

## A review on detecting and characterizing damage mechanisms of synthetic and natural fiber based composites

### ABSTRACT

The damage to composite structures caused by impact events is one of the most critical behaviors that inhibit the widespread application of composite material. As the application of synthetic and natural based composite material increases over time, improved knowledge of composite damage in areas such as automotive and aerospace is exceedingly necessary. It is important to study and understand the damage mechanism of composite structures to produce effective designs. The failure caused by damage in structural design can result in unintended consequences. Extensive research has been conducted to detect impact damage in synthetic fiber. There are various methods to identify and characterize the damage. This article provides a comprehensive review of recent literature focusing on the broader scope of impact damage and incipient thermal damage of synthetic and natural fiber-based composites. In this report, the available research is reviewed by considering all aspects related to damage in composite materials, particularly the work done on detecting and characterizing damage mechanisms of synthetic and natural fiber-based composites.

**Keyword:** Impact damages; Incipient thermal damages (ITD); Bio-composite; Natural fiber