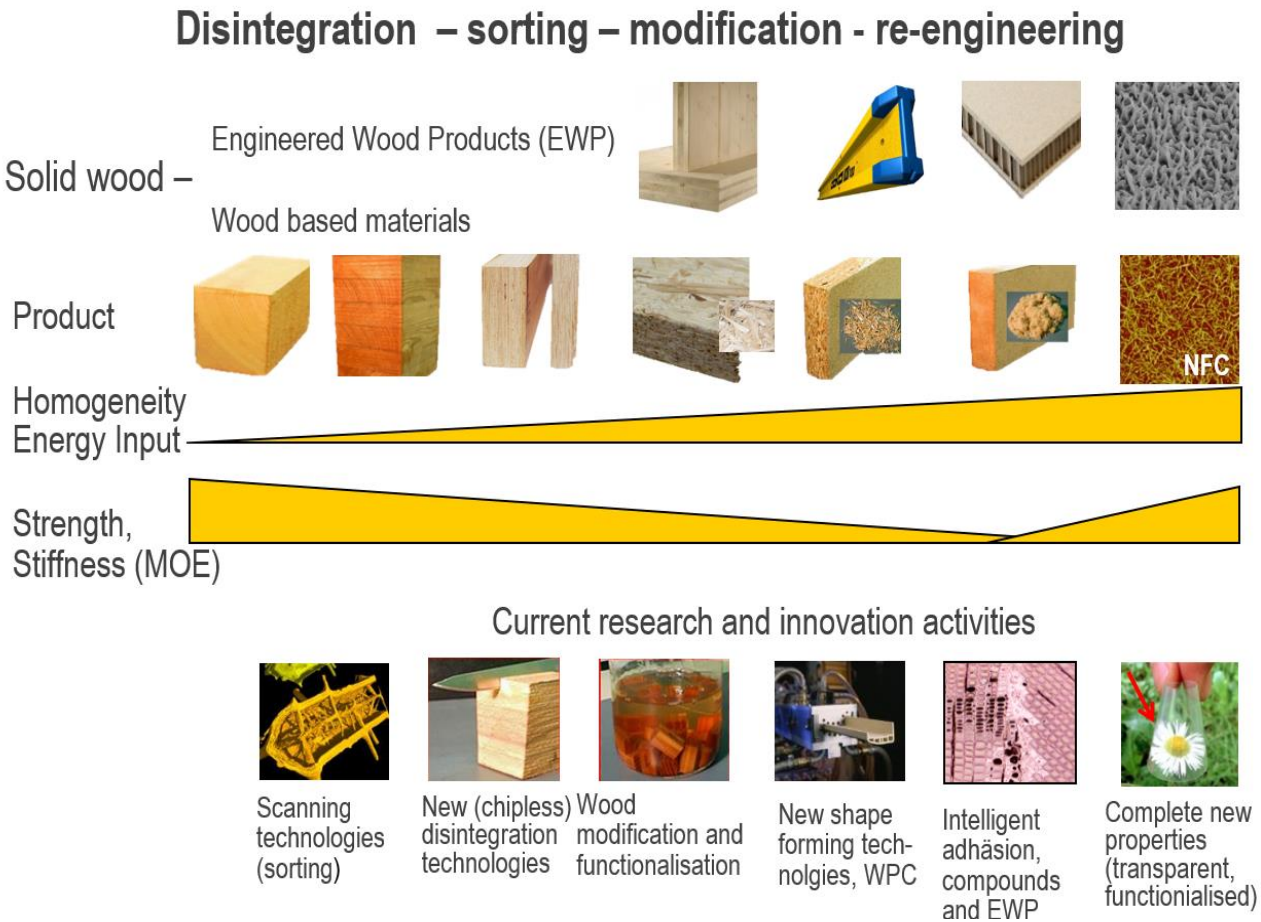








Wood Technology
(Alfred Teischinger)

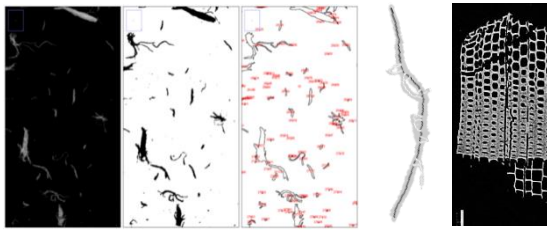


Wood technology is an assemblage of engineering practices and processing techniques, to transform the raw material wood into useful products.

„From a heterogenous raw material to reliable products!“

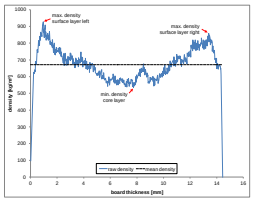
Engineered wood products
(Ulrich Müller)

Material selection – AR

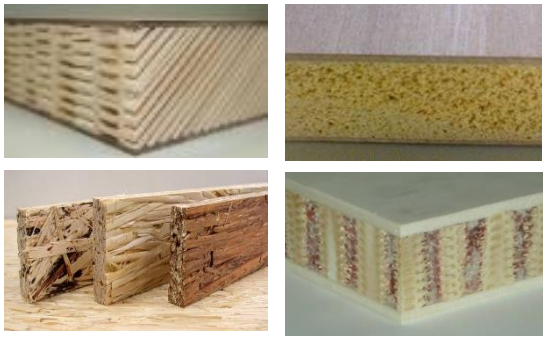


Characterisation of raw material & particles

Low densities & weight reduction



Testing mechanical & physical properties



Engineering & new materials

New applications

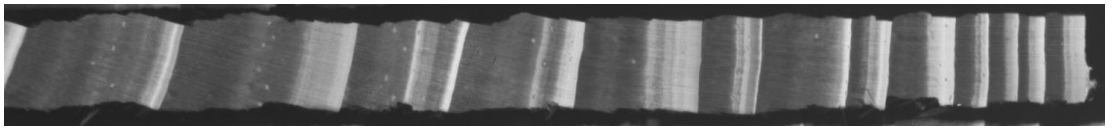
Historic wood utilisation & tree ring analysis (Michael Grabner)

Dendrochronology → dating of wood

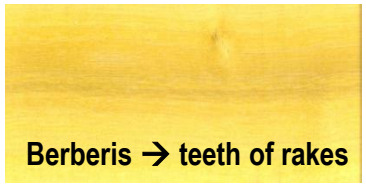
Oldest wooden staircase
13th century BC

→ Studying the influence of climate on wood quality

X-ray densitometry of softwood



Analysing the historic use of wood: wood species selection and old handicraft skills

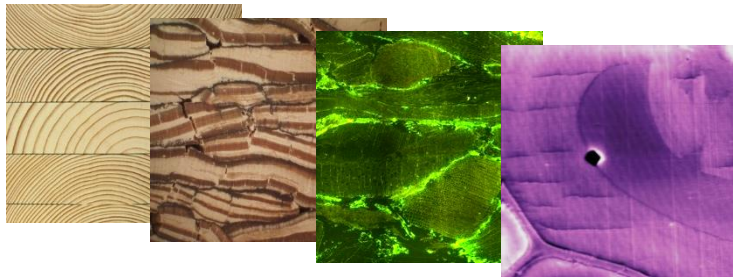


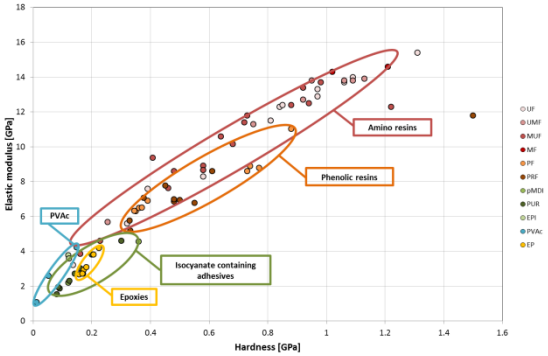
Berberis → teeth of rakes

Bands of ash
by hammering

Wood adhesive bonding
(Johannes Konnerth)

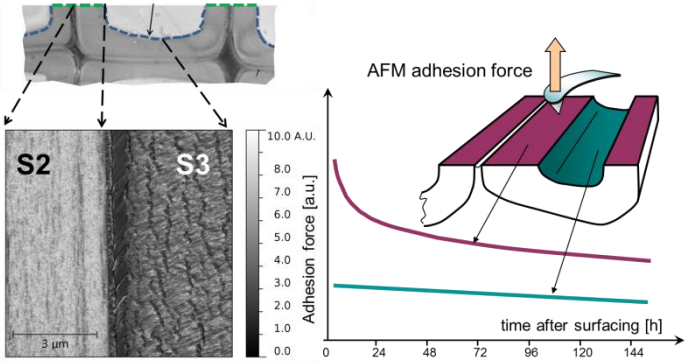
Macroscopic to nanoscale performance



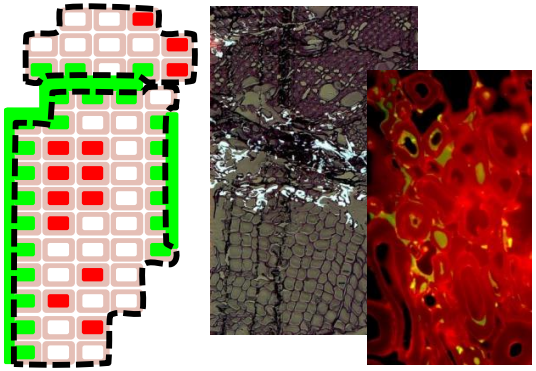


State of the art binders, formaldehyde-free solutions and renewable resources

Fundamentals of wood adhesion & surfaces



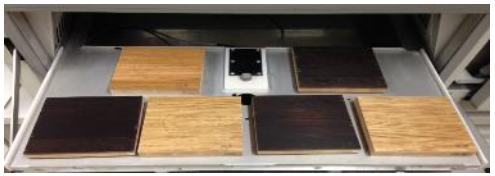
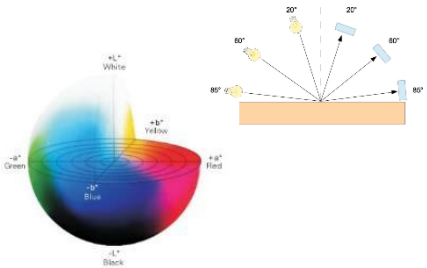
Adhesive distribution in wood products



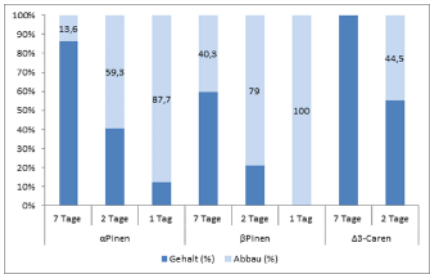
Functionalised wood
(Christian Hansmann – Wood K plus)

Hydrothermal treatment



Biochemical VOC reduction

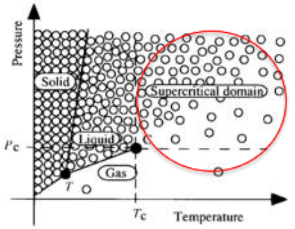



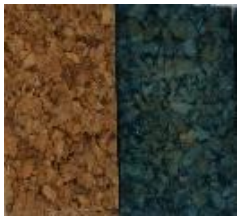
Reduction of all three main terpenes from pinewood strands by *Pseudomonas* sp.

Durability & resistance

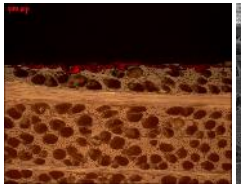
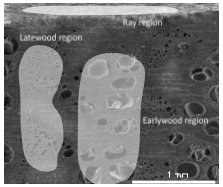


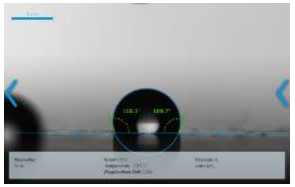
Smart colour control and stability



Functionalised surfaces

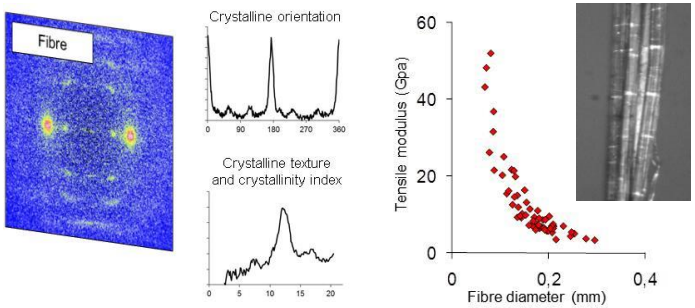





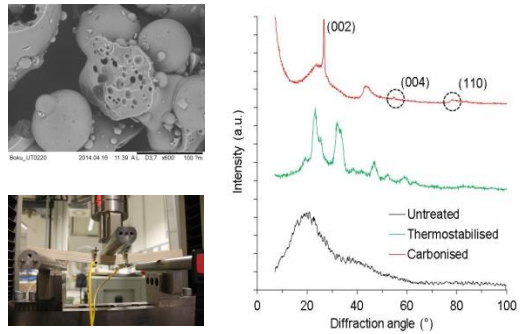
Bio-based fibre materials

(Wolfgang Gindl-Altmutter)

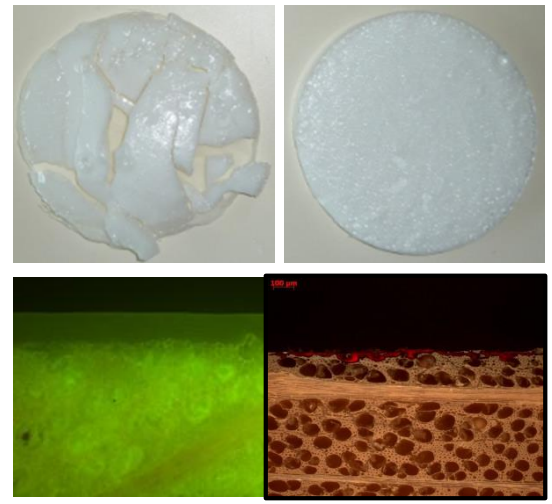
Fibre structure-property relationships



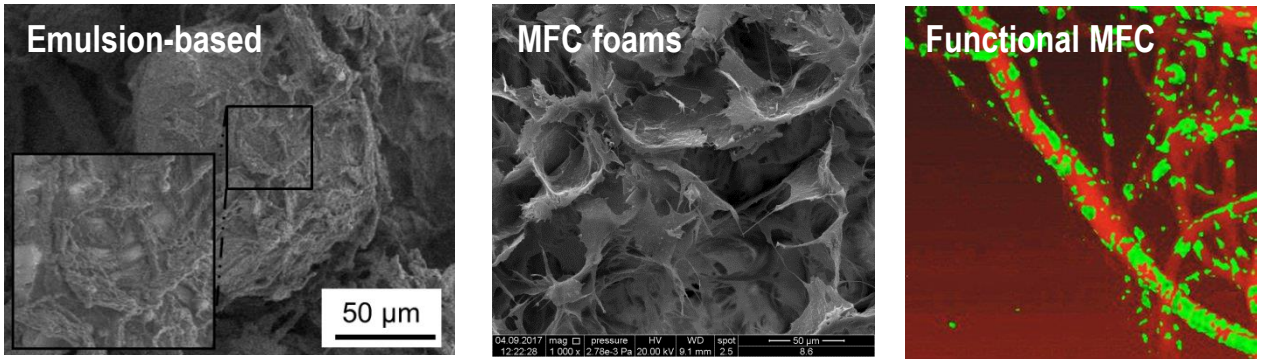
Carbonised lignin



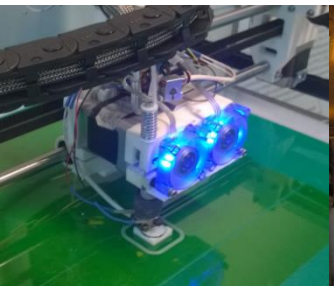
MFC-modified adhesives and coatings

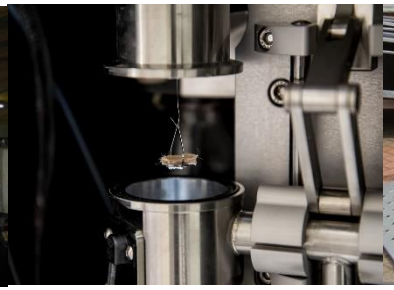


Advanced bio-based materials



Ressource Efficient Materials
(Rupert Wimmer)

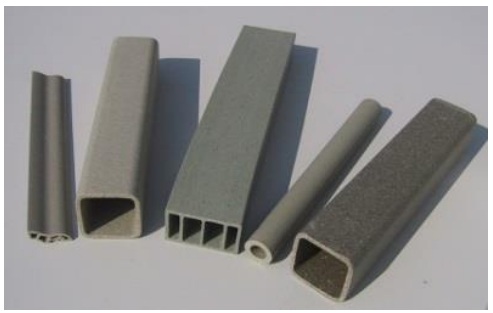





- Natural Materials Technologies
- Assessing resource-efficiency
- Functionalized wood materials
- Packaging and insulation materials
- Environmental protection in the wood industry

Waste 2 Value






Thank You !