Dirección de Formación Académica

CENTRO DE INVESTIGACIONES EN OPTICA, A.C.

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Thesis: "IN-LINE FIBER FABRY-PEROT INTERFEROMETER FOR REAL-TIME SENSING APPLICATIONS"

Summary:

Sensors, defined as devices or systems used for monitoring magnitudes of a certain domain to produce a signal in the electrical domain, have a fundamental role in our daily life. In recent years, technological advances in physics, chemistry, computer science, materials science and engineering have allowed the development of sensors specifically designed for industry, medicine or research applications. One of these novel technologies that has had a profound impact on the sensor community are optical fibers (a cylindrical dielectric cable to transmit information as light and consist of an inner core surrounded by a cladding) since they offer significant advantages such as flexibility, compact size, lightweight and immunity to electromagnetic interference. These characteristics, along with the capability to carry out point, distributed and quasi-distributed monitoring in real-time have attracted the attention of the sensor's community. In this work, optical fiber Fabry-Perot interferometers are studied and used to develop in-line, compact and simple to fabricate sensors for real-time applications. Novel schemes are proposed and experimentally demonstrated to measure strain, room-temperature, relative humidity, and refractive index with improved performance.