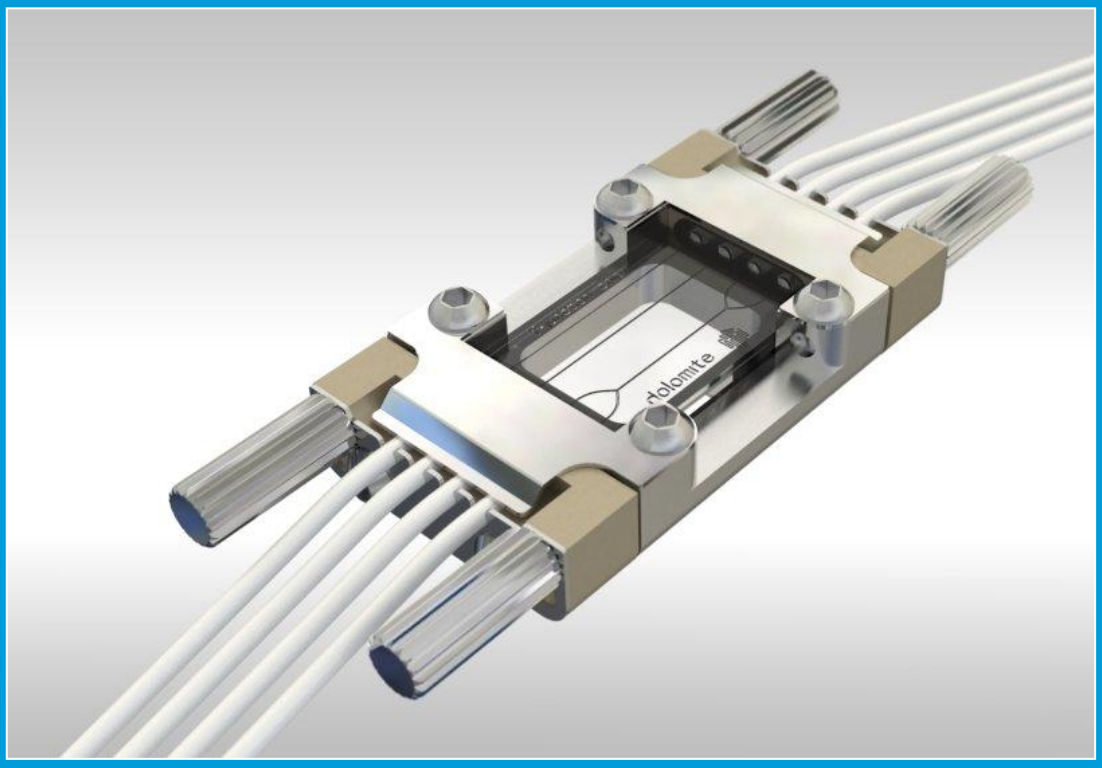

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Y-JUNCTION CHIP

USER INSTRUCTIONS

Contents

1. Getting started

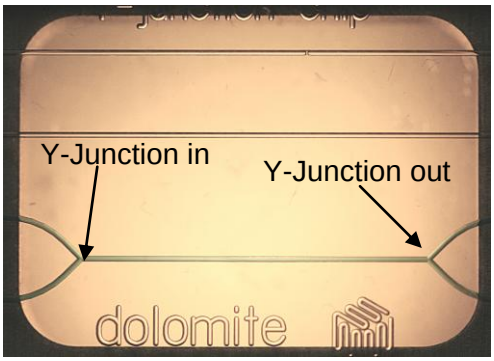
Please refer to the user guide: Chip Interface H (Part No. 3000155) for a step-by-step guide to setting up the chip and interface.

Note: To avoid blockages in the chip:

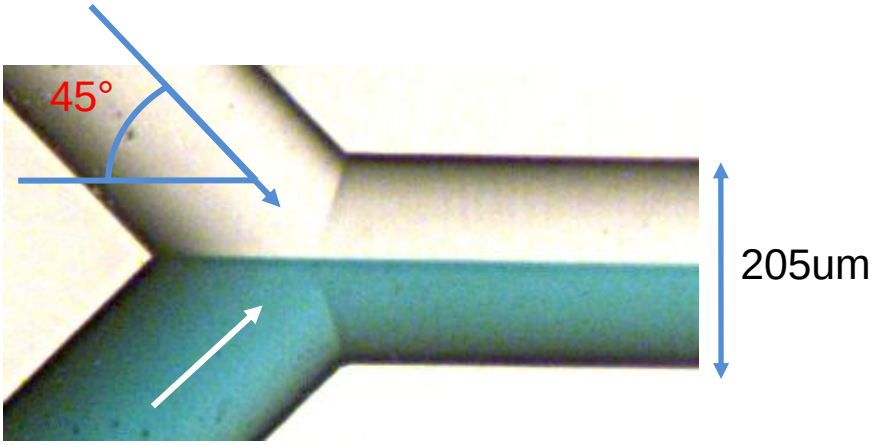
- If possible filter all liquids that will be used
- Purge the pump, tubing and connector prior to connection to remove any debris
- Flush chip with acetone and water after use

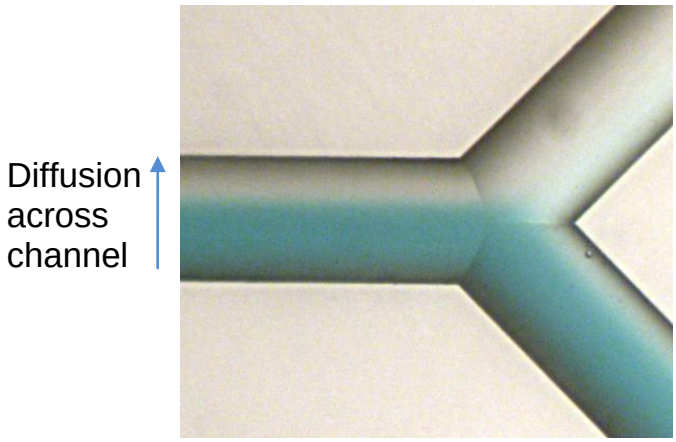
2. Chip usage

The Y-Junction chip (Part No. 3200008) has four inlets and four outlets. The top pair of inlet/outlets are through-channels and the bottom feed into the y-junction area.



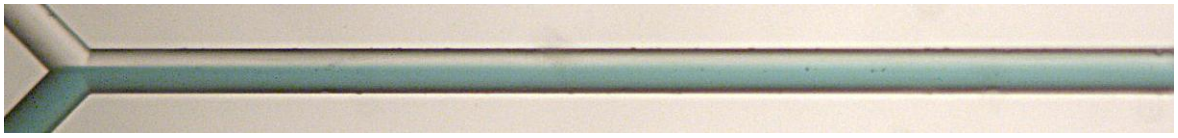
Below are photos of the inlet and outlet flow into the y-junction area:



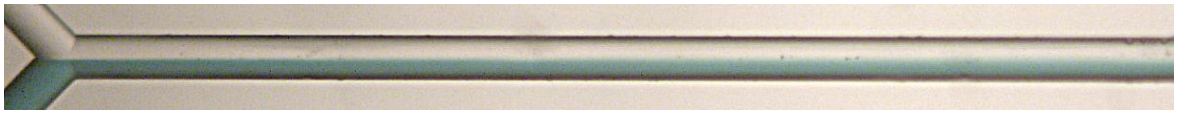


Inside the parallel flow area the different diffusion rates can be accurately controlled. Below are some photos of aqueous-aqueous diffusive flow over a range of flow rates (using syringe pump).

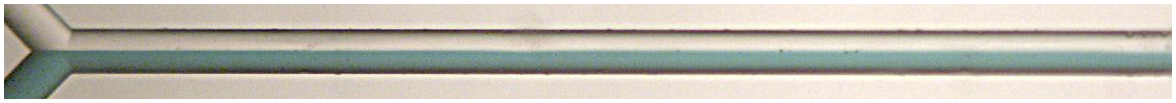
0.5ul/min:



1.0ul/min:



5.0ul/min:



3. Set up advice

The chip and system should flushed with fluid to clear any bubbles before experimentation begins. For the same reason, it is advised that the chip is used with a pump which does not introduce any bubbles into the system.

4. Blockages and cleaning the chip

The best way to avoid blockages is to filter all fluids before pumping them into the chip. The narrowest junctions are 100 x 205µm and filters should be chosen accordingly.

If a blockage does occur there are a number of methods for removing them:

- Flush the system with fluid at a high flow rate >100µl/min
- Strategically pump fluids down different channels to force it out.
- Place the chip in a sonication bath for 10 minutes to dislodge the blockage, and then flush the chip with a fluid. Repeat sonication for a longer time period if necessary.
- If available, connect the chip to a pressurised gas supply pump high pressure gas though the chip. It is recommended that pressures of 5-10 bar are used. Typically filtered air, nitrogen or Argon is used.

REMEMBER: Whether pumping a chemical to dissolve the blockage or a gas to force it out, exercise all necessary precautions.

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