

عنوان مقاله:

Size Effect on Inclined Cracking in Unidirectional Composites

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خلاصه مقاله:

The fracture and size effect properties of the unidirectional (UD) laminae were investigated based on the fracture energy analysis. The crack propagations on inclined fiber orientation may result in different energy release mechanisms. Therefore, the size effect behavior of these types of failures may vary according to the fracture parameters of the UD composites. This study aims to develop a fracture analysis of UD plies with inclined fibers relative to the loading axis. A numerical work with a developed material model was conducted to predict the size effect trends. The size effect law was used to fit the strength reduction with increasing size. The fundamentals of the quasibrittle fracture mechanics are shown to be applicable to analyze these types of structures. It is shown that the composite structures as quasibrittle materials, can exhibit a significant size effect.

کلمات کلیدی:

Size effect, fiber composite, quasibrittle fracture, inclined cracking

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