

OptoArray™ Precision Fiber Alignment Arrays

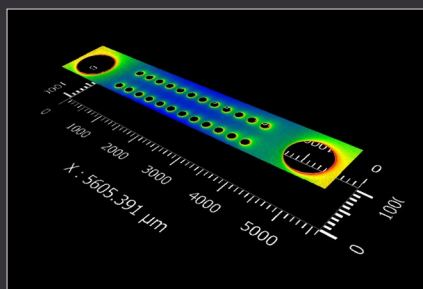


The demand for ever increasing bandwidth is driving the need for dense fiber optical connections in applications such as datacenter interconnects and optical switches. Many of these high density connections require the use of precise, tightly-toleranced fiber alignment structures to accurately position high density optical ports.

Optoscribe's high speed laser-based manufacturing process provides full 3D flexibility in the patterning of arrays and enables the creation of high precision, controllable microstructures in glass.

The manufacturing process provides a tight control over the key dimensional tolerances during micromachining of hole arrays. In addition, the 3D control provides the ability to shape the hole creating a flared entrance to allow for easy insertion of the fibers. Holes can also be formed at arbitrary angles to the surface of the glass such as the 8 degrees typically used for minimising back-reflections.

The OptoArray™ solutions can be used in a wide range of applications, including multi-fiber connectors, arrays for interfacing to optical switching hardware such as reconfigurable optical add drop multiplexers (ROADMs), and interfacing to other free-space optical systems.

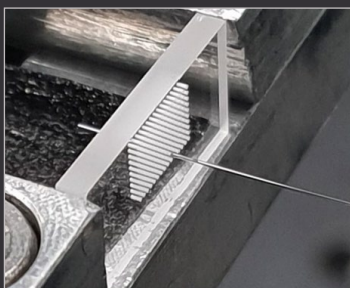
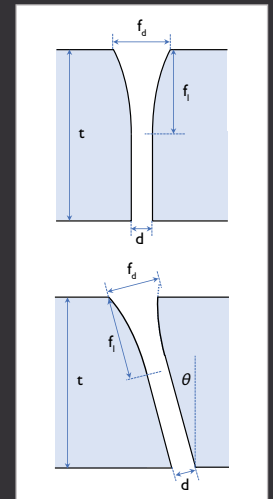


Key Advantages

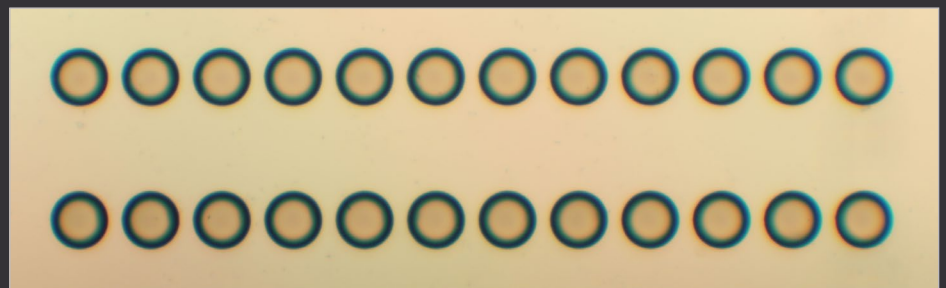
- **Best-in-class dimensional tolerances**
- **Low CTE due to solid glass construction**
- **Suitable for high density 2D arrays**
- **High speed fabrication**
- **Ultimate flexibility of hole shape and array configuration**
- **Multiple hole sizes per array allowing mixed ferrule configurations**
- **Can be integrated with mechanical alignment features on same substrate**

OptoArray™ Specifications

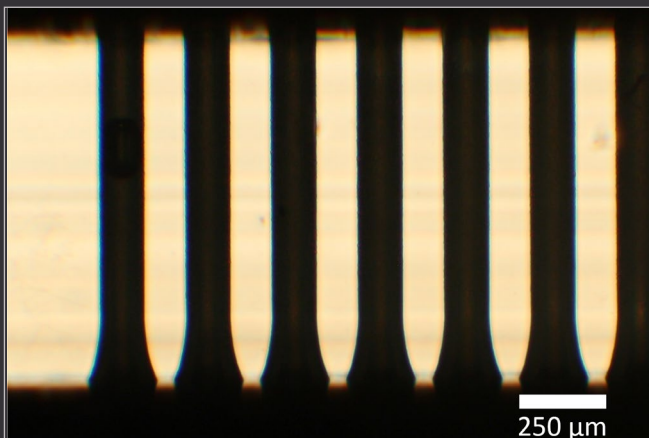
Parameter	Value	Notes
Hole diameter d	$> 50 \mu\text{m}$	Typical
Diameter tolerance d_{tol}	$\pm 0.5 \mu\text{m}$	
Glass thickness t	$0.5 - 2 \text{ mm}$	Standard wafer thickness tolerance (TTV) $10 \mu\text{m}$. Other tolerances may be available – contact to discuss
Pitch between holes	$> 1.4 \times d$	
Pitch tolerance	$\pm 0.5 \mu\text{m}$	
Flare type	Curved, Conical	
Flare length f_f	Typical $0.5 \times t$	Can be customized to suit – contact to discuss
Angle θ	0 or 8 degrees	Other angles possible – contact to discuss
Material	Schott Borofloat-33	Other glasses possible including UV Fused Silica and Ultra low expansion Fused Silica – contact to discuss
Product supply configuration	Wafers or singulated die	



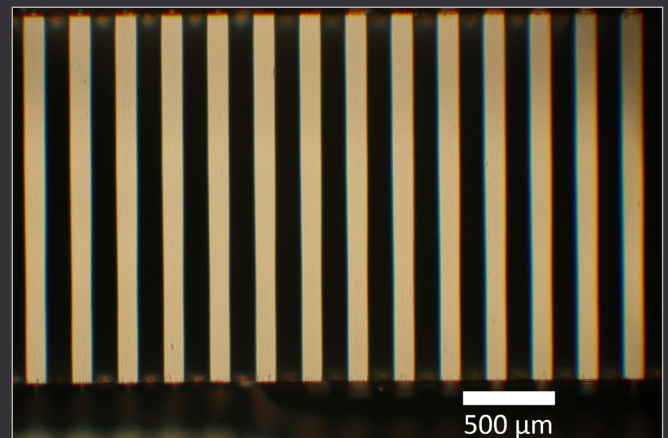
Testing hole array close up



Top view flared holes top

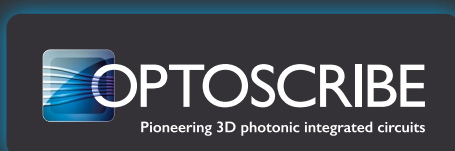


Side view of 1mm thick flared holes



Side view of 2mm thick holes

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