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(Research Article)
Simulation and fabrication of optical sound sensor based on suspended fiber-optic beam

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Abstract

Sound waves provide useful information about the environment that requires sensitive and environmentally sensitive sensors to receive this information. Among the various audio sensors that have been built, sensors based on optical equipment benefit from a high signal-to-noise ratio and high sensitivity. In this research, an optical sound sensor with very high sensitivity and small dimensions was designed and built for use in complex environmental conditions such as solution or atmosphere. The tip of a fiber optic as a suspended beam can detect very small vibrations of the environment. The light coming out of the fiber is focused on a light beam position sensor and the vibrations of the fiber tip are tracked. The intensity of the detected vibrations can be used to determine the frequency and intensity of sound waves in the environment. The simulation results show the ability to detect sound waves up to zero decibels.

Keywords: Fiber optic sensor, Cantilever fiber, Very low intensity acoustic sensor.

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