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TitleDevelopment of Carbon Fibre Metal Laminates (CFML): Design, Fabrication and Characterisation		
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## Abstract

Fibre Metal Laminates (FMLs) are hybrid materials consisting of metal layers bonded to fibre-reinforced polymer layers. CFML is an FML developed at NAL consisting of thin aluminum foil combined with carbon-epoxy and glass-epoxy prepreg materials. CFML is proposed as the candidate material for the leading edges of wing and empennage of an aircraft as it has superior characteristics in terms of shape retention (due to highly linearly elastic material like carbon/epoxy), energy absorption capability (due to layered structure and plastic deformation), lightning protection (due to the presence of aluminum layers), and also due to its cost effectiveness (lightweight construction and simple production techniques). An important design issue is the internal residual stresses built into the laminate during curing due to differential coefficients of thermal expansion of the different material systems. This report discusses the methods and issues involved in the fabrication of CFML. CFML laminates were fabricated and Tensile, Compression, ILSS and Flexure testing of standard specimens for different lay-ups were done. The failure modes exhibited during these tests indicate that these materials could be better in energy absorption. However, these conclusions need to be validated with the experiments to quantify their energy absorption capability.