Contract No: **T2EDK-01394-HIPERION**

Title: **High-Performance Industrial Materials based on Nanocellulose**

Duration: **29/07/2021-28/11/2023**

Abstract:

The aim of the HIPERION project is the sustainable production of different types of nanocellulose, such as microfibrillated cellulose (MFC), cellulose nano-fibrils (CNF), nanocrystalline cellulose (NCC) and bacterial nanocellulose (BNC), for the development of high-performance nanoscale industrial materials. The structural components of lignocellulosic biomass will be converted to MFC, CNF and NCC through novel thermochemical and mechanical processes. Also, sugars will be recovered from lignocellulosic biomass and will be applied in novel fermentation processes for the production of BNC through bacterial cultures. In addition, the project will focus on the exploitation of renewable raw materials (side-streams of conventional industrial branches, plant / residual biomass, organic fraction of municipal waste) through the development of bio-refineries and the utilization of free sugars and hemicellulose hydrolyzate from different types of biomass. The structure of the produced nanocellulose will be studied extensively at microscopic and macroscopic scale in order to optimize its properties. Added-value applications of the produced nanocellulose samples will be developed.

CHIMAR role in this project includes the evaluation of the potential of nanocellulose to strengthen urea-formaldehyde (UF) and/or melamine-urea-formaldehyde (MUF) resins and their performance on application for wood-based panels production as well as to act as formaldehyde emission barrier in surface coatings for wood products.

Co-financed by Greece and the European Union