

Effect of Alkalization on Mechanical Properties of Water Hyacinth Fibers-Unsaturated Polyester composites.

Abstract

Characteristic of local water hyacinth (WH) fibers and composites that consist of mixing WH fibers and unsaturated polyester (UPR) were studied. Composites mixed with the WH fibers treated in different alkali concentration for 1 h soaking time were tested by tensile and flexure machine and their fracture surface was observed by using scanning electron microscope (SEM). The results show that 7% NaOH, 1 h, treated WH fibers provided better mechanical properties on UPR matrix composites in comparison with other alkali concentrations. From SEM observation, some untreated WH fibers pulled out from their matrix were observed clearly in fracture surface of composites. The high alkali concentration created damage of cellulosic structure, thus decreasing of mechanical properties of the composites.

Keyword: Alkali treatment; Mechanical properties; Water hyacinth fibers