

## **Low velocity impact and compression after impact properties of hybrid bio-composites modified with multi-walled carbon nanotubes**

### **ABSTRACT**

Aerospace structures are prone to impact which affected their residual strength. The aim of this paper to investigate the impact and after-impact behaviour of multi-walled carbon nanotube (MWCNTs) as nanofiller enhanced flax/carbon fibre composites (FLXC) and flax/glass fibre composites (FLXG) hybrid composites. Wet lay-up method was used to fabricate the hybrid composites. The hybrid composites were impacted with impact energies ranging from 5J to 20J, with different types of surface susceptible to the impactor to compare their response under loading. Compression after impact (CAI) testing were done to evaluate the after-impact properties of the hybrid composites. Obtained results found that FLXG composites impacted at glass surface (G-FLX) showed better impact properties compared to C-FLX composites. In another end, it was found that the compressive strength of FLXG composites is higher compared to FLXC composites due to severe damage occurred on FLXC composites surface compared to FLXG composites. Therefore, from the results, it can be concluded that FLXG hybrid composites shows good behaviour to be applied as the interior and functional surfaces inside an aircraft.

**Keyword:** Carbon nanotube; Flax fibre; Carbon and glass fibre; Hybrid composites; Low-velocity impact; Compression after-impact