5th World Bioenergy Congress and Expo

June 29-30, 2017 Madrid, Spain

Optimization of fast growing biomass fractionation processes

Pablo G del Río¹, Elena Domínguez¹, Viana David¹, Aloia Romaní² and Gil Garrote¹ ¹University of Vigo, Spain ²University of Minho, Portugal

Global warming is an important problem nowadays. It is caused because of the emissions of greenhouse gases (GHGs), produced by the combustion of fossil fuels. Additionally, the high-speed extraction rate from fossil fuel tanks, compared with the replenishment rate, is way faster. Due to this fact, it is known that it is a finite source of energy. Consequently, biomass (and most importantly lignocellulosic biomass) has become a determining source of renewable energy owing to its ubiquity, availability, cheapness and sustainability. Paulownia is a fast growing lignocellulosic biomass useful for second generation bioethanol production, by applying a suitable and environmentally friendly pretreatment like autohydrolysis. This treatment allows releasing a high amount of oligosaccharides and increasing the enzymatic susceptibility of the solid phase, optimal features for fermentation processes afterwards. In this work, two pretreatments (non-isothermal autohydrolysis and isothermal delignification) were employed, separately and jointly, in order to improve the susceptibility of the enzymatic hydrolysis and the bioethanol production. The fermentations of the solid phase resultant were carried out by Separated Hydrolysis and Fermentation (SHF), where the saccharification and fermentation processes take place sequentially. The results show that the solid, pretreated by the joined processes, is the most suitable for the bioethanol obtention, allowing reaching higher glucose to ethanol conversion.



Biography

Pablo G del Río has his expertise in bioethanol production from lignocellulosic biomass pretreated by ecologically friendly processes like autohydrolysis. His PhD focuses on ethanol production from wood and seaweed, trying to optimize both processes comparing 2nd and 3rd generation bioethanol production.

pdelrio@uvigo.es

Notes: