

COST Action FP0802

Workshop „Hierarchical structure and mechanical characterization of wood“

August 24-25, 2011

Helsinki, Finland

Wednesday, August 24

08.00-09.00h: **Registration / Coffee**

09.00-09.10h: **Opening** – Pekka Saranpää & Ritva Serimaa

09.10-9.50h: **Keynote 1**

Chairman: Pekka Saranpää

Anna-Stiina Jääskeläinen: Wood characterization by Raman spectroscopy

9.50-10.30h: **Session 1: Application of Spectroscopic Technology**

Chairman: Lisbeth Thygesen

9.50-10.10h: **Miro Suchy, Eero Kontturi & Tapani Vuorinen:** Alterations in wood ultrastructure induced by drying

10.10-10.30h: **Jakub Sandak & Anna Sandak:** Estimation of mechanical stresses with Mid Infrared Spectroscopy

10.30-10.50: **Poster Presentations**

Seppo Andersson, Kirsi Leppänen, Pekka Saranpää, Yurong Wang, Haiqing Ren, Benhua Fei & Ritva Serimaa: Studies on the nanostructure of the cell wall of Maidenhair tree and Chinese fir using wide-angle x-ray scattering

J.-P. Suuronen, Jessica Lucenius, Kirsi Svedström, Kurt Fagerstedt, Ewa Mellerowicz & Ritva Serimaa: X-ray analysis of water transport in trees and their wood structure at cellular and ultrastructural level

Kirsi Leppänen, J. Lucenius, J-P Suuronen, J. Van den Bulcke, D. Van Loo, J. Van Acker, P. Immerzeel, E. Mellerowicz, K. Fagerstedt, P. Saranpää & R. Serimaa: X-ray scattering and microtomography study on the structure and dynamics of hybrid aspen, birch, spruce, and pine saplings

Jelena Bogdanović Pristov, Jasna Simonović, Aleksandra Mitrović, Vuk Maksimović, Dragoljub Grubišić, Ksenija Radotić: Cell wall-bound phenols, lignin content and peroxidase activity in *Dioscorea balcanica* stem

Jasna Simonović, Jelena Bogdanović Pristov, Aleksandra Mitrović, Gabor Steinbach, Gregory Mouille, Gyozo Garab, Ksenija Radotić: Cell wall linear dichroism in the *Dioscorea balcanica* stems sections

Vanamo Salo, Tuuli Timonen, Pirkko Harju, Pekka Saranpää & Heikki Saraja: Abnormal structure of wood in Finnish conifers exhibiting mazar-like features

R. Piispanen, S. Valkonen & P. Saranpää: Wood properties of uneven-aged Norway spruce: a case study in five stands in southern Finland

- 10.50-11.10h: **Coffee Break**
- 11.10-12.30h: **Session 2: Sorption Behaviour and Swelling**
Chairman: Kristofer Gamstedt
- 11.10-11.30h: **Kalman Schulgasser & Allan Witztum:** How the relationship between wood density and shrinkage depends on the microstructure of the cell wall
- 11.30-11.50h: **D. Derome, A. Patera, M. Griffa, A. Rafsanjani, J. Carmeliet & R. Guyer: On the origin of hysteresis in moisture behaviour of wood**
- 11.50-12.10h: **J. Carmeliet, R. Guyer, D. Derome & A. Kim: Hysteretic behaviour of wood in mechanical loading, moisture sorption and swelling**
- 12.10-12.30h: **João C. Costa, Jorge M. Branco, Aires F. Camões & Ana C. Coelho: Wood dimensional changes as consequence of its hygroscopic behaviour**
- 12.30-14.00: **Lunch**
- 14.00-15.20h: **Session 3: Modified Wood Tissues**
Chairman: Michaela Eder
- 14.00-14.20h: **Friederike Saxe, Adya Singh, Michaela Eder, Tripti Singh & Ingo Burgert: Modifying wood by chitosan treatment**
- 14.20-14.40h: **Ž. Gorišek & A. Straže: Comparative analysis of creep response and viscoelasticity of heat treated and untreated beechwood**
- 14.40-15.00h: **Mohamad Eid, Rahime Bag, Bernard Kurek & Johnny Beaugrand: Dielectric properties of woody hemp core, a lignocellulosic resource: variation with hemicelluloses content**
- 15.00-15.20h: **Jean-Eudes Maigret, Jean Stéphane Antoniow, Mihai Chirtoc, Johnny Beaugrand & Patrice Dole: Gradients of glass transitions temperature in lignocellulosic cell walls highlighted by Micro-Thermal analysis Scan (SThM)**
- 15.20-15.40: **Poster Presentations**
- James W. Canavan & Mike C. Jarvis: Effects of drying on the dimensional stability of discs of Sitka spruce wood**
- D. Georgakaki & H.M. Polatoglou: The role of nanometrology in nanoindentation wood experiments**
- Leopold Wagner, Thomas K. Bader, Karin Hofstetter, Karin Fackler, Thomas Ters: Nanoindentation and micromechanical modelling to explore the mechanical performance of deteriorated softwood**
- Carmen-Mihaela Popescu, Gabriela Lisa & George Mantanis: Evaluation of the stage of degradation of aged Oak wood (*Quercus aegilops L.*) originating from the old Meteora monasteries**
- Zarah Walsh, Emma-Rose Coad, Oliver T. Hudson, Chi Hu, Michael H. Ramage, Michelle L. Oyen & Oren A. Scherman: Thermally, photo- and microwave polymerised wood-polymer composites in native English willow and their resistance to environmental degradation**
- Emma-Rose Coad, Zarah Walsh, Oliver T. Hudson, Chi Hu, Michael H. Ramage, Michelle L. Oyen & Oren A. Scherman: Development and mechanical characterisation of methacrylate impregnated willow**
- Maria-Cristina Popescu: Multivariate statistical analysis of Mid-Infrared Spectra of wood/polyamide composites**
- 15.40-16.00h: **Coffee Break**

- 16.00-18.00h: **Session 4: Thermo-Hygro-Mechanically Modified Wood (Thematic Session in Cooperation with COST Action FP0904)**
Chairman: Lennart Salmén
- 16.00-16.40h **Keynote 2**
Parviz Navi: Properties and processing of THM wood
- 16.40-17.00h **S. Abbasion, D. Derome & J. Carmeliet:** Modelling investigation of the effect of initial moisture content on the thermo-hydro-mechanical fields during the linear welding of wood
- 17.00-17.20h **Stefania Fortino & Tomi Toratti:** A computational framework for stress calculation in wood products under humidity and temperature variations
- 17.20-17.40h **Nadine Herold, Jana Peters, Mario Zauer, Steffen Fischer & Alexander Pfriem:** Improving of the mechanical properties of thermally modified wood by a prior chemical treatment
- 17.40-18.00h **Discussion**
- 19.00h: **Workshop Dinner**

Thursday, August 25

- 09.00-09.40h: **Keynote 3**
Chairman: Ritva Serimaa
Olli Ikkala: Functional materials based on nanocellulose
- 09.40-10.40h: **Session 5: Wood Fibres and Fibre Networks**
Chairman: Karin Hofstetter
- 09.40-10.00h: **C. Marulier, P.J.J. Dumont, L. Orgéas, D. Caillerie & S. Rolland du Roscoat:** Modelling of the hygromechanical behaviour of intricate networks of natural fibres
- 10.00-10.20h: **Gabriella Josefsson, E. Kristofer Gamstedt, Bjørn Steinar Tanem, Yanjun Li & Per Erik Vullum:** Prediction of elastic properties of wood cellulose nanofibrils from ultrastructure characterized by Transmission Electron Microscopy
- 10.20-10.40h: **Thomas Joffre, Kristofer Gamstedt, Raphael Passas, Pierre Dumont & Cristian Neagu:** Moisture-induced deformation of wood fibre on the tracheid and cell-wall layer level
- 10.40-11.00h: **Coffee Break**
- 11.00-12.30h: **Session 6: WG-Reports and Discussion**
Chairman: Karin Hofstetter
- 12.30-14.00: **Lunch**
- 14.00-15.20h: **Session 7: Structure-Function-Relationships**
Chairman: Kristofer Gamstedt
- 14.00-14.20h: **Tuula Jyske, Tuomo Kalliokoski, Harri Mäkinen, Pekka Nöjd, Tapani Repo, Takeshi Fujiwara, Katsushi Kuroda, Taiichi Iki & Hisashi Abe:** Investigation on intra-annual xylem formation in conifers by light and scanning electron microscopy (FE-SEM) – lessons learned
- 14.20-14.40h: **A. Gronvold, C. Montero, A. Van der Lee & T. Alméras:** Multiscale investigation of wood behaviour after the elastic domain using X-Ray diffraction technique

14.40-15.00h: **Bruno Clair**: Contribution of internal stresses release to the drying shrinkage of wood

15.00-15.20h: **S.S. Chang, F. Quignard, F. Di Renzo & B. Clair**: Wood behaviour during dehydration in organic solution

15.20-15.40h: **Coffee Break**

15.40-17.20h: **Management Committee Meeting**