

Optical fiber sensor for measurement of acoustic vibration

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Abstrak

In this research work an experiment on the application of fiber sensor for measuring an acoustic vibration has been carried out. A light beam from He-Ne laser source was into two arms of Mach tender Interferometer. Each arm of the interferometer was a piece of optical fiber with a length of 2 m.

The beam transmitting through the sensing arm was modulated in phase by an acoustic vibration produced by a signal generator. The output of this fiber was interfered with the light radiated from the undisturbed fiber, the reference arm of the interferometer. A fringe counter measured a fringe shift due to the vibration of the acoustic signal. The measurement shows a good response in terms of the number of fringes with respects to the acoustic vibration in a frequency range of 10 Hz up to 40 Hz. It is concluded that the system is applicable to measure an acoustic vibration with an accuracy of 7 %.