



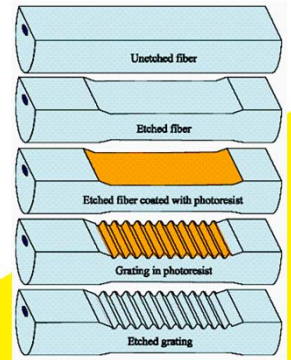
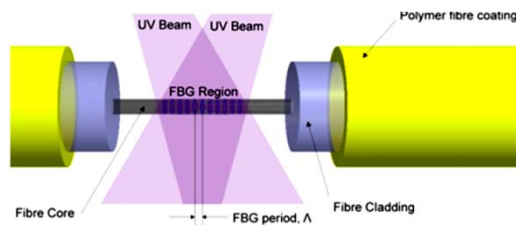
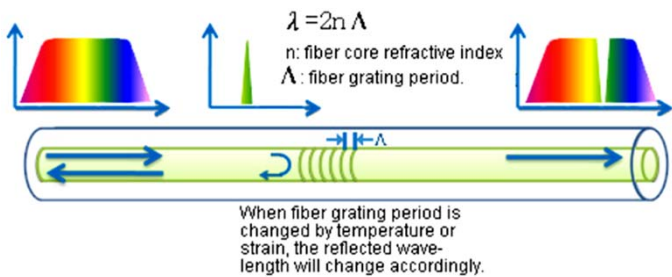
A Novel Optical Wavelength Filter



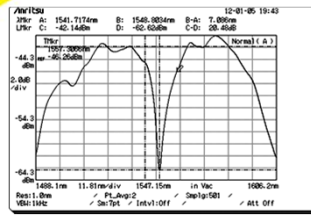
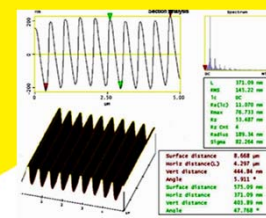
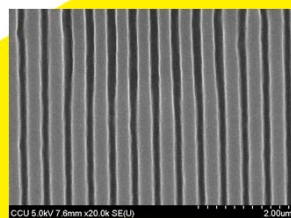
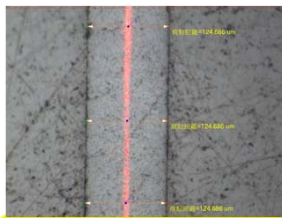
USA Invention Patent , Pat. No. 8,396,341, Date of patent : Mar.12,2013
Taiwan Invention Patent, Pat. No. I390262 , Date of patent : Mar.21,2013

The invention proposed a process to rapidly replicate the optical wavelength filter with surface-relief Bragg grating by using holographic interference techniques, soft Lithography, and micro molding.

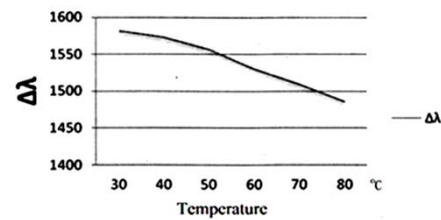
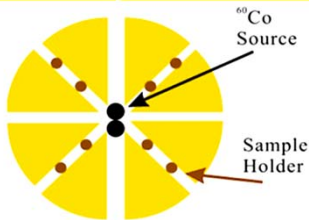
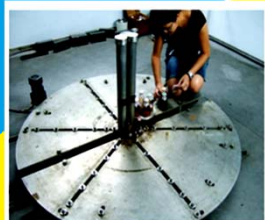
The optical wavelength filter can act as a temperature sensor which can be applied in high-energy gamma-ray irradiation, nuclear power plant environment.



- **Tradition process:** photosensitive optical fiber exposed by UV Beam Excimer laser, refractive index variation
- **Our Invention:** surface-relief grating fabricated by holographic interference, soft Lithography, and micro molding tech.
- **Advantage:** low cost, rapid replicate process, higher sensitivity to external environment changes



Grinding machine for Optical Fiber Profile of the D-shaped polished fiber The SEM and AFM micrographs of gratings Optical spectrum of our Novel Optical Wavelength Filter



The Co-60 source gamma-ray irradiation instrument and Schematic diagram The Novel Optical Wavelength Filter The reflected optical wavelength (λ) varies with the surrounding temperature($^{\circ}\text{C}$)

■ **Experimental results show that, there is no change of device characteristics after the high-energy gamma-ray irradiation.(gamma-irradiation dosage up to 100kGy)**



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