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Design Modification of Lap Joint of Fiber Metal Laminates (CARALL)

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Abstract : The synergistic effect of properties of metals and fibers reinforced laminates has diverted attention of the world towards use of robust composite materials known as fiber-metal laminates in many high performance applications. In this study, modification of an adhesively bonded joint as a single lap joint of carbon fibers based CARALL FML has done to increase interlaminar shear strength of the joint. The effect of different configurations of joint designs such as spews, stepped and modification in adhesive by addition of nano-fillers was studied. Both experimental and simulation results showed that modified joint design have superior properties as maximum force experienced stepped joint was 1.5 times more than the simple lap joint. Addition of carbon nano-tubes as nano-fillers in the adhesive joint increased the maximum force due to crack deflection mechanism.

Keywords : adhesive joint, Carbon Reinforced Aluminium Laminate (CARALL), fiber metal laminates, spews
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