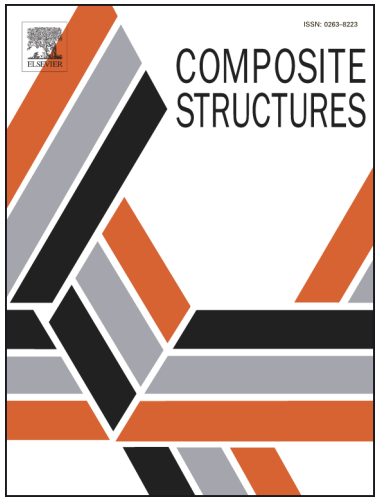

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Mechanical behavior of Ti/CFRP/Ti laminates with different surface treatments of titanium sheets

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Abstract: The Metal Composite Interface (MCI) properties affect not only the integrity of Fiber Metal Laminates (FMLs), but also the deformation/failure modes of FMLs. In this paper, the influence of MCI on the mechanical behaviors of Ti/CFRP/Ti laminates were experimentally investigated through indentation tests and low velocity impact tests. Three different surface treatments of titanium sheets were prepared to obtain the different MCI strength based on annealing, sandblasting, and anodizing. The treated surfaces of titanium sheets were analyzed using Field Emission Scanning Electron Microscope (FE-SEM) and Energy Dispersive X-ray Spectrom (EDX). The MCI strength was characterized by apparent shear strength between titanium sheet and epoxy, which was measured through single lap shear test. The deformation/failure modes and energy absorption capacity of FMLs were analyzed. It was demonstrated that the MCI strength was greatly enhanced when the metal surfaces were sandblasted and anodized. The results showed that the improved MCI helped to maintain the integrity of FMLs under

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