

Wood Reinvented

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Lignocellulosic material which comprises lignin, hemicelluloses, and cellulose is a sustainable and renewable resource and it can come from forest and agricultural wastes and urban waste. 75 % of the lignocelluloses are made up of carbohydrates. Polysaccharides are the major cell wall constituents in the plant cell with the total amount up to 80 % of the total weight of the woody material. The simple sugar monomers in the polysaccharides can be converted into lactic acid through enzymatic hydrolysis and fermentation process. By utilizing the polysaccharides from the lignocellulosic biomass to produce biochemicals such as lactic acid, the solid waste from industry and agriculture sectors can be efficiently used and the dependency on the fossil fuel for the production of bio-chemicals can be reduced. By-products from the lignocellulosic materials such as Hibiscus cannabinus (kenaf), *Elaeis guineensis* (oil palm), and Bambuseae (Bamboos) could be used for various applications and to design bird-related materials. The kenaf bast fibre is long and can be used in pulp and paper or bio-composite industries and the core is usually produced for low range products such as animal bedding, animal feeding, and absorbent materials for oil cleaning. The bast and core of kenaf stem are separated by bio-retting process of biotechnological approach using microbes. The kenaf core, a wooden part with lower grade fibre by-product after the bast fibres are being separated from the stem for long fibre production is used to design the bird cage. Thus the materials used to design bird cage and other bird-related stuffs, are showing unique and exciting characteristics of applications.

