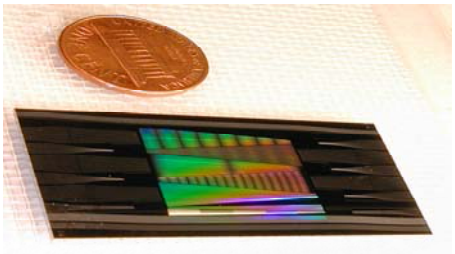
Holographic Bragg Reflectors (HBRs)

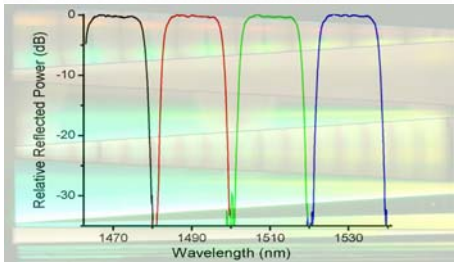
Crafting light for the Information Age

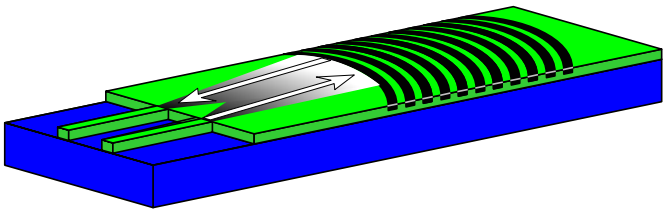
HBRs are volume-holographic filters fabricated in slab waveguides by DUV photolithography. They provide fiber-Bragg grating-like spectral filtering, but simultaneously route the reflected signal to an output distinct from the input thus eliminating the need for a circulator. Multiple HBRs can be combined to yield integrated multiport filters, e.g. for multiplexing. Filter passbands can be flexibly tailored making HBRs the integrated equivalent of thin film filters.

Features:

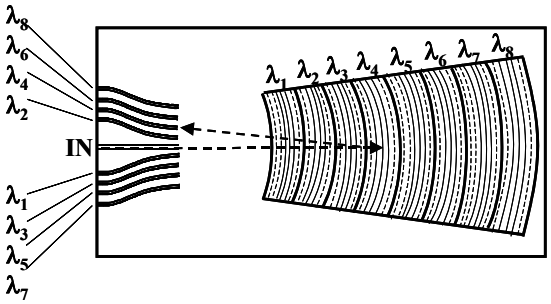
- Operational wavelength range: 350 nm – 2.4 μm
- First-order designs for λ > 1200 nm
- Arbitrary phase and amplitude apodization
- Minimum feature size 200 nm with placement accuracy <10 nm over 30 mm
- Refractive index contrast: from 0.8 % to 3 %
- Grating etch depth: up to 1000 nm
- Passband width: 0.4 GHz - 70 THz (or 3 pm to 400 nm at 1.5 μm), highly customizable
- Low polarization sensitivity







Holographic Bragg reflectors provide simultaneous spectral filtering and routing operation.



Stacking of multiple HBRs yields multiport filters with individually programmable filter function.

Applications

- Integrated Thin Film Filter or Filter Array
- Coarse and Dense Wavelength Division Multiplexing
- Spectral Signature Recognition and Spectroscopy
- Optical Pulse Shaping and Coding (spectral or temporal)
- Code Division Multiple Access (CDMA)

Specialty Applications

Custom Designs

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