



ITE/EIXHMYΘ

ΣΕΜΙΝΑΡΙΟ

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ΘΕΜΑ: Applications of Finite Fracture Mechanics for Predicting Fracture Events in Composites

ΗΜΕΡΟΜΗΝΙΑ: 27 Ιουλίου 1999

ΤΟΠΟΣ : Αίθουσα Σεμιναρίων ΕΙΧΗΜΥΘ

ΩΡΑ: ΚΑΦΕΣ : 18:30
 ΕΝΑΡΞΗ : 19:00

ΠΕΡΙΛΗΨΗ:

Many composites fail by fracture events, such as fiber breaks or matrix cracks, rather than by continuous crack growth. Conventional fracture mechanics deals with predicting crack growth. This paper suggests that conventional fracture mechanics can be extended to predict fracture events by using finite fracture mechanics. In finite fracture mechanics, the next fracture event is assumed to occur when the finite energy released by that event exceeds the energy required or the toughness for that event.

After deriving some mathematical methods for calculating finite energy release rate in composites, an application of finite fracture mechanics to predicting matrix microcracking is discussed. When finite fracture mechanics of microcracking is done correctly and pays attention to all experimental boundary conditions, it can be used to predict most microcracking results for laminates. Other examples of finite fracture mechanics models include cracking of coatings and instantaneous debonding at new fibre breaks in single-fibre composites.