



custom

design and
microfabrication

chips

microfluidic chips in glass,
quartz and polymer



Innovators in microfluidic solutions

Why choose Dolomite for microfluidic chip design and fabrication?

Dolomite work with customers around the world to develop a versatile and complex variety of custom chips, available in exceptionally short lead times. Dolomite has extensive experience in materials processing and expertise in microfluidic design with its innovative team of design engineers.

Custom chip materials

- **Wide variety of materials used:** Dolomite's designs are formulated around the most appropriate material for the application, e.g. optical glass, borosilicate, etc.
- **Fused silica (quartz) chips:** Excellent thermal shock properties and ideal for high temperature and analytical applications, along with cuvette style manufacturing.
- **Polymer capabilities:** Proprietary techniques for low volume quantities/low tooling costs (as little as 10% of conventional costs in volumes of up to tens of thousands).

Processing capabilities

- **World leading thermal bonding process:** Low temperature bonding minimises thermal distortions enabling unrivalled chip complexity.
- **Grinding and polishing techniques:** Dolomite offer a wide range of substrate thicknesses from as thin as 100µm to >40mm thick.
- **Multi-layer chips:** Multiple layers can be fused to create complex geometries.
- **Excellent drilling and dicing techniques:** Vertical sidewalls of 100s µm to 10s mm dia are possible with no tooling costs.
- **Proprietary interconnect technology:** Innovative dicing techniques ensure incredibly precise 'edge connection'.
- **Wet etching of microchannels:** Superior optical quality of channels with etch depths of nm to mm deep in glass and borosilicate.

Other unique chip benefits

- **Cold and hot bonding techniques:** Ensures better thermal protection and enables higher pressure applications.
- **Extremely accurate alignment:** 5µm alignment accuracy.
- **Variety of functionalised surface coatings:** Hydrophobic and hydrophilic.
- **Variety of deposited coatings:** Chips can be sputtered with metals such as platinum, gold, copper, titanium, etc. to create a wide range of features, such as embedded RTDs, sensors, mirrors, electrodes, etc.
- **Unrivalled lead times:** Complex chips fabricated and delivered in as little as 4 weeks.

Custom chip examples

Below is a selection of recent examples of Dolomite's custom chip work:

- **Quartz capillary electrophoresis chip:** 160mm x 40mm.
- **1ml Chip:** 3 layers etched to 300µm deep per layer.
- **Nozzle spray device:** Developed with integrated platinum electrodes.
- **Silica chips:** Etched on both layers, aligned <5µm, one layer polished to 150µm, designed and delivered in just 4 weeks.
- **Gas chromatography chip (4" x 4" footprint):** Etched on both layers, one layer polished to 250µm, with over 7 metres of channel network.
- **Cell sorting chip:** Designed and fabricated with over 2 million integrated electrode features.
- **Polymer chips:** Cost-effective, functional prototype developed in tens for healthcare application.

Applications

Dolomite works with partners in a wide range of application areas including:

- Clinical diagnostics
- DNA analysis
- Academia
- Genomics
- Point of care systems
- Drug screening
- Drug delivery
- Protein crystallization
- Healthcare
- Environmental testing
- Biotech
- And many more...

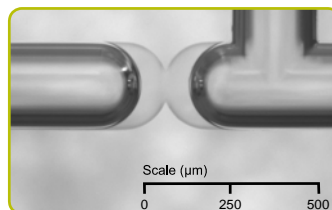
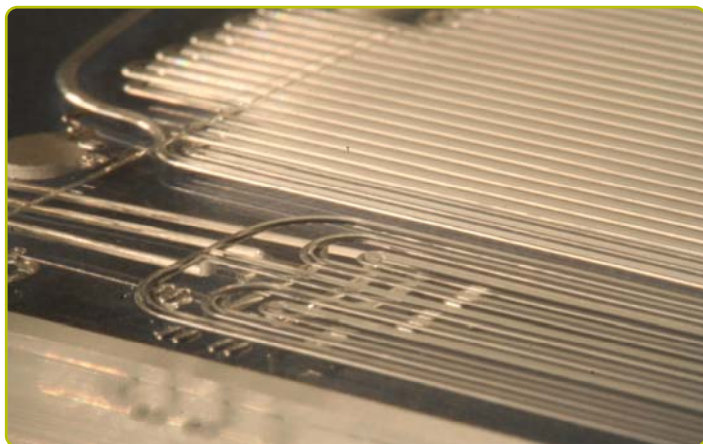
Custom chip design service

Dolomite's in-house team of design engineers work with you to understand your application, using 3D CAD and flow modelling tools to confirm the design before fabrication.

Standard products

As well as Dolomite's custom chip and fabrication capabilities, we also offer a Mitos range of standard microfluidic chips, designed to help evaluate microfluidic concepts quickly and easily.

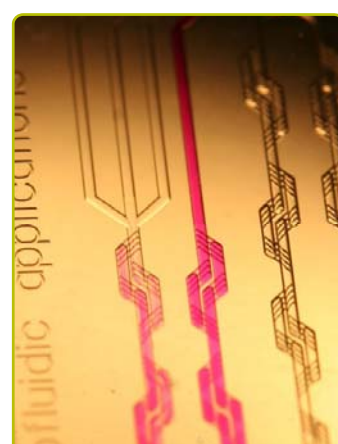
Contact Dolomite for a consultation with one of our engineers...



Left: 1ml microreactor chip with 300µm wet etched depth

Above: Flow restrictor chip, etched on both layers. Channel-to-channel alignment accuracy <5µm

Right: A micromixer chip for millisecond mixing of two fluids



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