Faculty of Electrical Engineering & Computer Science
Master Degree Course Electronics Engineering, MSc EE

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Investigations of Anisotropic Behaviour for an Online Measurements System.

ABSTRACT - Masterthesis

Innovations in optical fiber technology are creating an enormous impact on modern telecommunication systems. Optical fibers are replacing metal wires as the transmission medium in high-speed, high-capacity communication systems that convert information into light, which is then transmitted via fiber optic cable.

The standard method to manufacture optical fibers consists in first construct the preform with a carefully controlled refractive index profile and then carry out the drawing process where the preform is melted and pulled to form the optical fiber. The drawing process is decisive to produce fibers with the expected properties of initial glass preform. The drawing parameters must be strictly controlled in order to achieve the desired waveguide properties. Fiber drawing tension is one of the critical factors significantly affecting the properties of optical fibers.

This Master thesis work introduces the principle of birefringence method to measure the drawing tension of an optical fiber. The proposed design consists in a non-contact technique avoiding contact with the uncoated fiber which could degrade the fiber strength.