

Design and manufacturing of bio-based sandwich structures

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ABSTRACT:

The aim of this chapter is to discuss the design and manufacturing of bio-based sandwich structures. As the economic advantages of weight reduction have become mandatory for many advanced industries, bio-based sandwich panels have emerged as preferred candidates as they possess interesting properties like high stiffness along with low weight. The work presents the background on sandwich panels highlighting the history and important advantages of sandwich structures. The different processing techniques for manufacture of sandwich panels are documented in detail. Bio-based sandwich panels are prepared by using bio-based skins (either a natural fiber skin impregnated with a thermoset resin or biopolymer skin bonded to the core with adhesives) or by using bio-based cores. The different types of bio-based core materials used in sandwich panels have been discussed. Case studies dealing with the preparation and characterization of bio-based sandwich panels have also been enumerated. Finally, the applications of sandwich panels in different industrial sectors are also discussed.