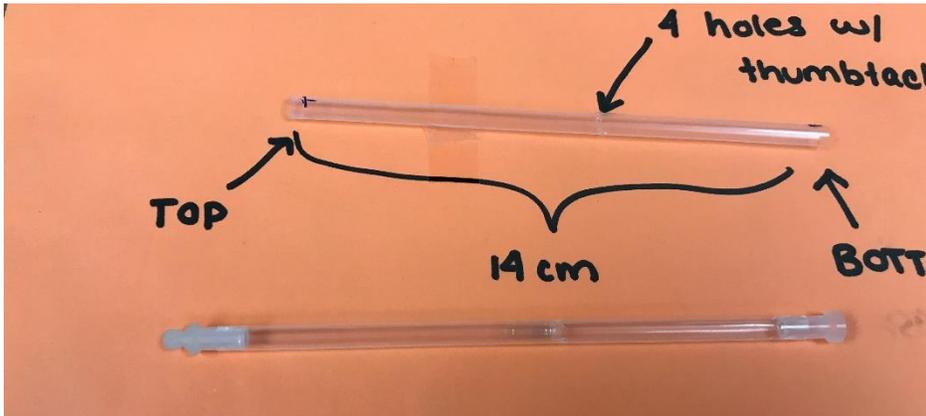


# SQUID Guide

20180213 lzhu

1. Tare the balance with the capsule (wear gloves, and keep the balance clean!!). Then put the sample in the capsule and get an accurate weight. Put the capsule+sample into the straw. You should use gloves to prevent contamination. Put both top plug and bottom plug on the ends of straw. Make sure they are tight and don't block the tiny air flow holes on them. Do not bend or crease either the capsule or the straw; replace them if you do. Screw the straw to the sample rod.



2. Make sure **UP&DOWN Arrow buttons** on sample chamber are both solid green.

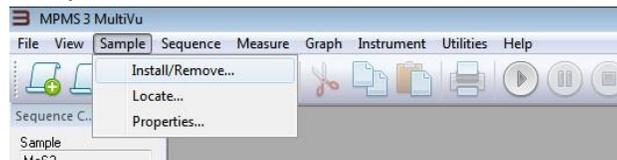


**UP&DOWN Arrow buttons**

Check the status bar on bottom of MPMS3 MultiVu software and make sure temperature is at 300K and magnetic field is at 0; the sample chamber should be showing “purged” status.

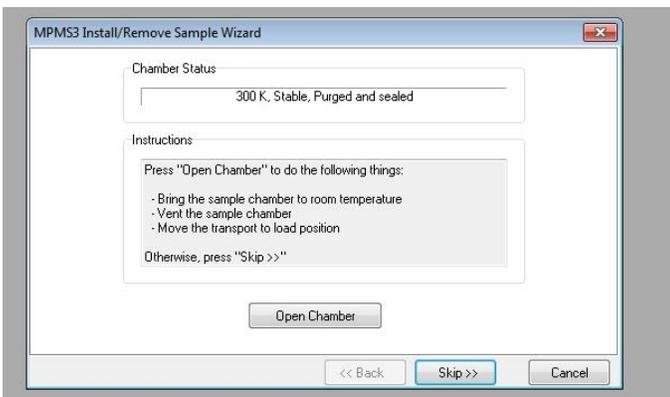


3. Choose from the Menu bar on top of MPMS3 MultiVu software:

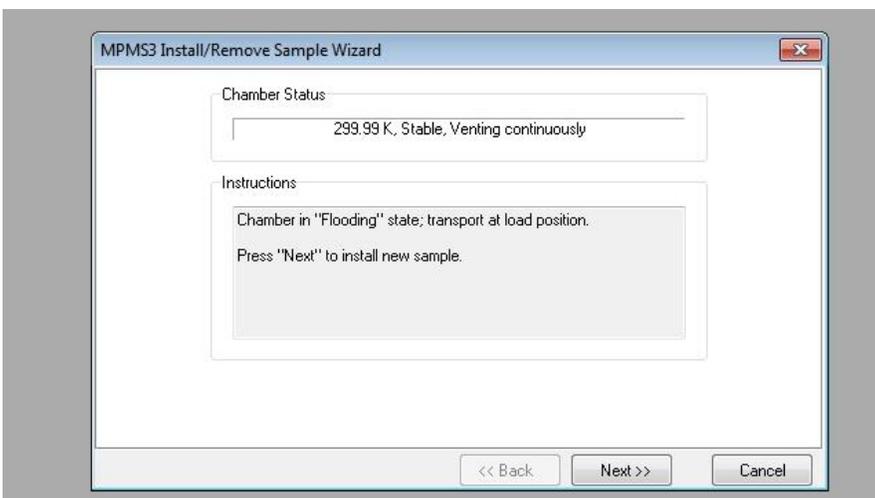


**Sample->Install/Remove...**

A Wizard will show up as follow:



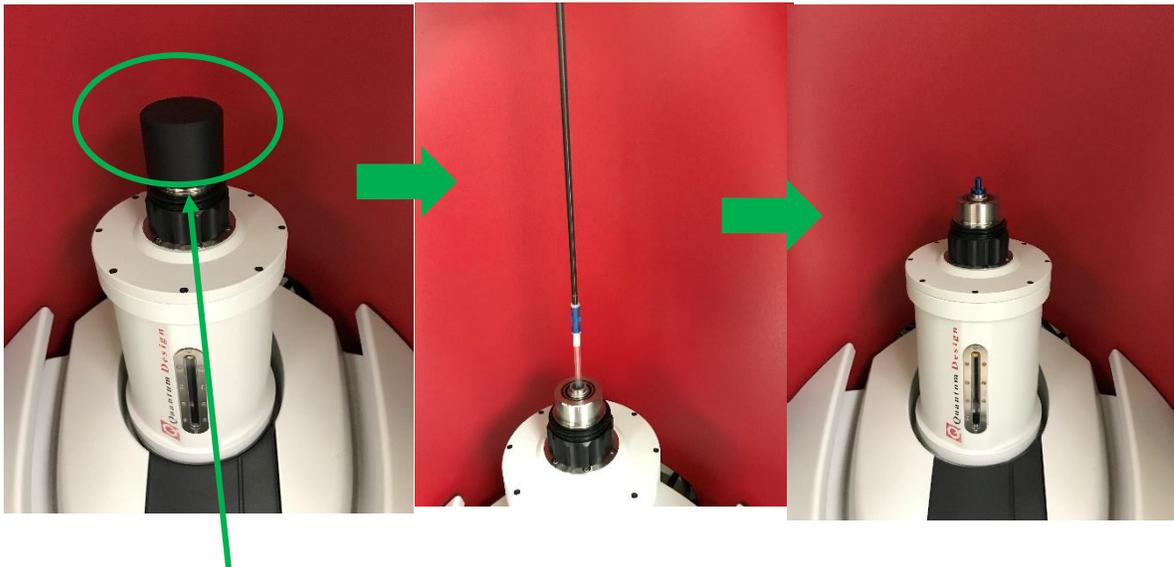
Click **“Open Chamber”**, the chamber will be vented continuously by ultrapure helium gas (so don’t leave this open too long!).



You will see **UP&DOWN Arrow buttons** on the sample chamber become yellow and flashing.

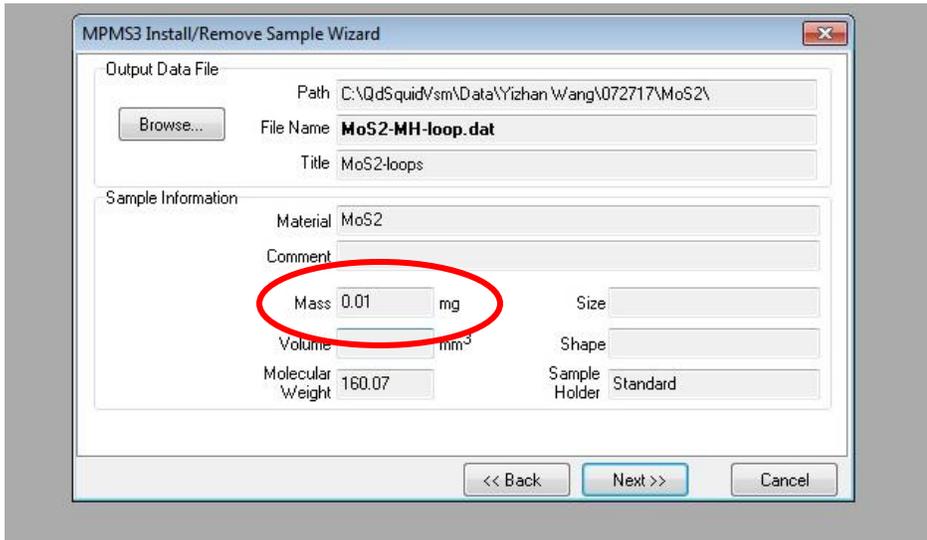


4. Open the black Cap and insert your sample rod **straight** into sample chamber. Don't touch the straw part anymore: keep it clean! You can touch the black part of sample rod. The top of sample rod will be attracted by the little magnet component on top of the sample chamber.



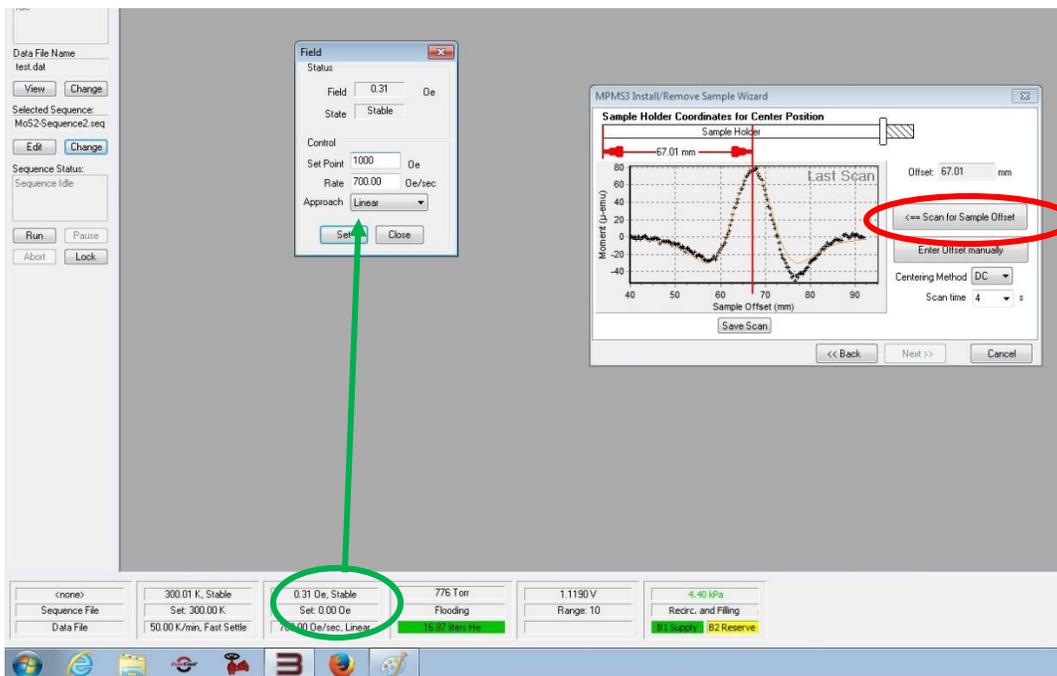
5. Put the **black CAP** back and make sure it is **sealed evenly** on top of the **sample chamber**. Usually the cap is just sitting on top of the sample chamber. You can try to turn the cap to check the seal.

- Go back to the software and click **“Next”** in the Wizard. You will need to fill in the sample and data information:



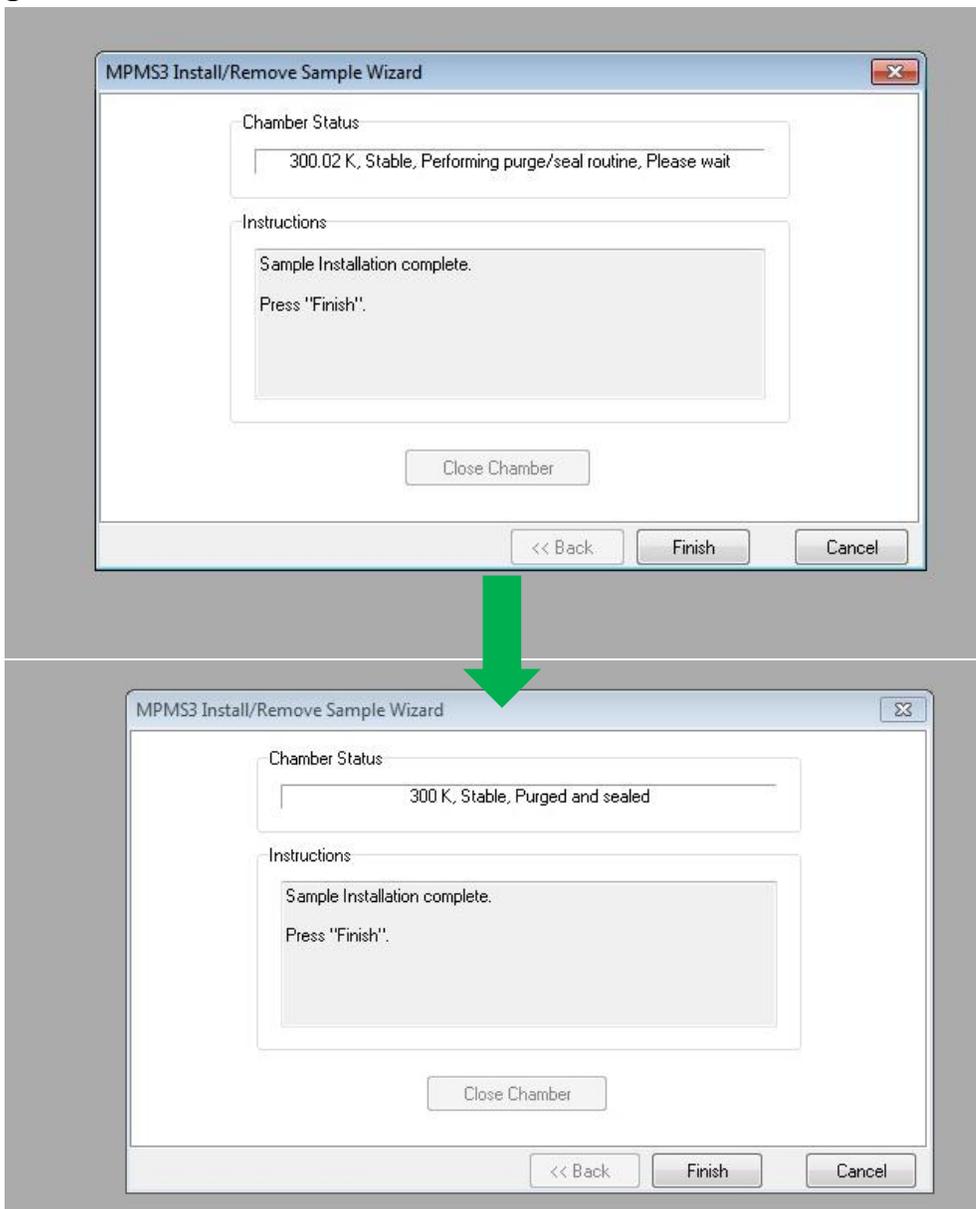
Here **“Mass”** is the most important one, being the weight from step 1.

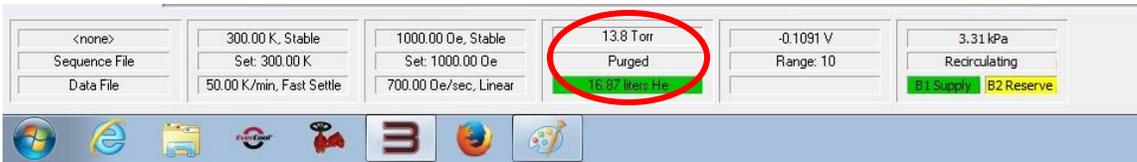
- Click **“Next”** and you will see a sample offset screen. Double click the **“magnetic field”** status bar (green circled) at the bottom of the software and set the field to **1000 Oe** (Oe is same as gauss). Then click **“Scan for Sample Offset”** button (Red circled). If you don't set the field first, the software will remind you after you click **“Scan for Sample Offset”** button.



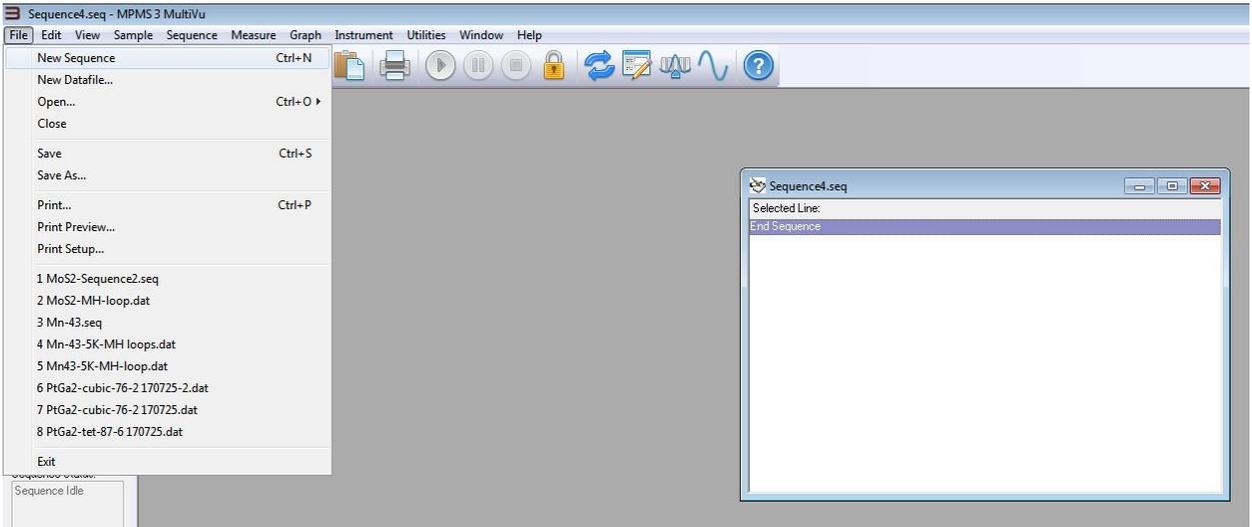
The DC Scan will take 30s to finish and will tell you the location of your sample. Click **“OK”** to confirm the location. Note the offset value.

8. Click **“Next”** and to go to the last step of the Wizard. **Make sure the Black Cap is sealed evenly on top of the sample chamber.** Click **“Close Chamber”** to start the purge/seal routine. This takes a few minutes to finish and you will hear loud pump noises from the SQUID. When the chamber is purged, you will see the status bar of the sample chamber showing **“Purged”** and the **UP&DOWN Arrow buttons** on the sample chamber both going solid green. Then click **“Finish”**.

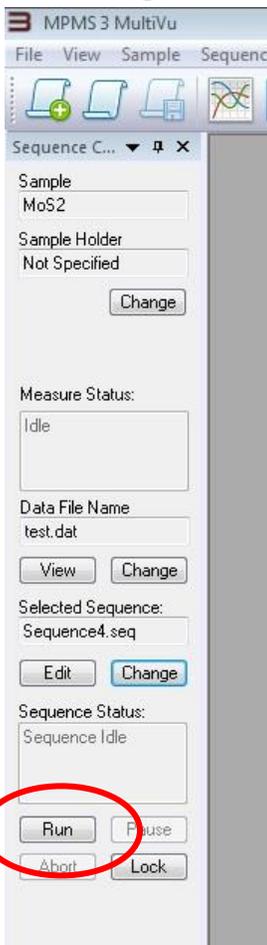




9. Choose File → New Sequence to create a new experiment sequence.



On the right of software, you will see the sequence options:

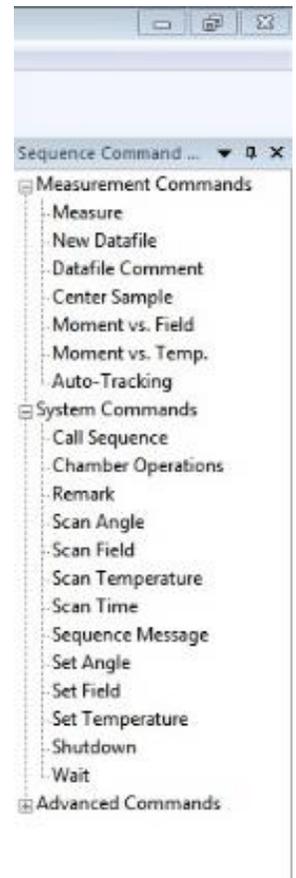


You can double click sequence commands to add them into your own sequence.

Make sure you save your sequence.

To start your sequence, click “Run” on the left side of software.

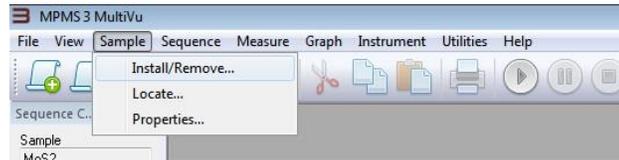
**UP&DOWN Arrow buttons** on sample chamber are both **green flashing** when the sequence is running.



10. After your sequence is done, **UP&DOWN Arrow buttons on sample chamber both become solid green again.**

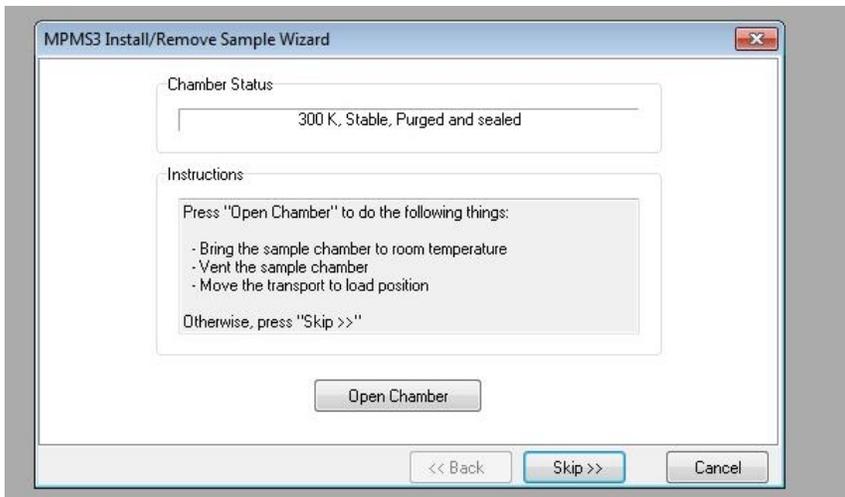
**To remove your sample from the SQUID:**

Choose from the Menu bar on top of MPMS3 MultiVu software:

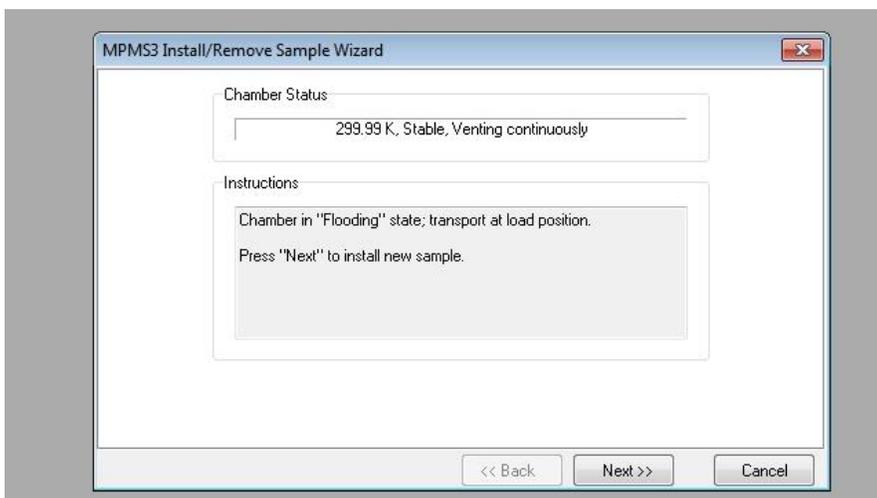


**Sample->Install/Remove...**

A Wizard will show up as follows:



Click “Open Chamber”, the chamber will be vented continuously by ultrapure helium gas (so don’t leave open too long!).



You will see **UP&DOWN Arrow buttons** on sample chamber become yellow and flashing. Open the black Cap and **gently** pull the sample rod **straight** out from the sample chamber. You will feel the some magnetic resistance from the top of the sample rod (blue part).



**10a.** If you have another sample to run, insert the other sample rod with your sample now. Then go to step 4 for similar steps.

**10b.** If you are done with your experiment, put the **black CAP** back and make sure **it is sealed (sitting) evenly on top of sample chamber.**

**Important Notes:** There is currently a software bug. Please wait at least **2 minutes** before you press "Down" Arrow button. Press "**Down**" Arrow button on sample chamber.



**DOWN Arrow button**

The chamber starts the purge/seal routine. This takes a few minutes to finish and you will hear loud pump noise from the SQUID. When the chamber is purged, you will see the status bar of the sample chamber showing “Purged” and the **UP&DOWN Arrow buttons** on the sample chamber both turn solid green.



11. Write down your usage log in the excel file (**SQUID user log sheet**) on the Desktop. Clean the sample preparation table.