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Effect of Mercerization on Coconut Fiber Surface Condition

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Abstract : The use of natural fibers requires that they should be treated in preparation for their use in Natural Fiber-reinforced polymer composites. This paper reports on the effects of sodium hydroxide (NaOH) treatment on the surface of coconut fibers. The fibers were subjected to 5%, 10%, 15% and 20% NaOH concentrations and soaked for 4 hours and thoroughly rinsed and allowed to dry in the open air for seven days, after which time they were dried in an oven for 30 minutes. Untreated and treated coconut fibers were observed under the Scanning Electron Microscope and it was noted that the surface structure of the fibers was modified differently by the different NaOH concentrations, and the resultant colour of the treated fibers got darker as the solution concentration increased, and the texture felt rougher to the touch as a result of the erosion of the fiber surface. Further, the increase in alkali concentration striped the surface of more constituents, thus exposing “pits” and other surface components rendering the surface rough.

Keywords : coconut fiber, scanning electron microscope, sodium hydroxide, surface treatment
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