

## **Effect of treatment on water absorption behavior of natural fiber–reinforced polymer composites**

### **ABSTRACT**

Natural fiber–reinforced polymer composites (NFRPCs) are gaining favor over synthetic fiber owing to their lower cost and environmental friendly characteristics, as they exist abundantly and are renewable. NFRPCs have developed from a laboratory scale of fundamental research to industrial implementation in the last 2 decades. Nevertheless, despite its potential to be widely used in various applications, the main drawback of this NFRPC is its poor dimensional stability due to the hygroscopic nature of the incorporated natural fiber. As water absorption of the fibers used is one of the main factors that affected the overall mechanical properties of the natural fiber–reinforced polymer composites, treatments aiming to reduce the hydrophilic nature of the fibers are worth investigating. This chapter provides a comprehensive overview on the effect of treatment on water absorption behavior of natural fiber–reinforced polymer composites. Composites reinforced with different types of natural fibers and polymers are listed, and their basic properties are reported. Issues on the dimensional stability of these NFRPCs are discussed. Various types of treatment such as alkali, silane, and acetylation that are applied on NFRPCs and the effect on water behavior on NFRPCs are analyzed based on past literature.

**Keywords:** Chemical treatment; Natural fiber; Polymer matrix; Reinforced polymer composite; Water absorption