

MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
Smart Materials and Adaptive Structures (5)

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WAVELET ANALYSIS OF CRACK DETECTION EXPERIMENT FOR ALUMINUM ALLOY BOARD

**Abstract**

A crack identification experiment for aluminum alloy board was presented in this article. Several optical Fibers with Bragg Grating(FBG)sensors were bonded on the surface, which were used to measure static strain around the crack in the plate, and wavelet transform was applied to the received strain signal. The slight strain change near crack area was shown distinctly by low scale wavelet transform coefficients. Various crack sizes were studied, which proved the validity of using wavelet analysis to identify whether there was a crack and what is the size of the crack. A index that correlated low scale wavelet transform coefficients with crack location and size was introduced. By the experiment, we realized that the abrupt change of the index could be used to localize crack, and the local maximum value of index increased with crack size increase.