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

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Investigations on Blue Light Sources for Metrology Application.

ABSTRACT - Masterthesis

The aim of this thesis is to understand blue laser light sources and detectors operating at 405 nm. This was done by analyzing the laser diode specification and characteristics. Later the blue laser module developed operating at 405 nm was used in the fiber tension measurement setup.

During the drawing process, the drawing parameters must be controlled in order to achieve the desired waveguide properties. Fiber tension is one of the critical properties which significantly can affect the properties of optical fibers.

Here the applied tension acting on the fiber was measured using a laser with defined SOP. The laser light illuminates the fiber laterally then the azimuth angle of the output SOP is measured after reconversion from elliptical to linear. Two photodetectors are used to measure the corresponding voltages which are parallel and perpendicular to the incident plane and the SOP is determined from the phase relationship. Both the red and blue lasers were used simultaneously to perform the measurement. The above mentioned method has already been applied in the previous works using a red laser module operating at a wavelength of 650 nm.