

## **Low velocity impact and compression after impact properties on gamma irradiated Kevlar/oil palm empty fruit bunch hybrid composites**

### **ABSTRACT**

This work investigates the dynamic impact response of Kevlar/oil palm empty fruit bunch (EFB) hybrid composite structures with/without gamma radiation under low velocity impact (LVI) and compression after impact (CAI) test. The layering pattern Kevlar/oil palm EFB/Kevlar (K/OP/K) was applied in this work. Irradiation with gamma ray with various doses were applied from 25–150 kGy. LVI results shows that hybrid Kevlar/oil palm EFBs (Kevlar/OPEFB) that were not irradiated have greater impact resistance as compared to irradiated hybrid Kevlar/OPEFB. It was also observed that the hybridization of Kevlar/OPEFB with gamma irradiation helped to improve the compressive residual strength of the composites. It was found that Kevlar/OPEFB hybrid composites with the layering sequence K/OP/K can withstand up to 35 J of impact energy, with the optimum gamma radiation dose at 50 kGy.

**Keyword:** Oil palm; Aramid fiber; Hybrid; Laminates; Impact behavior; Residual stress