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Stress analysis of plate with opposite semicircular notches and adhesively bonded piezoelectric actuators

(Conference Paper) (Open Access)

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Abstract

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Stress control of structures by means of active smart material has evolved in recent years. The structure's stress control can typically be considered as strengthening that effects the structure's load-carrying capability. The stress-concentration cause by holes and notches produces a large variation and significant increase in stress. The control of the stress concentration and its distributions in the notched area is valuable for many practical and design applications. This study investigates the impacts of the piezoelectric actuators on control of the stress concentration factor (SCF) for an aluminum plate with opposite semicircular notches. Finite-element method (FEM) is used to access the SCFs due to external static loading. The stress control efficiency is assessed by the SCFs as an effectiveness criterion. The results indicate that SCFs reduces linearly with active piezoelectric actuator.

SciVal Topic Prominence

Topic: Crack Tips | Stress Intensity Factors | Patch

Prominence percentile: 81.673

Author keywords

FEM | Piezoelectric actuator | Smart material | Stress concentration factor

Indexed keywords

Engineering controlled terms: Adhesives | Piezoelectricity | Plates (structural components) | Stress analysis | Stress concentration | Stress intensity factors

Engineering uncontrolled terms: Adhesively bonded | Design applications | Load carrying capability | Semicircular notch | Static loading | Stress concentration factors | Stress control

Engineering main heading: Piezoelectric actuators

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