

Integrated Multiproducts Biorefinery

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The development of economically viable biorefinery processes require the use of the structural components of lignocellulosic biomass. This work presents the results of project aiming to develop a multiproduct biorefinery processes based on the principles of green chemistry.

Almond shells were fractionated using sequential treatments, with the purpose to separate hemicellulose, lignin and cellulose. Acid hydrolysis, autohydrolysis, organosolv and alkaline treatment assisted by different techniques of processes intensification including ultrasound and microwave were used. The liquid phase containing the solubilized hemicelluloses were used to obtain sugars (C5, C6) and oligosaccharides. The solid phase was be submitted to different fractionation procedures for obtaining the cellulose and lignin.

The cellulose fraction was used for the production of glucose stream and nanocellulose. Lignin was valorised for the obtaining of building blocks.