

Integrated Photonics Multi Project Wafer (MPW)

AIM Photonics Multi Project Wafer (MPW) provides access to the most advanced state-of-the-art 300mm semiconductor processing research fab in the world at the Albany Nanotech facility in Albany, NY.

Albany Nanotech Advanced 300mm Fabrication Facility

- >130K square feet of Class-1 capable



cleanrooms that operate 24/7

- Regular tool health checks and statistical process control
- Same tool set that produces 14nm and smaller circuits

Inline Electro-Optical Testing

- Fully integrated into the fab with the ability to test wafers during build
- Ability to measure passive and active PDK components



- Full auto wafer scale testing
- 1310nm and 1550nm lasers
- Optical Wafer Acceptance Criteria (OWAC) reports to be sent with all MPW chips in 2019

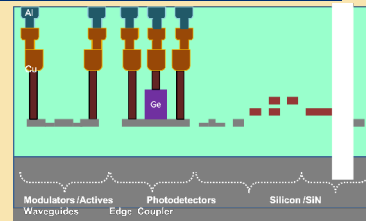
Interposer Technologies

Passive Interposer:

- Based on a 100µm thick silicon substrate with TSVs, a silicon nitride waveguide, three frontside and one backside metal wiring levels
- Pockets for laser and PIC chips to be flip chip soldered in
- Deep trenches for edge or evanescent fiber coupling

Active Interposer:

- Fusion bonding of PIC and interposer allows for the entire design real estate to be used for photonics or metal routing
- Lasers soldered into pockets and deep trenches for coupling



PIC Technology Highlights

Best-in-class 90-day fab time for full actives process on 300mm SOI wafers

NEW: Ultra Low-Loss Waveguides

- <0.25 db/cm for 220nm silicon
- <0.10db/cm for 220nm SiN
- ~1db/facet edge coupler for both TE and TM polarization

Actives Process includes

- Si + SiN waveguides
- 6 implant levels
- Ge photodetector
- Cu wiring
- Al wiring/termination layer

Active Interposer MPW

- Actives PIC fusion bonded to 100µm thick Si interposer

