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Abstract
In this thesis, we proposed a method of fabrication an adjustable D-shaped fiber of Bragg surface grating filter component by utilizing thickness of photoresist and D-shaped fiber polishing along with photolithography and holographic interference lithography technologies. By changing the thickness of photoresist, we fabricated a D-shaped fiber of Bragg surface grating with an adjustable average refraction index.
During the fabrication, we first make some polishing samples to do side-polished on multi-mode fiber. It would precisely stop polishing until reaching the core of fiber. Next, we conduct to fabricate on diffraction grating filter component through photolithography process and holography interference lithography, and then it utilizes spinner to spin coating and expose the positive photoresist on core of fiber with short periodic Bragg surface grating. Moreover, the diffraction grating filter component along with thermal evaporation coating process to apply to photoresist which was observed and analyzed its optical reactive features.
At last, it can fabricate a low loss transmission whole fibered D-shaped optical fiber grating filter. Its period and depth of grating is observed by atomic force microscope (AFM), and the results of optical transmission characteristics are measured and shown by ASE broadband light source and in-line optical fiber polarizer though optical spectrum analyzer(OSA).
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