



Interdisciplinary Doctoral School
(SDI)

Field of doctoral studies:

FOREST ENGINEERING

PhD supervisor:

Prof.dr. Maria Cristina TIMAR

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: Unconventional wood resources/sorts with exquisite aesthetical value – characterisation and adequate treating/coating solutions for valorisation (în furniture/interior design)

Minimal requests for speciality exam preparation:

- ageing, degradation and fossilization of wood: factors, conditions, associated phenomena;
- principles/methods of old wood dating (dendrochronology, C14 dating);
- biotic wood degradation agents, natural durability of wood- definition and classes of durability;
- preventive and curative wood preservation methods- classical and modern approaches in research and conservation practice;
- subfossil wood: definition, characteristics, importance in Europe as scientific challenge and valorization potential;
- subfossil wood in Romania- present status - acknowledgement, scientific research and valorization;
- research project proposal to solve the topic.

Recommended bibliography:

1. Fengel D. Ageing and fossilization of wood and its components. Wood Science and Technology, 1991 25(3), pp. 153-177.
2. Fengel F, Wegener G (1984) Aging and fossilization. In: Fengel D, Wegener G (eds) Wood, chemistry, ultrastructure, reactions. Walter de Gruyter, Berlin, pp 407-413
3. Rede V, Essert S, Kodvanj J. Annual ring orientation effect on bending strength of subfossil elm wood, Journal of Wood Science, 2017, 63(1), pp 31-36. <https://doi.org/10.1007/s10086-016-1596-x>
4. Kolar T, Rybnicek M. Physical and mechanical properties of Subfossil Oak (Quercus sp). ACTA UNIVERSITATIS AGRICULTURAE ET SILVICULTURAE MENDELIANAE BRUNENSIS, 2010
5. Sava G.O, Popa I., Sava B.T et al: INTERVALIDATION OF DENDROCHRONOLOGY AND 14C DATING ON A 700-YR TREE-RING SEQUENCE ORIGINATING FROM THE EASTERN CARPATHIANS, 23rd International Radiocarbon Conference, Trondheim, Norway, 17-22 June, 2018, DOI:10.1017/RDC.2019.56
6. Timar M.C. Ameliorarea lemnului, Editura Universității Transilvania din Brașov, 2003. (capitole reprezentative)
7. Timar M.C. Restaurarea mobilei- teorie și practică, Editura Universității Transilvania din Brașov, 2003. (capitole reprezentative)
8. Liu X.Y : Contributions to the study of *ageing* phenomena of wooden substrate and traditional materials for transparent finishes - a comparative approach for Europe and China with applicability in furniture conservation / restoration -teză de doctorat 2017, disponibilă în Biblioteca UTBv
9. *** Articles from journals – internet sources
10. <http://subfossil.cz/en/homepage/>

TOPIC 2: Modern approaches in stabilisation and functionalisation of coated wood surfaces for interior use

Minimal requests for speciality exam preparation:

- wood species relevant for furniture manufacturing/ interior design;
- colour theory – the CIE Lab system , measurement of colour;
- determination of light fastness (resistance to light) – accelerated testing;
- coating materials for transparent, nature wood finishing for interior use;
- ageing of materials (wood species, coating materials) – colour changes;
- current trends in the international research referring to ageing /colour stabilisation of wood surfaces (for indoors applicatios);
- other modern trends of functionalisation of wood surfaces: hydrophobation, antimicrobial properties, self-cleaning;
- research project proposal to solve the topic.

Recommended bibliography:

1. Rowell R. (editor) : Handbook of *wood* chemistry and wood composites, 2013 (capitole reprezentative)
2. Williams S. Finishing of wood – book chapter – disponibil la:
https://www.fpl.fs.fed.us/documnts/fplgtr/fplgtr190/chapter_16.pdf
3. Timar M.C. Ameliorarea lemnului, Editura Universității Transilvania din Brașov, 2003. (capitole reprezentative)
4. LIU X.Y : Contributions to the study of *ageing* phenomena of wooden substrate and traditional materials for transparent finishes - a comparative approach for Europe and China with applicability in furniture conservation / restoration -teză de doctorat 2017, disponibilă în Biblioteca UTBv
5. Dong Y, Yan Y, Ma H., Zhang S, et al: In-Situ Chemosynthesis of ZnO Nanoparticles to Endow Wood with Antibacterial and UV-Resistance Properties; Journal of Materials Science & Technology, 13 (2017): 266-270.
6. <https://advances.sciencemag.org/content/6/3/eaaw9727>
7. http://repositorio.unb.br/bitstream/10482/10498/1/ARTIGO_AestheticsAppreciationWood.pdf
8. http://perso.telecom-paristech.fr/~angelini/master_spsiv/2006/papers_for_presentation/color_comparison_hill.pdf
9. *** Articles from journals – internet sources

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