

CRACK GROWTH OF PRE-PREG LAMINATE COMPOSITE SUBJECTED TO ELEVATED TEMPERATURE FATIGUE POST BALLISTIC IMPACT

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The damage progression post ballistic impact of laminate prepreg melt infiltrated SiC/SiC composite was assessed in tension-tension stepped fatigue using electrical resistance, acoustic emission and digital image correlation. The CMC specimens were subjected to a ballistic impact at room temperature at 350 m/s using hardened chrome steel ball and fatigued post impact at room temperature and at 815°C. A ply level electric circuit was constructed based on ply resistivities at temperature to correlate the resistance change in the MI material with crack growth. Damage progression was characterized using optical microscopy, scanning electron microscopy (SEM) and electron dispersive spectroscopy (EDS) to aid correlating the damage evolution to the monitored electrical resistance response.