عنوان مقاله:

Determination of Stress Intensity Factors for In-plane Mixed-Mode FractureToughness Tests by Using a New Loading Device

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نویسندگان:

N Choupani - *Associate Professor*

M Shameli - *PhD Student*

A Es'hagi Oskui - *Postgraduate Student, School of Mechanical Engineering, Sahand University of Technology, Sahand, Tabriz, ۵۱۳۳۵-۱۹۹۶, Iran,*

خلاصه مقاله:

Determination of materials fracture properties is one of the most important objectives in fracture mechanics and design of structures. In most actual applications, in-plane loading conditions, consists of tensile (mode I), shear (mode II) and combination of tensile and shear modes (mixed-mode). There are various methods for testing fracture specifications of materials. Arcan test fixture is widely used for mixed-mode fracture tests of the isotropic and composite materials because of its simplicity and using of the similar specimens in the experiments. Disadvantages of Arcan fixture such as asymmetry in inplane loading and limitations of changing the angle of loading have been solved by designing and using a new loading device. In this paper, the stress intensity factor functions for pure mode I, mode II and mixed-mode fracture toughness tests are analyzed with finite element method. The results are validated for compact tension (CT) standard specimens.

کلمات کلیدی:

Mixed-mode fracture; Stress intensity factor; New loading device; Finite element method

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