MONTANA STATE UNIVERSITY

Spectrum LAB
Montana State University

INTEGRATED PHOTONICS TESTING CAPABILITIES

Photonic integrated circuit testing

Wafer- and die-level optical testing of photonic Integrated circuits, from 300 mm wafers to single devices.



Photonic integrated circuit vs. penny

Precision testing for photonic chips

Photonic chips pack lasers, waveguides and detectors into a space smaller than a fingernail. Our stations align fibers to them with nanometer precision to characterize their performance.

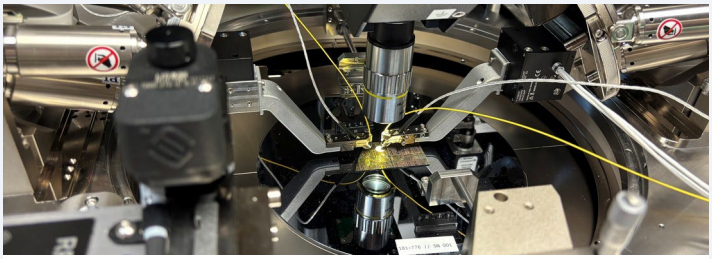
300 mm
Size of wafers tested automatically

100 nm
Positioning precision for fiber-to-chip alignment

9 pm
Absolute wavelength accuracy of c-band tunable laser

90 dB
Optical power range measured, −80 to +10 dBm

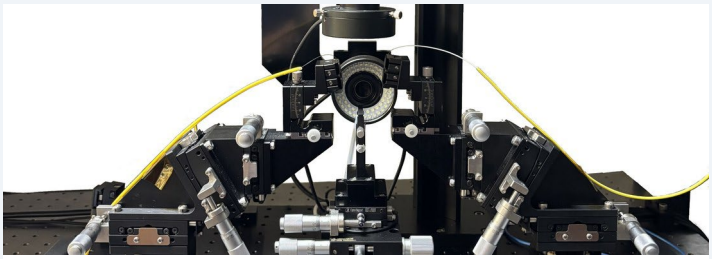
TEST STATIONS & INSTRUMENTS



Automated Wafer Test Station

FormFactor · 300 mm wafers

- 100 nm x,y and 50 nm z motion steps
- Tests many devices and dies on one chip automatically
- Surface grating coupling



Manual Die Test Station

Keysight · single dies & prototypes

- 500 nm positioning resolution
- Surface grating and edge coupling
- Flexible setup for custom devices

Tunable Laser Source

Keysight N7778C

- 1490 – 1640 nm tuning range
- 9 pm accuracy · 2 pm repeatability

Optical Power Meter

Keysight N7742C · 2 channels

- 1250 – 1650 nm · −80 to +10 dBm
- 1 µs minimum averaging time

Fiber Array Units

8-channel PM, 1550 nm

- 250 µm channel spacing
- 8°, 4° and 0° polish angles

Work with us

- Chip testing for industry and research partners
- Training for students and faculty

HEADWATERS TECH HUB
people • place • technology

MONTANA PHOTONICS & QUANTUM

TALK TO US ABOUT TESTING

spectrum.montana.edu

Mountains and Minds
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