

Abstract

Fringe Visibility Enhanced Fiber-Optic Fabry-Perot Interferometric Sensor for Highly Sensitive Ultrasound Detection [†]

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[†] Presented at the 5th International Symposium on Sensor Science (ISS 2017), Barcelona, Spain, 27–29 September 2017.

Published: 6 December 2017

A fringe visibility enhanced fiber-optic Fabry-Perot functionalized diaphragm based ultrasonic sensor is proposed and experimentally demonstrated for ultrasound sensing. The sensor consists of a fiber-optic collimator and a PTFE diaphragm to form a Fabry-Perot interferometer. Due to the significantly increase in the slope of the sensor spectral sideband and the smaller Young's modulus of the PTFE, a high response to both continuous and pulsed ultrasound with a high SNR of 42.92 dB in 300 kHz is achieved when the spectral sideband filter technique is used to interrogate the sensor.

Conflicts of Interest: The authors declare no conflict of interest.



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