Effect of chemical modification on the mechanical properties of sedge fiber reinforced epoxy composites

Sawitree Suckley*, Thanyaluck Thanyachaleon, Sunisa Poonsri

Department of Chemistry, Faculty of Science and Technology, Nakhon Sawan Rajabhat University, Nakhon Sawan 60000, Thailand

*E-mail: sawitree.suckley@gmail.com

Abstract: In this research work, polymer composites of sedge fiber-epoxy resin were prepared. Sedge fibers were treated with NaOH aqueous solution and silane coupling agent, respectively, before they were applied into epoxy composites. The effect of surface modification and fiber contents on mechanical properties was investigated by tensile and impact tests. Compared with untreated sedge fiber reinforced epoxy composite, fiber treated with 3% NaOH followed by 3% silane coupling agent showed the highest flexural strength and the maximum flexural strength was obtained at 15% fiber content. The untreated sedge fiber reinforced epoxy composite, however, showed the highest impact strength as compared to all treated fibers and the maximum impact strength for untreated sedge fiber filled epoxy composite was also obtained at 15% fiber content.

Keywords: Sedge fiber; Chemical modification; Epoxy composites