Mercerization effect on morphology and tensile properties of roselle fibre

ABSTRACT

Natural fibres are preferred compared to synthetic fibres because of several advantages such as biodegradable, lightweight, low cost and good mechanical properties. Roselle is one of the plants found to be suitable to be used to produce natural fibres. Although natural fiber reinforced composites are becoming widely used, several weaknesses such as lack of good interfacial adhesion, low melting point and poor resistance to moisture absorption are harmful to its further acceptance. Chemical treatment is a method that can improve the interfacial bonding, stop water absorption, clean the fibre and increase surface roughness. In this study, roselle fibres were immersed in Sodium hydroxide (NaOH) with 3 different concentration (3, 6, and 9%). The results before and after treatment were compared. Scanning electron microscope was used to examine the surface morphology. Tensile properties of roselle fibre were performed to study the tensile properties. Results shows that the higher concentration of NaOH will increase the surface roughness and have higher ability to clean the fibre. For tensile properties, 6% of NaOH give the highest tensile strength. It can be concluded that, 6% of NaOH is the most suitable concentration to clean roselle fibre and while maintaining good tensile properties.

Keyword: Mercerization; Morphology; Roselle fibre; Tensile