



## Multicomponents adsorption of modified cellulose microfibrils

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### ABSTRACT

Jute has been used as a raw material to chemically modified cellulose microfibrils. For this purpose three chemical treatments were used: mercerization with NaOH, acetylating with nitric acid and acetic acid and finally hydrolysis with sulphuric acid. The isolated microfibrils were characterized by Fourier transform infrared spectroscopy (FTIR) and Technical Association of the Pulp and Paper Industry standards have been applied before and after chemical treatment to determine the composition of the cellulosic materials which was decreased considerably the lignin content from 17 to 1.7%. The microfibrils were treated with palmitic acid to graft a long hydrocarbon chain and able to retain organic molecules such as toluene or benzene in water. In this way, after elimination of water from the cellulose microfibrils by azeotropic distillation; palmitic acid, *N-N'*-Dicyclohexylcarbodiimide and 4-(Dimethylamino)pyridine catalyst were added to esterify cellulose microfibrils. Treated fibres were characterized by FTIR to follow the ester carbonyl formation peak and contact angle measurements to determine the decrease in the hydrophilic character of the initial untreated fibres. The adsorption capacity of these microfibrils has been studied using various solutions of different organic components, benzene or toluene, and then, we have studied the retention capacity in a multicomponent solution, i.e. with two organic components in the same solution.

*Keywords:* Adsorption; Modified cellulose; Microfibrils; Multicomponents

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