Study of strain-transfer of FBG sensors embedded in unidirectional composites

Optical fibre Bragg grating (FBG) sensors are now quite established and widely used in strain measurements in composites. However, insufficient understanding of the limitations of the embedment and measuring techniques often leads to inaccurate results. This work is a continuation of a novel method to improve the reliability and accuracy of the strain measurements on unidirectional composites using embedded FBG sensors [1]. A new combination of the pair host material/sensor was studied and characterized. Test specimens were manufactured with longitudinally embedded FBG sensors, using a glass/epoxy prepreg system, in order to compare with a carbon/epoxy prepreg system. The combined behaviour of the sensors and the host material was characterized and a procedure to obtain a more accurate strain was defined for this new chosen material.

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