A mini review on testing methods for mechanical properties of Natural Fiber Honeycomb sandwich structure and fractography analysis

Abstract

This paper is a review of the past research of mechanical testing methods for natural fibre honeycomb sandwich structure as well as failure modes analysis at a microscopic level by using Scanning Electron Microscope (SEM). As the world is garnering attention towards renewable resources for environmental purposes, studies of natural fibre have been increasing as well as the application of natural fibre throughout various industries such as aerospace, automobiles, and construction sectors. This paper is started with brief information regarding the honeycomb sandwich structure, introduction to natural fibre, its applications as well as the factors affecting the performances of the structure. Next, the mechanical testing methods are listed out as well as the expected outcomes obtained from the respective testing. The mechanical properties are also identified by conducting lab tests according to the ASTM standard for sandwich and core structures. The microstructure of the deformed samples is then examined under Scanning Electron Microscope (SEM) by using different magnifications to study the failure mechanisms of the samples. The images obtained from the SEM test are analyzed by using fractography which will show the failure modes of the samples. This article is based on past research conducted by professional on the related topic.