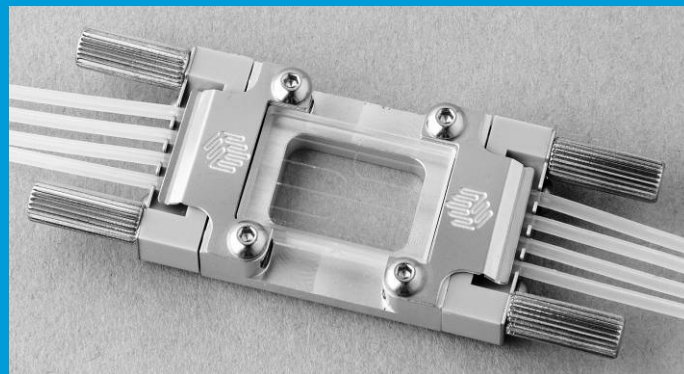
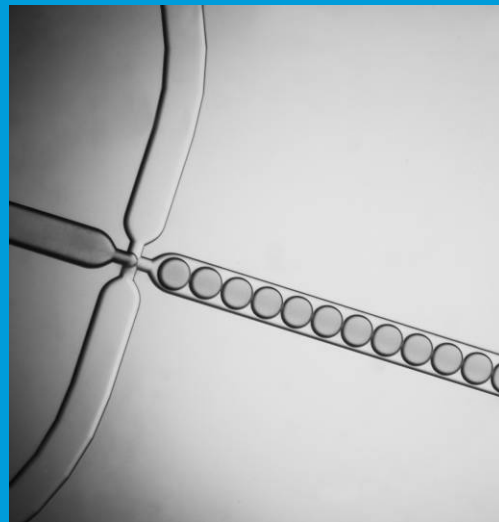


Pressure-based Droplet Starter System



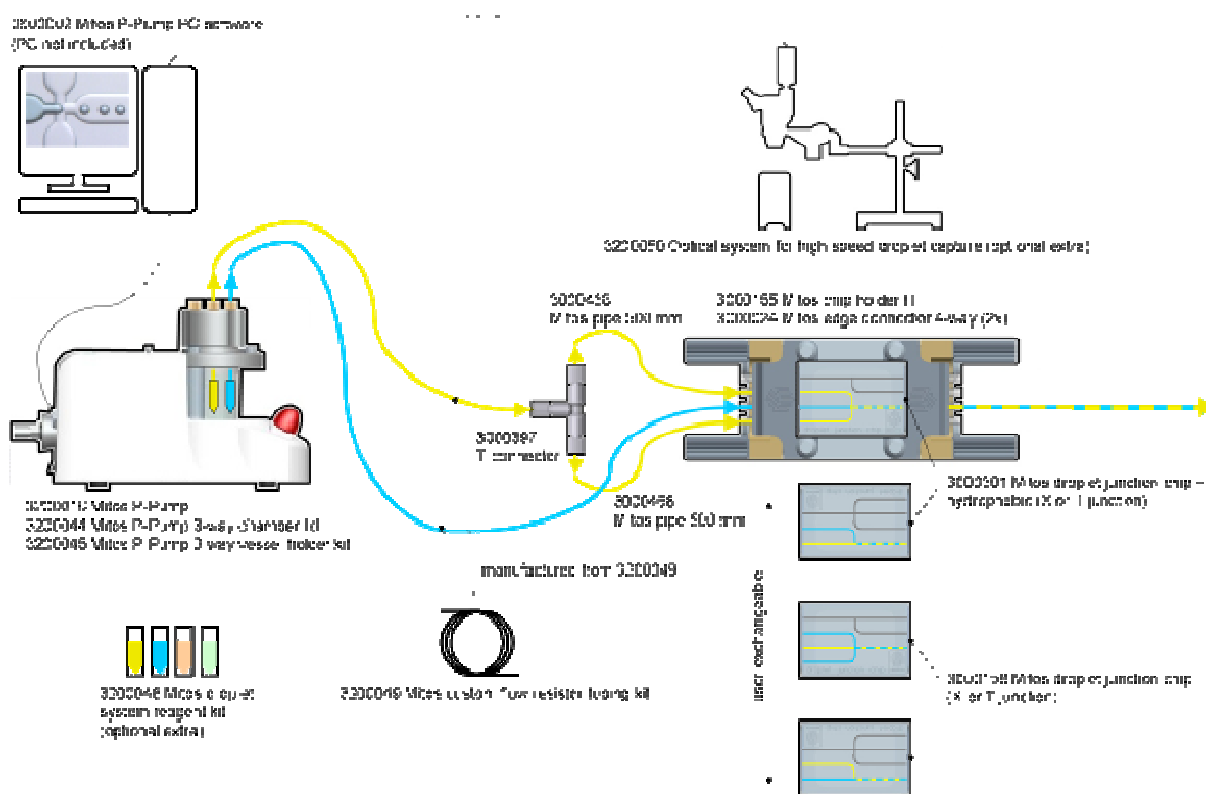
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Product Description

The Pressure-based Droplet Starter System is a basic toolkit for initial work in droplet microfluidics. It provides a complete solution containing all necessary pumps, connectors and chips enabling the immediate production of highly monodispersed droplets (aqueous or organic) from \varnothing 10 to 150 μ m.

Operating over a wide pressure range of 0 to 10bar, this system is extremely chemically resistant and its modular design makes it easily expandable for future application requirements.

Providing a pulseless and stable liquid flow, this cost-effective modular toolkit eliminates dead volume and sample waste to effectively reduce associated reagent costs. In addition, the ability to provide a quick liquid changeover significantly increases the throughput of any application. A lockable pressure chamber and an innovative 3-way chamber lid allow simultaneous pumping of up to three liquids, making it ideal for entry-level experimentation.



Pressure-based Droplet Starter System

Main Benefits and Applications

Benefits

- Highly monodispersed droplets ranging from \varnothing 10 to 150 μ m
- Pulseless and stable liquid flow
- Wide pressure range 0 - 10bar
- Cost effective solution
- Excellent chemical resistance
- Easily expandable

Applications

The Pressure-based Droplet Starter System is ideal for initial exploration of droplet microfluidics including:

- Initial droplet studies in academia and R&D labs;
- Evaluation of sample liquids for stable droplet production;
- Feasibility testing and development of concepts in droplet microfluidics;
- Ideal for experimentation requiring precise control of droplet volumes.

System Components

The Pressure-based Droplet Starter System is built around Dolomite's industry leading microfluidic pumps, connectors and chips:

- 1 x MitoS P-Pump with 3-way Accessories (Part No. 3200094)
- 1 x MitoS P-Pump 3-way Vessel Holder Kit (Part No. 3200045)
- 1 x Chip Interface H (Part No. 3000155)
- 2 x Linear Connector 4-way (Part No. 3000024)
- 2 x Droplet Junction Chips: Part No. 3000158 - hydrophilic chip with channel depth of 100 μ m, Part No. 3000301 - hydrophobic chip channel depth of 100 μ m
- MitoS P-Pump software suite (Part No. 3600002)
- Custom Flow Resistor Tubing Kit allowing users to make their own flow resistors of the required length (Part No. 3200049)
- Pressure-based Droplet Starter Kit containing a selection of tubing and fittings (Part No. 3200073)

The Mitos P-Pump is a 0 – 10bar pressure pump which offers pulseless liquid flow over a wide flow rate range and the capability to pump high viscosity liquids. The Linear Connector ensures that a quick and reliable seal is made every time, so downtime is minimised. This connection system is well suited to droplet microfluidics as the tube interfaces directly to micro-channels at the chip edge. The result is a straight fluidic path, eliminating the flow disruption seen with 90° bends.

All Dolomite droplet generation chips are double etched to give a near circular channel profile, which is important for the generation of consistent, spherical droplets. The chip fabrication process results in highly accurate channel dimensions with very smooth surfaces ($R_a = 5\text{nm}$). These glass chips have excellent optical transparency for clear imaging of droplets. Advanced hydrophobic coating treatments enable water-in-oil droplets to be generated instead of the oil-in-water droplets formed in the untreated chips.

Product Specifications

Technical information	Pressure-based Droplet Starter System
Droplet size range	10 – 150 μm
Monodispersity	Very good
Droplet production rate	>10,000 per second
Junction types	X-junction and T-junction (alternative geometries available on request)
Sample volume	2ml
Max pressure	10bar
Pump type	Pulseless pressure driven pump
Independent control of fluid channels?	No
Flow resistors required?	Yes
Speed of liquid refill	Fast
Speed of connections	Fast
Flexibility of experimentation	Limited

Accessories

There is a broad range of accessories available including:

- Droplet System Reagent Kit – Part No. 3200048
- High Speed Optical System – Part No. 3200050
- Mitos P-Pump Starter Kit – Part No. 3200033
- Mitos Flow Resistor Kit – Part No. 3200083
- Pneumatic Connector Kit – Part No. 3200034

The Pressure-based Droplet Starter System is part of Dolomite's Micro Droplet System range which also includes:

- The Syringe-based Droplet Starter System: ideal for initial concept work and experimentation towards the development of a high throughput droplet system;
- The Droplet Advanced System which benefits a wide range of development work in droplet microfluidics with potential applications in high throughput chemistry and biology.

Custom Options

Other chip configurations are available on request. If you would like to generate droplets of a different size, operate without surfactant or create Janus particles, Dolomite can design the junction geometry required. The range of Dolomite services available covers all aspects of the development process from characterization of liquids for droplet generation to the design of commercial instruments in the field of droplet microfluidics. Please contact Dolomite to discuss your application.



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