

# Laserpower Measurement Tutorial

## Instrument & measuring mode

- Use Powermeter PT 9610
- **Primary switch on** is at the top side of device (On/Off-slider)  
→ After use you always to switch off the primary switch in order to avoid a shift in instruments precision!
- **Secondary switch on** at the bottom of control panel (On/Off-pushbuttons)
- Measure in RMS L Mode X
- Set mode by using buttons: **RMS** and **HF/LF/WB**
- List the upper value in the spreadsheet
- The measuring field on the detector head is the white spot, try to center the beam in it

## General

Always use the same 10x objective (Olympus) or the 10x/0.3 (Zeiss) for measurement. Lasers should be switched on at least 1 hour before measuring to warm up. Set the argon laser emission to approx. 30% for warming up. For measuring boost emission up to 100% (especially important for the argon laser).

Adjust the detector head with a weak laserline (like 458nm) with approx. 30-50% emission. The measuring field is the white spot on the head. Don't forget to switch the different wavelengths on power meter, too (arrow keys). **Avoid outside light sources** because they will falsify the measurements. Record the values when they are stable.

Measurements are to list in the spreadsheet of the particular microscope.  
URL:

[docs.google.com](https://docs.google.com)

Login: [lmf@mpi-cbg.de](mailto:lmf@mpi-cbg.de)  
PW: backfocalplane

## Measurements at Zeiss LSM UV,Meta,405/594, DuoScan

### 1 hour before measurement

- Start system via switching on remote control and computer according to the start routine

**NOTE:** on **UV** the Water cooling unit first

- start **Zeiss Confocal Software** and click **Start Expert Mode** → take care that Scan New Image is clicked
- choose **Laser** and turn on the Laserslines

**NOTE:** Argon Laser should be in Stand by Mode

### Microscope settings - **Meta**

- Pull out the slides of the scan-visual-camera-switch on right hand side of microscope

### Detector head

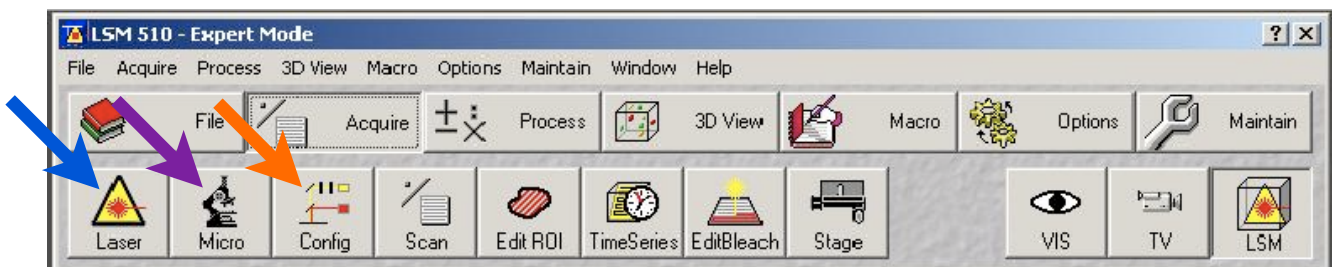
- Place detector head with measuring field to the objectiv on slide holder
- While maximizing first laser emission (later in procedure) center the beam in scan field
- Therefore use a low wavelength with approx 50% emission

### Directly before measurement

- in Laser menu turn argon emission up to a tube current of ~ 8A
- if warning apperas, click ok

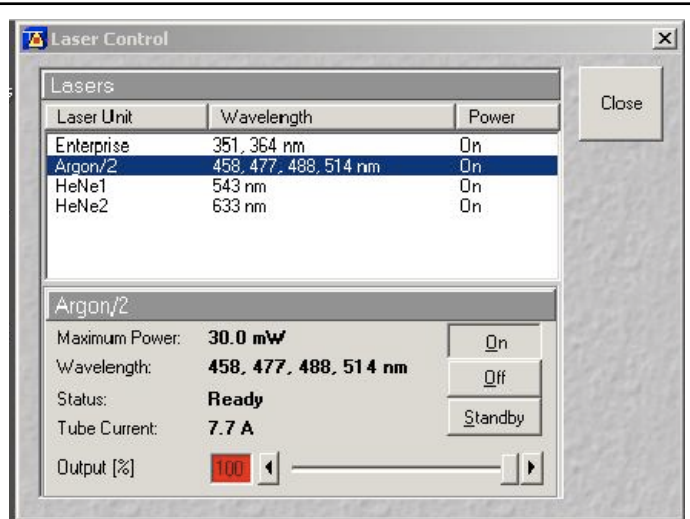
### Software settings

#### **control the software settings**



## Laser

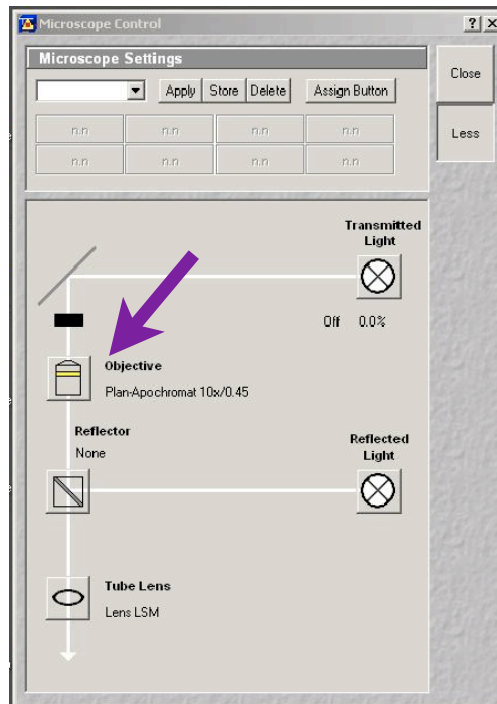
- switch from standby to on
- increase argon laser output, ntl tube current shows 8 A (or max.)



## Micro

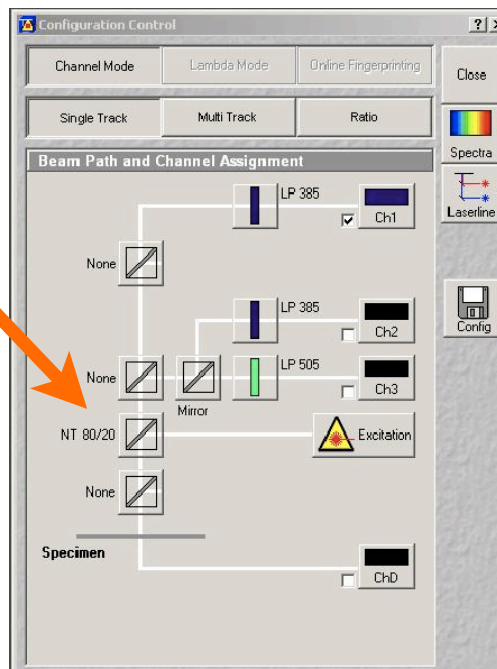
- check that the right objective is chosen

→ use **Plan-Apochromat 10x/0.45** (only software)

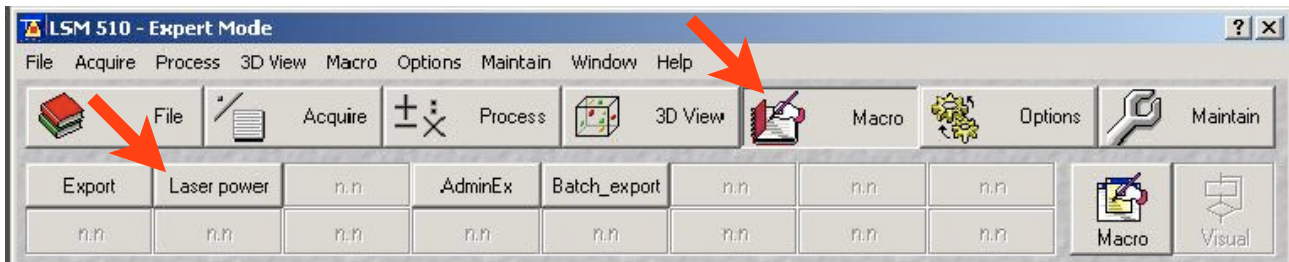


## Config

- set the main beamsplitter to **NT 80/20**



## start laserpower measurement



- choose Macro in task-menu
- click on the LPM-Macro

**NOTE:** the name of the lpm macro vary on the different systems

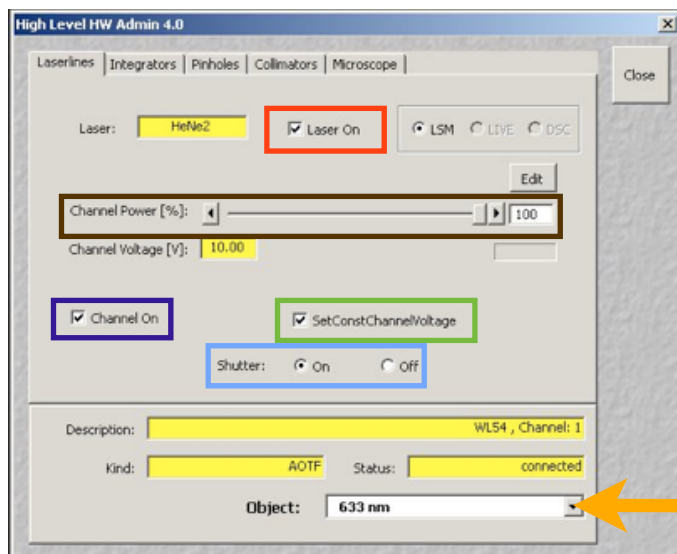
- **UV:** Laser Power
- **405/594:** HW Admin Ex
- **Meta:** Laser Power
- **DuoScan:** HW Admin Ex
- Passwort: service

measure Laser Power on **UV, Meta** and **405/594**

- make sure that the **laser is on**

1. choose **wavelength**
2. check **SetConstChannelVoltage**
3. check **Channel On**
4. set **Channel Power** to **100%**
5. switch **Shutter** from off to **on**

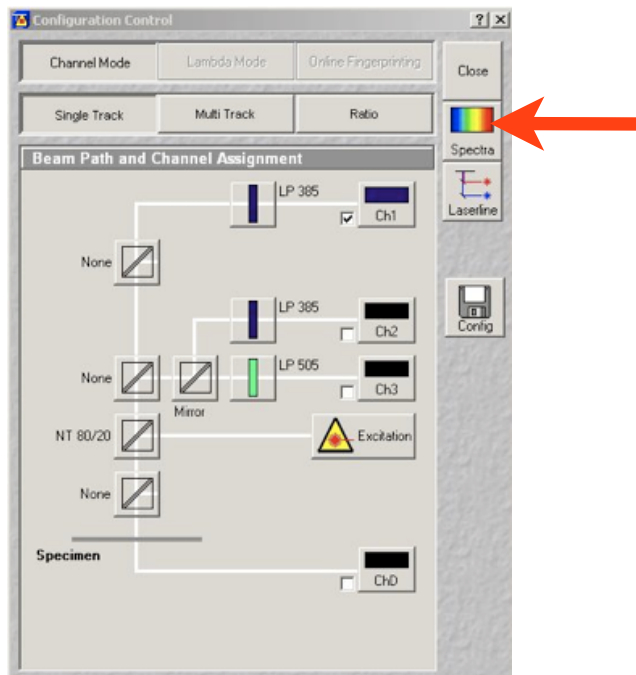
to measure the next wavelength, switch off laser emission while going from step 5. to 1.  
→ proceed also if you want to leave



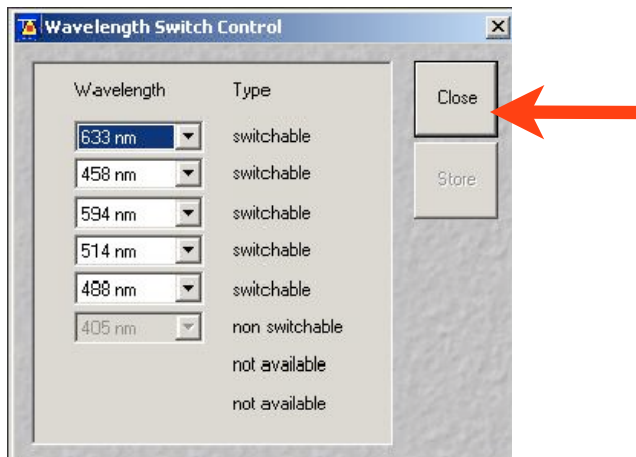
**NOTE:** on **UV** and **405/594** you can't choose all laserlines in the Macro → you have to switch the available laser lines

## To switch the available Laserlines:

- choose **Aquire** in task menu
- choose **Config**
- click on **Laserline**



- switch a switchable line to the wavelength you need
- **press store**
- the window closes automatically
- **after measuring switch this laserline back**

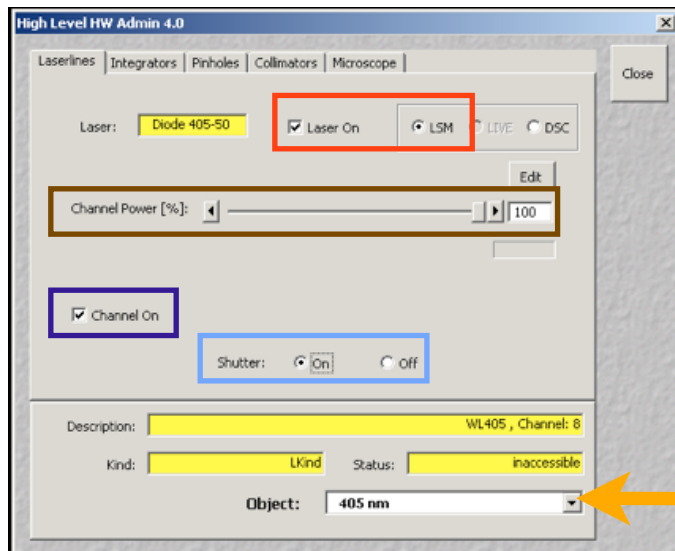


## measure Laser Power on **DuoScan**

- make sure that the **laser is on** and the **LSM** field is **marked**

1. choose **wavelength**
2. check **Channel On**
3. set **Channel Power** to **100%**
4. set **Channel Power** to **100%**
5. switch **Shutter** from off to **on**

to measure the next wavelength, switch off laser emission while going from step 5. to 1.  
→ proceed also if you want to leave



## After measurement – shutting down routine

Waht to do when last user/ not last user

- last user
  - turn Argon emission back to 25%
  - close all windows and close the programm
  - wait 5 min for cooling down the Argon laser
  - shut down the computer
  - switch off remote control
  - on **UV** switch off water cooling unit
- not last user
  - turn Argon emission back to 25%
  - close all windows and close the programm
  - log off Windows account