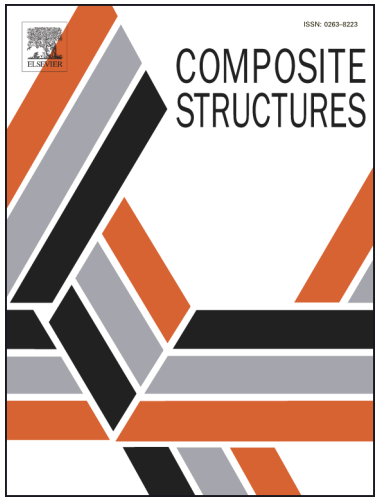

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ABSTRACT

Low-velocity impact is the one of the most critical events to reduce the reliability of composite structures, because it can generate hidden damages such as delamination inside the structures. In order to address this problem, impact monitoring systems have been suggested using various types of built-in sensors. Generally, such impact monitoring systems are consisted of impact localization and damage assessment. In this paper, a methodology of impact-induced delamination assessment was studied using fiber Bragg grating (FBG) sensors. Because of its multiplexing capability, FBG sensors are advantageous of monitoring large areas of target structures. However, it is hard to be applied in impact monitoring systems due to its low sensitivity and narrow bandwidth. In this study, a quantification method of delamination was examined with maintaining the merits of FBG sensors. For the acquisition of impact-generated acoustic emission (AE) signals, the commercial FBG system was adopted with a sampling frequency of 100 kHz. Then, the acquired AE signals during the low-velocity impact fracture tests were analyzed with the wavelet transform (WT) method for measuring the delamination