Refraction of the fiber optic sensor core

A typical optical fiber is shown in Figure A: the fiber is constituted by an inner part (core) with a refractive index n1 and an outer part (called cladding) with refractive index n2.

By utilizing the deep learning-based sensor structure with real-time measurement capabilities, refractive index measurements can be made in many fields such as chemical, biosensor, ...

In this paper, a single-core photonic crystal fiber (PCF)-surface plasmon resonance (SPR) sensor based on Tantalum pentoxide (Ta 2 O 5) modulated thermometry layer is proposed for ...

A novel fiber optic sensor has been developed using suspended core fiber (SCF) to simultaneously measure the refractive index (RI) and temperature of liquids. The innovative design comprises an ...

Surrounding the core there is a region having a lower index of refraction, called the cladding. Light is trapped inside the core and travels along the fiber by bouncing off the interfaces with the cladding. ...

We demonstrate the high sensitivity fiber index sensors by tapering the four core fibers to produce supermode interference with the best extinction ratio of up to 15 dB and the index sensitivity of 2,884 ...

When the incident light hits the core-clad interface at angles larger than its critical angle, the light is completely reflected and guided in the fiber. In contrast, the incident light which meets the ...

A simple and compact fiber optic sensor based on a two-core fiber is demonstrated for high-performance measurements of refractive indices (RI) of liquids.

Optical fiber is comprised of a central core with a high refractive index surrounded by cladding with a low refractive index. When light enters the core, repetitive total internal reflection at the boundary of the ...

Medical Imaging: Endoscopes and fiber-optic scopes use refractive index properties to transmit images with high clarity. Sensors: Refractive index sensors detect changes in the environment, such as ...

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