

## **Fiber bragg grating-based fabry-perot interferometer sensor for damage detection on thin aluminum plate**

*N. Ismail<sup>a</sup>, Z. M. Hafizi<sup>a</sup>, Cheong-Weng Ooi<sup>b</sup>, Muhammad Khairol Annuar Bin Zaini<sup>b</sup>, C. K. E. Nizwan<sup>a</sup>, Kok-Sing Lim<sup>a</sup>, Harith Ahmad<sup>a</sup>*

<sup>a</sup> Faculty of Mechanical Engineering, Universiti Malaysia Pahang, Pekan, Malaysia

<sup>b</sup> Photonics Research Centre, University of Malaya, Kuala Lumpur, Malaysia

### **ABSTRACT**

Structural Health Monitoring of engineering structures has become an essential measure for the prevention of catastrophic failures. This study presented a feasibility study of Fiber Bragg Grating-based Fabry-Perot interferometer (FBG-FPI) sensor for damage detection on an aluminum plate, by acoustic Lamb wave technique. In the investigation, a rectangular damage slot was introduced to the plate, at 15 cm from the actuator. Two FBG-FPI sensors were surface-mounted on the aluminum plate for the detection. In the analysis, we observed an additional wave packet with attenuated amplitude and time delay in the time-domain signal for the defect plate. Similar features are observed in the time-frequency spectrograms and they are important signatures that can be used for detecting the defect. The findings show the applicability of FBG-FPI sensor for damage detection on a thin-walled metallic structure.

### **KEYWORDS**

Structural health monitoring; Lamb wave; FBG-FPI sensor; Signal processing; Strain sensing

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