

SILICON PHOTONICS FOR OPTICAL COMMUNICATIONS

Develop a platform capable of manufacturing micron scale Planar Light Circuits in Silicon (Si-PLC) using standard bulk micromachining processes in Silicon on Insulator (SOI) 8" wafers.

TECHNOLOGICAL CHALLENGE

Lumentum is engaged in exploratory projects that aim at expanding the application space of the processes used for MEMS.

Lumentum is working on developing a dynamic ROADM Networking which could also provide significant cost and performance benefits for future products in telecom.

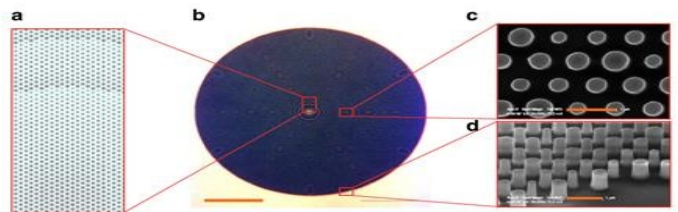
Key challenges to be overcome for success of this approach:

1. A method to produce smooth sidewalls with surface roughness of single digit nanometers.
2. A process flow that allows manufacturing of three level structures.
3. Developing a robust modelling capability to design the building blocks needed for ROADM applications.
4. Developing characterization and testing equipment to assess the quality of the devices.

DEVELOPED SOLUTION

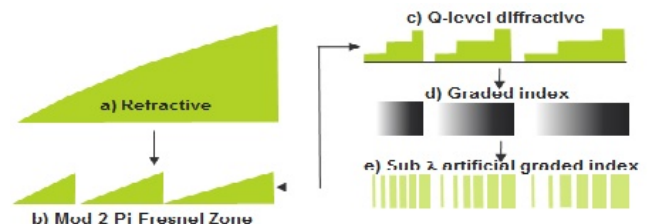
For micron scale silicon photonics

- A two level self-aligned process.
- A design library of building blocks with different functionalities.
- Different methods for improving the side wall surface roughness.



For diffractive optic elements (DOE)

- A proprietary design with single mask process that allows manufacturing of high efficiency 1D and 2D DOEs.



GOALS

In addition, several interesting applications are being envisioned of bulk micromachined devices for Dynamic ROADM Networking, which could also provide significant cost and performance benefits for future products within other business units in LUMENTUM.

IMPACTS OF THE PROJECT 2016-2017



Funded amount

100K



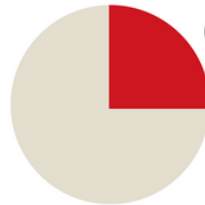
Job created person-year/2 years

8



Projected revenues/2 years

10M\$



Capital investments /2 years

500K\$

THIS PROJECT IS AN ACTIVE COLLABORATION BETWEEN



NRC - CMRC



Centre de Collaboration
MiQro Innovation



Gale Micro Technologies