

Dual-component optical transducer



Overview

A dual element transducer consists of two crystal elements housed in the same case, separated by an acoustic barrier. Maximum temperature capability is 800°F (425°C) for 5.5 MHz. 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. All-optical ultrasound (OpUS), where ultrasound is both generated and received using light, has emerged as a modality well-suited to highly miniaturised applications. Their great sensitivity and quick response are well known, and these are crucial characteristics that help with applications like Light Detection and. We use analytic modeling based on dual optical and acoustic transfer matrix formalism to analyze the coupled optical and acoustic wave propagation.



Article Content

Hot

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

Jan 01, 2026 Hot

FEMTO-PHOTONICS: OPTICAL TRANSDUCERS UTILIZING

FEMTO-PHOTONICS: OPTICAL TRANSDUCERS UTILIZING NOVEL SUB-WAVELENGTH DUAL LAYER GRATING STRUCTURES Dustin W. Carr, Gregory R. Bogart, Bianca E. N. Keeler

Aug 16, 2025 Hot

Dye-doped polymer based optical fiber transducer for PA-US dual ...

Abstract: A dye-doped polymer based optical fiber transducer is demonstrated for PA-US dual-modality imaging, which exhibits an ultrasound generation efficiency of 0.064MPa mJ⁻¹ cm² with a

May 27, 2026 Hot

Multicontrast and Nondestructive Transparent Ultrasound Transducer ...

We propose a nondestructive dual-modal imaging system that utilizes the light absorption contrast of photoacoustic imaging (PAI) and light scattering contrast of optical coherence imaging (OCI).

May 05, 2026 Hot

Empowering high-dimensional optical fiber communications with

Leveraging photonic integration and photonic computing acceleration, Lu et al. proposed and demonstrated a scalable integrated silicon photonic processor that enables high-capacity optical

Apr 28, 2026 Hot

Dynamic reflectivity of an opto-acoustic three-layer

We present an analysis of a three-layered structure used for both launching and detecting picosecond acoustic waves. To enhance the optical

Mar 21, 2026 Hot

Optical current transducers for electrical power systems ...

Abstract A literature survey of Optical Current Transducers (OCTs) with particular emphasis on electric power systems measurements has been performed. This report is intended to provide information

Jun 17, 2026 Hot

Multicontrast and Nondestructive Transparent Ultrasound Transducer ...

Dual-modal PAI/OCI visually identifies surface and internal defects on FPCBs that cannot be detected by the current automatic optical inspection (AOI) system in a manufacturing environment. The PAI/OCI

Sep 27, 2025 Hot

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

Feb 17, 2026 Hot

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 designed DTR-FOPA sensor

Jun 13, 2026 Hot

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

High-resolution sub-millimetre diameter side-viewing all-optical ultrasound transducer based on a single dual-clad optical fibre.

Dec 26, 2025 Hot

Dual-Frequency Piezoelectric Transducers for Contrast

2. Dual-Frequency Transducers The goal of dual-frequency contrast imaging is to form images of only microbubble harmonics by transmitting acoustic

Aug 03, 2025 Hot

Dual Element Transducers

Eliminates delay line multiples for high temperature applications Reduces direct back-scattering noise in coarse grained or scattering materials Combines

Jun 09, 2026 Hot

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 waves, and

Jan 27, 2026 Hot

Scalable microwave-to-optical transducers at the single-photon level ...

Microwave-to-optical transduction of single photons will play an essential role in interconnecting future superconducting quantum devices. Various transducers have been developed

Oct 22, 2025 Hot

Characterization of an Array-Based Dual-Frequency Transducer for ...

Current dual-frequency imaging systems for superharmonic imaging have been used for visualizing tumor microvasculature, with single-element transducers for each of the low- and high-frequency

Dec 02, 2025 Hot

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

All-optical ultrasound (OpUS), where ultrasound is both generated and received using light, has emerged as a modality well-suited to highly miniaturised applications. In this work we

Apr 30, 2026 Hot

All-Optical Ultrasound Transducer Using CNT-PDMS

Schematic illustration of the all-optical transducer with CNT-PDMS composite film layer and thin-film etalon incorporating two DBRs.

Sep 17, 2025 Hot

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

Sep 01, 2025 Hot

Optically Transparent Focused Transducers for

Purpose Photoacoustic (PA) microscopy has emerged as a useful tool in biomedical imaging applications such as visualization of microvasculature

Nov 17, 2025 Hot

Stack-Layer Dual-Element Ultrasonic Transducer for Broadband

This transducer bridges the sensitivity capability of ultrasound and the high contrast of optical methods in functional photoacoustic tomography. The dual-element transducer enabled multiscale analysis of

Jun 17, 2026 Hot

Validation of an ultrasound transducer's generation and receiving ...

This paper presents the design, fabrication and testing of a single-mode fiber optic ultrasound transducer. This transducer can work as an ultrasound

May 28, 2026 Hot

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.

Aug 05, 2025 Hot

White Paper Simulation-based Design of Ultrasonic Dual Element

ts as a receiver for the echoes produced in the component under test. The main advantages of this type of transducer compared to a single-element pulse-echo probe are a better near-surface resolution

Jul 23, 2025 Hot

Olympus Dual Element Transducers < Qualité NDE

Dual element transducers offer enhanced near-surface resolution, ideal for thickness gauging, corrosion monitoring, and weld/cladding inspections.

Jul 26, 2025 Hot

7.5: Radiation Transducers

In this section the radiation transducers commonly found in hand-held or benchtop optical instruments are described. The list of these devices described in

Dec 27, 2025 Hot

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

In this work, we overcome these limitations by using a dual-clad optical fibre (DCF) for light delivery. Additionally, we used micro-optic components to enable ultrasound transmission in a side-viewing

Dec 20, 2025 Hot

Optical Sensors

In optical sensing technology, phototransistors are essential components that perform as both photodiodes and bipolar junction transistors (BJTs). Signal

Jan 10, 2026 Hot

Dual mode fiber optic high-performance sensor designs for ...

In this article, we present a theoretical study of SPR-based fiber optic sensor by utilizing oxide and polymer over layer upon single metal layer. We have categorized our probe designs in 3 types in

Oct 31, 2025

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