

Excellence in design and  
manufacture of innovative  
microfluidic solutions



dolomite

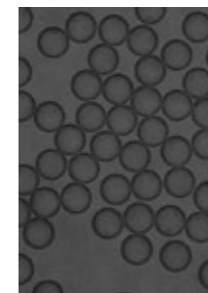
# Why Dolomite Microfluidics?

“For over a decade, we have been developing microfluidic technologies to enable the manipulation of fluids at micro- and nanoscale. Our technology assists users with reproducibility and the ability to scale-up, which are crucial for applications such as microencapsulation or droplet generation.”

Mark Gilligan, CEO



## Our innovative products offer a range of benefits:



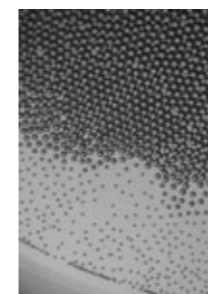
### High monodispersity

Microfluidic techniques offer extremely consistent size of droplets, particles or emulsions.



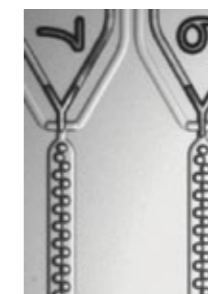
### Wide range of fluids and droplet types

Emulsions, particles, foams, gels, suspensions and sols can be made from aqueous, organic or fluorinated liquids, powders and gases.



### Rapid research & process optimization

Parameters such as flow rates, droplet size, temperatures, mixing parameters, surface properties and order of additions can be quickly varied.



### Straightforward scale-up to production

Conditions identified in the laboratory can be seamlessly scaled-up to a larger production, whilst maintaining product quality.

Dolomite Microfluidics was founded in 2005. Our experience in the microfluidics market demonstrates a thorough understanding of applications and industries. We use this knowledge to shape the future of microfluidics, and continuously push the boundaries to find new and better ways to solve scientific challenges.

# Applications

Microfluidic technology is being applied across a diverse and rapidly increasing range of fields. Dolomite provides robust products and systems for established applications, and partners with scientists and engineers to develop exciting new fields of use.



## Single emulsions

Highly monodisperse droplets, foams, gels, emulsions and suspensions ranging from 2  $\mu\text{m}$  to 500  $\mu\text{m}$ .

e.g. Emulsion-based cosmetic and pharmaceutical products



## Double emulsions

Droplets, foams, emulsions and suspensions consisting of two or more components, sized from 2  $\mu\text{m}$  to 500  $\mu\text{m}$ .

e.g. Flavor particles with a central core containing a payload, and a thin protective shell layer



## Multiple emulsions

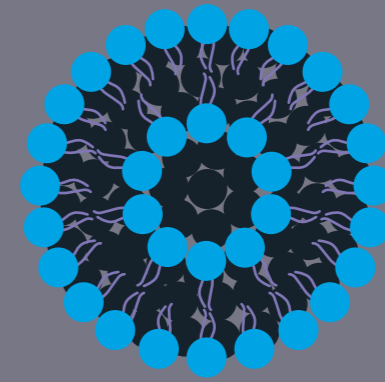
Complex emulsions and suspensions where both oil in water and water in oil emulsion exists simultaneously, size ranging from 2  $\mu\text{m}$  to 250  $\mu\text{m}$  in diameter.

e.g. Encapsulation of an aqueous soluble API in a polymer shell (PLGA)

## Polymer particle synthesis

Wide range of polymer particles with sizes ranging from 20 nm to 500  $\mu\text{m}$ .

Polymers include PLGA and PCL for API encapsulation, and a wide range of others including PS-DVB, PEG-DA, polyepoxides and more.

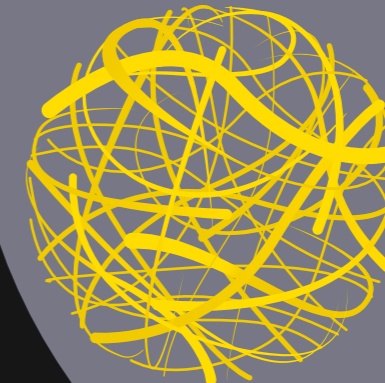


## Liposome synthesis

The liposome's layered structure forms a perfect protective shield for nutrients or API transportation, exploited to deliver these agents into the body and even into specific cells of the body.

## Oil & gas

For oil and gas measurement and characterization, such as filtration or optical measurements.

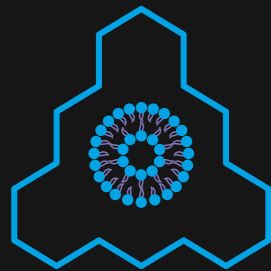


## Hydrogels

Monodisperse hydrogel particles in the range 2  $\mu\text{m}$  to 500  $\mu\text{m}$  diameter. Hydrogels include Agarose, Alginate, and Polyacrylamide.



Scale up seamlessly from laboratory optimization to production by using our Telos® multi-channel systems, which can deliver up to a tonne of emulsion per month.



SYSTEMS



COMPONENTS



SPECIALIST  
CHEMICALS

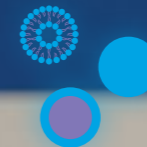
# Solutions

Dolomite provides various system solutions focused on specific applications such as droplet microfluidics or nanoparticle synthesis. These modular and flexible systems offer a cost-effective and scalable solution.



## Multiple functionalities

Solutions can be used independently, bundled up together to create a specific setup, or bespoke options can be purchased for existing system improvements.



## Diversification

Systems can be easily adapted for multiple applications. Switch between applications in minutes with no need for tools.



## High-throughput

Easy scale-up using our Telos® technology to produce up to a tonne of highly monodisperse droplets, emulsions, gels, or particles each month.



## Rapid research or process optimization

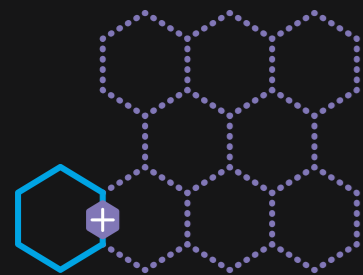
Parameters such as flow rate, temperature, mixing junction, surface property and order of addition can be quickly varied, and the effects analysed and quantified automatically.

# Webshop

We provide everything users may need when working with microfluidics. Our webshop is filled with chips, pumps, valves, sensors, connectors, chemicals and all other accessories needed to build both simple and complex systems. Develop your own solution or speak to an expert at Dolomite to help you get the most out of microfluidics for your application.



SIMPLE



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MICROSCOPES



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ACCESSORIES & CONSUMABLES



TELOS® COMPONENTS



SOFTWARE

# Technology highlights

## Microfluidic pumps



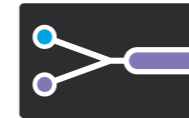
Dolomite's pressure pumps provide pulseless flow even at very low flow rates, which offer huge advantages over traditional syringe pumps, such as fast response time and increased user flexibility.

### Features and benefits:

- Precise pressure control, resolution: 1 mbar
- Excellent accuracy and response time, which enables quick and easy change of flow conditions
- Wide pressure range (0-10 bar) enables use with systems of high and low fluidic resistance
- Flexible solution – accommodates a wide range of fluid vessels (standard and non-standard)
- Integrates with Dolomite's flow rate sensors
- Excellent chemical compatibility
- Eliminates dead volume and sample waste



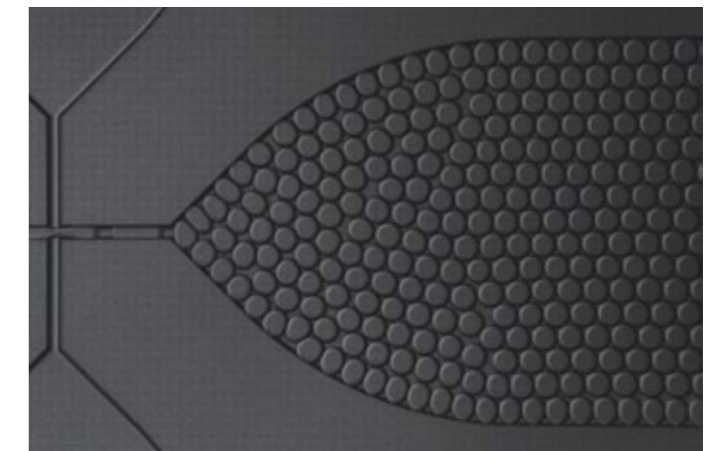
## Microfluidic chips



Fabricated to the highest quality standards in glass or quartz, our microfluidic chips are particularly suitable for applications where reusability, chemical compatibility, optical transparency and thermal characteristics are important, such as analysis and droplet generation.

Microfluidic chips can be customised in a number of ways including different material, surface coating, channel size or junction geometry.

Dolomite has world-class expertise in the design and manufacture of glass microfluidic chips, which are made using the wet-etching process to create highly consistent channels from 100 nm to 1 mm depth, with 5 nm surface roughness.



# Modular scale-up

## Telos® system

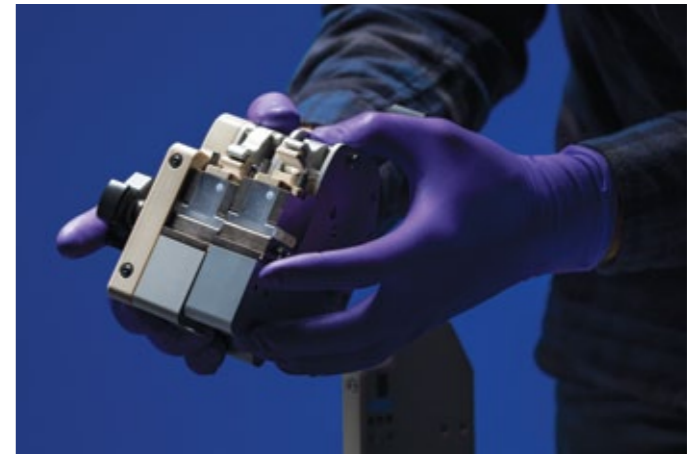
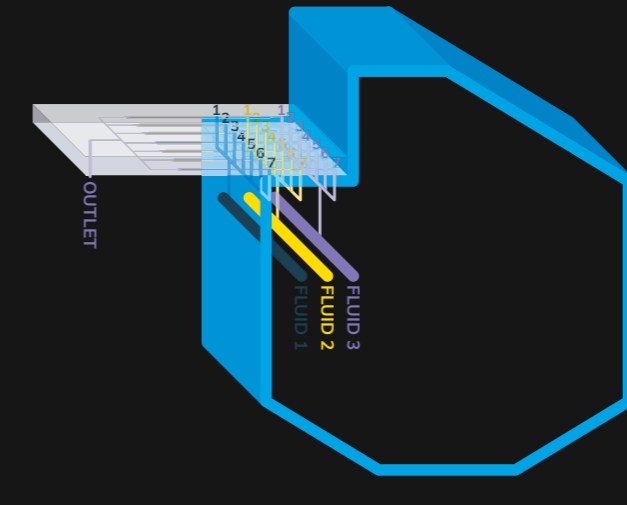


The Telos® system is a breakthrough product for scaling up microfluidic applications such as emulsion generation, micro-particle production, high-throughput mixing and microreactions.

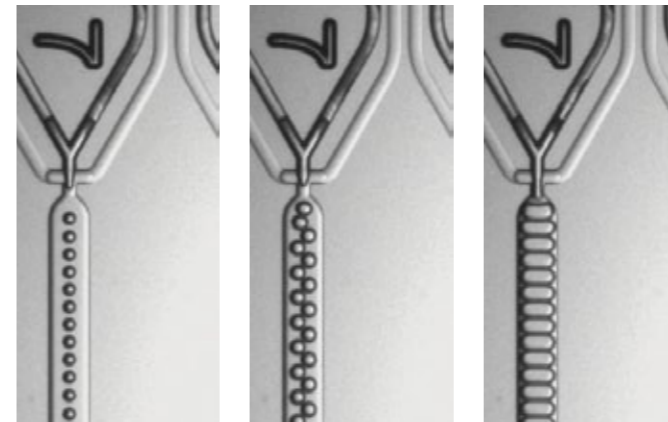
This modular, scalable, and highly flexible system removes the low-throughput limitation of individual microfluidic chips, enabling production rate of up to 100x the output of a single channel.



Each module holds a microfluidic chip typically with 7 junctions.



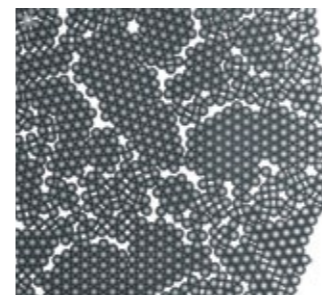
Up to 10 Telos® modules can be assembled in parallel, enabling a total of 70 parallel junctions to be run at once.



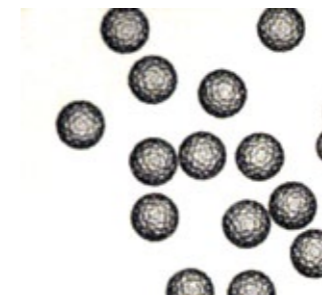
Small droplets

Medium droplets

Large droplets



Emulsions production



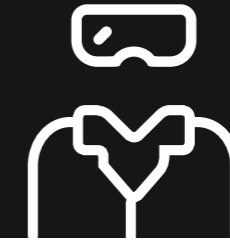
Particle production

up to  
**1 tonne**  
/ month

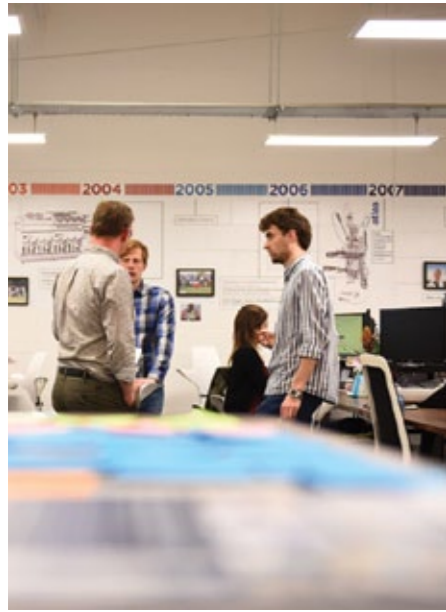
Telos® modules also have integrated valves providing excellent flow control during priming and operation and optional integrated filters on all input streams.

The Telos® system can be configured to allow collection of the output streams into a bulk fluid reservoir or into tubing to allow downstream process steps.

# About Dolomite Microfluidics



We employ over 100 world-class scientists, engineers, commercial and manufacturing experts



Advanced technologies, world-class microfabrication facilities, custom glass manufacture

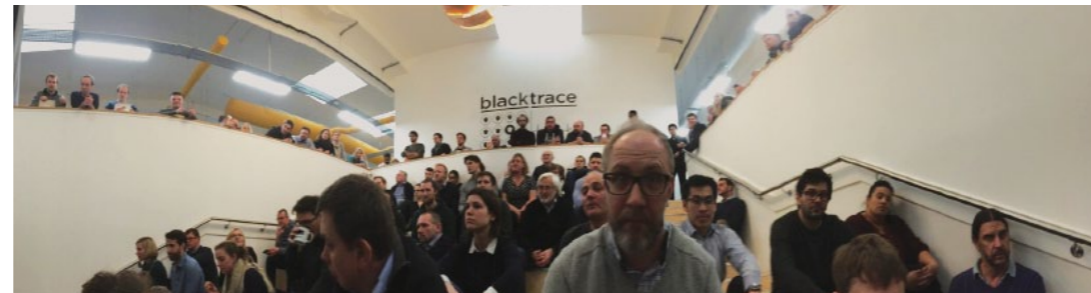
In-house design, development, manufacture and sales of hundreds of microfluidic systems and components



Global company with a Head Office based in United Kingdom



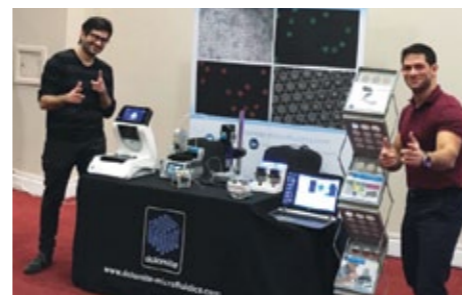
**100s**  
OF MICROFLUIDIC PRODUCTS



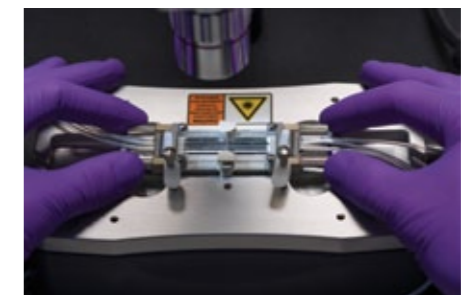
Cutting-edge facilities for creating, testing, and scientific verification of new technologies



**1000s**  
OF USERS



**100s**  
OF PUBLICATIONS





Microfluidic technology presents many challenges, so take advantage of our experience to help you get it right first time!

dolomite-microfluidics.com

## Get in touch

### email

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### Join us on



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