Book of Abstracts

COST Action FP1407
Final Conference

LIVING WITH MODIFIED WOOD

Belgrade, Serbia
12-13 December 2018

University of Belgrade – Faculty of Forestry

COST Action FP1407

Understanding wood modification through an integrated scientific and environmental impact approach (ModWoodLife)

Living with modified wood

Final COST Action FP1407 International Conference

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Editors: Goran Milić, Nebojša Todorović, Tanja Palija, Andreja Kutnar

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Local organiser preface

It is both a pleasure and a privilege for the Department of Technologies, Management and Design of Furniture and Wood Products, Faculty of Forestry to host the final conference of COST Action FP1407. This honour has given us an opportunity to establish a more visible position within the European network of wood related institutions.

Wording of the title - “Living with modified wood” - signifies that the time in which we live has provided us with technologies of wood modification that will ensure that never again will this material be regarded as a lesser material with a short life-span. Wood, as one of the rare living materials, is experiencing a worldwide renaissance, one that could not have been considered possible just a generation ago. For these very reasons, the primary goal of this conference is to foster, forge and encourage the cooperation and exchange of ideas between wood modification researchers and experts in related fields and, hopefully, help them grow.

Belgrade, as a city with a long and rather eventful history, is an environment where sparse moments of peace and prosperity have instilled a way of thinking that appreciates the little things in life. This setting emphasises even more the pressing need of the modern age to live more organically, ethically and above all, ecologically – and what better way than living with an organic material such as wood.

Success of this event would not have been possible without the effort of the entire team of my colleagues. I would like to thank them and to express my deepest gratitude to Andreja Kutnar, Chair of COST FP1407, for leading this fantastic Action, and for her continuous help in organising this Final Conference.

Last but not least I would like to thank all of the participants and contributors of the Final COST FP1407 Conference. I wish you to have a memorable time in Belgrade.

So let us look forward to an exciting conference!

Goran Milić

Preface

Welcome to the fourth and final international conference of COST Action FP1407 "Understanding wood modification through an integrated scientific and environmental impact approach" (ModWoodLife). This conference, "Living with modified wood", held in Belgrade, Serbia December 12 and 13, 2018 brings researchers and professionals together to share and disseminate their work. Their research contributes significantly to our Action's objectives. It is especially rewarding too see contributions that have resulted from collaborations developed and strengthened through this network. Since the beginning of the Action in 2015, we have delivered new knowledge in the field of wood modification and environmental impact assessment. We can all be proud that during our Action, the European Union recognized the need to strategically approach activities, research, and policy to reduce climate change. Among the key strategies that were accepted in the past three years are the Circular Economy (2015), the Paris Agreement (2016), the Research and Innovation Roadmap 2050 – A Sustainable and Competitive Future for European Raw Materials (2018), as well as the recently renewed Bioeconomy strategy. Although our Action did not directly contribute to these documents, I am convinced that the activities of our network and its participants accelerated their adoption. At the same time, it is clear that our collaboration must continue after the Action ends on March 9, 2019. Going forward we should jointly contribute to "closing the loop" of product lifecycles through greater recycling and re-use and bring benefits for both the environment and the economy.

I would like to thank you for your great collaboration. Besides the new knowledge we created, our new friendships will continue for many years more!

Wishing you a successful and memorable conference in Belgrade.

Andreja Kutnar
Chair, COST FP1407

Strategies for improvement of visibility and acceptance of modified wood

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Perception is defined as a recognition and interpretation of sensory information. Perception also includes how we respond to the information and how we interact with the surrounding environment. Knowledge about human sensory perception of materials is playing an increasingly important role in the selection and combination of materials within manufactured products (Zuo *et al*. 2016). One of the main recent advances in wood technology is the development of modified wood. New products offer enhanced durability and improved performance in unique ways. Wood modification includes several treatments that change

material properties on different levels (Hill 2006). They include active modifications, that change chemical nature of materials (e.g., chemical, thermal, enzymatic), or passive, that do not alter materials chemistry (e.g., impregnation, surface treatments). Consequently, various properties of wood are changed to different extents.

A previous study demonstrated that not only physical characteristics of materials are important in materials experience, but also sensory properties of materials and the meanings and emotions triggered by them (Karana *et al*. 2015). Customers formulate a perception of the product partly based on its sensory properties (e.g., colour, texture, sound, smell, taste) when experiencing the product for the first time. Sijtsema *et al*. (2016) highlighted the importance of obtaining insight into perceptions of laypeople about new technologies. In some cases (e.g., genetic modification), new technologies are not generally accepted and might even be rejected by consumers, even if professionals see many benefits in them. Similarly, "modified wood" might impair the impression due to specific background knowledge (e.g., containing "chemistry" and/or manipulated/no more natural). Material perception shall be investigated in certain contests and applications. Modified wood used for food contact materials should be safe for human health and do not transfer organoleptic characteristics of food (European Comission, 2004). Therefore, the selection of materials with particular sensory properties and placing them in certain usage contest might enhance the product's overall image and the market's perception of its value (Zuo *et al*. 2001). The project "Perception of modified wood" is a joint project of seven partners with the overall goal to investigate reception of modified wood in order to improve its visibility and acceptance. Within this research, we aim to investigate preferences in using modified wood from psychological, physiological and cultural perspectives. Influences of modification processes on human health and wellbeing will be investigated with preference tests by using both virtual and real samples. Special focus will be directed towards implementing alternative assessment methods (e.g., wearable sensors that can capture physiological responses) while assessing respondents.

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