

## **Crush zone morphology of epoxy glass fiber aluminium composite columnar tube due to longitudinal crushing force**

### **Abstract**

Epoxy–glass fiber–aluminium composite may be of interest for energy absorption application due to their improved crashworthiness. In the current study, the hybrid–composite columnar tube specimen has been fabricated by a hand lay–up method using epoxy–glass fiber with aluminium columnar tube as a core material. An experimental quasi–static crush test has been performed on the specimen under axial loading. The post–crushing of composite lay–up configuration was observed during and after interaction of the axial loading with the specimen. The result of crush morphology analysis on final mode of failure of the specimen was carried out using SEM and showed combination of several failure modes such as matrix–fiber interfacial fracture, fiber breakage and hackles. However, the main failure mode is brittle type fracture comprising transverse shearing and splaying modes.