THEORITICAL AND ANALYTICAL MODELS

Dynamic crashing behavior of new extrudable multi-cell tubes with a functionally graded thickness

- Specific Energy Absorption (SEA)
- Peak Crushing Force (Fmax)
- Crushing Force Efficiency (CFE)
- Empirical Formula for Energy Absorption
- Dynamic Impact Model (Finite Element Analysis)
- Functionally Graded Thickness Distribution
- Simplified Analytical Models for Multi-Cell Tubes
- Material Model: Johnson-Cook Constitutive Model

On design of multi-cell tubes under axial and oblique impact loads

- Kriging model and optimization algorithm

Energy Absorption of a Novel Lattice Structure-Filled Multicell Thin-Walled Tubes Under Axial and Oblique Loadings

- FE Modeling for Crash Simulations

Dynamical bending analysis and optimization design for functionally graded thickness (FGT) tube

- Belytschko-Tsay shell elements were employed for accurate representation.
- Mechanical properties of the aluminum alloy (AA6061)
- The study used a multi-objective particle swarm optimization (MOPSO)
- Surrogate models (Response Surface Method, Kriging Approximation, and Radial Basis Functions) were constructed using Design of Experiments (DOE) methods like Latin hypercube sampling. Three accuracy metrics (R-square, RMSE, and MAPE) were used for the surrogate models

Functionally graded material via L-PBF: characterization of multi-material junction between steels (AISI 316L/16MnCr5), copper (CuCrZr) and aluminium alloys (Al-Sc/AlSi10Mg)

- New material, can be used for our research