

DAMAGE EVOLUTION IN Ti-SiC UNIDIRECTIONAL FIBER COMPOSITES

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Fiber fractures in metal-matrix composites often initiate damage zones that grow until the composite fails. To better understand the evolution of such damage from a micromechanics point of view, a model Ti-matrix/SiC-fiber composite was studied. Using high energy X-rays for deep penetration and a small sampling volume, the damage zone around a broken fiber was investigated. The growth of this zone was monitored *in situ* under applied tensile stress by measuring the responses of the fibers as well as the matrix. The spatially resolved diffraction data were complemented by average macroscopic data obtained from a strain gauge. The results will also be compared to the predictions of a micromechanics model based on the shear lag approach.