

TOWARDS MULTI-PARAMETER SENSING BY MEANS OF GEOMETRICALLY AND STRUCTURALLY MODIFIED FIBER BRAGG GRATINGS

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Fiber Bragg gratings (FBGs) are the most extensively studied passive fiber optic components for sensing purposes. FBGs exhibit many important advantages that distinguish them from other sensors, i.e.: immunity to electromagnetic radiation, ease of assembly and implementation, ability to work in harsh environment and multiplexing capability. Moreover, due to the technological modification of fiber Bragg gratings, they can be also used as multi-parameter (mainly two-parameter) sensing of physical quantities such as: temperature, strain, surrounding refractive index etc.

In this talk, key methods of fiber Bragg gratings modification to improve their sensitivities and to increase measurement capabilities with respect to conventional FBGs are presented. It can be realized by both geometrical shaping of optical fiber and structural modification of both optical fiber and in-written grating profile. Few examples of such unconventional fiber Bragg gratings based structures and results of their characterization in terms of multi-parameter measurement and improvement of sensing properties are discussed in detail.