

Dual-component optical transducer



Overview

A dual element transducer consists of two crystal elements housed in the same case, separated by an acoustic barrier. Can be contoured to conform to curved parts. Maximum temperature capability is 800°F (425°C) for. We present an experimental demonstration of a dual- function acoustic- to- optical transducer, enabling simultaneous underwater encrypted communication and distance measurement. Specifically, the transducer efficiently converts underwater acoustic signals into single photons for transmission. The Elcometer range of Dual Element Transducers is designed to ultrasonically measure material thickness when access is only available to one side of the material under inspection. Dual element material thickness transducers are ideal for inspecting metal substrates but can also measure thicknesses. Distributed Acoustic Sensing (DAS) extends this concept by enabling the detection and localization of acoustic sources along the fiber, using backscattered light from small segments to achieve spatial resolution on the order of meters. The elements are angled, creating a V-shaped sound path which enhances the resolution in the focal zone.

Article Content

The Ultrasonic Transducer

The ultrasonic transducer is an extremely important and critical part of any ultrasonic test. Selection of the proper transducer for a particular application is most

A dual bistatic optical forward transceiver configuration for ...

We present the system topology and configuration for a dual-fiber layout, each end equipped with optical transmitters and receivers. The position estimation is derived from the time

Stack-Layer Dual-Element Ultrasonic Transducer for

This transducer bridges the sensitivity capability of ultrasound and the high contrast of optical methods in functional photoacoustic tomography. The

Dual Elements Transducers| Dual Element Probes

Elcometer offer a range of underwater material and coating thickness transducers with dual elements, ideal for offshore inspections. For general thickness

High-resolution sub-millimetre diameter side-viewing all-optical ...

Additionally, we used micro-optic components to enable ultrasound transmission in a side-viewing fashion which is of higher clinical interest. The OpUS transducer was employed for imaging and

Bidirectional microwave-optical transduction based on

Here, we present a compact microwave-optical transducer based on monolithic integration of piezoelectric actuators on silicon nitride photonic circuits.

Ultrasonic dual element probes revisited

Ultrasonic dual element transducers consist of two angled piezoelectric elements housed in the same case but separated by an acoustic barrier. While one element excites transient waves

Dual Element Transducers | Evident Scientific

A dual element transducer consists of two crystal elements housed in the same case, separated by an acoustic barrier. One element transmits longitudinal

Fabrication of optically transparent ultrasound transducers to ...

The design of optically transparent ultrasound transducers facilitates the building of compact biomedical instruments for the concurrent combination of optical and ultrasound-based

Quadruple ultrasound, photoacoustic, optical

Here, we demonstrate a quadruple fusion imaging system using a spherically focused transparent ultrasound transducer that enables seamless

(PDF) Prototype Optical Bionic Microphone with a Dual

A prototype optical bionic microphone with a dual-channel Mach-Zehnder interferometric (MZI) transducer was designed and prepared for

High-frequency (> 65 MHz) broadband transparent transducer with ...

In this work, we developed a high-frequency (> 65 MHz) broadband TUT to enable highly efficient dual-mode PA/US imaging. To enhance acoustic performance, we utilized an ultrathin (< 10

Dual-modal photoacoustic and ultrasound imaging: from ...

Photoacoustic (PA) imaging is a relatively new method that combines optical absorption and acoustic detection. Different wavelengths can be used to differentiate various tissue

Dual Element Transducers

Dual Element Contact Transducers are longitudinal wave transducers with a split element; one half functions as a transmitter while the other functions as a receiver. Each half-element is angled slightly

Fiber-optic photoacoustic sensor for binary gas mixture analysis based ...

An integrated and miniaturized dual-frequency enhanced spectrophone was constructed by combining a dual-channel fiber-optic acoustic sensor with a multi-pass excitation structure for

Olympus Dual Element Transducers < Qualité NDE

A dual element transducer has two crystal elements housed in the same case, separated by an acoustic barrier. One element transmits longitudinal waves

Recent Advancements in Ultrasound Transducer: From

Ultrasound is extensively studied for biomedical engineering applications. As the core part of the ultrasonic system, the ultrasound transducer plays a significant

Dual Element Transducer Approach for Second Harmonic ...

A planar stress-free boundary is known to destructively alter the nonlinear wave generation process including the second harmonic component. This is the reason why the harmonic

Dual-function acoustic-to-optical transducers for

In this work, we demonstrate the experimental realization of a dual-function acoustic-to-optical transducer capable of simultaneous distance sensing

Dual Element Transducers

A dual element transducer consists of two crystal elements housed in the same casing, separated by an acoustic barrier. One crystal transmits sound energy

Fiber-optic photoacoustic sensor for binary gas mixture analysis based ...

The spectrophone integrates a dual-channel fiber-optic Fabry-Perot (F-P) acoustic sensor and a compact multi-pass reflective photoacoustic cell (PAC) within a volume of 1 mL. The two

A high-sensitivity compact dual-T-type resonant fiber-optic ...

We propose a high-sensitivity compact dual-T-type resonant fiber-optic photoacoustic(DTR-FOPA) sensor for simultaneous detection of two gases. The des

Capacitive micromachined ultrasound transducers for intravascular ...

In the following section, ultrasound transducers, the core component to provide imaging information, will be introduced in detail.

Dual-frequency piezoelectric micromachined ultrasound transducer

In this study, we present a novel method for dual-frequency ultrasound generation from a ferroelectric piezoelectric micromachined ultrasound transducer (PMUT).

An ultrasensitive and broadband transparent ultrasound transducer for ...

Transparent ultrasound transducers (TUTs) can seamlessly integrate optical and ultrasound components, but acoustic impedance mismatch prohibits existing TUTs from being

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