Degassing a Microfluidic System

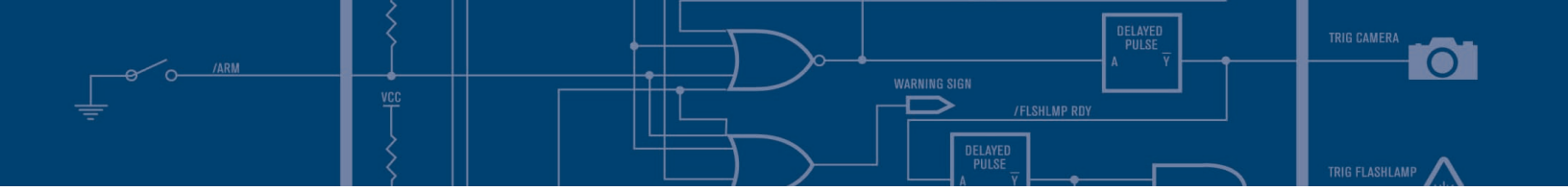
Dissolved gas and trapped air bubbles in a microfluidic system can affect repeatability and stability. Degassing a fluid system is easy using a LabSmith Breadboard Reservoir or Chip Reservoir.

Use a Breadboard Reservoir

You can use a breadboard reservoir (BBRES-C360 or BBRES-T116), cap, and CapTite connections to degas your system as follows:

1. Make sure the circuit is closed. Plug any open ports.
2. Fill the reservoir at least half full with the desired fluid.
3. Secure the cap on the reservoir using an o-ring seal.
4. Connect a manual Luer-lock syringe to the reservoir cap with a short piece of tubing
5. Use the syringe to pull a vacuum in the fluid circuit.

The image below shows a circuit being degassed with a syringe and breadboard reservoir as described above.



Use a Chip Reservoir

Instead of a breadboard reservoir you can also use a chip reservoir (C360-405R) for degassing:

1. Mount a bonded port connector to a microfluidic chip.
2. Connect a chip reservoir to the bonded port connector.
3. Ensure that all open ports on the chip are plugged.
4. Fill the reservoir at least half-full with the desired fluid.
5. Connect a manual Luer-tip syringe to the chip reservoir.
6. Use the syringe to pull a vacuum.

Degassing Tips

- Sonicate fluid prior to introducing it into your system or reservoir to remove most of the dissolved gasses.
- Degas the circuit with syringes in the dispensed position to make it easier to remove air bubbles.
- A ~10 ml syringe is a good size for degassing a circuit; however, several iterations may be necessary to remove all trapped gas.
- Put a small amount of fluid in the manual syringe so you can observe when the fluid degassing is complete (when you no longer see bubbles rising into the fluid).
- If you continue to observe bubbles in the fluid look for a leak or a blocked path in your circuit.
- If leaks are suspected, try using the manual syringe in the same setup to pressurize the system to see where fluid is leaking. See the table below for a list of typical problem areas.

Problem	Solution
Incorrectly assembled one-piece fitting	Tubing must extend past the end of the one-piece fitting to properly seal
Incorrectly cut tubing	Clean straight cut required for leak-free installation
Pinched tubing	Cut PEEK tubing with a sharp blade to minimize risk of pinching ends, look for kinks along the tubing
Blocked port or valve	Always flush components (especially valves) after use if working with particles or condensing solutions If using fused-silica tubing, incorrectly cut ends can cause glass particles to break off and block ports
Broken o-ring on reservoir cap	Check to ensure the o-ring isn't pinched or broken

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