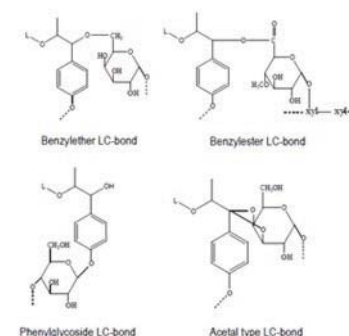
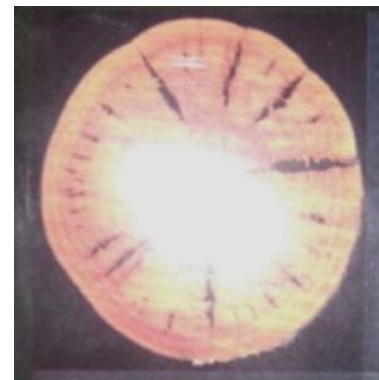


Wood Degradation & Preservation Chemical Utilization of Wood Pulp & Paper



Integration of xylan pre-extraction prior to Kraft pulping from *Eucalyptus grandis*, bamboo and sugarcane bagasse to produce paper pulps, value added biopolymers and bioethanol.

The possibility to integrate pre-extraction of xylans prior to pulping from three types of biomaterials, for the production of ethanol and biopolymers without altering the integrity of cellulose for production of high valued pulp products, is in progress.



Weathering behaviour of Colorado (*Eucalyptus camaldulensis* and *Eucalyptus tereticornis*) and Balau (*Shorea spp.*)

The effect of marine and inland Mediterranean natural exposure of plantation grown *Eucalyptus spp.* and commercially available *Shorea pp.* used for decking, were compared.

Development of an economic index to quantify the productivity and quality contribution of *Eucalyptus spp.* in the Kraft pulping process.

This study focuses on the selection and measurement of the parameters that quantify the effect of improved productivity and quality of forest plantations on the timber processing and consumption in the pulp mill, expressed as tons of timber required per ton of pulp produced. The contribution of increased fibre quality and net productivity on the chemical pulping process are evaluated.

Lignin carbohydrate complexes in biomaterials

The existence of covalent bonds between lignin and carbohydrates is of considerable interest in connection with a number of issues in wood chemistry, such as the reactions taking place during the formation of wood, the natural molecular weight distribution of lignin and carbohydrates, swelling and accessibility properties and the reactivity of wood during its processing, e.g., during chemical pulping or bio-processing into ethanol. The research, among other things, seeks to develop an understanding of the changes that take place not only in the lignin carbohydrate bonds but also in lignin-lignin bonds as affected by chemical or bio-processing of biomass.