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TOWARDS INDUSTRIAL WASTE VALORIZATION – PROPERTIES INVESTIGATION OF BIO-BASED FILMS WITH LIGNIN

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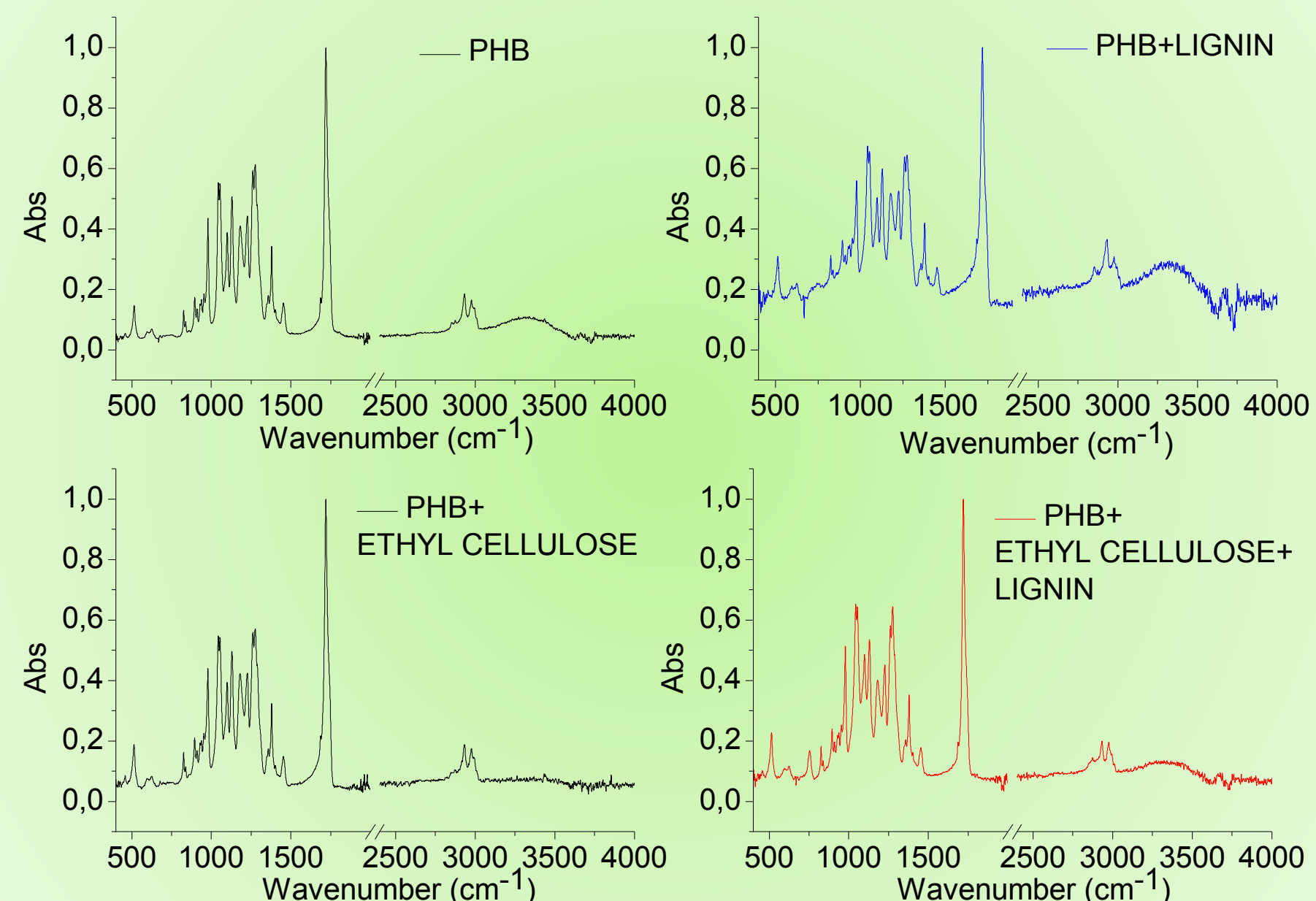
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MOTIVTION AND BACKGROUND

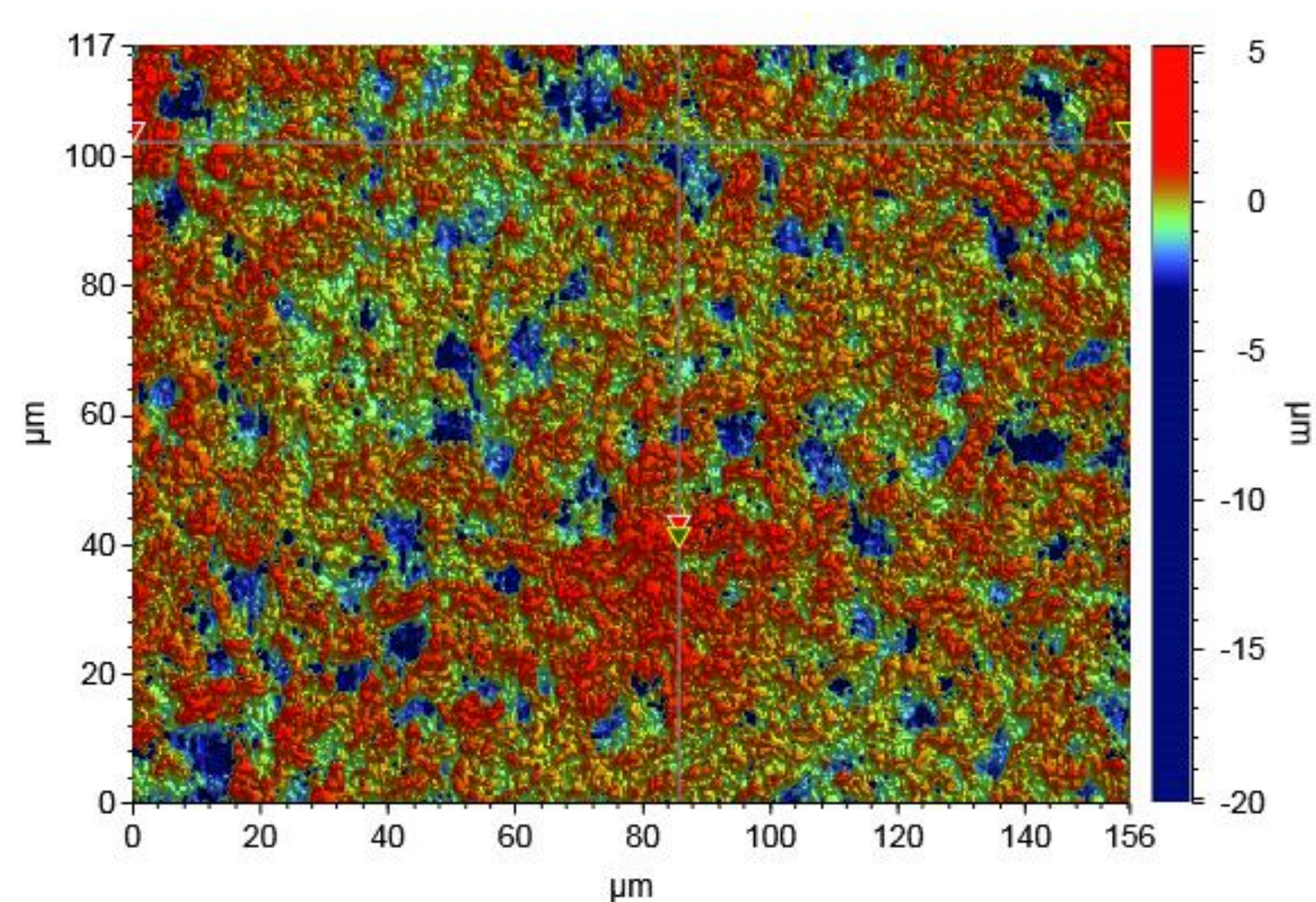
Due to the demand for the reduced exploitation of fossil fuels, there is an urgent need to develop sustainable alternatives based on biodegradable and natural resources that can be utilized to manufacture goods from daily use, in a further extended scale [1-2]. Lignin is the most abundant natural aromatic feedstock and its conversion to value-added products is currently of great interests of the researchers around the world. The use of lignin for the preparation of bio-based materials has many advantages because of its renewable properties and unique chemical composition. Lignin is generated in large quantities as a by-product of pulp and paper industry. Currently, it is mainly burned as a low-energy fuel. Hence, it is justified to search for innovative solutions aimed at valorizing lignin as an industrial waste product and obtaining materials that fit into the trend of sustainable development and circular economy [3-6]. In this work, lignin and ethyl cellulose were introduced into the PHB matrix and the effect of these bioadditives were studied in relation to the surface structure and properties of the obtained foils.

EXPERIMENTAL

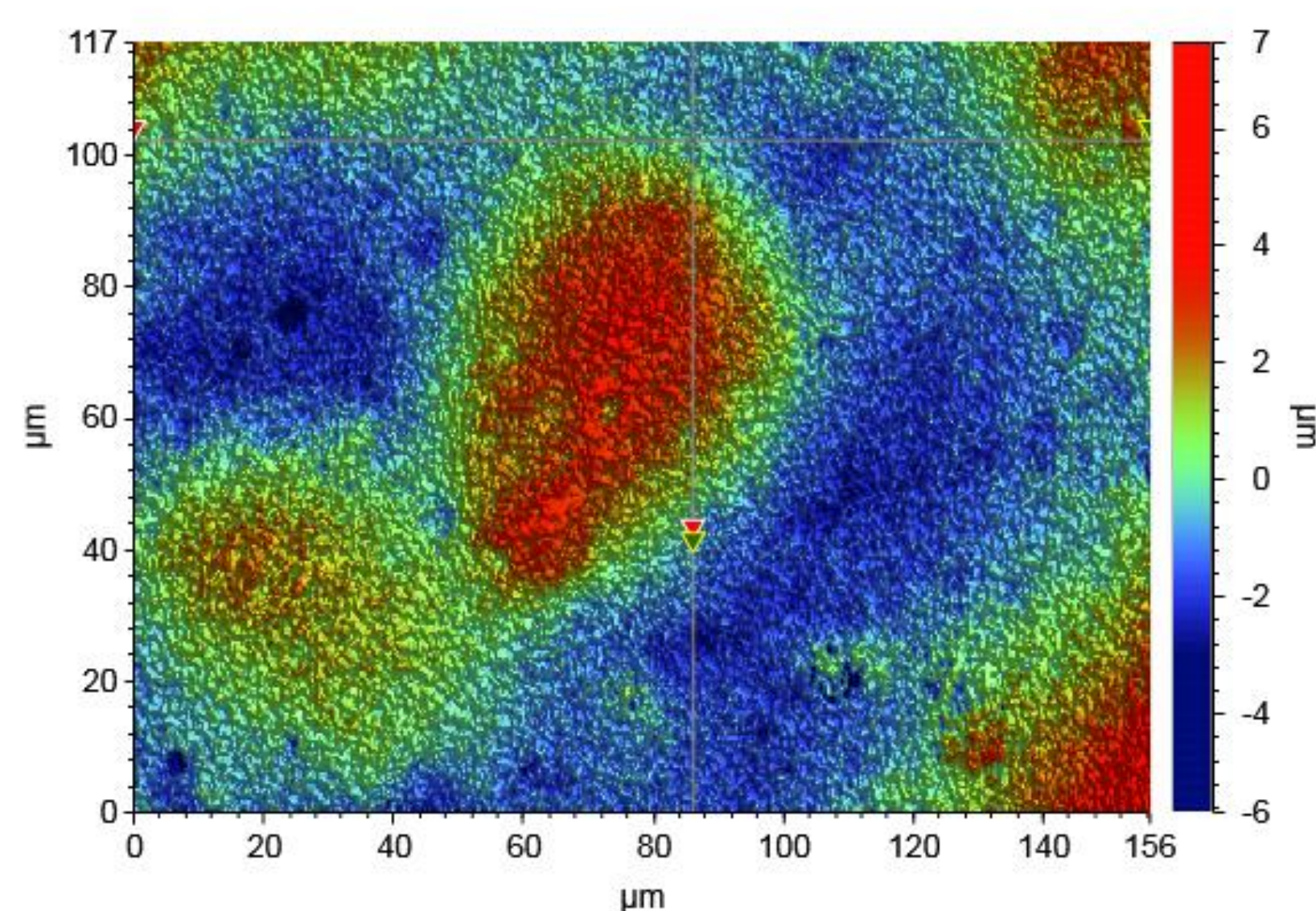
ATR/FT-IR STUDIES



SURFACE TOPOGRAPHY



PHB



PHB+ETHYL CELLULOSE+LIGNIN

CONCLUSIONS

The introduction of lignin and ethyl cellulose to the structure of the films based on PHB allowed to understand the impact of these bioadditives on the properties of the obtained products what is essential in establishing changes in the further processability conditions. It contributes to the valorization of lignin as an industrial waste product and highlights the importance of sustainable solid waste management through the promotion of safe practices aiming to accelerate the transition to the circular economy.

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