Environmental Controls

Temperature Control

The Zeiss Elyra microscope (room 1.723) is generally held **at 27 °C** (setting at **28.5 °C for stability)**, even when everything is shut down. This allows the system to run more stable in terms of drift and lattice pattern rotation. It also minimizes the time needed for stabilization when heating up to 37°C for live cell imaging.

The temperature is controlled by a separate unit which is located behind the system on a small table and should remain switched **ON** all the time. To change the temperature from the standard temperature usually used for the microscope, change the setting by pressing **SET** and choosing from one of the given temperatures.

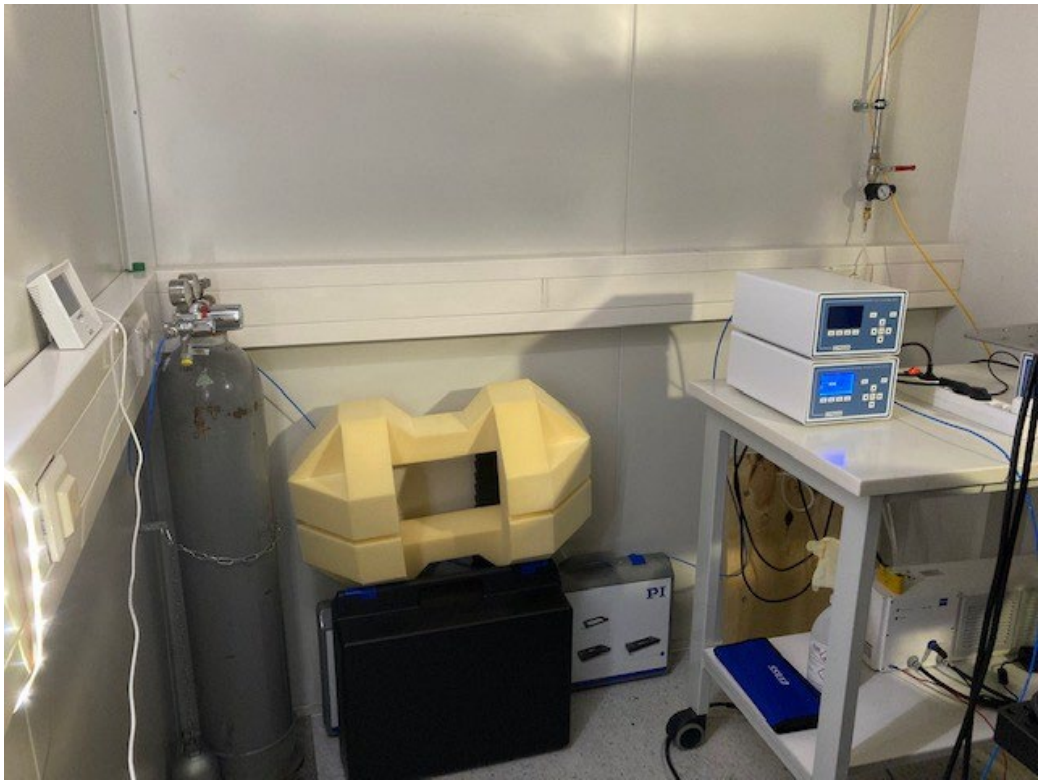
You can also choose a different temperature by using the arrows to the right, to set what you need.

Heat up time to 37°C is about 2 hours if you need to use the system for Lattice SIM imaging to allow for a stable pattern movement, but 30 minutes will be sufficient if you want to use it for TIRF imaging. 2 hours is the **minimum time recommended** by Zeiss for SIM and this time will be greyed out in the PPMS booking calendar when booking for a session at 37°C. Please keep this in mind when planning your experiment and booking the system.

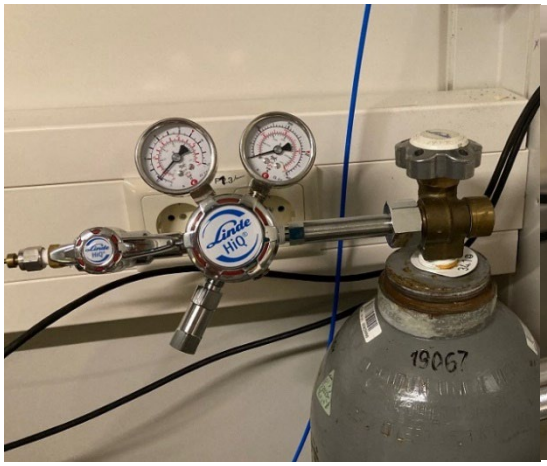
Please make sure you return the settings to 28.5°C at the end of a session, unless the next user has also booked for 37°C (should be checked in the PPMS booking system).

CO_2 supply

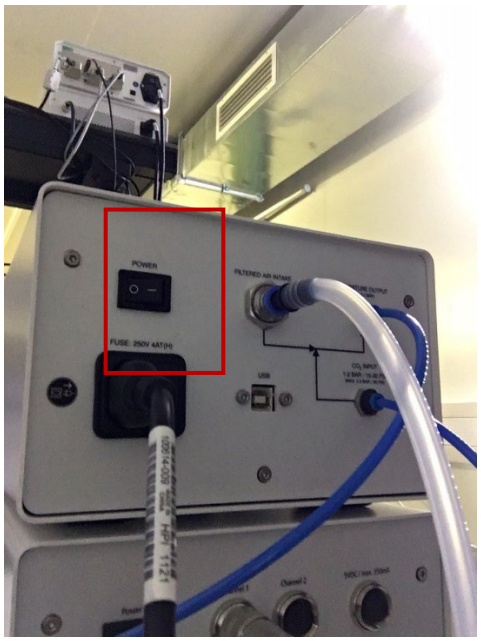
The CO_2 flask is located in the left corner behind the microscope.



Remember: you need to open the flask at the main valve (bottom right image) **and more important at the end of a session CLOSE again** to use CO_2 at the microscope. Do not change the other valves on the manometer.



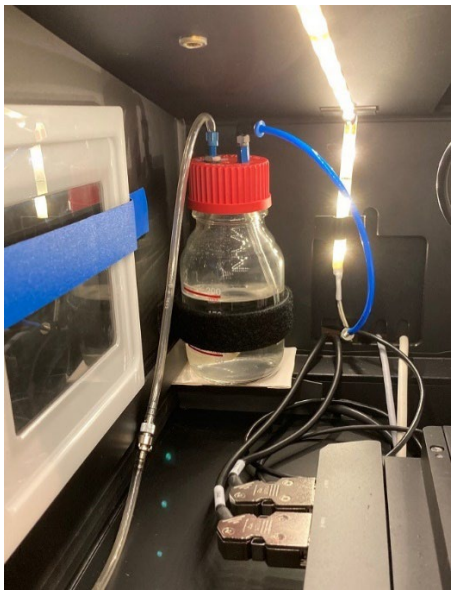
The CO_2 controller is on the table, and sits on top of the temperature controller. To start using it you need to locate the On/Off switch at the back first and switch to On. The actual set point is 5% CO_2 (can be changed if required). To activate the gas flow, use the On/Off button at the front (check the humidifier flask in the incubation chamber of the microscope for bubbles).



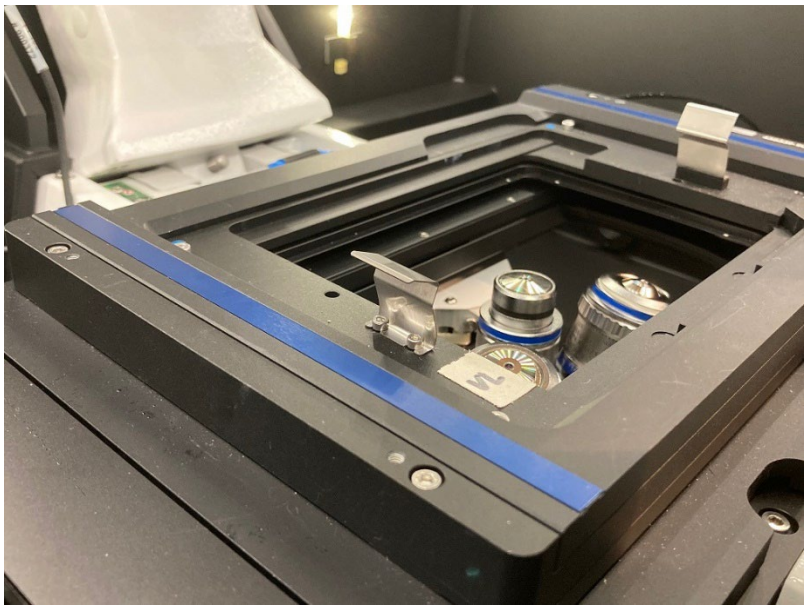
When finished with your session you need to shut off the CO_2 controller first at the front control and second at the back again. Do not forget to close the main valve at the flask.

Set up at the microscope

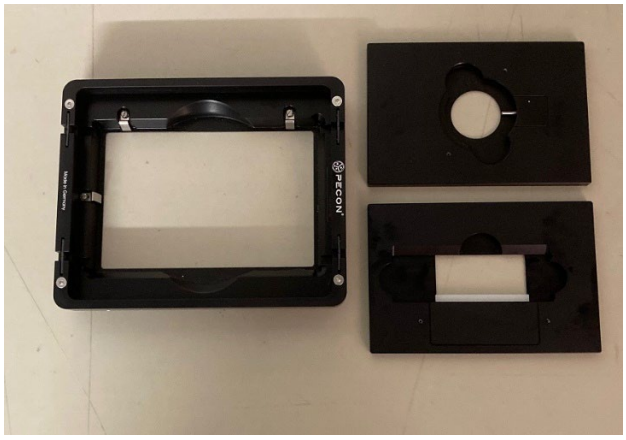
Inside the microscope there is a humidifier flask at the left side of the incubator. When CO_2 supply is on, you should see bubbles in the flask. The lid for the live cell imaging chamber can also been seen in the image, it is held up (and out of the way) with the help of a Velcro strip (blue).



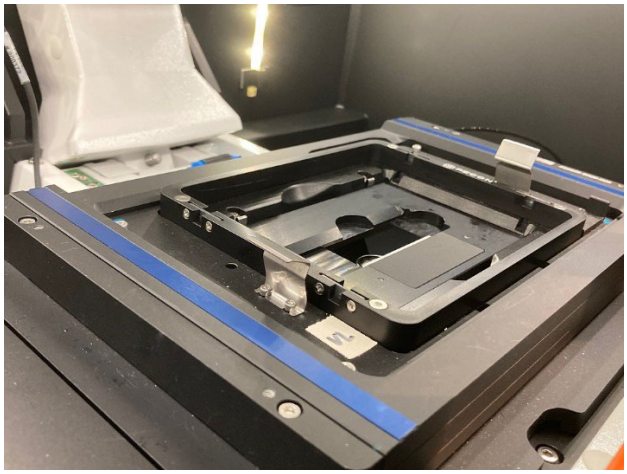
The Piezo controlled stage holder for the live cell imaging chamber looks as shown in the image below. If you find a different holder on the system when you come to start the heating up process (see section on Temperature Control) please get in touch with the facility team: we will show you how to swap the insert out.



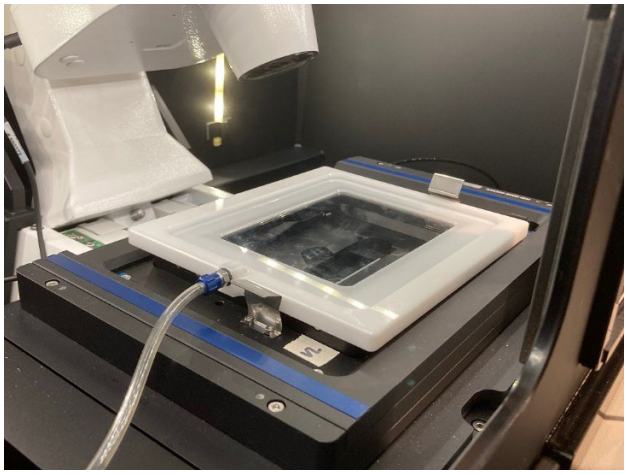
The insert for this Piezo controlled stage holder requires some assembly as it actually consist of two parts: one labeled Pecon and an additional insert. The additional insert allows you to adapt the chamber for your sample container. We can accommodate slides and Petri-dishes.



The final assembly for slide imaging is shown below. **Make sure to have the the objective in LOAD position when assembling the stage**. It is usually easier to put the smaller insert into the PECON frame before installing this on the Piezo controlled stage holder.



As a final step you need to attach the lid for the CO_2 supply to the stage as shown in the image below.



Again: Do not forget to reset everything to start conditions at the end of your session.