

Contract No: **T6YBP-00341-CELL4GLUE**

Title: **Development of innovative nanocellulose-reinforced composite wood products with advanced hydrophobic and antimicrobial properties**

Duration: **28/02/2020-27/02/2023**

Abstract:

Composite wood products such as particleboards, fibreboards etc. are widely applied in the furniture industry and in uses like e.g., office, kitchen, bathroom, where for reasons of functionality, appearance and strength, are most often overlaid with sheets of paper ingrained in adhesive resins. Significant disadvantages of these surfaces such as low hydrophobicity and oleophobicity, as well as contamination by microorganisms remain a problem. The CELL4GLUE project will implement a new modification process of the surface of the composite wood products enabling it to become hydrophobic and/or oleophobic and at the same time antimicrobial. This will be done with an innovative technique, nanoimprint thermal lithography. In addition, the use of (nano)cellulose as additive for adhesive resins will be studied to further enhance the wood panel properties and the hydrophobic/antimicrobial properties of their surface. Wood cellulose derived from the processing/fractionation of various lignocellulosic agricultural or forest by-products/waste will be used, as well as microbial cellulose derived from crude glycerol processing. Both types of cellulose will then be suitably processed to obtain cellulose nanostructures and will be surface modified with reactive and/or hydrophobic groups. The aim is to use these types of (nano)cellulose in composite wood product applications, to enhance their performance in terms of their physical and mechanical properties, while at the same time adjusting/improving the hydrophobic properties.

The project is co-financed by the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation (EPAnEK 2014-2020) as well as by private funds, within the framework of Special Action Call "Industrial Materials".

CHIMAR role in this project includes the evaluation of the application of cellulose nanomaterials in adhesive systems used in the manufacture of composite wood panels.



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