

# Structural Strengthening Using Natural Fibers Composite – A Review

Norliana Bakar <sup>1</sup>, Chin Siew Choo <sup>1,2</sup> and Januar Parlaungan Siregar <sup>3</sup>

1 Faculty of Civil Engineering and Earth Resources, Universiti Malaysia Pahang,  
26300 Gambang, Pahang, Malaysia.

2 Centre of Excellence for Advanced Research in Fluid Flow (CARIFF), Universiti Malaysia Pahang,  
26300 Gambang, Pahang, Malaysia.

3 Faculty of Mechanical & Manufacturing Engineering, Universiti Malaysia Pahang,  
26300 Gambang, Pahang, Malaysia..

## **Abstract:**

In recent year research on natural fiber composites increased owing to their light weight, easy availability and improved mechanical characteristics. The natural fiber is also an environmentally friendly material, which produce less pollutant during its production. This paper presents a comprehensive review on the efficient and sustainable use of natural fiber composites in structural strengthening. In addition, detailed information on the physical and mechanical properties of natural fibers is also presented. The state-of-art technology to produce a high strength natural fiber composites are also reviewed. Comparison are also made with a conventional material such as a carbon fiber reinforced composite and a recommendation for best practices is outlined. Finally, recommendation for potential external strengthening material is presented based on the performance of the natural fiber composites.

**Keywords :** Bamboo Fiber; Natural Fiber; Structural Strengthening; Natural Fiber Composites; Structural Application

## **Acknowledgment**

This research is support by the internal grant of Universiti Malaysia Pahang RDU 180349. The authors would like to acknowledge the Center of Excellence for Advanced Research in Fluid Flow (CARIFF) and Faculty of Civil Engineering and Earth Resources, University Malaysia Pahang for the equipment and facilities provided.