

國立陽明交通大學 國際半導體產業學院
International College of Semiconductor Technology,
National Yang Ming Chiao Tung University



副教授 Associate Professor

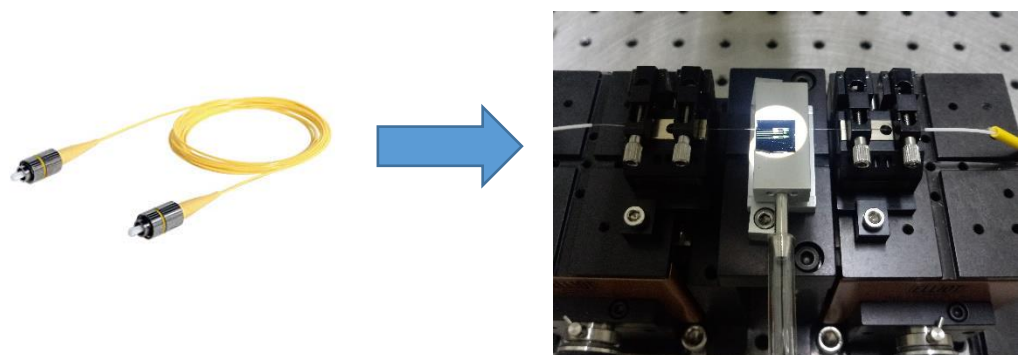
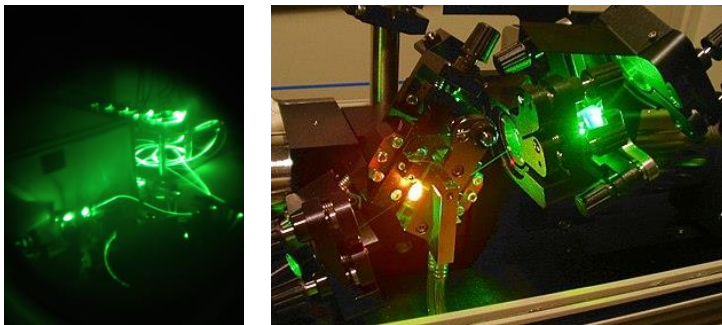
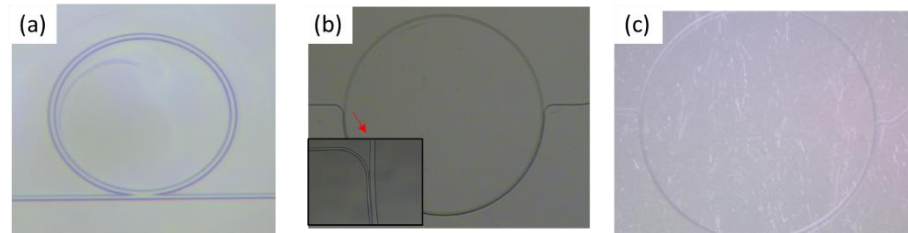
王培勳 Pei-Hsun Wang

PHotonics
LAB

Project Topics

Silicon Photonics or related areas:
(from fiber to integrated circuit)

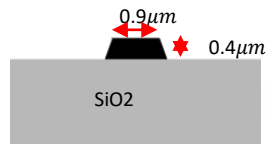
- Simulation and Modeling
- Optical System and Design
- Device Measurement and Fabrication*



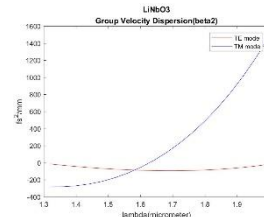
Simulation and Modeling

Optical Waveguide

Lithium niobate waveguide

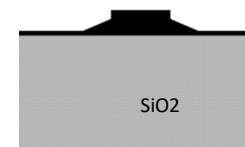


TE mode



FemSIM/MIT Photonic Bands (MPB)

Lithium niobate waveguide

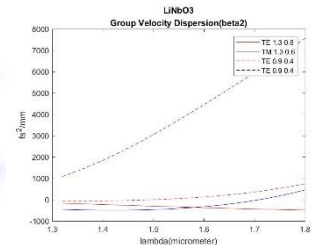


TE (x)

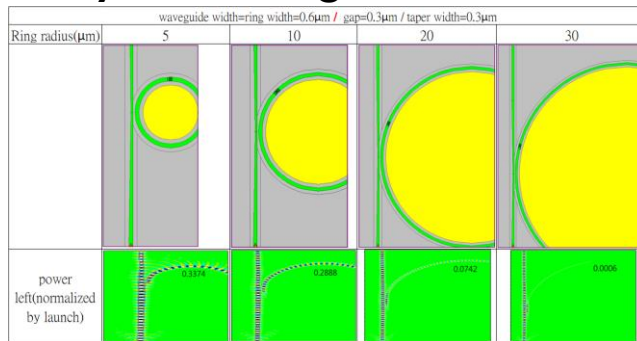
TE (y)

TM (y)

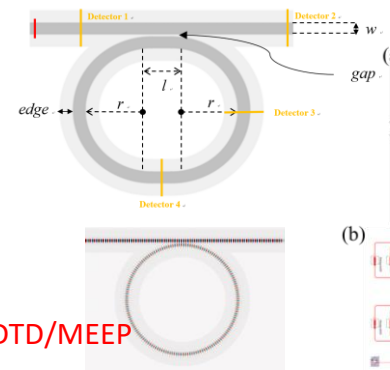
TE (x)



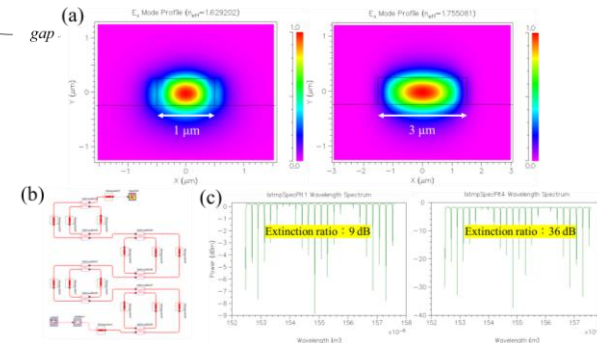
Waveguide and System Design



Rsoft FullWAVE
Rsoft BeamPROP



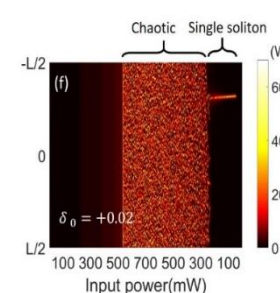
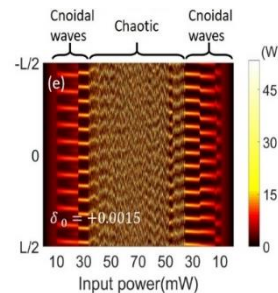
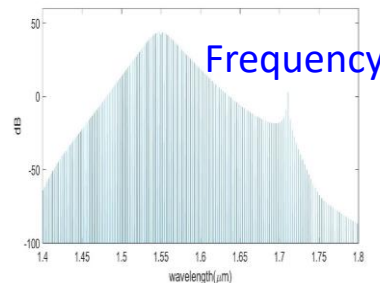
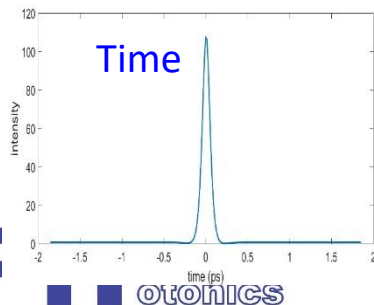
FDTD/MEEP



OptoSIM

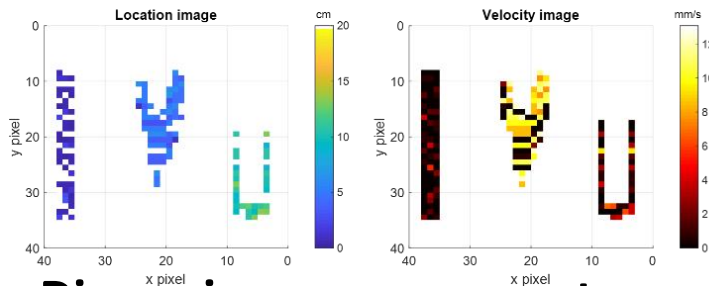
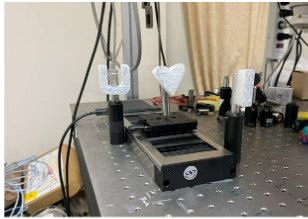
Nonlinear Optics: On-chip Frequency Comb Generation:

MATLAB

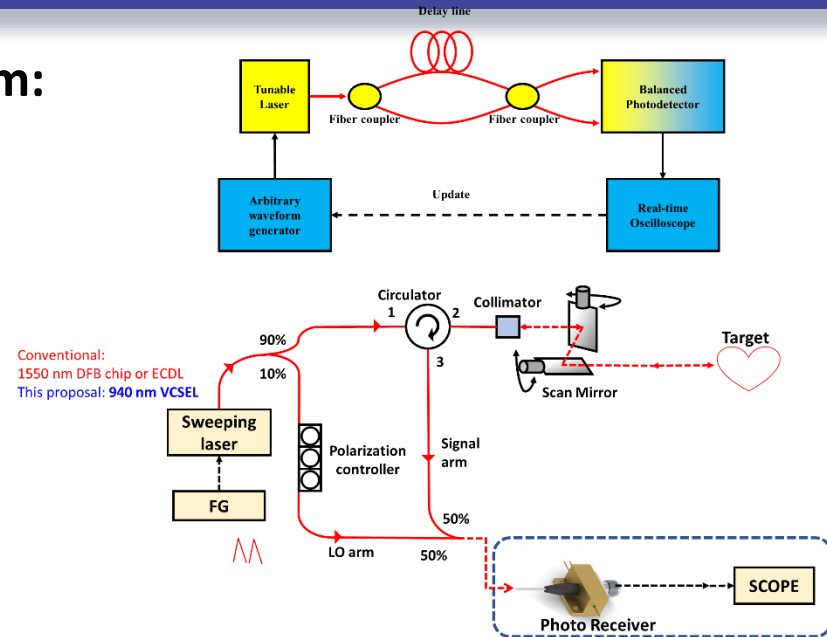
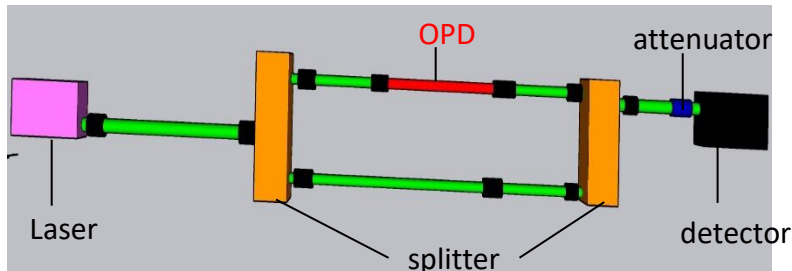


Optical Design and System

- Advanced 4D FMCW LiDAR system:**

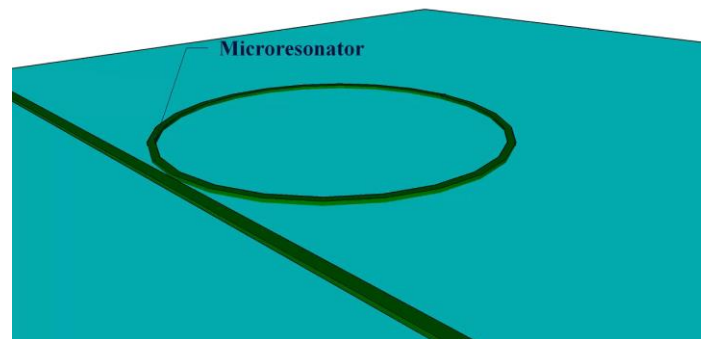
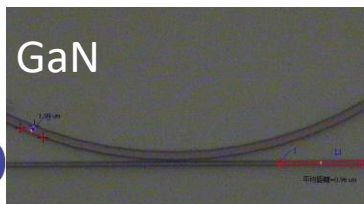
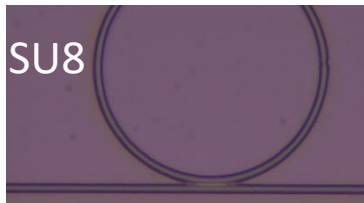
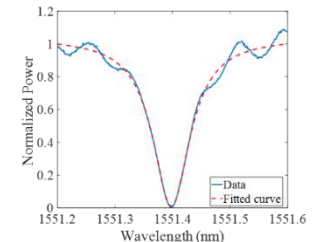
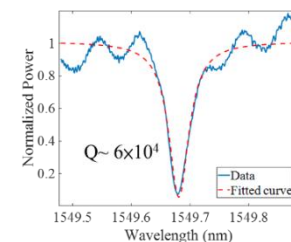
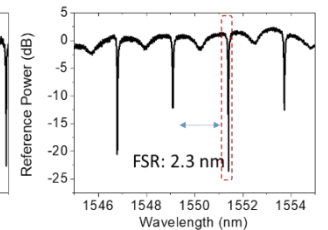
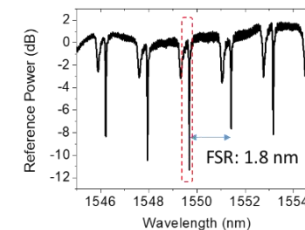
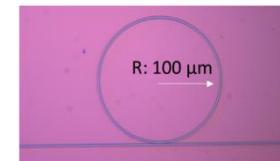
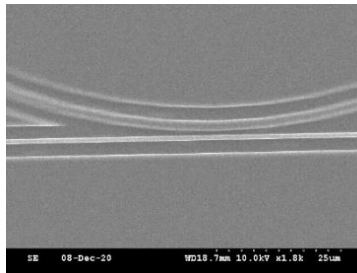
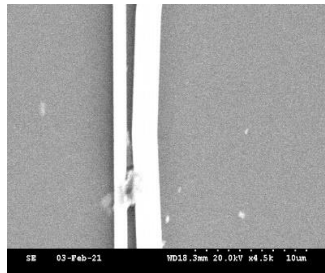
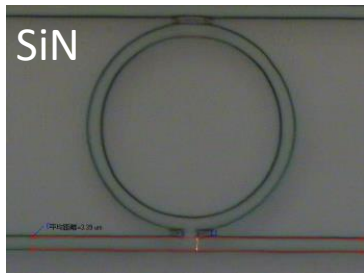
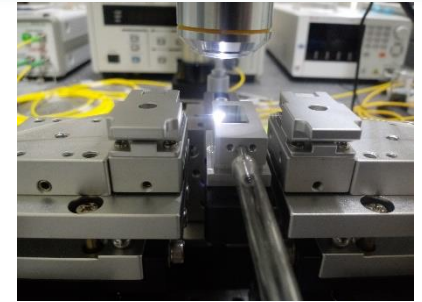


- Dispersion measurement:**



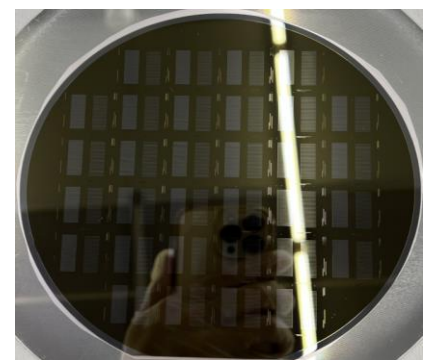
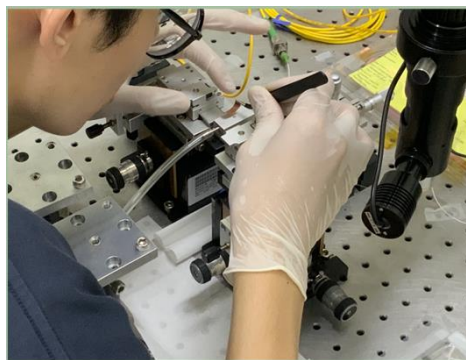
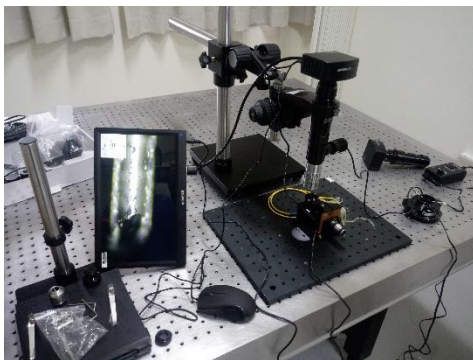
Device Fabrication

- Course / training required during summer & 1st semester
- Optical measurement training
- Lithography / E-beam patterning
- Silicon Nitride / SU8 / Gallium Nitride Waveguide Resonator



Information

- Fabrication in cleanroom is needed. (TSRI/NFC at NYCU)
- Optical measurement in the local lab
- Graduation year: $\approx 2 \sim 2.5$ years



PH **LAB**
otonics