Department of Wood & Furniture Design and Technology (WFDT) www.wfdt.teilar.gr

Research Lab of Wood Science & Technology - T.E.I. of Thessaly, Karditsa (Greece)

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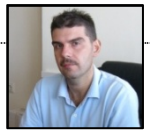

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-**Mr. Gerasimos Bothos**, *Lab Assistant*

Lab Description

The **Research Lab of Wood Science and Technology**, at the Tech. Educ. Inst. (TEI) of Thessaly (Greece), carries out basic and applied research and provides technical services within the wood-, furniture- and packaging- related areas, from raw materials to final products. It deals with the study of *wood* as a raw material and its conversion into products covering the subjects: natural and macroscopic characteristics, wood and fibre identification, chemical composition, microscopy and ultrastructure of wood, production of wood in trees and variability, wood defects, properties of wood such as density, hygroscopicity, dimensional stability, mechanical strength, heat-sound insulation, natural durability; also, protection and improvement of wood, i.e. modification, preservation, as well as quality and strength grading of timber, recycling of waste wood & paper, wood as a raw material for the paper-timber industries, properties and control of glued and composite wood products, wood as an energy source (firewood, pellets, briquettes). In addition, the Lab offers *technical services*, to third parties, in the areas of quality control both of final wood products and furniture pieces & end products, as well as indoor or outdoor testing of several wood-derived materials and final products according to the international standards.

Published work *(during the last 5 years)*

Mantanis, G., Terzi, E., Kartal, S.N., Papadopoulos, A. (2014). Evaluation of mold, decay and termite resistance of pine wood treated with zinc- and copper- based nanocompounds. *International Biodeterioration and Biodegradation (submitted in).*

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P. Gascón-Garrido, P., Oliver-Villanueva, J.V., Ibiza-Palacios, M.S., Militz, H., Mai, C. and S. Adamopoulos. 2013. Resistance of wood modified with different technologies against Mediterranean termites *(Reticulitermes spp.).* *International Biodeterioration and Biodegradation* 82: 13-16.

Gortzi O., Metaxa X., Mantanis G. and S. Lalas (2013). Effect of artificial aging using eleven different wood chips on the antioxidant activity, phenolic profile, sensory properties and color of two Greek red wines. *Food Chemistry* 141: 2887-2895.

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Papadopoulos A.N., Mantanis G., Katsinikas, K., Michael M. (2013). Formaldehyde in indoor air of new apartments in Drama, Greece. *Advances in Forestry Letter*, 2(2): 9-13.

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Adamopoulos, S., Bastani, A., Gascón-Garrido, P., Militz, H. and C. Mai. 2012. Adhesive bonding of beech wood modified with a phenol formaldehyde compound. *Eur. J. Wood Prod.* 70: 897-901.

Lykidis, C., Parnavela C., Goulounis N. and A. Grigoriou, 2012. Potential for utilizing waste corrugated paper containers into wood composites using UF and PMDI resin systems. *European Journal of Wood and Wood Products* 70, No 6, pp. 811–818.

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Adamopoulos, S., G. Koch. 2011. Wood structure and topochemistry *of Juniperus excelsa*. *IAWA J*. 32(1): 67-76

Scholz, G., Adamopoulos, S. and H. Militz. 2011. Migration of blue stain hyphae within wax treated wood. *IAWA J.* 32 (1): 88-96.

Adamopoulos, S., Chavenetidou, M., Passialis C. and E. Voulgaridis. 2010. Effect of cambium age and ring width on density and fibre length of black locust and chestnut wood. *Wood Research* 55(3): 25-36.

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Updated: 28.12.2013

Research Lab of Wood Science & Technology (WST): facilities & equipment

Partial view of a testing room at the Research Lab of WST

GANN moisture meter

View of the wood-impregnation pilot plant (600 L) at WST

Zwick-Roell Z020 testing apparatus

PROTHERM lab-scale ashing furnace

Quality control (QC) equipment for furniture products

Partial view of the lab with conditioning room & chambers

Desiccator apparatus for HCHO emission

Liquid chromatography – Mass spectrometry equipment at the WST

LEICA light microscope

Large conditioning room

STETON hot-press apparatus for glued wood products

ATLAS Xenon equipment

Outdoor cladding-test area at the WST lab

Soil test area for in-ground experiments

"Block-test" set up for outdoor fungi test

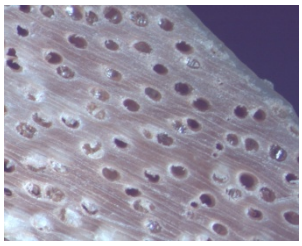
Small conditioning room

Lab-scale Shimadzu spectrophotometer

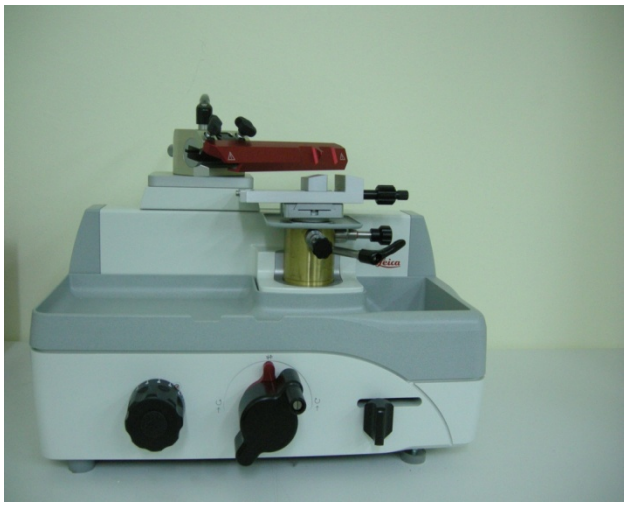
Lignostation™: device for wood density measurements

LINTAB 5™: analysis of tree rings

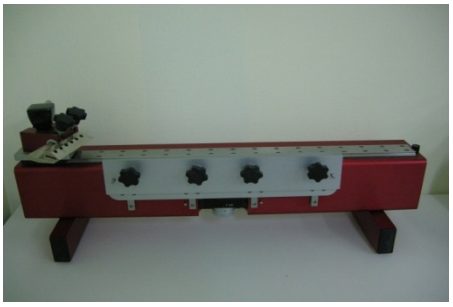
Research microscope ECLIPSE 50i with a digital camera & relative software, and Stereoscope NIKON SM2 800 equipped with photographic digital system



Wood cross section



Microtome LEICA MICROTOME SM 2010R



Microtome SLEDGE MICROTOME G.S.L. 1

GRINDOSONIC Mk5 device for non-destructive MOE measurements of wood

Device RESISTOGRAPH 4452-S for defects control

Mobile device IML MICRO HAMMER for tree defects

SYLVATEST for timber grading (EN338)

Atomic absorption PERKIN ELMER AAnalyst 200 equipment

Testing machine SHIMADJU UH-300 kNI for mechanical properties of wood materials

SOXHLET extraction system for chemical analyses

Machine WPM 150J for wood impact tests

Conditioning room ELVEM (0-50°C, 25-98%RH)

Vacuum chamber VACIOTEM

Conditioning room BINDER KBF 115 (10-100°C, 10-90%RH)

Chamber MEMMERT with hood

Wood mill POLYMIX PX-MFC 90D

Caliper for wood swelling studies

Lab small devices: balances, oil-baths, FALK, PH-meters, micrometers, and other.

Chamber POL-ECO-APARATURA SLW 53, and

High-temperature chamber THERMCONCEPT KLS 03/10

Desiccator test apparatus (JIS 233)

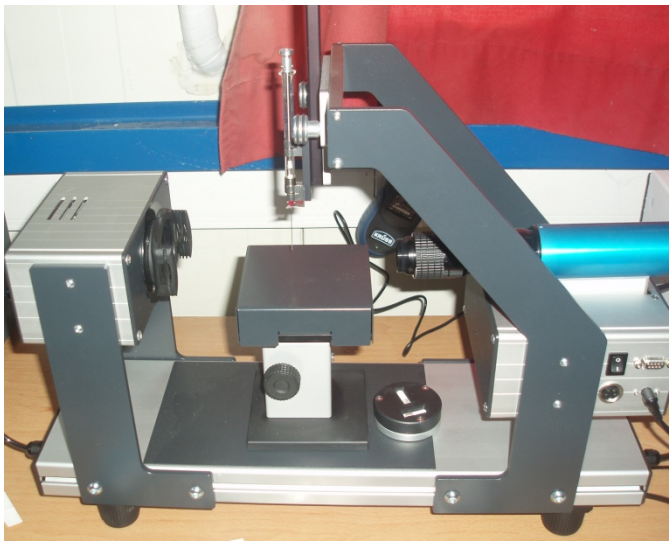
Laboratory-size water bath

TABER abraser apparatus for HPL & other surfaces

Erichsen impact tester

Erichsen scratch-resistance tester

Perforator-test lab apparatus (EN 120)



Contact-angle apparatus (goniometer) with digital camera

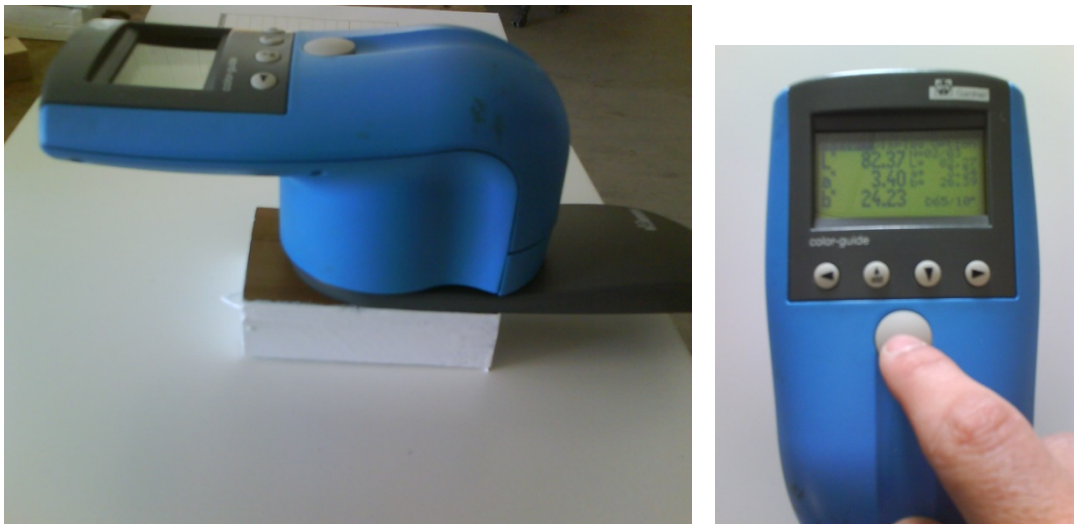
Lab size spectrophotometer

MEMMERT small-scale conditioning room

PPM portable Formaldemeter™ 400

WESSEX Pendulum skid resistance tester

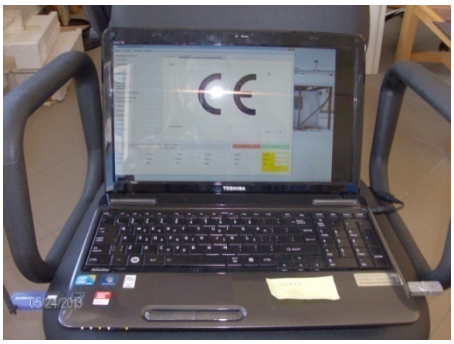
Laboratory size oven dryers



BYK-Gardner colourimeter for several wood experiments

Vacuum apparatus for wood-impregnation experiments

STÄUBLI Robotic system for furniture QC (quality control) & other automation tests



Brookhuis MTG system for timber grading (EN 338)

3-axial CNC machine for furniture manufacturing

SECAL pilot-scale kiln dryer

QC system for furniture testing & grading (CE)

Quality control (QC) system for wooden windows and doors