ARISTOTLE UNIVERSITY OF THESSALONIKI

RESEARCH COMMITTEE

ADVANCED MATERIALS AND DEVICES LABORATORY COLABORATION WITH THE INDUSTRIAL SECTOR

Laboratory of Advanced Materials and Devices (AMDeLab) was created with a vision of a versatile structure oriented on the physicochemical characterization and study of materials and devices. AMDeLab belongs to the Department of Physics, Faculty of Sciences in Aristotle University of Thessaloniki. The research plan of AMDeLab is developed in direct interaction to the needs of the production sector from local economy, taking advantage of the wide possibilities to offer integrated characterizations and studies of materials and devices together with its partnership in competitive research programs.

Advanced Materials and Devices Laboratory (AMDE LAB)

AMDe lab
LABORATORY OF ADVANCED MATERIALS AND DEVICES

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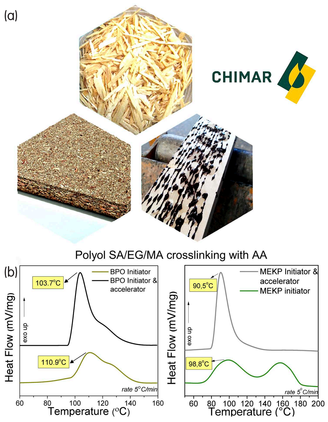

Figure 1: (a) CHIMAR specializes on the development of state-of-the-art binder and hardener products and supplies various wood-based panel industries all around the globe. The main scope of the collaboration between CHIMAR and the AMDe Lab is the study and optimization of bio-based materials such as resins compatible to their commonly used petroleum-based counterparts. (b) Differential Scanning Calorimetry (DSC) characterization of the cross-linking occurred for unsaturated polyester resins reinforced with maleic anhydrate and two different initiators.

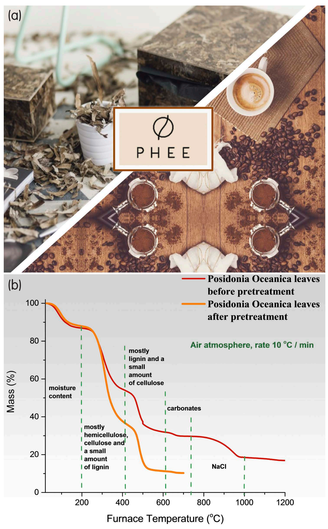

Figure 2: a) AMDe Lab. is working with PHEE to develop high strength and resistance to failure bio-based particle boards/panel using ecofriendly materials such as seaweed and coffee grounds. (b) Thermogravimetry Analysis (TGA) analysis of the Posidonia Oceanica seaweed leaves.

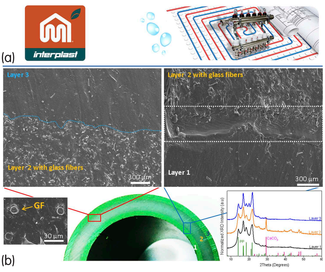

Figure 3: (a) Interplast manufactures high quality plastic pipes and fittings suitable for water supply, heating and sewerage systems with a wide range of application in house and industrial facilities construction. AMDe Lab. collaborates with Interplast to develop advanced composite polymer materials with improved terminal and mechanical properties suitable for water pipe systems. (b) Scanning Electron Microscopy (SEM) imaging and X-rays Diffraction (XRD) characterization of a multilayered water pipe with improved thermal stability and reduced heat losses.

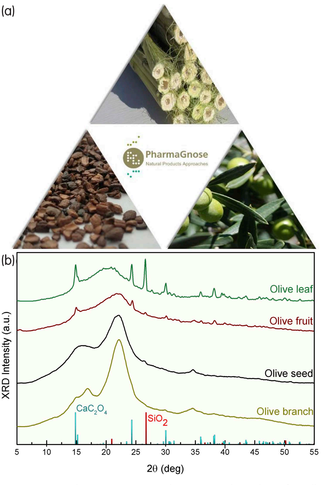

Figure 4: (a) Pharmagnose provides AMDe Lab. with ecofriendly materials such as hemp, olive prances, olive leaves and olive processing residual products which will be used to develop advanced particles boards/plywoods and bio-based adhesives. (b) XRD pattern of the different olive tree and fruit parts.

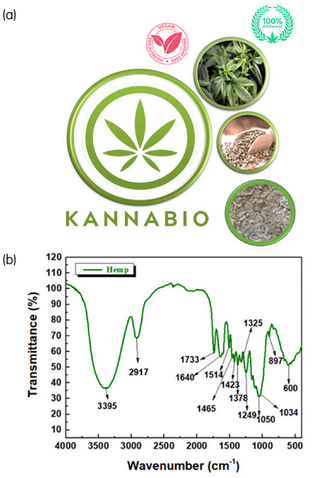

Figure 5: (a) KANNABIO provides AMDe Lab. with industrial hemp, fiber and wood chips from its shoot performing qualitative evaluation of the stems (moisture content and appearance of mold or odor). (b) FTIR spectra of the hemp strain.

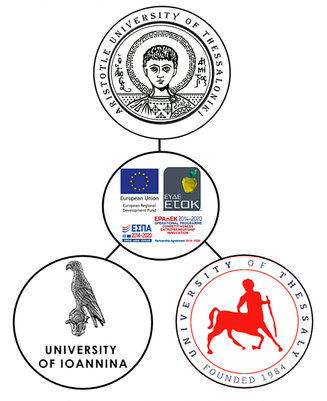

Figure 6: Under the EPAnEK 2014-2020 Operational programme Competitiveness Entrepreneurship & Innovation – EPAnEK-kinissi, the Aristotle University of Thessaloniki, University of Ioannina and University of Thessaly will collaborate with the industrial sector to synthesize innovative and high technology materials of advanced requirements.

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