

Biorefinery: the paper mill of tomorrow

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ABSTRACT

A biorefinery is a facility that integrates biomass conversion processes and equipment to produce energy, fuels and value-added chemicals from biomass. Pulp and paper industry is using biomass to produce cellulose products. However, an additional progress is required in order to exploit the whole benefits of this main source of renewable materials. The use of biotechnology permits to develop new routes for cellulose and lignin-based added value products. Progress in pulp and paper research has led to the increasing adoption of enzyme technology on the grounds of its potential for providing environmentally friendly processes and novel, sustainable products. Among the most widely investigated enzymes in the pulp and paper industry are the oxidoreductases laccases, whose operational flexibility and broad substrate specificity provide a powerful tool for developing cleaner processes and modifying lignocellulose fibres or, paper sheets, to obtain high-value products. Various plant phenols were assayed as laccase redox mediators and their potential for either biobleaching or functionalizing pulp fibres was evaluated. The phenolic compound showing the highest tendency to coupling to fibres was selected to investigate functionalization by biografting reactions.

Patents

<http://www.detip.upc.edu/PUBLICACIONES%20I%20PATENTS>

<http://www.upc.edu/patents/technology-offers-1/chemical/procedimiento-fabricacion-papel.pdf>

<http://www.upc.edu/patents/TO/engineering-and-industrial-technologies/enzymaticaqueous-1>

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