



TECHNOLOGY

Fiber Optic Sensor Systems for Pressure Gradient, Velocity, and Acoustic Intensity Measurements

OVERVIEW

In the design of modern transportation vehicles, structural vibration and interior noise have become important problem areas that must be addressed. Vibrations may be the source of noisy environment and/or the cause of fatigue damage, as in the cases of automobiles, aircrafts, and ships. Therefore, sensors that can measure pressure gradients, air particle velocity, and acoustic intensity are in great demand.

Researchers at the University of Maryland, College Park have developed a miniature, interference-free fiber tip based sensor system for pressure measurement, which may be used to detect acoustic and vibration fields in a broad frequency range. Also the researchers have devised fiber tip based Fabry-Perot sensor systems for acoustic control where the fiber tip sensors are designed for acoustic pressure gradient, air particle velocity, and acoustic intensity measurements; each sensor includes a diaphragm as the transducer. The sensor design permits a high dynamic range and low sensitivity to wavelength fluctuations in the light source as well as to optical intensity fluctuations.

The sensor system applications range from the aerospace industry to the architecture industry. Specific applications include acoustic emission measurements in computer hard disk drives; pressure measurements for ignition chambers of automobiles; integrated distributed pressure sensor arrays for smart wing structures; distributed acoustic pressure array panels for acoustic measurement in concert halls and conference rooms; health monitoring technologies; and background noise suppression systems in automotive telematics.

A US patent 7,224,465 "Fiber tip based sensor system for measurements of pressure gradient, air particle velocity and acoustic intensity" has been granted for this novel technology.

For additional information, please contact Office of Technology Commercialization, University of Maryland College Park, MD 20742. Tel: (301) 405-3947 E-mail: otc@umd.edu

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Additional Information

INSTITUTION

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PATENT STATUS

U.S. Patent 7,224,465

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Microelectronics

EXTERNAL RESOURCES

- [US Patent 7,224,465](#)

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