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## High-pressure enzymatic hydrolysis to reveal physicochemical and thermal properties of bamboo fiber using a supercritical water fermenter (Article)

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### Abstract

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Bamboo fiber was treated using a high-pressure enzyme hydrolysis process. The process performance was compared with the pulping and bleaching process for bamboo fiber. Several analytical methods, including field emission scanning electron microscopy, Fourier transform infrared spectroscopy, X-ray diffraction, thermogravimetry, and differential scanning calorimetry, were employed to determine the physicochemical and thermal properties of the treated cellulosic bamboo fiber. It was found that the pressurized enzyme hydrolysis treated bamboo fiber had the most uniform morphological structure, along with lowest crystallinity and highest thermal stability. Thus, utilizing high-pressure enzyme hydrolysis is the most effective process for treating fiber to remove non-cellulosic components from the raw material, including lignin, hemicelluloses, and waxy materials.

### Author keywords

Bamboo fibers   Cellulose   Enzyme hydrolysis   Morphological characterization   Pressure water   Thermal properties

### Indexed keywords

Engineering controlled terms:

 Bamboo   Cellulose   Differential scanning calorimetry   Enzymes   Fibers  
 Field emission microscopes   Fourier transform infrared spectroscopy   Hydrolysis  
 Scanning electron microscopy   Thermodynamic properties   Thermogravimetric analysis  
 X ray diffraction

### Cited by 5 documents

A review on nanocellulosic fibres as new material for sustainable packaging: Process and applications

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