



# DE-RISK YOUR MICROFLUIDIC DRUG DEVELOPMENT

PARALLEL

**Iterate faster without compromising data quality.**

Your formulation science moves fast; your device fabrication should too. When you’re optimizing lipid ratios, testing mixing geometries, or validating assay conditions, you need hardware that performs consistently across every iteration. Production-grade devices delivered in days give you the iteration speed of prototyping with the reliability you need for confident decision-making.

**What traditional prototyping doesn’t tell you.**

Prototype materials aren’t production materials. When you scale up, material differences change surface chemistry, shift mixing efficiency, and introduce new chemical interactions. Devices that worked in development fail at scale, forcing you back to redesign and retest while burning through timeline and budget with each iteration.

|                     | Traditional approach                                                                                                                                            | Parallel Fluidics approach                                                                                                        |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Prototype           | <p>Quick devices, uncertain scale-up.</p> <p>PDMS or 3D printing is fast, but materials don’t match production. Your data may not translate.</p>                | <p>Iterate in production materials.</p> <p>Get devices in days using the same thermoplastics you’ll manufacture with.</p>         |
| Material transition | <p>Everything needs revalidation.</p> <p>Material switch changes surface properties and mixing behavior. Formulations must be reoptimized and assays rerun.</p> | <p>Skip the material transition.</p> <p>Your device performs the same from first prototype to production. No rework required.</p> |
| Scale-up            | <p>Locked in after 6+ months.</p> <p>Once tooling is cut, design changes mean expensive rework or restarting.</p>                                               | <p>Prove your design works first.</p> <p>Iterate until performance is validated, then commit to tooling with confidence.</p>      |

**Why production materials matter for your data.**

Prototype materials absorb lipids, swell in solvents, and perform inconsistently across batches. Production-grade thermoplastics eliminate these issues so your data reflects your formulation, not your device.



**Predictable surface chemistry**

Consistent material properties deliver repeatable mixing and particle formation across every device and batch.



**Consistent optical performance**

Maintain accurate concentrations without compounds binding to device surfaces during formulation.



**True solvent compatibility**

Process with ethanol and organic solvents without device swelling, cracking, or contamination.

**Iterate at the speed of your science.**

Receive custom devices in 3 days so your formulation work doesn't wait on hardware. Iterate through 10+ design cycles in the time traditional manufacturers spend cutting tooling for their first prototype.



Feature dimensions down to 50  $\mu\text{m}$



Consistent batch-to-batch performance



Complex 3D cross-channels and microwells



Fluidic layers in PMMA, PC, or COP with thermally bonded caps

**Applications for drug discovery**

**LNP Formulation & Screening**

Control lipid-to-aqueous ratios with herringbone, staggered, or T-junction geometries for consistent particle size distribution.

**High-Throughput Screening**

Run parallel formulation tests using multi-channel devices that integrate directly with lab automation platforms.

**Biologics & Small Molecule Delivery**

Test drug loading, release kinetics, and stability in materials that match your production environment.

**Assay Development**

Validate mixing dynamics and residence times in devices that deliver consistent, reproducible performance.



Validate first, then scale.

Start with 5-10 devices to prove your design works. Scale to hundreds per month without changing materials or compromising device performance.

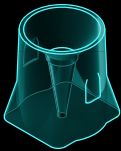
|                      | Traditional manufacturing               | Parallel Fluidics                |
|----------------------|-----------------------------------------|----------------------------------|
| Initial investment   | > \$100,000                             | < \$10,000                       |
| Time to first device | > 6 months                              | 3-14 days                        |
| Minimum order        | > 1000 units                            | 5 units                          |
| Volume flexibility   | Fixed capacity                          | 5 to 1000 units/month            |
| Development risk     | Locked into one supplier; design frozen | Iterate and scale when validated |

Focus on the science, not hardware integration.

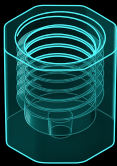
Embedded Hardware integrates directly into your custom device design to streamline workflow and eliminate manual connection steps.



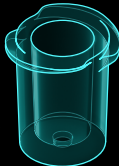
**MV-1 Microvalve**  
Automate flow control in channels



**Pipette Interface**  
Integrate with existing lab robotics



**1/4-28 Port**  
Attach standard capillary tubing



**Luer Lock Port**  
Connect external Luer fittings



**250 µL Reservoir**  
Collect samples or create flow

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# Get Started in Three Ways.

Validate your design in production-grade materials from day one. Carry forward from prototype to batch production without material surprises, performance shifts, or data resets.



**Upload a design**  
[Submit a CAD file or sketch](#) and get a quote within 24 hours.



**Book a meeting**  
[Discuss your design requirements](#) with our applications team.



**Review material compatibility**  
Explore [solvent resistance specs](#) for PMMA, PC, and COP.