The Structure of Cotton and Other Plant Fibers

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Abstract

The structure and properties of plant fibres are reviewed with emphasis on the deposition of cellulose microfibrils in the plant cell wall and the effect of microfibril angle on mechanical properties such as strength and stiffness. The worldwide production of cotton fibres for textile applications far exceeds that of other plant fibres, hence the structure of cotton is reviewed in detail. Plant fibre bundles such as sisal, hemp, jute and kenaf are finding new uses in structural applications in the automotive and construction industries and a significant proportion of the chapter is devoted to these industrial fibres. New developments in understanding structure-property relationships are continuously appearing in the literature and natural fibres have a strong part to play in a sustainable future.