10th European Conference on Wood Modification

Monday 25 April 2022	
8h00-9h00	**Registration**
9h00-9h15	**Welcome and opening**
9h15-10h00	**Keynote** - Thermal wood modification after 20 years of commercialization: an overview and the ThermoWood® story. **Wolfram Scheiding, Jukka Ala-Viikari and Timo Tetri**
Session one: commercial opportunities for modified wood	
10h00- 10h15	Oral 1.1 - Wood modifications on poplar: overview and development. **Xiuping Jiang**, Jan Van den Bulcke and Joris Van Acker
10h15- 10h30	Oral 1.2 - Wood modification with citric acid and sorbitol - A review and future perspectives. Katarzyna Kurkowiak, Lukas Emmerich, Christian Simmering and **Holger Militz**
10h30 -11h00	**Coffee**
Session two: thermal modification	
11h00 – 11h15	Oral 2.1 - A short review on the environmental performance of the thermally modified wood. **Kévin Candelier** and Janka Dibdiakova
11h15 – 11h30	Oral 2.2 - A model to predict the kinetic of mass loss in wood during thermo-vacuum modification. **Ottaviano Allegretti**, Ignazia Cuccui and Nasko Terziev
11h30 – 11h45	Oral 2.3 - Mild pyrolysis of wood particle: treatment homogeneity on thick samples. **Daniela Florez-Parra**, Antoine Stéphan and Romain Rémond
11h45 – 12h00	Oral 2.4 - Absolute and universal metric for the degree of thermal conversion of wood. **Wim Willems**
12h00 – 12h15	Oral 2.5 - Long term moisture content monitoring of the façade made of thermally modified Norway spruce wood. **Miha Humar**, Davor Kržišnik and Boštjan Lesar
12h15 - 14h00	**Lunch**
Session 3: Poster session 1	
14h00 – 14h05	Introduction to the poster session
14h05 – 14h08	Poster 1.1 - Continuous densification of solid wood - the band press approach. **Benedikt Neyses**, Alexander Scharf and Dick Sandberg
14h08 – 14h11	Poster 1.2 - Thermodensification of beech wood via furfurylation combined with compression. **Jérémie Damay**, Bertille Etienney, Prabu Satria Sejati, Firmin Obounou Akong and Philippe Gérardin
14h11 – 14h14	Poster 1.3 - Alteration of bending properties of wood due to ammonia treatment and additional densification. **Herwig Hackenberg**, Mario Zauer, Tobias Dietrich and André Wagenführ

14h14 – 14h17	Poster 1.4 - Impregnation of wood with a paraffinic phase change material for increasing heat capacity. **Jens U. Hartig**, Fabian Hilkert, Jörg Wehsener and Peer Haller
14h17 – 14h20	Poster 1.5 - Effect of citric acid on visual aspect of *Pinus* spp. submitted to thermo-mechanical densification. **Matheus Couto Crisóstomo** and Cláudio Henrique Soares Del Menezzi
14h20 – 14h23	Poster 1.6 - Fire for façades - Effect of modification method on surface properties of charred wood. **Maija Kymäläinen** and Lauri Rautkari
14h23 – 14h26	Poster 1.7 - Fire resistance of surface charred beech wood. **Jakub Dohnal**, Veronika Vacenovská, Jan Pencík, Petr Cermák, Jakub Dömény, Anna Oberle, Jan Tippner, Lucie Zárybnická, Dita Machová and Michal Kloiber
14h26 – 14h29	Poster 1.8 - Laminated veneer lumber made from cement-impregnated veneers. **Sebastian Hirschmüller**, Andriy Kovryga, Seraphin Unterberger, Harald Larbig, Brendan Marais, Christian Brischke, Jan-Willem van de Kuilen and Adrian Krey
14h29 – 14h32	Poster 1.9 - Bonding performance of Ciol®-modified wood. **Karl-Christian Mahnert** and Andreas Treu
14h32 – 14h35	Poster 1.10 - Improvement of the thermal stability of wood through surface and modification treatments. **René Herrera**, Pedro de Hoyos-Martinez, Jalel Labidi, Anna Sandak and Fatima Charrier-El Bouhtoury
14h35 – 14h38	Poster 1.11 - Consolidation of wood shavings-sand mixtures by biomineralization. **Lisa Bansamir**, Fabian Wulf, Tom Brodhagen and Alexander Pfriem
14h38 – 14h41	Poster 1.12 - Penetration of an acrylic waterborne coating into plasma treated wood. **Jure Žigon**, Pierre Kibleur, Jan Van den Bulcke, Joris Van Acker, Marko Petrič and Sebastian Dahle
14h41 – 14h44	Poster 1.13 - Thermal behaviour and reaction to fire of three various hardwood species mineralized with calcium oxalate. **Tom Franke** and Thomas Volkmer
14h44 – 14h47	Poster 1.14 - Influence of thermal modification on the impregnability of beech (*Fagus sylvatica* [L.]) and European Maple (*Acer pseudoplatanus* [L.]). **Tobias Bender**, Christoph Munk, Alexander Pfriem, Jérémie Damay, Emmanuel Fredon, Romain Rémond, Pierre Jean Méausoone, Firmin Obounou Akong, Philippe Gérardin and Michael Jousserand
14h47 – 14h50	Poster 1.15- Investigation of a change in the hardness properties of thermally modified beech wood (*Fagus sylvatica* L) as a result of a 6-week long-term temperature at 120°C and 140°C. **Martin Wozniak**, Fabian Wulf and Alexander Pfriem
14h50 – 14h53	Poster 1.16 - The effect of heat treatment on characteristics of short rotation teak. **Resa Martha**, Efrida Basri, Loedy Setiono, Irmanida Batubara, Istie S. Rahayu, Wayan Darmawan and Philippe Gérardin
14h53 – 14h56	Poster 1.17- Use of DMA to evaluate the modification of tropical hardwood timbers by cashew nut shell liquid (CNSL) resin. **Morwenna J. Spear**, Md. Ashaduzzaman, Graham A. Ormondroyd and Michael D. Hale
14h56 – 14h59	Poster 1.18 - Cupping distortion of surface-densified wood intended for flooring. **Alexander Scharf**, Benedikt Neyses and Dick Sandberg
14h59 – 15h02	Poster 1.19 - Moisture related properties of thermomechanical (TM) treated European beech, black walnut and sugar maple to substitute Indian rosewood in musical instruments. **Tobias Dietrich**, Mario Zauer and André Wagenführ
15h02 – 16h00	Coffee and Poster viewing

Session Four : Chemical Modification	
16h00 – 16h15	Oral 4.1 - Comparison of cell wall chemistry and durability of esterified wood using microscopy-based techniques. **Lisbeth G. Thygesen**, Andreas Treu and Gry Alfredsen
16h15 – 16h30	Oral 4.2 - Environmental performance of combined treated wood. **Edgars Kuka**, Dace Cirule, Ingeborga Andersone and Bruno Andersons
16h30 - 16h45	Oral 4.3 Improvement of decay and termite's durability of wood through combined treatments involving thermal and mild chemical modifications – A review of last research works of laboratory. Mahdi Mubarok, Solafa Salman, Holger Militz, Stéphane Dumarcay, Marie France Thévenon, Kevin Candelier, I Wayan Darmawan, Yusuf Sudo Hadi and **Philippe Gérardin**
16h45 – 17h00	Oral 4.4 - Wood chemical modification treatment based on combination of tannins and furfuryl alcohol. Mahdi Mubarok, Elham Azadeh, Firmin Obounou Akong, Stéphane Dumarçay, Philippe Gérardin and **Christine Charbonnier-Gérardin**
17h00 – 17h15	Oral 4.5 - Dynamic moisture resistance of chemically-treated and heat-treated plywood. **Fred Kamke**, Luis Molina and Scott Leavengood
17h15 – 17h30	Oral 4.6 - Modification of white spruce to improve dimensional stability of exterior wood cladding. **Diane Schorr** and Gabrielle Boivin
19h30	**Gala Dinner**
Tuesday 26 April 2022	
8h00 -8h30	**Early morning coffee**
Session Four: Chemical Modification cont.	
8h30-8h45	Oral 4.7 - Improving effect of silica aerogel on the dimensional stability of wood. **Miklós Bak,** Ferenc Molnár and Róbert Németh
8h45- 9h00	Oral 4.8 - Understanding the mode of action of sorbitol and citric acid (SorCA) in wood. **Katarzyna Kurkowiak**, David Hentges, Stéphane Dumarçay, Philippe Gérardin and Holger Militz
9h00 – 9h15	Oral 4.9 - Dimensionally stabilized LVL by acetylation. **Maik Slabohm**, Ferry Bongers and Holger Militz
9h15 – 9h30	Oral 4.10 - Recent advances in wood modification through the use of maleic anhydride and sodium hypophosphite. **Injeong Kim**, Olov Karlsson, Emil Engelund Thybring, Dick Sandberg and Dennis Jones
9h30 – 9h45	Oral 4.11 - Properties of beech wood improved by eco-friendly treatments. **Adèle Chabert**, Emmanuel Fredon, Philippe Gérardin and Romain Rémond
9h45 – 10h00	Oral 4.12- Birch wood treatment with modified phenol-formaldehyde pre-polymers. **Juris Grinins**, Vladimirs Biziks, Mairis Iesalnieks and Ineta Gritane
10h00 -10h30	**Coffee**

Session Five : Evaluation of properties and performance	
10h30 – 10h45	Oral 5.1 - Growth behaviour and wood degradation of wood-destroying fungi in chemically modified wood. **Lukas Emmerich**, Sarah Strohbusch, Christian Brischke, Susanne Bollmus and Holger Militz
10h45– 11h00	Oral 5.2- Laboratory evaluation of the resistance of furfurylated wood to attack by the marine wood boring crustacean, *Limnoria quadripunctata*. **Lucy S. Martin**, Reuben Shipway, Erika Tönnerfors, Mats Westin, Stig Lande and Simon M. Cragg
11h00 – 11h15	Oral 5.3 - Marine borer resistance of MMF and DMDHEU modified wood - results from up to 20 years of field exposure. **Mats Westin**, Pia Larsson Brelid, Andreas Rapp and Jörg Habicht
11h15 – 11h30	Oral 5.4 - Properties of crude tall oil impregnated Scots pine posts after a nine-year soil contact test. Manish Pakhrin, **Henrik Heräjärvi**, Antti Haapala, Hannu Kokko, Juhani Marttila, Veikko Möttönen and Martti Venäläinen
11h30 – 11h45	Oral 5.5 - Performance of resin-treated solid wood and laminated veneer lumber (LVL) under marine conditions. **Lukas Emmerich**, Christian Brischke, Sascha Bicke and **Holger Militz**
11h45 – 12h00	Oral 5.6 - The effects of material fatigue on differently modified woods. **Carlo Kupfernagel**, Simon Curling, Morwenna Spear and Graham Ormondroyd
12h00 - 12h15	Oral 5.7 - Does wood modification reduce the overall carbon footprint of wood Over the Whole Lifetime? **Callum Hill** and Mark Hughes
12h15 – 12h30	Oral 5.8 - Service properties of combined treated pine. **Bruno Andersons**, Dace Cirule, Nina Kurnosova, Ingeborga Andersone and Edgars Kuka
12h30 - 13h30	**Lunch**
Session 6: Poster session 2	
13h30 – 13h33	Poster 2.1 - Feasibility of hyperspectral imaging for evaluation of wood modification extend. **Anna Sandak**, Jakub Sandak, Faksawat Poohphajai, Rene Herrera Diaz, Veerapandian Ponnuchamy and Nežka Sajinčič
13h33 – 13h36	Poster 2.2 - Hyperspectral imaging predicts the moisture content distribution in acetylated wood. **Muhammad Awais**, Michael Altgen, Mikko Mäkelä, Tiina Belt, Lauri Rautkari
13h36 – 13h39	Poster 2.3 - The influence of thermal modification on the initial material-brightness (L*), documented by in-situ measurements. **Lothar Clauder**, Christoph Munk and Alexander Pfriem
13h39 – 13h42	Poster 2.4 - Improvement of dimensional stability of birch wood using low molecular weight phenol-formaldehyde resins. **Juris Grinins**, Vladimirs Biziks, Ilze Irbe, Janis Rizikovs and Holger Militz
13h42 – 13h45	Poster 2.5 - Bending tests of delignified and densified poplar. **Jörg Wehsener**, Martina Bremer and Peer Haller
13h45 – 13h48	Poster 2.6 - Improving the acoustic properties of beech wood by high pressure hydrothermal treatment. **Aleš Straže** and Ervin Žveplan
13h48 – 13h51	Poster 2.7 - PTFE wax as an anti-fingerprint additive in adhesives for HPL, based on MF resins: evaluation by FTIR-ATR spectroscopy. J. Santos, J. Pereira, N. Paiva, J. Ferra, F. D. Magalhães, J. M. Martins and **L. H. de Carvalho**
13h51 – 13h54	Poster 2.8 - Furfurylation of wood from four fast-growing tropical wood species enhanced resistance to subterranean termite attack. Yusuf Sudo Hadi, Desy

	Mulyosari, Elis Nina Herliyana, Gustan Pari, Wa Ode Muliastuty Arsyad, Imam Busyra Abdillah and **Philippe Gérardin**
13h54 – 13h57	Poster 2.9 - Poplar plywood heat treatment: mechanical performances and durability. **Bertrand Marcon**, Joffrey Viguier, Kevin Candelier, Louis Denaud and Robert Collet
13h57 – 14h00	Poster 2.10 - Using Pyrolysis-GC/MS to characterize chemical modifications in wood. **David Hentges**, Philippe Gérardin and Stéphane Dumarçay
14h00 – 14h03	Poster 2.11 - Thermal modification of dry and green Paulownia wood from central Italy plantations – Effects on selected properties. **Giacomo Goli**, Pasquale Murrone, Giovanni Aminti and Michele Brunetti
14h03 – 14h06	Poster 2.12 - Bonding properties of commercial scale woven oil palm sandwich composite modified with low molecular weight phenol formaldehyde. **Norul Hisham Hamid**, Mohamad Jawaid and Nursyafira Ain Ahmad
14h06 – 14h09	Poster 2.13 - Oleo-thermo-chemical treatment of wood and color change due to treatment**. Behbood Mohebby** and Hamed Kevili
14h09 - 14h12	Poster 2.14 - - Impact of target temperature and process duration on the selected physical properties of thermally modified Eucalypt wood. **Djeison Cesar Batista**, Maximilian Wentzel, Christian Brischke and Holger Militz
14h12 - 14h15	Poster 2.15 - Physical Properties of Hydrothermally Treated Rubberwood (*Hevea brasiliensis*) in Different Buffered media. Md. Rowson Ali, **Ummi Hani Abdullah**, Zaidon Ashaari, and Lee Seng Hua
14h15 - 14h18	Poster 2.16 - Phosphorylation of Kraft lignin to be used as a water-stable fire retardant in wood. **Olov Karlsson**, Chia-Feng Lin, Dennis Jones and Dick Sandberg
14h18 – 15h00	**Coffee and Poster viewing**
Session Seven: Applications of thermally and chemically modified wood	
15h00 – 15h15	Oral 7.1 - Heat treatment and chemical wood modification - A combined approach for exclusive, interior products. **Giacomo Goli**, Federico Negro, Lukas Emmerich and Holger Militz
15h15 – 15h30	Oral 7.2 -The influence of thermal modification and oil impregnation on the characteristic acoustic impedance of different wood species. **Christoph Munk** and Alexander Pfriem
15h30 – 15h45	Oral 7.3 - Non-leaching fire-retardant treatment for spruce timber. **Jussi Ruponen**, Mikko Valkonen, Jari Kukkonen and Mark Hughes
15h45 – 16h00	Oral 7.4 - Composite strategy for improving fire-retardancy of furfurylated wood. **Chia-feng Lin**, Injeong Kim, Olov Karlsson Dennis Jones and Dick Sandberg
16h00 – 16h15	Oral 7.5 - The effect of acetylation on the embedment behaviour of birch plywood. **Tianxiang Wang**, Yue Wang, Roberto Crocetti and Magnus Wålinder
16h15 – 16h30	Oral 7.6 - Phenol formaldehyde resin treatment of end-grain cobbles for flooring and paving applications. **Morwenna Spear**,Dylan Jones, Chris Miles and Graham Ormondroyd
16h30 – 16h45	Oral 7.7 - Properties of modified wood with commercially available polyamine/polyepoxy resin. Mahdi Mubarok, Frédéric Simon, **Stéphane Dumarcay**, Christine Gérardin and Philippe Gérardin
16h45 – 17h00	**Closure of conference / ECWM 11 announcement**