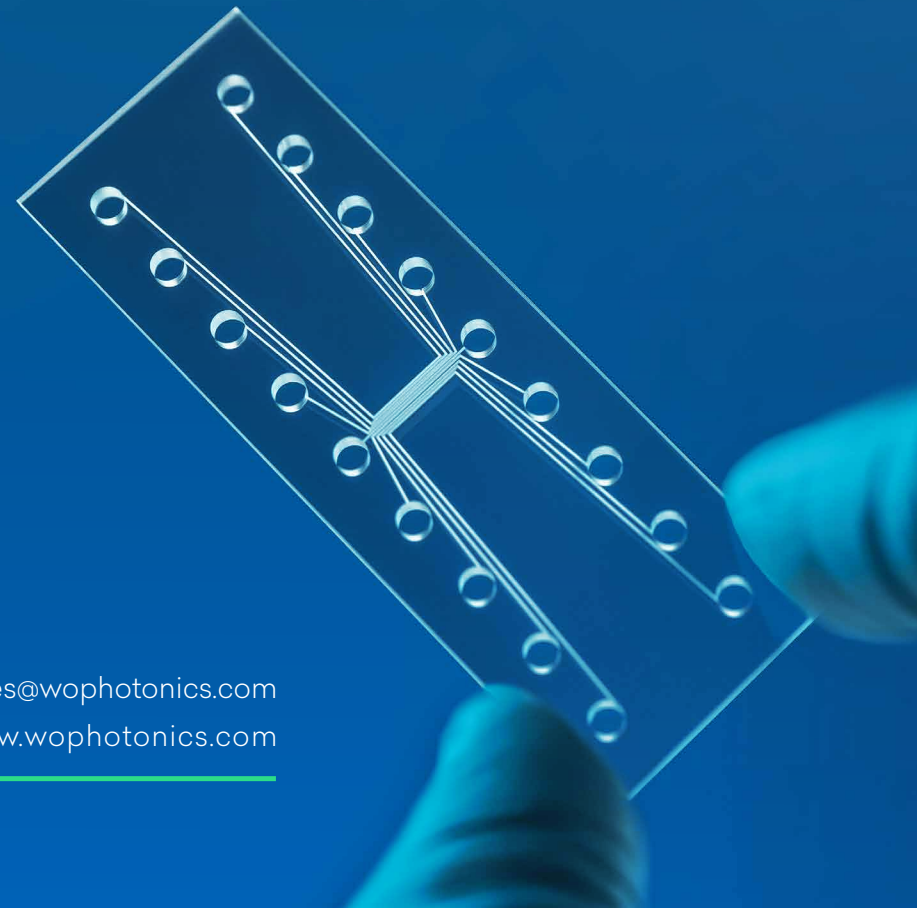
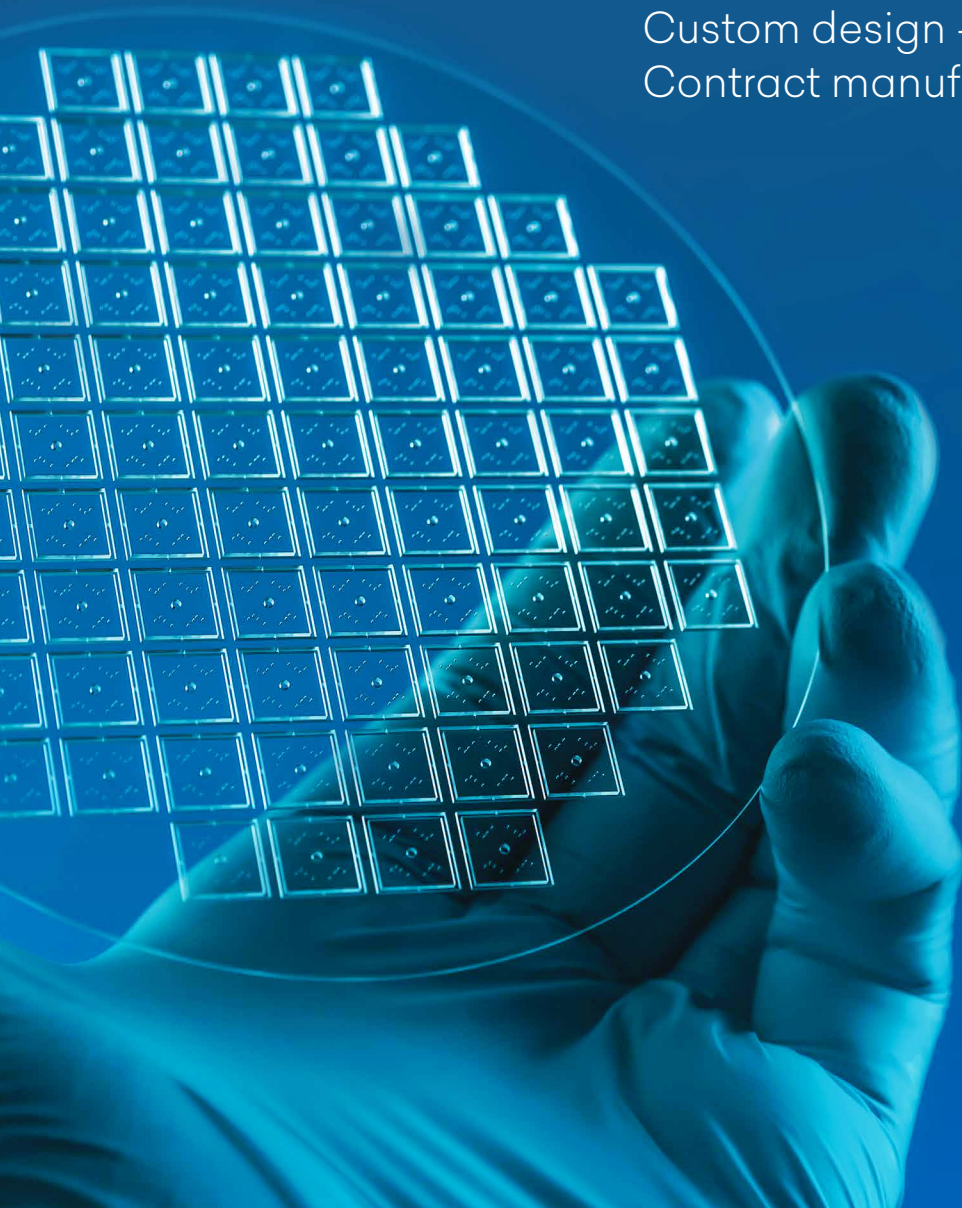




# Microfluidic Chips & Devices

Custom design – Rapid prototyping –  
Contract manufacturing services



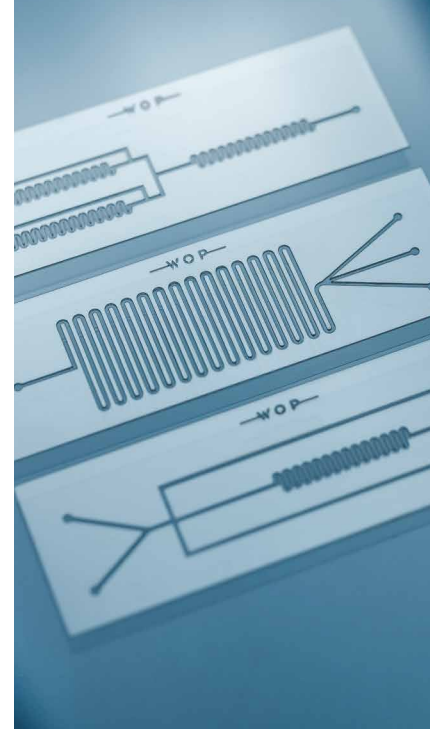
[sales@wophotonics.com](mailto:sales@wophotonics.com)  
[www.wophotonics.com](http://www.wophotonics.com)

# Laser solutions for microfluidics

In medical technology, the trend is toward ever-greater miniaturization, leading to new challenges in micro processing. WOP has been working in the field of femtosecond laser micromachining for over 19 years, verifying that it provides many advantages over conventional methods and is ideally suited for the fabrication of microdevices.

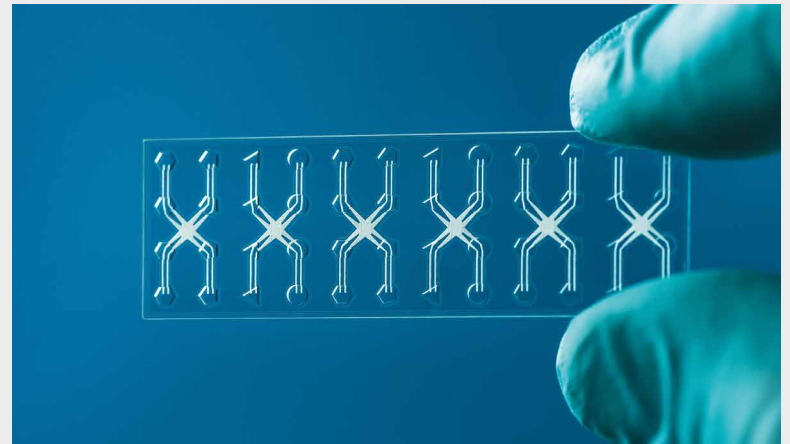
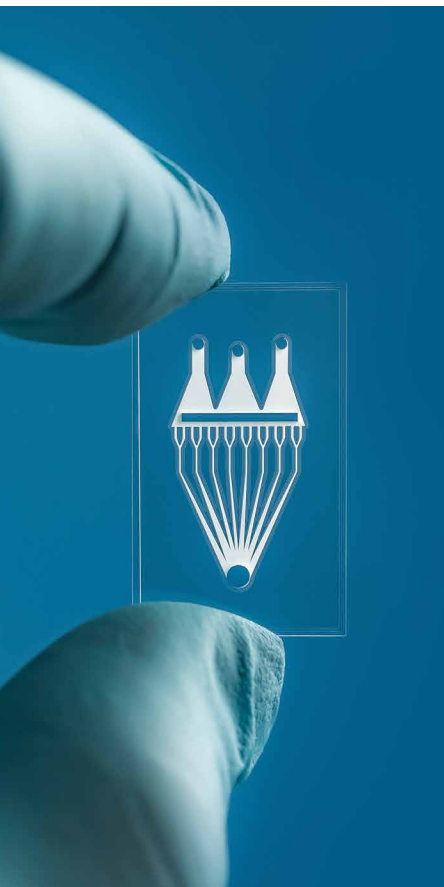
## Microfluidics

- Droplet-based
- Point-of-care
- Single-cell-analysis
- Any custom application



## The advantages

- Ultra-high precision & quality results
- Process versatility - wide range of channels width and depth
- Embedded features induced hydro properties, marks
- No debris on the surface - beneficial for bonding
- No mold needed - fewer expenses, faster processes
- Single or multi-layer structures available



# WOP in-house technologies for micro devices:

- 1 Wafer-level glass micromachining
- 2 Selective laser-induced etching (SLE)
- 3 Selective laser ablation | Surface structuring | Laser cutting
- 4 Laser micro welding

## Features

**Materials:**  
Glass, Silicon, Polymer

**Surface roughness**  
Ra <math>< 1 \mu\text{m}</math> or less after polishing

**Straight or irregular cuts**

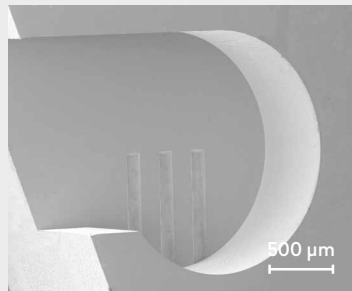
**Wide range of channel width and depth**  
with aspect ratio up to 1:100

**Feature sizes**  
from 10  $\mu\text{m}$

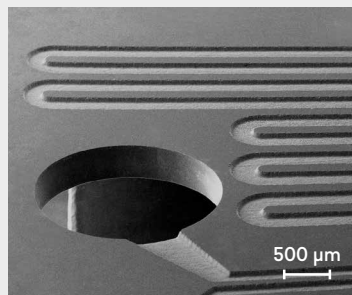
**Substrate thickness**  
from 100  $\mu\text{m}$  to 10 mm

**Resolution and tolerances:**  
Process resolution  $\sim 1 \mu\text{m}$   
XY tolerances  $\pm 1 \mu\text{m}$   
Z tolerances  $\pm 2 \mu\text{m}$

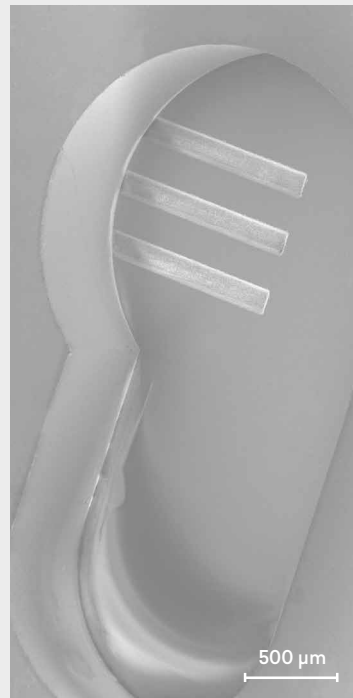
**Low chipping**  
<math>< 10 \mu\text{m}</math>, typ. none



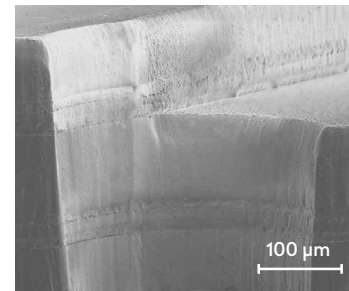
Microfluidic chip channels micro drilling with laser ablation and laser bonding | **fused silica**



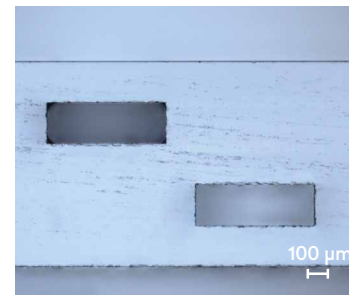
Microfluidic chip channels formation | **fused silica**



Microfluidic chip channels micro drilling with laser ablation and laser bonding | **fused silica**



Microfluidic chip channel drilling | **polyester**



Microfluidic chip, 5 layers bonded, side view | **D263T glass**



Microfluidic chip channels formation | **fused silica**