



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
Belgrade, Serbia, 12 – 13th December 2018

Book of Abstracts

Editors: Goran Milić, Nebojša Todorović, Tanja Palijsa, 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

Wood protection from the olive industry

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The European olive industry produces the majority of the olive oil in the world. The process by which the oil is obtained separates the oil phase of the olive from the solid phases comprised of the stone, fleshy parts of the olive, and residual leaves. All of these materials contain phenolic compounds which provide good flavour and human health benefits, however, they may serve another purpose: providing protection against degradation of wood products. Recently, Schwarzkopf *et al.* (2018) explored the use of these olive mill by-products for use in the protection of wood. In this study two maleinisation techniques were used to chemically modify low-value lampante oil to limit leaching when impregnated in wood. Scots pine (*Pinus sylvestris*) and European beech (*Fagus sylvatica*) were then impregnated with the modified oils (Fig. 1) and underwent leaching, accelerated weathering, and decay tests. The two oil modification treatments increased the potential for the oil to react with the hydroxyl groups of the wood, making them less likely to leach from the wood. Leaching of the oils was relatively low compared with other experiments and beech wood specimens impregnated with a direct maleinisation oil showed improvement in leaching performance compared to control specimens. In addition, it was found that the modified oils were not completely removed from the wood after solvent extraction indicating that they could potentially be used as an immobilisation agent in combination with other treatments to reduce the required quantity of active component of protective agents.

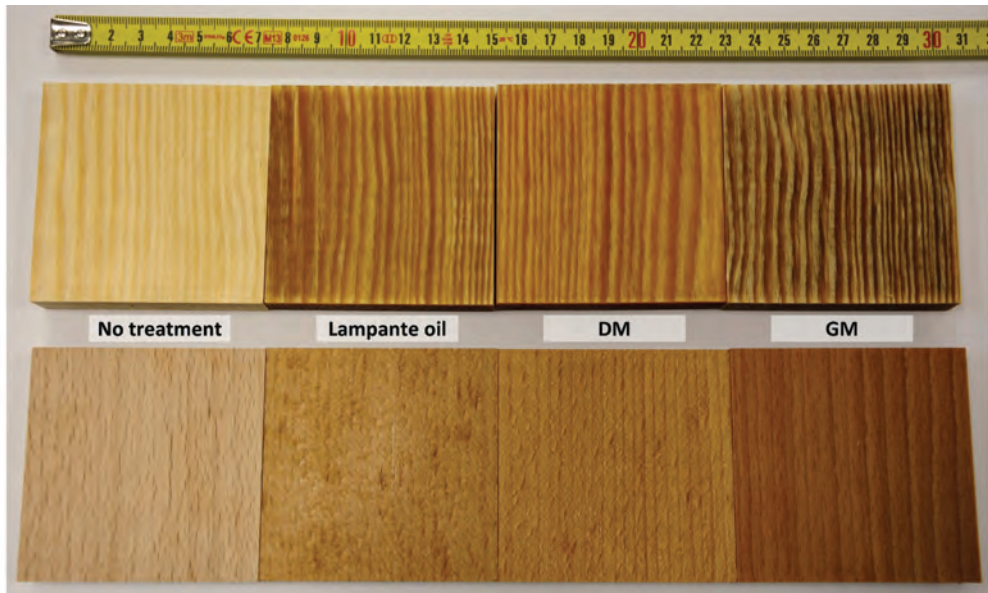


Figure 1: Pine (upper row) and beech (lower row) specimens treated with modified oils. DM signifies direct maleinisation and GM signifies maleinisation preceded by a glycerolysis step.

These results have prompted further interest in this topic leading to Horizon 2020 funding in an active Bio-Based Industries project entitled 'ProEnrich'. Rather than focusing on the oil, this project targets the pomace and wastewater coming from the olive mill. These waste materials have higher phenolic content than the oil, making them more attractive for further processing. The objective of the project is to create a value chain from the olive farmer to the end user who would buy refined phenolic compounds. These phenolics can then be used by industries including food, cosmetics, pet care, and wood protection.

References

Schwarzkopf M., Burnard M., Tverezovskiy V., Treu A., Humar M., Kutnar A. 2018. Utilisation of chemically modified lampante oil for wood protection. *European Journal of Wood and Wood Products*, 76, 5: 1471–1482

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