Π PHASE-SHIFT FABRICATION OF FIBER BRAGG GRATING BY POST-PROCESSING USING FEMTOSECOND LASER

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ABSTRACT

Fabricating of phase-shifted fiber Bragg grating (PSFBG) by a femtosecond (fs) laser post-processing of standard single mode fiber Bragg grating (FBG) without phase mask is demonstrated. A central region of grating is irradiated by an fs laser assisted with a rotating jig, which produces a π phase shift at the central region of the grating and forms a π phase-shifted FBG. The procedure is simple, fast, and has good reproductivity. The bandwidth of transmission peak of PSFBG grows with increasing amount of laser energy or length of irradiation and decreasing translation speed. Transmission loss decreases with increasing irradiation length. Repeatability of fs post-processing and temperature stability of PSFBG were investigated.

Keywords: *Phase-Shifted Fiber Bragg Grating, Femtosecond, FS Laser, Rotating Jig*