

9th International Conference on

Optics, Photonics & Lasers

July 02-04, 2018 | Berlin, Germany

Latest technologies in optical fiber lasers for sensing applications

Rosa Ana Perez Herrera and Manuel Lopez Amo

Institute of Smart Cities - Universidad Pública de Navarra, Spain

As it is well known, optical fiber lasers can be used as sensor elements on their own, which offer new possibilities for developing high-performance sensors with compact size when needed and reduced complexity. A number of distributed and point optical fiber lasers can be developed for different sensing applications depending on the technology used to generate the laser and also depending on the physical or chemical parameter under evaluation. On the other hand, optical fiber laser sensors are some of the most reliable and robust laser systems. Taking care of the design and manufacturing process required to guarantee a high level of reliability, inhospitable environments can be easily monitored even when they operate in such harsh conditions such as sensing in high-voltage or high-power machinery, or in explosive environments. Also, the increasing interest about structural health monitoring systems has helped to raise the development of novel optical fiber laser technologies for sensing applications. More and more lately developed fiber technologies bring a superior performance to fiber-optic sensing networks. Tunable FBG-based laser interrogators implemented by several kinds of fiber laser systems, such as novel Fourier domain mode locking fiber lasers, or those based on random lasers implemented by means of Raman amplification or even erbium doped fiber amplifiers, have been demonstrated, both theoretical and experimentally, to be a good option to develop new optical fiber laser for sensing applications. In this work, the uses of some advanced photonic technologies that include fiber laser technologies, among others, for fiber sensing applications are presented.

Biography

Rosa Ana Perez Herrera received the Telecommunications Engineering degree from the University of Cantabria, Spain, in 2004. In 2005 she joined the Optical Communications Group at the Department of Electrical and Electronic Engineering of the Public University of Navarra (Pamplona, Spain). In 2010 she obtained her PhD degree from the Public University of Navarra, Spain. Her research interests are in Raman amplifiers, erbium-doped amplifiers, fiber-optic sensors and multiplexing architectures. She has co-authored more than 70 papers, presented in conferences and scientific journals.

rosa.perez@unavarra.es