

Microfluidics Pilot Line

From prototype to
scalable product -
faster and smarter

Pilot-scale manufacturing of thermoplastic microfluidic devices

Tailored for biotech startups and
applied research teams, enabling
a smooth transition from PDMS,
soft lithography, 3D printing, and
laser-cut prototypes to
manufacturable thermoplastic
solutions.



We Combine

Design-for-Manufacturing (DfM)

Tooling strategy

Micro-injection molding

Bonding and assembly

Verification



INSTITUTE OF SOLID STATE PHYSICS
UNIVERSITY OF LATVIA

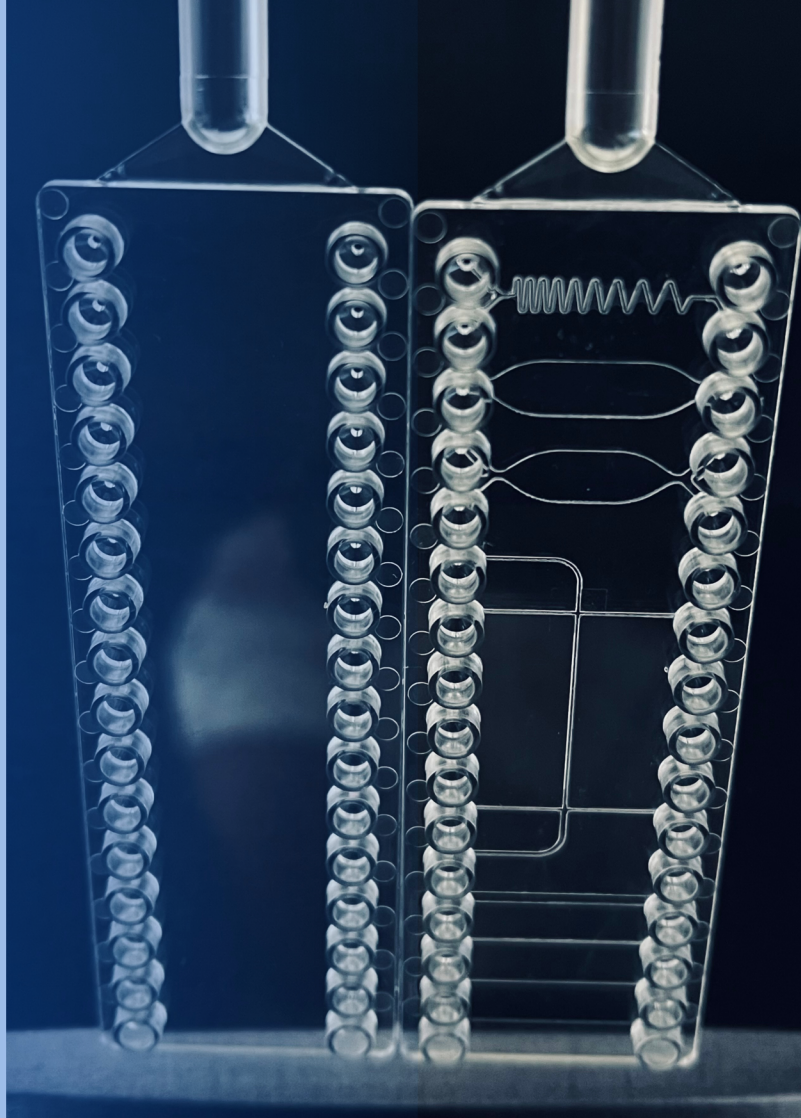


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Designed For

Early- to mid-TRL projects range from lab-validated concepts to the pre-industrial or pilot stage.

At this stage, fast iteration, manufacturability, and risk reduction matter more than volume.



We Help

microfluidic innovators move from research prototypes to injection-moulded pilot production - without costly tooling risks.



Lab



Pilot



Industrial

Primary Users

Academic teams needing rapid design iteration

Biotech startups (diagnostics, lab-on-chip)

University spin-offs preparing for pilot production or funding

SMEs transitioning to thermoplastics

Micro-scale Feature Capability

We offer feature sizes down to $\sim 10 \mu\text{m}$ using high-precision mold inserts with optimized micro-injection moulding conditions.

Our service packages

OSTE – COC prototyping

- Your custom design
- Functional testing of prototype
- 75x25 mm chip size
- Fast turn around (2–4 weeks)

Custom insert moulding

- Moulding of your design
- Volumes: 10s, 100s, 1000s
- 25.5 x 75.5 mm slide size
- Aluminum or steel inserts

Our custom microfluidics

- Custom microfluidics part
- 12g shot size
- Lead time: 6+ months

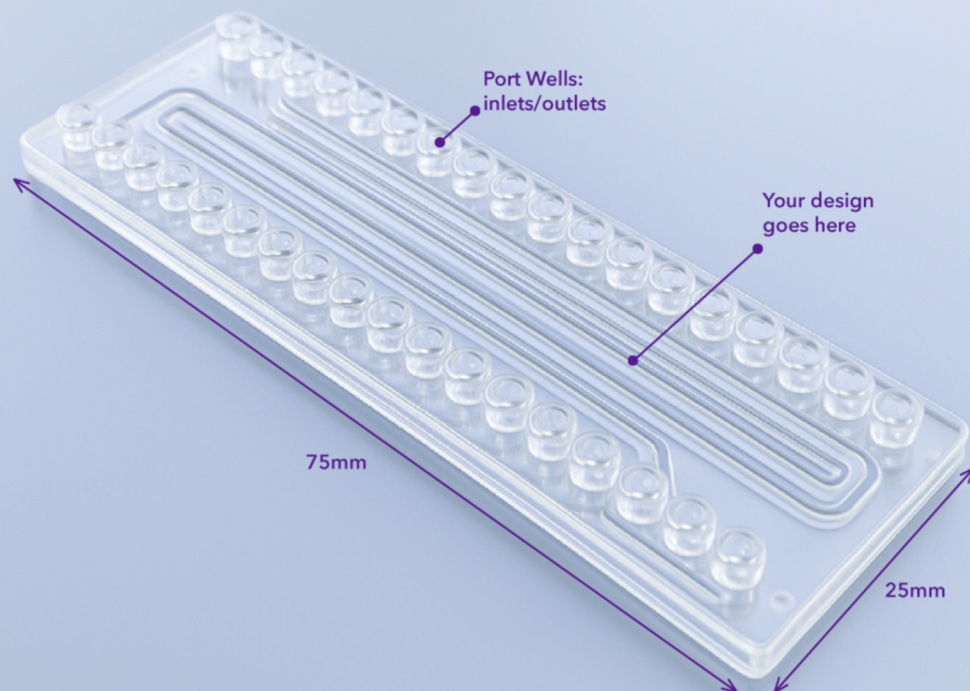
⦿ All service packages currently support a maximum shot size of 12g.

Primary material:

TOPAS® COC 8007 x10 -

offering optical clarity, low autofluorescence, chemical resistance, and precise microfeature replication.

Pilot line also supports all common thermoplastics for microfluidic device manufacturing.



The price and lead time depends on the project complexity, required engineering work, tooling, and production volume. Our approach focuses on practical solutions, fast iteration, and cost-efficient pilot manufacturing.

Precision & Quality

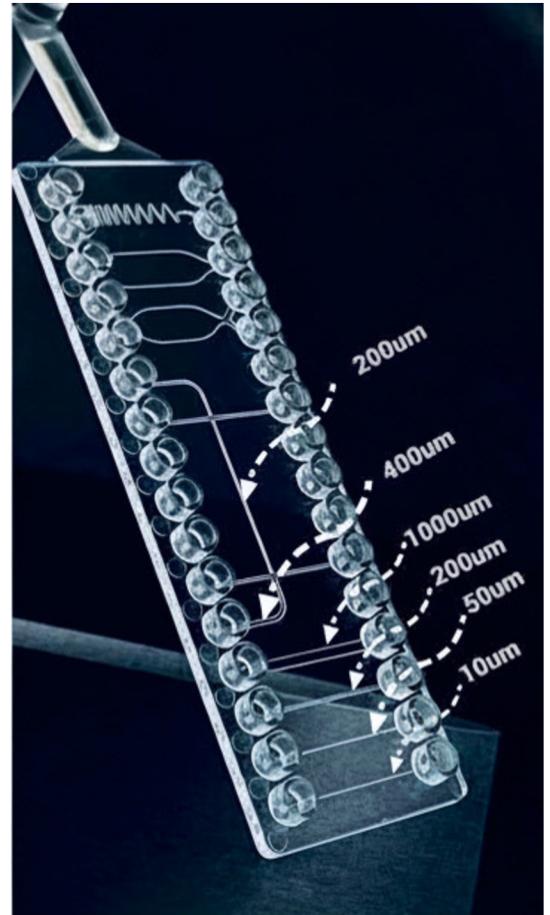
Quality assurance through batch sampling in accordance with ISO 2859-1.

Examples:

**COC injection molded flat standard part
(75x25 mm)**



**COC injection molded with channels
(steel Insert)**



⦿ Inspection performed with Mitutoyo, Quick Vision Apex Pro 302

Ecosystem:

ISO certified 650m² Nanotechnology center with Class 8 cleanrooms

In-house pilot production

Trusted industrial toolmakers and scale-up partners

Clear handover path to high-volume manufacturing



The Institute of Solid State Physics, University of Latvia (ISSP UL) operates under an ISO 9001:2015 & ISO 14644-1:2015 certification. ISSP UL Nanotechnology centre is a part of EUROnanoLAB



Our Experience

Our team brings over a decade of hands-on experience in microfluidics and micro-/nanodevice fabrication. We have successfully delivered 30+ R&D and industry-collaborative projects across chip design, microfabrication, polymer replication, and functional testing.

We work with both academic and commercial partners to translate concepts into manufacturable, application-ready devices.

Core Capabilities

Chip design

Microfabrication

Polymer replication

Functional testing



Contact us

Girts Ozoliņš

Senior Expert in Innovations &
Commercialization

 girts.ozolins@cfi.lu.lv

- Share your idea and requirements
- Get expert feedback on feasibility
- Move forward with a clear plan



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ISSP UL Microfluidics Pilot Line service packages

To support different stages of product development, we offer three complementary service routes.

Option A: Rapid Iteration Route

Fast prototyping and bonded microfluidic devices.

Ideal for early-stage development, design validation, and rapid testing cycles, this route allows teams to quickly evaluate and refine microfluidic designs before moving to industrial production.

Key features

- Standard-format microfluidic chips (75 × 25 mm) with integrated inlet and outlet wells
- Bonded microfluidic devices
- Material configuration: COC – OSTE – COC
- Channel width: 10 µm up to 10 mm
- Aspect ratio: 1 up to 5
- Typical lead time: 2-4 weeks (per design)

This option enables fast feedback loops, lower development risk, and accelerated innovation.

Option B: Injection Molding Manufacturing Route

Designed for teams preparing for product validation, pilot manufacturing, and scale-up. This route provides high-quality moulded components and assembled devices ready for testing and integration.

Key features

- Chip size: 75.5*25.5 mm
- Fixed mini-luer port: 32
- Materials: COC, COP, PC, PMMA families (other options under consulting)
- Channel width: down to 10 µm
- Pilot production batches from first samples up to ~10,000 units
- Quality control and verification with detailed reporting
 - Tests such as: Leaking, port fit, channel dimensions.
- Suitable for lab-on-chip devices in biotech and life-science R&D
- Typical lead time: 3 - 8 months (depending on the design complexity)

This pathway offers a reliable bridge between development and full-scale manufacturing, helping you validate your device under realistic production conditions.

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Option C: Custom Microfluidics and Other Precision Components

Example: Injection Molding System Specifications

- Injection volume: 12 cm³
- Injection weight (PS): 10.9 g
- Screw L/D ratio: 21
- Clamping force: 400 kN

Mould configuration

Version A – Modular Mold Base

- Mould system: Modular Mould base with interchangeable cavity and core inserts
- Maximum projected area: 65mm × 85 mm
(applicable only if the mould inserts design accommodates the modular mould base system)

Version B – Complete New Mold

If a new mould is proposed, it must comply with the following machine limits:

- Distance between tie bars (H × V): 320 × 320 mm
- Minimum mould dimensions (H × V): 205 × 205 mm
- Mould height: 150 – 320 mm

