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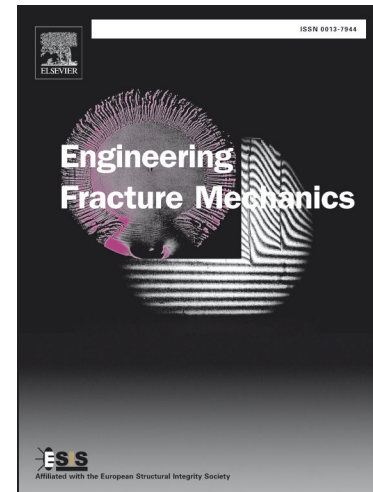
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Averaged strain energy density criterion for rupture assessment of cracked rubbers: A novel method for determination of critical SED

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In the present study, the application of averaged strain energy density (ASED) criterion has been extended to hyperelastic materials. Because of the material and geometry nonlinearities, commonly known for rubber-like materials, the use of conventional relations for determining the criterion parameters is no longer allowable. Therefore, by taking the advantage of a simple uniaxial state of stress field ahead of the crack tip in hyperelastic materials, a novel method has been proposed for determining the critical value of strain energy density. The sound agreement between the theoretical estimates based on the employed ASED criterion and the experimental data, taken from the literature, confirms the suitability of the proposed method.

Keywords:

Fracture mechanics; Failure assessment; Crack growth; Finite element analysis; Rubber.

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