

## Autohydrolysis followed by ionic liquid treatment for *Eucalyptus globulus* wood fractionation

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**Abstract:** The 2030 Agenda for Sustainable Development recognises the need for a green and sustainable chemistry and engineering [1]. In this context, cleaner processes require the substitution of organic solvents by less harmful solvents. In addition, the solvent selection for a biomass processing is crucial for the environmental sustainability and feasibility of a biorefinery [2].

In this work, water and the ionic liquid 1-ethyl-3-methylimidazolium acetate ([C<sub>2</sub>mim][OAc]) were chosen as green solvents for a selective fractionation of *Eucalyptus globulus* wood in order to valorise their main fractions (hemicellulose, cellulose and lignin). Two sequential stages were proposed for the biomass processing. First, an autohydrolysis step allowed the hemicellulose solubilisation and its recovery as oligosaccharides in the aqueous liquid phase, yielding a solid phase composed by 60 % glucan and 34 % lignin. Second, a treatment with [C<sub>2</sub>mim][OAc] was evaluated for the delignification of the autohydrolysed biomass. Optimisation of operational conditions (temperature and time) of the ionic liquid treatment was performed to improve the enzymatic saccharification of cellulose remaining in the solid phase and to solubilise lignin. The proposed process configuration is expected to contribute towards the development of integrated biorefineries based on hardwood biomass.

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