



MORE LIGHT

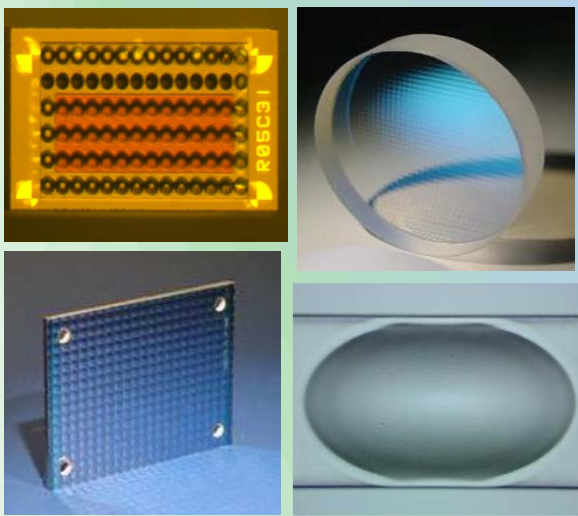
JENOPTIK Microoptics Technology and Products

Presented by Tim Lindsey, Director, Product Management, Microoptics

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Tim Lindsey, JENOPTIK Optical Systems, LLC, EPIC Online Technology Meeting on Micro-optics Manufacturing
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Unique Optics



UNIQUE Refractive Solutions



Cutting Edge

State of the art fabrication technology that creates customer-specific **freeform** shapes of components from DUV to LWIR.

High **flexibility** including

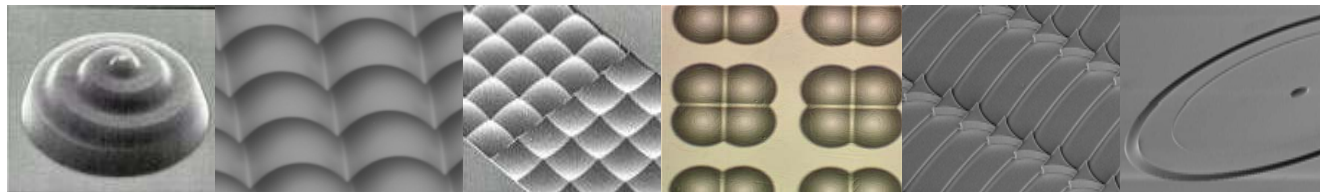
- Aspheric, Anamorphic, High Numerical Aperture, Polynomial and Off Axis Lens Designs
- Multiple Optical Functions, including Prism Designs

Materials

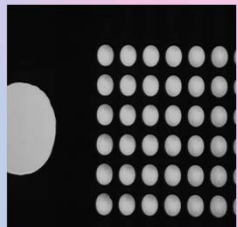
CaF₂, Al₂O₃, GaP, SiO₂, GaAs, Si, Ge, ZnS, ZnSe, others

Manufacturing Technology

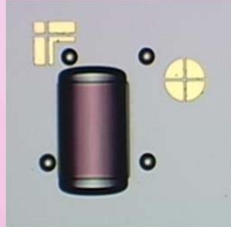
Standard semiconductor **wafer scale** manufacturing process



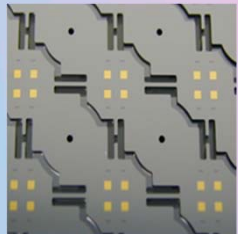
Precise Mechanics



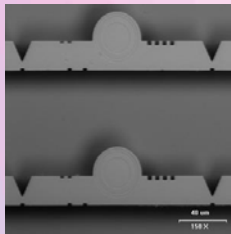
Tapered through holes



Solderable coatings & alignment marks



Backside wafer process & metal coatings



Unique lens shape with high mechanical precision

PRECISE Mechanical Solutions



Cutting Edge

Precise Opto Mechanical Assemblies and Components using **passive** alignment strategies

Reduced packaging time due to

- Multiple Functions on same component
- Mechanical Alignment Features for passive alignment
- Precise Mechanical Alignment Marks
- Solderable Coatings

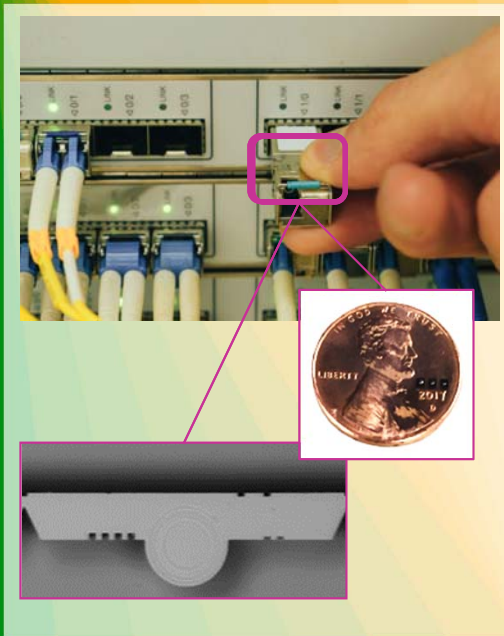
Manufacturing Technology

- Active Alignment in cleanroom
- Standard semiconductor **wafer scale** manufacturing process

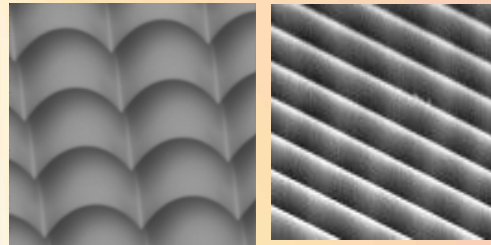


Applications Examples

Transceivers / SiPh

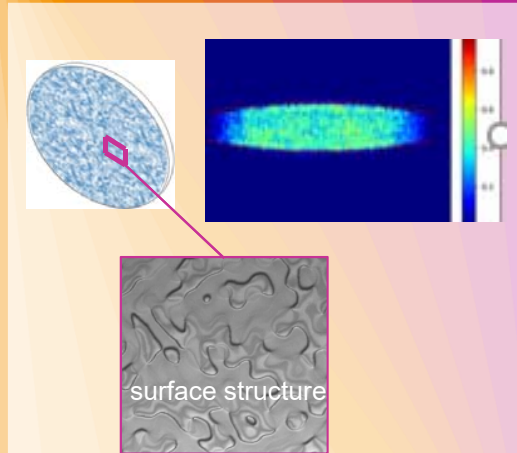


Quantum Cascade Laser



Microlens arrays for
midwave and longwave IR
diode collimation

LIDAR Illumination



Grayscale refractive, diffractive
and hybrid structures for large
angle homogenizer patterns



Thank you for your attention.

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