

57th SWST International Convention
7th Wood Structure and Properties Conference
6th European Hardwood Conference



Sustainable Resources and Technology for Forest Products

June 23–27, 2014

Technical University in Zvolen, Zvolen, Slovakia

Overall General Co-Chairs: Michael Wolcott, Washington State University, USA and Marian Babiak, Technical University in Zvolen, Slovakia



Sunday, June 22

14:00 to 16:00 Registration and Packet Pickup - Aula Building, Technical University in Zvolen

17:00 to 19:00 Opening Ceremony: Zvolen Castle

Monday, June 23

7:00 Registration and Packet Pickup - Aula Building, Technical University in Zvolen

All Sessions will be Held in Aula Building

8:00 to 10:00 Hardwood Research & Utilization

Session Co-Chairs: Rado Gazo, Purdue University, USA and Róbert Németh, University of West Hungary, Hungary

8:00 to 8:20 Rado Gazo, Purdue University, USA

CT Scanning of Logs – Analysis and Optimization for Better Utilization of Hardwoods

8:20 to 8:40 Roman Réh, Technical University in Zvolen, Slovakia

Decorative Veneer Properties of Black Walnut (*Juglans nigra* L.)

8:40 to 9:00 Leandro Passarini, Université Laval, Canada

Distribution of the Equilibrium Moisture Content in Four Hardwoods Below Fiber Saturation Point by Magnetic Resonance Microimaging

9:00 to 9:20 Bryan Dick, North Carolina State University, USA

Changes in the Anatomy of Exposed Roots of Some Hardwood Species

9:20 to 9:40 Szabolcs Komán, University of West Hungary, Hungary

Mechanical Properties of Common Beech (*Fagus sylvatica* L.) after Microwave Drying in Comparison to Naturally and Laboratory Oven-dried Material

9:40 to 10:00 Róbert Németh, University of West Hungary, Hungary

Protecting Effect of Beeswax Impregnation on the Modulus of Elasticity During Soil Contact

10:00 to 10:20 BREAK

10:20 to 12:00 Solid Wood Manufacturing

Session Co-Chairs: Bob Rice, University of Maine, USA and Levente Dénes, University of West Hungary, Hungary

10:20 to 10:40 Douglas J. Gardner, University of Maine, USA

Processing Conditions Contributing to Formaldehyde Emissions from “Native” Wood

10:40 to 11:00 Thomas Krenke, Kompetenzzentrum Holz GmbH, Austria

A New Method of Dynamic 3D-cutting Force Analysis of Wood



Monday, June 23 *continued*

- 11:00 to 11:20 Sudipta Dasmohapatra, North Carolina State University, USA
Solid Wood Furniture Marketing
- 11:20 to 11:40 Levente Dénes, University of West Hungary, Hungary
Monte Carlo Simulation of Window's Air Tightness Performance
- 11:40 to 12:00 Nikolay Skuratov, Moscow State Forest University, Russia
Decorative Finger Jointing of Valuable Wood
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- 12:00 to 13:00 **LUNCH** - Technical University Dining Hall
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- 13:00 to 14:50 **Forest Products Policy, Global Trade, and Value Chain Management**
Session Co-Chairs: Eric Hansen, Oregon State University, USA and Mikulas Supin,
Technical University in Zvolen, Slovakia
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- 13:00 to 13:15 Henry Quesada-Pineda, Virginia Tech, USA
Factors Impacting the Export of US Hardwoods in Germany, China and Vietnam
- 13:15 to 13:30 Manja Kuzman, University of Ljubljana, Slovenia
Timber Passive House Technologies of Slovenian Contemporary Architecture
- 13:30 to 13:45 Yvonne Brodrechtova, Technical University in Zvolen, Slovakia
Dynamics of Slovakian Timber Market in Retrospect
- 13:45 to 14:00 Michael Burnard, University of Primorska, Slovenia
Restorative Environmental Design: Wood as a Material for Sustainable, Healthy Environments
- 14:00 to 14:15 Alexandru Giurca, European Forest Institute, Sweden
European Union Timber Regulation Impact on International Timber Markets
- 14:15 to 14:30 Erlend Nybakk, Norwegian Forest and Landscape Institute, Norway
Chemical Suppliers' Views and Impact on Innovation in the Wood Treating Industry
- 14:30 to 14:45 Discussion
- 14:45 to 15:10 BREAK
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- 15:10 to 17:00 **Sustainable Forest Management**
Session Co-Chairs: Ilona Peszlen, North Carolina State University, USA and Jaroslav Kmet',
Technical University in Zvolen, Slovakia
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- 15:10 to 15:30 Julie Bossu, CNRS, UMR Ecofog, French Guiana
Looking for "Paradoxical" Species for a Sustainable Forest Management in French Guiana
- 15:30 to 15:50 Ubong Ime Udoakpan, University of Uyo, Nigeria
A Comparative Study of Wood Properties of *Pinus caribaea* (Morelet) in Two Plantation Ages in Oluwa Forest Reserve, Ondo State, Nigeria
- 15:50 to 16:10 Anton Zbonak, Department of Agriculture, Fisheries and Forestry, Australia
Veneering of Plantation Grown Sub-tropical Species from Thinning Experiments
- 16:10 to 16:30 Tahiana Ramanantoandro, Université d'Antananarivo, Madagascar
Influence of the Tree Diameter and Shade-tolerance on Wood Density and its Radial Variation in Madagascar Rainforest
- 16:30 to 16:50 Perry Peralta, North Carolina State University, USA
Bridging Forest Biotechnology and Biomaterials Engineering
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- 17:15 to 19:00 **Forestry and Wood Technology Museum Tour**



Tuesday, June 24

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- 8:00 to 12:00** **Lignocellulosic Material Science and Wood Quality**
Session Co-Chairs: Barry Goodell, Virginia Tech, USA and Alfred Teischinger,
Universität für Bodenkultur, Austria
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- 8:00 to 8:20** Roger Rowell, University of Wisconsin, USA
Accessibility and Reactivity of Hydroxyl Groups in Wood
- 8:20 to 8:40** Barry Goodell, Virginia Tech, USA
Non-enzymatic Deconstruction Systems in the Brown Rot Fungi
- 8:40 to 9:00** Jerrold Winandy, University of Minnesota, USA
**Modeling Severity of Exposure Relationships Between Laboratory and Field Exposures
for FRT Plywood**
- 9:00 to 9:20** Chloé Maury, Université du Québec à Trois-Rivières, Canada
**Study of Mechanical Properties of Composites Based on TEMPO-oxidized Cellulose Gel
and Silica Nanoparticles**
- 9:20 to 9:40** Dimitrios Tsalagkas, University of West Hungary, Hungary
Morphological and Structural Changes of Ultrasound-treated Bacterial Cellulose
- 9:40 to 10:00** Stefan Pinkl, Kompetenzzentrum Holz GmbH, Austria
**Fibrillation of Different Lignocellulose Suspensions and their Bonding Strength to
Wood Compared with Nanocellulose**
- 10:00 to 10:20** BREAK
- 10:20 to 10:40** Martin Riegler, Martin Weigl, and Ulrich Müller, Wood K Plus, Austria
The Role of Fibre Characteristics for Online Process Adaptation in the Manufacturing of MDF
- 10:40 to 11:00** Galina Gorbacheva, Moscow State Forest University, Russia
Research of Molecular-Topological Structure at Shape-Memory Effect of Wood
- 11:00 to 11:20** Peder Gjerdrum, Norwegian Forest and Landscape Institute, Norway
**Grain Angle Variation in Norway Spruce: Overall Pattern and Stochastic Dissimilarities Within
and Between Stems**
- 11:20 to 11:40** Ilona Peszlen, North Carolina State University, USA
Variation in Cell Morphology of Genetically Engineered Aspen and Cottonwood
- 11:40 to 12:00** Hyeun-Jong Bae, Chonnam National University, Korea
Rapid Hydrolysis of Lignocellulosic Wood Biomass
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- 12:00 to 13:00** **LUNCH** - Technical University Dining Hall
Group Picture
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- 13:00 to 14:00** **Lignocellulosic Material Science and Wood Quality**
Session Co-Chairs: Barry Goodell, Virginia Tech, USA and Alfred Teischinger,
Universität für Bodenkultur, Austria
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- 13:00 to 13:20** Veronika Kotradyova, Slovak University of Technology, Faculty of Architecture, Slovakia
Tactile Interaction and Contact Comfort of Wood and Wood Materials
- 13:20 to 13:40** Peter Niemz, ETH Zurich, Switzerland
Effect of Natural Aging on Wood Properties
- 13:40 to 14:00** Stephen Frybort, Kompetenzzentrum Holz GmbH, Austria
Deformation Analysis of Cutting Processes of Wood
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- 14:00 to 15:00** Poster Setup - Entrance Area Technical University
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- 15:00 to 18:00** **Poster Session with Cash Bar and Student Poster Competition**
Session Co-Chairs: Douglas Gardner, University of Maine, USA and Jozef Kúdela,



Wednesday, June 25

Technical University in Zvolen

8:00 to 12:00

Wood Panels Composites

Session Co-Chairs: Marius Barbu, Transilvania University of Brasov, Romania and Sergej Medved, University of Ljubljana, Slovenia

8:00 to 8:20

Marius Barbu, Salzburg University of Applied Sciences, Austria
The Use of Waste Leather in Wood-based Panels

8:20 to 8:40

Marius Barbu, Salzburg University of Applied Sciences, Austria
Bark-based Insulation Panels Made of Different Softwood Barks

8:40 to 9:00

Ayfer Donmez Cavdar, Karadeniz Technical University, Turkey
Some Properties of Fire Retardants and Sand Dusts of Medium Density Fiberboard Filled Wood Plastic Composites

9:00 to 9:20

Kate Semple, University of British Columbia, Canada
Optimising the Stranding of Moso Bamboo (*Phyllostachys pubescens* Mazel) Culms Using a CAE 6/36 Disk Flaker.

9:20 to 9:40

Ahmad Jahan-latibari, Islamic Azad University Karaj Branch, Iran
The Potential Of Urban Wood Residues in Particleboard Production

9:40 to 10:00

Eike Alexander Mahrtdt, Wood K Plus, Austria
A New Analytical Method to Study UF Resin Distribution within Particle Boards

10:00 to 10:20

BREAK

10:20 to 10:40

Johann Trischler, Linnaeus University, Sweden
Classification of Lignocellulose Raw Materials Regarding Selected Material Properties and the Requirements of Three Competitors to Reveal Options for Alternative Use

10:40 to 11:00

Christoph Wenderdel, Institut fuer Holztechnologie Dresden GmbH, Germany
Very Thin Medium Density Fibreboards (MDF) with Paperboard-like Properties as Reusable Packaging Material

11:00 to 11:20

Anna Ślęzak, Poznan University of Life Sciences, Poland
Investigations upon Resistance of Surfaces Panel Elements Bonding by Artificial Veneers from Hot Melt Adhesives

11:20 to 11:40

Min Niu, Fujian Agriculture and Forestry University, China
Fire Properties Improvement of an Ultralow Density Fiberboard

11:40 to 12:00

Levente Dénes, University of West Hungary, Hungary
Finite Element Modelling Simplification of Paper Honeycomb Panels by a Substituting Homogenous Core

12:00 to 13:00

LUNCH - Technical University Dining Hall

13:00 to 17:00

Wood Construction & Structures

Session Co-Chairs: Arijit Sinha, Oregon State University, USA and Bohumil Kasal, Fraunhofer Wilhelm Klauwitz Institute, Germany

13:00 to 13:20

Andreja Kutnar, University of Primorska, Slovenia
Cross Laminated Timber Panels Using Hybrid Poplar

13:20 to 13:40

Karol Sikora, National University of Ireland, Ireland
Durability of Adhesive Bonds in Cross-laminated Timber (CLT) Panels Manufactured Using Irish Sitka Spruce

13:40 to 14:00

Bryan Dick, North Carolina State University, USA
Fire Performance of Adhesives Used for Southern Pine Cross-Laminated Timber

14:00 to 14:20

Georg Stecher, University of Innsbruck, Austria



Wednesday, June 25 *continued*

“Radiusholz” – Curved Cross-laminated Timber Elements

- 14:20 to 14:40** Marius Barbu, Salzburg University of Applied Sciences, Austria
Cross Laminated Timber – Implementation of European Experiences in the USA
- 14:40 to 15:00** BREAK
- 15:00 to 15:20** Desmond Dolan, NUI. Galway, Ireland
A Hybrid Input-Output LCA Analysis of Timber Construction Products Produced in Ireland
- 15:20 to 15:40** David DeVallance, West Virginia University, USA
Spatial Analysis of Certified Wood Use in LEED Green Building Projects
- 15:40 to 16:00** Bohumil Kasal, TU Braunschweig, Kasal-Fraunhofer WKI, Germany
Impact Loading of Wood
- 16:00 to 16:20** Jaromir Milch, Mendel University in Brno, Czech Republic
Experimental Verification of Numerical Model of Single and Double-Shear Dowel-Type Joints of Wood
- 16:20 to 16:40** Discussion
- 16:40 to 18:00** SWST Business Meeting

Thursday, June 26

8:00 to 12:00 **Energy, Fuels, Chemicals**
Session Co-Chairs: Dave DeVallance, West Virginia University, USA and Margareta Wihersaari, Åbo Akademi University, Finland

- 8:00 to 8:20** Quy Nam Nguyen, Université Laval, Canada
Fuel Pellets from Low Quality Hardwood Trees: Raw Materials and Pelletization Characteristics
- 8:20 to 8:40** Robert Rice, University of Maine, USA
Rapid Assessment of Pellet Ash Agglomeration Using Electrical Resistivity
- 8:40 to 9:00** Michael Wolcott, Washington State University, USA
Wood to Wing - Envisioning an Aviation Biofuels Industry from Forest Residuals
- 9:00 to 9:20** Wenliang Wang, Beijing Forestry University, China
Fast Pyrolysis of Wastes and Bio-refinery for Value-added Products
- 9:20 to 9:40** Amy Falcon, West Virginia University, USA
Optimizing Urea Concentration for Woody Biomass Pretreatment
- 9:40 to 10:00** Hongmei Gu, US Forest Service Forest Products Laboratory, USA
Life-cycle Inventory Analysis of Bio-products from a Modular Advanced Biomass Pyrolysis System
- 10:00 to 10:20** BREAK
- 10:20 to 10:40** Md Sarwar Jahan, BCSIR, Bangladesh
Improvement of Furfural Production From Concentrated Pre- Hydrolysis Liquor (PHL) of a Kraft-Based Hardwood Dissolving Pulp Production Process
- 10:40 to 11:00** Melanie Blumentritt, University of Maine, USA
Electron Microscopic Study of Neat and Hot Water Extracted Aspen Wood by Means of Selective Electron Dense Staining and Immunogold Labeling
- 11:00 to 11:20** Milan Sernek, University of Ljubljana, Slovenia
Curing Kinetics of Spruce Bark Tannin-Based Foams
- 11:20 to 11:40** Michel Delmas, University of Toulouse, France
Biolignin™, a Renewable and Efficient Natural Product for Wood Adhesives
- 11:40 to 12:00** Ru Liu, Beijing Forestry University, China
Some Physical and Mechanical Properties of Two-step Organo-montmorillonite Modified Wood Flour/



Thursday, June 26 *continued*

Polypropylene Composites

12:00 to 13:00 **LUNCH** - Technical University Dining Hall

13:00 to 17:00 **Advanced Wood and Polymer Composites**
Session Co-Chairs: Rupert Wimmer, BOKU Vienna, IFA Tulln, Austria and Joris Van Acker,
Ghent University, Belgium

13:00 to 13:20 Rupert Wimmer, BOKU Vienna, IFA Tulln, Austria
**Natural Bio-polymers, Bio-based, Sustainable Biomaterials and Green Composites.
Do We Still Need Wood?**

13:20 to 13:35 Matthew Schwarzkopf, Oregon State University, USA
**Strain Distribution and Load Transfer in the Polymer-wood Particle Bond in Wood Plastic
Composites (WPCs)**

13:35 to 13:50 Gloria Oporto, West Virginia University, USA
**Microstructure, Mechanical, Thermal and Antimicrobial Properties of Hybrid Copper Nanoparticles and
Cellulose Based Materials Embedded in Thermoplastic Resins**

13:50 to 14:05 Stephen Shaler, University of Maine, USA
Cellulose Nanofibril (CNF) Reinforced Open Cell Foams - Application of Cubic Array Foam Theory

14:05 to 14:20 Sheldon Shi, University of North Texas, USA
Vacuum Assisted Resin Transfer Molding Process for Kenaf Fiber Based Composites

14:20 to 14:35 David DeVallance, West Virginia University, USA
Bio-based Carbon/Polyvinyl Alcohol Piezoresistive Sensor Material

14:35 to 14:50 A. Emeran Neuhäuser, Wood K Plus, Austria
Lifecycle of a Novel Bio-based Wood Composite made of Sawmill Waste

14:50 to 15:05 Nadir Ayrilmis, Istanbul University, Turkey
Mechanical Performance of Wood Plastic Composite Containing Decayed Wood

15:05 to 15:30 BREAK

15:30 to 15:50 Joris Van Acker, Ghent University, Belgium
Moisture Dynamics of Plywood and Impact on Time of Wetness

15:50 to 16:05 Yonggun Park, Seoul National University, Korea
Properties of the Wood Dried and Heat-treated by Superheated Steam

16:05 to 16:20 Sheldon Shi, University of North Texas, USA
**Correlation Between Fracture Fractal Dimension and Wood Shear Properties after
Hydrothermal Treatment**

16:20 to 16:35 Roland Maderebner, University of Innsbruck, Austria
Artificially Aged Timber for Structural Components

16:35 to 17:00 Discussion

18:30 to 22:00 Banquet - Reštaurácia Koliba Stráže

Friday, June 27

8:00 to 17:30 Final Day Tour - Banská Štiavnica - UNESCO World Heritage Site and Hronsek Church