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Session 1 "Wood Modification and Processing"

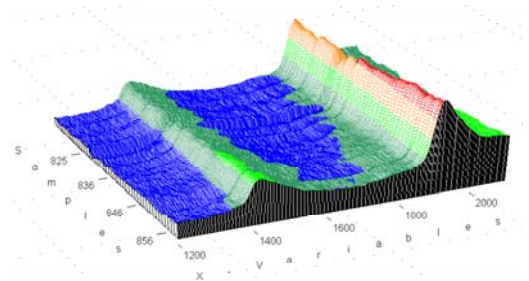
19th – 20th September 2002
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Post Conference Edition of the Proceedings of the International Symposium „Wood Based Materials“

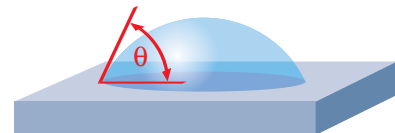
organized by COST Action E13 „Wood Adhesion
and Glued Products“ and „Wood Kplus“

The issue covers the post conference edition of the proceedings of the symposium „Wood Based Materials – Wood Composites and Chemistry“, which was organized by the Competence Centre for Wood Composites and Wood Chemistry „Wood K plus“ in cooperation with the COST Action E13 – Wood Adhesion and Glued Products“ in Vienna, Sept. 2002. The proceedings comprize 5 key-note lectures and 27 oral presentations, a summary of the Cost Action E13, a presentation of the Austrian Competence Center „Wood Kplus“ as well as 30 Posters with following topics:

- Wood modification and processing
- Adhesives and glueing
- Compound materials and glued products
- Wood chemistry and biotechnology



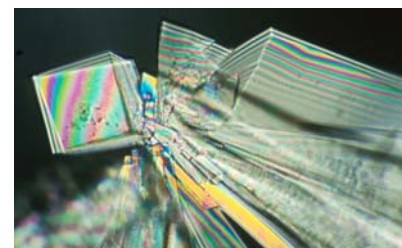
**Wood Modification
and Processing**



Adhesives and Glueing



**Compound Materials
and Glued Products**



**Wood Chemistry and
Biotechnology**

Abstracts and Summaries

The effect of steaming and veneer drying temperature on the weathering reactions

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Summary

When exposed to an outdoor environment, the surface of wood changes colour and becomes rough and develops small checks. This phenomenon is referred to as weathering. In this study, steamed and non-steamed veneer samples were dried at different temperatures and then exposed to indoor conditions. Rotary cut veneers obtained from non-steamed alder (*Alnus glutinosa subsp. barbata*), steamed beech (*Fagus orientalis*) and steamed and non-steamed spruce (*Picea orientalis* L.) logs were used as materials. Veneer drying temperatures were 20°C, 110°C, 150°C and 180°C for alder and beech and 110°C for spruce veneers. After the indoor exposures of 1, 3 and 6 months; changes in surface colour, surface roughness, pH and adhesive wettability of those veneers were evaluated. Three-layer-plywood panels were produced from veneers for each wood species by using urea formaldehyde resin. It was determined how the bonding and bending strengths of plywood panels were affected from the changes occurred on the veneers surfaces after the periods of indoor exposure.

Modified Materials in the Panel Product Industry – Evaluation by the Thematic Network for Wood Modification

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Abstract

The need for improved products and properties in the panel products industry results in an ever-increasing demand on innovative ideas throughout the timber R&D sector. Changes in material requirements, emission criteria and variations in environmentally acceptable policies dictate the products available on the market. However there is no focus on the work being carried out by individual groups, so there is considerable overlap and duplication, which restricts the advancement of the technology and potential end-user application. In an attempt to overcome this, the European Commission, through its Fifth Framework Programme and more specifically the "Promoting Competitive and Sustainable Growth" Programme have funded a Thematic Network to examine the possibilities of examining current procedures and evaluation potential new methods for the modification of wood. SHR Timber Research is the coordinator of this Network. Whilst this Network is primarily concerned with treatments for whole wood, many of the observations that will arise can also be applied within the panel products industry.

The Network comprises of 28 partners from 15 countries. These partners represent a cross-section of companies, research institutes and universities involved in wood modifications and treatment across the continent. The aim of the Network is to increase the exchange of information and experiences within Europe. This will increase the overall competitiveness, minimise duplication and accelerate innovation and commercialisation. Thus improvements will benefit the whole European Union and not just individual partners.

The aim of this paper will be fourfold:

- an introduction to the aims of the Network;
- an overview of currently available technologies;
- the overlap between the "whole wood" sector and the panels industry;
- how future developments can be applied to the panel products industry.

It is the ultimate goal of the Network to encourage understanding and co-operation throughout the European Union. This will allow new products to be produced and marketed through international links. These may have far reaching effects on the consumer market's perspective and has the potential to alleviate some of the problems currently existing. The results obtained from the advances in the modification of wood will be of commercial importance, not just to the partners within the Network, but the European timber community and the consumers as a whole.

Experimental study of the effect of a laser beam on the morphology of wood surfaces

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Abstract

The study reports on fundamental aspects of modification of wood by using a laser beam and relates different parameters such as laser type, intensity, time and focus to the surface morphology that presents ablation or melting processes that can be seen from microscopic observations (SEM). The penetration of water into laser treated surfaces is considerably suppressed. Apart from ablation or sealing of the wood surface, the laser beam can be used to remove microscopical amounts in order to clean or to prepare the surface for coatings by controlling the energy input. The paper shows some applications in the preservation of historic monuments. It is thought that the modification of wooden surfaces by laser beam represents a fundamental technology with many potential applications.

More Information:

www.boku.ac.at/holzforschung

www.kplus-wood.at

www.cost.cordis.lu