



Materials and Wood Technology

This Master Research Unit (MRU) is part of the Materials and Wood Technology research unit at Bern University of Applied Sciences Architecture, wood and civil engineering in Biel. Products based on wood as a raw material, composite or building material are developed and optimised in this unit. This includes the development of new wood materials and wood combining materials («Wood Ash Boards» project*). The researchers in the unit are important contacts for the international wood industry regarding the development of multifunctional materials.

In the area of bonding and joining technology the Specific Research Unit plays a leading role in wood fusion, with and without adhesives («EcoWelding» project*). Furthermore, the unit is developing new, environmentally sensitive adhesive systems for the wood industry («Hybrid Wood Bond» project*). Providing such systems demonstrates a significant ecological contribution.

Further project areas include finishing techniques and wood surface treatment. For example, the powder-coating of wood materials is being investigated and developed («Clear Coat» project*), with a special emphasis on application, fusion and hardening.

Course contents

Your studies are individualised and relevant for practice. You choose your major according to your personal goals. You will develop your knowledge in the areas of materials science, wood chemistry and analysis. You will be able to select wood composite materials and material combinations for use in constructive and non-constructive areas. You will participate in industry-related projects in the area of lightweight and multifunctional building boards. Interesting research topics related to the innovative technology of wood fusion offer possibilities for your Master's thesis. In addition, you will analyse new adhesive systems for the wood industry. This includes formulating and applying these adhesives for the production of wood composite materials and solid wood products. Moreover, you will discuss all of the physical and chemical questions regarding outer coatings. In this area you can implement in practice what you have learned within the framework of research projects in nano-coating («Self-CleaningWood» project*).

* Further information about the projects can be found in our project database under www.ahb.bfh.ch/pdb.





Within the Materials and Wood Technology MRU you will be able to develop one or several of the following skill sets:

Materials Development

The potential for innovation in the area of wood recovery and re-use is great. Due to the rising price of wood, the use of scrap wood to produce wood-based material board and wood composites is gaining significance. The challenge lies in combining various materials and processes to produce multifunctional composites such that the maximum amount of wood components may be recovered. In state-of-the-art laboratories you can learn about and test solutions in the area of wood composite materials development (e.g. acoustic or lightweight boards).

As a specialist in Materials Development you may work in innovative wood processing companies at the management or technical level. You will plan and implement the further development of the company's products and technology along with the related organisational and economic changes.

Bonding Technology and Surface Treatment

Today, requirements in the area of ambient air quality demand new solutions in the production and treatment of wood composites. Reducing the use of expensive adhesives (e.g. by using naturally available materials and parts of plants, such as tannin) and substituting volatile organic compounds (VOCs) with equivalent substances are emphasised here. In the interior design area, multifunctional surfaces (e.g. anti-static or self-cleaning surfaces or low-maintenance surfaces) are in high demand. Processes such as nano-coating or powder-coating may be used.

As a specialist in Bonding Technology and Surface Treatments for a company in the supply industry, your tasks will concentrate on the development of products and machines. Within the wood industry you will be responsible for contacts with external suppliers and customers.

Contact

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