

COST Training School Surface Characterization of Wood Using Microtensile Testing at Faculty of Forestry, University of Zagreb

From July 2 to July 4 2014 the Faculty of Forestry hosted 20 young researchers, mainly PhD students from 11 European countries on a three day scientific training entitled *Surface characterization of wood using microtensile testing*. The training was organized and led by dr Vjekoslav Živković, within the frame of COST Action FP 1006 - *Bringing new functions into wood through surface modification*.

After the Vice Dean Marijan Šušnjar and Vice Dean Alan Antonović presented the specifics of the Faculty of Forestry and its study programs, professor Hrvoje Turkulin gave a series of lectures on the basics of microtensile testing, possibilities of applying the method in wood research and the experiences gained over many years of his scientific work with thin strips and microtensile testing. Faculty of Forestry has a complete infrastructure for the implementation of the microtensile testing method. In combination with the microscopic and other analytical techniques, the method is used for studying the chemical changes caused by modification or (photo) degradation of the wood material.

Tests are carried out either on Pulmac paper testing machine or on a universal mechanical testing machine, which has a possibility to detect very fine changes in the mechanical properties of wood.

Second and the third day of training were devoted to a series of short lectures and practical work in

small groups. This enabled detailed presentation of the method and discussions about the specifics of testing the thin wood strips.

Professor Vlatka Jirouš Rajković presented the testing of wood surface protective systems using the packs of thin wood strips, dr Vjekoslav Živković gave a lecture on the impact of narrower wavelengths of ultraviolet and visible light (activation spectra) on photo-degradation of wood, whereas dr Christian Lehringer presented the applicability of thin strip method to analyze biodeteriorated wood. Dr Josip Miklečić gave a lecture about the specifics of accelerated artificial aging of wood surface and the correlations of these results with those in natural exposure, and professor Bogoslav Šefc about the modification of thin wood strips with citric acid.

Practical work in laboratories of the Faculty of Forestry covered all the steps of preparation and testing of thin wood strips. Participants showed particular interest for the practical part of the training where they microtomed thin wood strips, performed color and microtensile strength measurements, analyzed results and observed anatomical changes using optical microscope.

Numerous discussions during lectures, and especially during the practical part of the training, showed not only the interest in this method, but its applicability and efficiency in various aspects of wood research.



Figure 1 Vice Dean Alan Antonović presenting the Faculty of Forestry



Figure 2 Professor Hrvoje Turkulin lectures about the basics of microtensile testing



Figure 3 Microtoming the thin wood strips



Figure 4 Preparation of thin wood strips for accelerated exposure in QUV device



Figure 5 Microtensile strength testing on Pulmac testing device

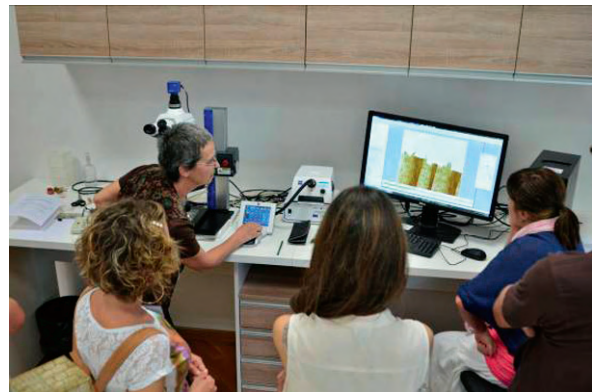


Figure 6 Observation of thin wood strips using research light microscope

Before the end of the training, trainees visited other laboratories of the Faculty of Forestry with the aim to get insight into the research capacities and possible collaboration on ongoing and future projects.

The success of the training school is shown by very positive comments and high grades given by trainees. On a scale from 1 to 5, the general grade/mark is 4.9.

Communication with trainers is rated 4.7, and gained knowledge and working materials are rated 4.8. Trainees expressed their opinion that the topics were well selected and interest in further education in this field.

The presented knowledge, experience and research capacities are an excellent promotion of the

Faculty of Forestry, laboratories, researchers and their research capacities.

Last but not least, I wish to express my sincere gratitude to everyone who made this training school possible: COST action FP 1006, Faculty of Forestry; my coworkers who took part in the organization and/or implementation of the training school, preparation of the working materials, samples, or equipment; to lecturers and practical session leaders and to colleagues who organized and lead the informal part of the training and guided the tour through Zagreb historical city centre. Many thanks to everyone!

Vjekoslav Živković, Ph.D.



Figure 7 Presentation of furniture testing laboratory of the Faculty of Forestry to trainees



Figure 8 Trainees in Zagreb downtown