Temperature sensitivity comparison between bare FBG and buffered FBG

ABSTRACT

The work presented in this paper compares the temperature sensitivity between bare fiber Bragg grating (FBG) and acrylate buffered FBG. Both FBGs were subjected to temperature variation and their wavelength shifts were recorded. It has been found that buffered FBG is more sensitive than bare FBG due to the higher thermal expansion of the acrylate buffer. The wavelength shift of the FBG increased linearly with the increment of temperature producing sensitivity of 0.0127nm/°C for buffered FBG while the sensitivity of bare FBG is measured at 0.01nm/°C. The findings emphasize the impact of the acrylate buffer coating in enhancing the FBG temperature sensitivity.

Keyword: Bare FBG; Buffer FBG; Temperature