A review of the recent trends on core structures and impact response of sandwich panels

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ABSTRACT
It is a challenging task to advance the excellent strength and structural performance of sandwich structures, while continuing to reduce the weight and cost parameters. Thousands of researchers have studied and developed the core structural innovation with periodical achievements. This review paper concentrates on the core structural trends and impact response of sandwich panels, which highlights the novel design concepts and impact failure modes. Three kinds of core structures have been classified, which are foam-core, two- and three-dimensional periodic cores. It is shown that the core structure of sandwich panels plays a vital role in structural performance and applications. Three common types of loading conditions have been considered, i.e. compression, projectile impact and three-point bending. Examples of novel core structures are further studied and summarised under corresponding impact loadings. Recent applications of sandwich structures are briefly concentrated on aerospace, automotive, marine and civil engineering areas. Furthermore, future research and development prospect of sandwich structures are suggested and predicted.

KEYWORDS
Sandwich panel; Core structure; Impact response; Compression; Velocity impact; Bending impact

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