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Review of Piezoelectric Actuator Applications in Damaged Structures: Challenges and Opportunities

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Abstract:

Piezoelectric material transducers can work as an actuator or sensor. Generally, the actuator will be used to repair the structure, and the sensor will be used to find the health condition. In the last two decades, piezoelectric actuators have shown the capacity to lower and control the shear stress concentration and joint edge peel in adhesively bonded joint systems. Hence, this paper aims at reviewing the application of piezoelectric actuators in damaged structures and adhesively bonded combined systems based on three different repair investigation methods: analytical, numerical, and experimental. Moreover, the study also explores the delamination control of composite material beams and some other studies using a piezoelectric actuator. The specific aim of this work is to determine

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scientific challenges and future opportunities for considering piezoelectric materials in damaged structure investigations for novice researchers.

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