Biomass Morphology Subjected to Different Chemical Treatment

Norsuzailina Mohamed Sutan[1,*], *Siti Masjida* Mazlan[1], *Siti Noor Linda* Taib[1] ,*Delsye Teo Ching* Lee[1] , *Alsidqi* Hassan[1] , *Siti Kudnie* Sahari[2] , *Khairul Anwar* Mohamad Said[3], and *Habibur Rahman* Sobuz [4]

[1]Civil Engineering Department, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia
[2]Electrical and Electronic Engineering Department, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia
[3]Chemical Engineering and Energy Sustainability Department, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak
[4]Department of Building Engineering and Construction Management, Khulna University of Engineering and Technology (KUET), Khulna, Bangladesh

Abstract. A growing interest of sugarcane bagasse fibre composite has been observed in recent years due to its attractiveness properties such as low specific weight, renewable source and producible with low investment at low cost. However, these materials have a low interfacial adhesion between fibre and matrix which lead to reduction in certain mechanical properties of the composite. To overcome this problem, studies show that certain chemical treatments on the surface of the fibres are some alternatives that significantly increase the adhesion reinforcement/matrix, in some cases improving its mechanical properties. The objective of this study was to evaluate the effect of different type of chemical treatment which are alkali and acid treatment on sugarcane bagasse fibre surface morphology. Seeking to improve the adhesion fibre matrix, the fibre has been treated with 5% of NaOH and 5% of HCL solution with added of bagasse fibre used in the range of 0% to 3% of cement weight respectively. Through SEM investigation, it is confirmed that chemical treatment helps to remove hemicelluloses from raw bagasse fiber as well as improved fibre matrix adhesion.

1 Introduction

Nowadays, composites have become an essential part and used by us almost every day. In the sense of being high performance materials and costs effective, lead composite to be used in broader volume in various engineering structures with ultra difficult applications such as spacecraft. Owing to the fact that in the aeronautics industry, the main goal of using composite material is the ‘reduction of weight combined with strength’ or ‘the reduction of weight and saving precious fuel’. The uses of nature have been applied for million years by ancient society in order to change heterogeneous materials combining with the best aspects

* Corresponding author: msnorsuzailina@unimas.my