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Author: Ms. Haibei Gu

Beijing Institute of Structure and Environmental Engineering(BISE), China, seashell1987@yeah.net

A NEW METHOD TO EVALUATE THE DAMAGE EXTENT OF C/C COMPOSITE MATERIAL
STRUCTURE USING ACOUSTIC EMISSION TECHNOLOGY**Abstract**

A new method to evaluate the damage extent of composite material structure is presented in this paper—determine the severity of damage extent from the relative curve of hits and counts of AE, attained from static load procedure of structure. We find that the ascending curve of counts and hits is related to the damage extent of structure by monitoring a series of static load test of C/C composite structure: the curve deviate from its prior linearity and deflection point appeared in a sudden when more severe damage occurred; and the ratio of load at this time to the final fracture load is steady for a certain structure. This method could early warn the failure of composite structure effectively and estimate the fracture load. This phenomenon could also provide some suggestion to interpret the evolution of damage field of composite structure.

Keywords: C/C composite material; Static load experiment; Acoustic emission; Steady probability distribution; Early warn of failure