Lambda 1050 UVVISNIR Spectrophotometer

Last Updated: 20210601

You must be a "Qualified Self-User" to operate this instrument independently.
You must be on the labs "Instrument Reservation Schedule" before touching the instrument for any reason.
Any problems, STOP, Post a note on the instrument and send an email to mtim@mit.edu immediately.
Do not perform any maintenance.
Do not install any software
Do not adjust any optics.

CORAL:
Engage the instrument using CORAL when you enter the lab.
Disengage CORAL when you are leaving the lab.

Instrument Specific Hazards

Emergencies DIAL 100

Electrical: 110-120V, 60Hz

Important:

To prevent damage, turn the bench power off before removing or installing a detector module.

Required Apparel

Safety Glasses, Gloves, Lab jacket.

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Optical, Thermal Characterization Laboratory

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Utilities:
Electricity (wall).

Emergency Shutdown:
Shutdown the computer.
Turn off the spectrometer power.
Power switch is located on the back of the instrument.

Restart after an emergency:
Restart the computer.
Turn on the spectrometer power.
Power switch is located on the back of the instrumt.

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When Arriving

Checkout the instrument

Bench Power: Off

Computer: On

Software: Closed

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Operation

Install the detector module you plan on using while the bench power is off.

Integrating Sphere – 250nm-2400nm, Transmission or Reflection

Three Detector Module – 175nm-3300nm, Transmission.

URA – Absolute Reflectance, Relative Reflectance, Transmission (Variable Angle).

Switch the bench power ON.
Wait three minutes
Open the software.
Run software as Analyst.
Choose the program appropriate for the detector module that is installed, OTC Sphere, Three Detector, URA or Time lapse.
Setup your measurement range and resolution. (Data Collection).
Enter # of samples and sample(s) names.
Click start.
Follow the onscreen prompts.
When finished – Save your data.

Adjusting the size of the beam

If you need to adjust the beam size:
To determine the correct beam adjust the beam size use the Manual Control Page.
In the method:
To change beam use the Common Beam Mask Control (CBM).
Choose align mode
Click on apply to change the beam size
Note: If you choose align from the method the beam will be full size, not what you set the CBM at!

Shutdown

Bench Power: Off

Software: Closed

Computer: On

Walk away with a copy of your data, No data storage here.

Clean up.

Leave the instrument in perfect condition and ready for the next user.

Disengage CORAL

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Specifics

Instrument Range:

Three Detector Module: 175nm thru 3300nm (PMT, InGaAs, PBs).

Transmission.

Integrating Sphere: 250nm thru 2400nm (PMT, InGaAs).

Transmission

Reflection – Total or Diffused.

Small Spot Kit available.

Universal Reflection Accessory (URA) - Variable Angle

Polarizers:

Polarizer Drive (need to install pol crystal).

Glan Taylor Polarisers.

Sheet Polarizer.

Beam angle 3-4degrees at focal point normally.

Cuvettes

Cuvette Holder Dimensions: 12.5x12.5, 10mm pathlength.

Plastic Cuvettes from VWR: 300-1650nm

Other cuvette sources:

Starna: (800) 228-4482

https://www.starnacells.com/d_cells_s/rect/T001GL14.html

Common Materials Ranges

Optical Glass: 334-2500nm

Special Optical Glass: 320-2500nm

Pyrex: 320-2500nm

Spectrosil: 170-2700nm

Infrasil: 220-3800nm

Instrument Filter Table

WL	Pos	Type
3350	10	T-LPG-2.5
2680.8	9	T-LPG-1.5
1670.4	8	T-LPG-1.0
1190.4	7	RG780

810.4	6	RG665
690.4	5	UG550
562.4	4	BG38
379.2	3	UG11
319.2	2	T=100%
150	1	Glass Filter

Data Formats

Good Lab practice - if your data is important enough to take with you then this what you should take with you at the end of your session.
"Save Spectra" - Binary-Proprietary format - .*(Coming Soon)*,
Export as ASCII - (.csv) Comma Separated Values

Software Commands

Align – to turn on visible light zero order.
CBM - Common Beam Mask to adjust beam size.
CBD – Common Beam Depolarizer.

Computing

Printing to the room printer. Or attached printer.
Printer connected to this instrument
Internet Access: Yes
USB: Yes, CD: Yes, DVD: Yes

Data Analysis

WinUV Data Processing and Viewer Software is installed on the data analysis computer at the front of 13-4139.
WinUV Data Processing and Viewer Software is also available for your pc.
See Tim to sign out theinstallation disc.
DPV Software
Name: administrator
Pass: administrator

Instrumentation Problems?

Send me an email (mtim@mit.edu) immediately if have any problems.
Only use the CORAL system to report catastrophic instrument failures.

It is okay to try to correct a problem by restarting the Software, computer or bench.
If the problem persists:
Stop using the instrument (prevents possible damage).

Computer Restarting
Name: Administrator
Password: (blank)

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Integrating Sphere procedure for Measuring Total Reflectance and Diffuse only Reflectance

Collect a Background and Zero.
Total Reflectance: Place sample on reflection sample port.
Diffuse only reflectance: remove the specular port blank from the sphere.
Return the specular port plank when finished.

Reflection Standards available for signout

Silver Mirror
    50.8mm square, 3.2mm thick
    Thor Labs#: ME2S-PO1
Gold Mirror
    50.8mm square, 3.2mm thick
    Thor Labs#: ME2S-MO1
Aluminum Mirror
    50.8mm square, 3.2mm thick
    Thor Labs#: ME2S-GO1
Labsphere calibrated Spectralon reflectance standard
    S/N: 99AA10-0513-6797 (August 2013)
    Part #: AS-01160-060, SRS-99-010

Lamp Life

Deuterium: 2000hrs
Tungsten: 1700 hrs

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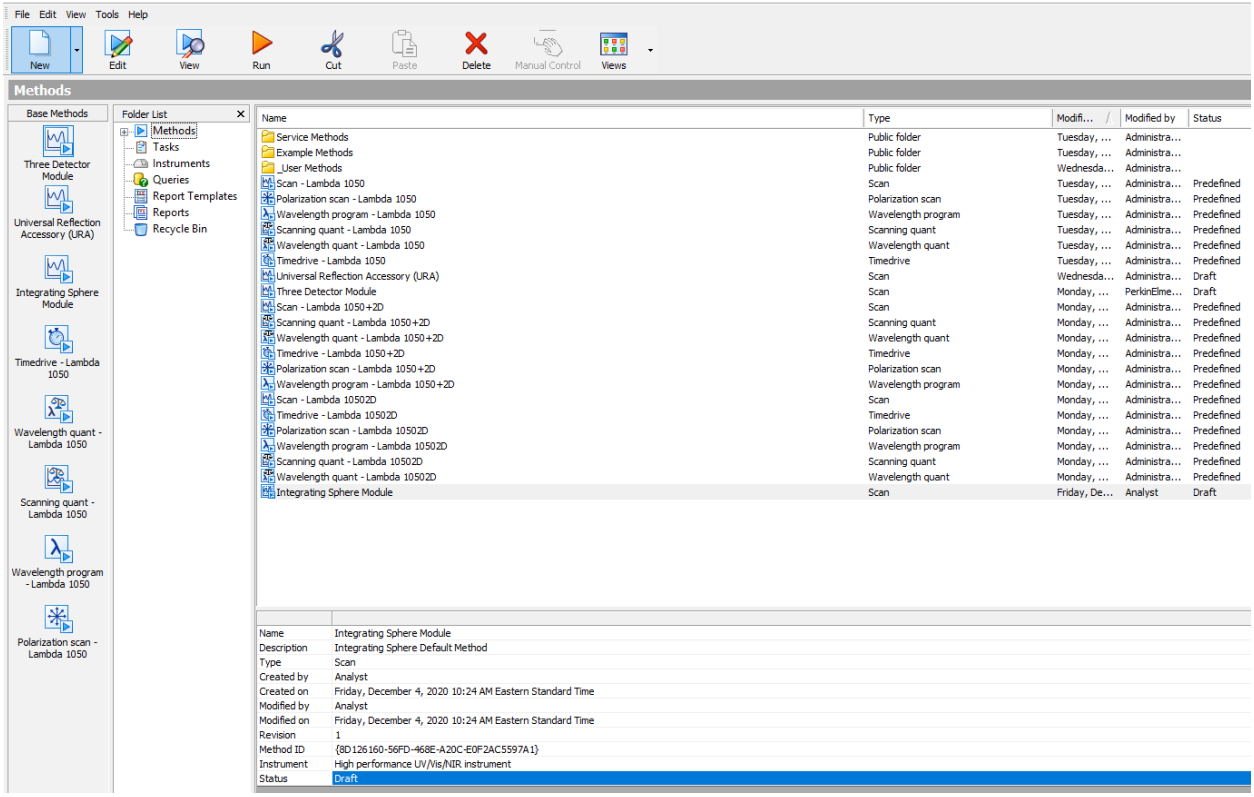

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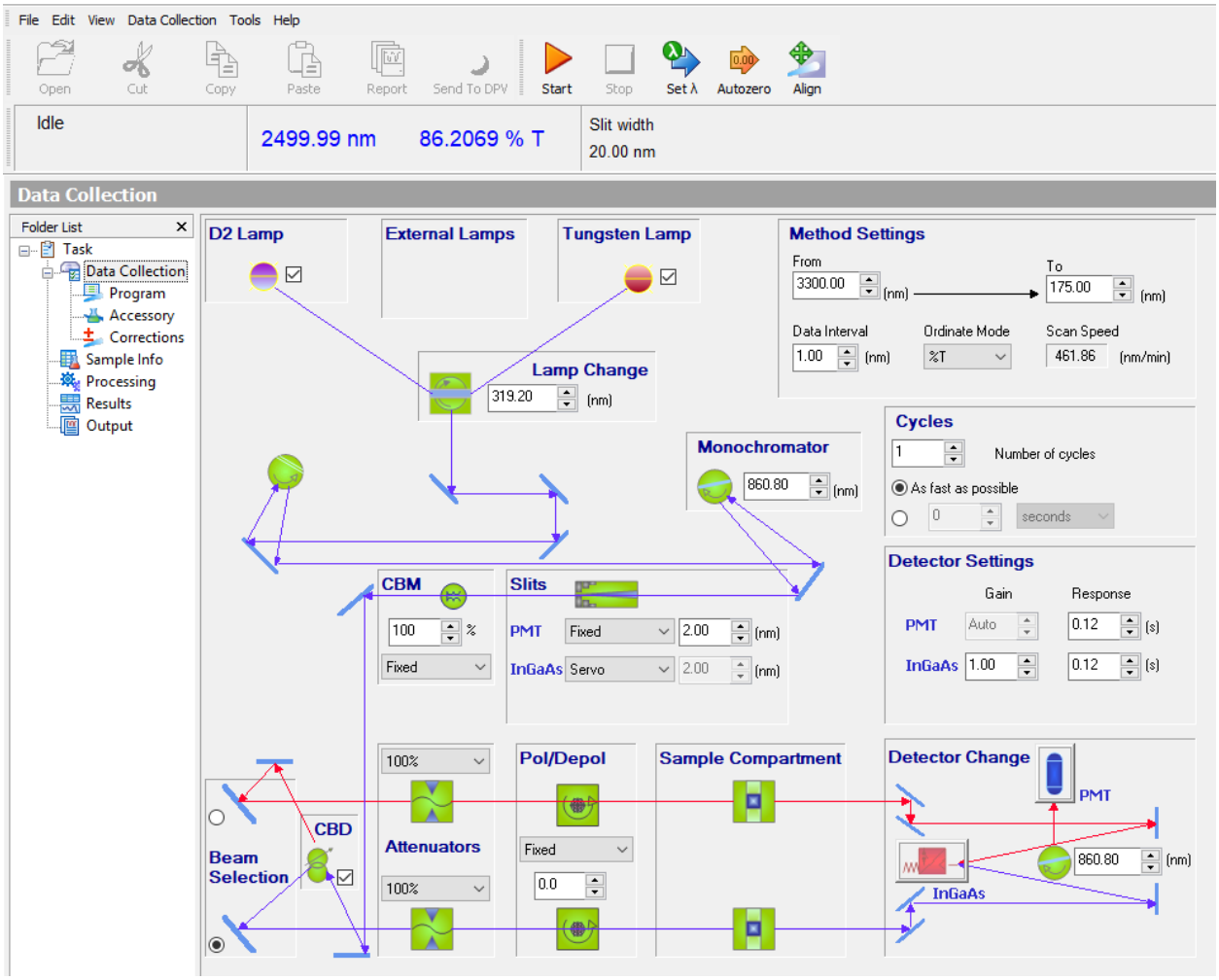
Three Detector Module



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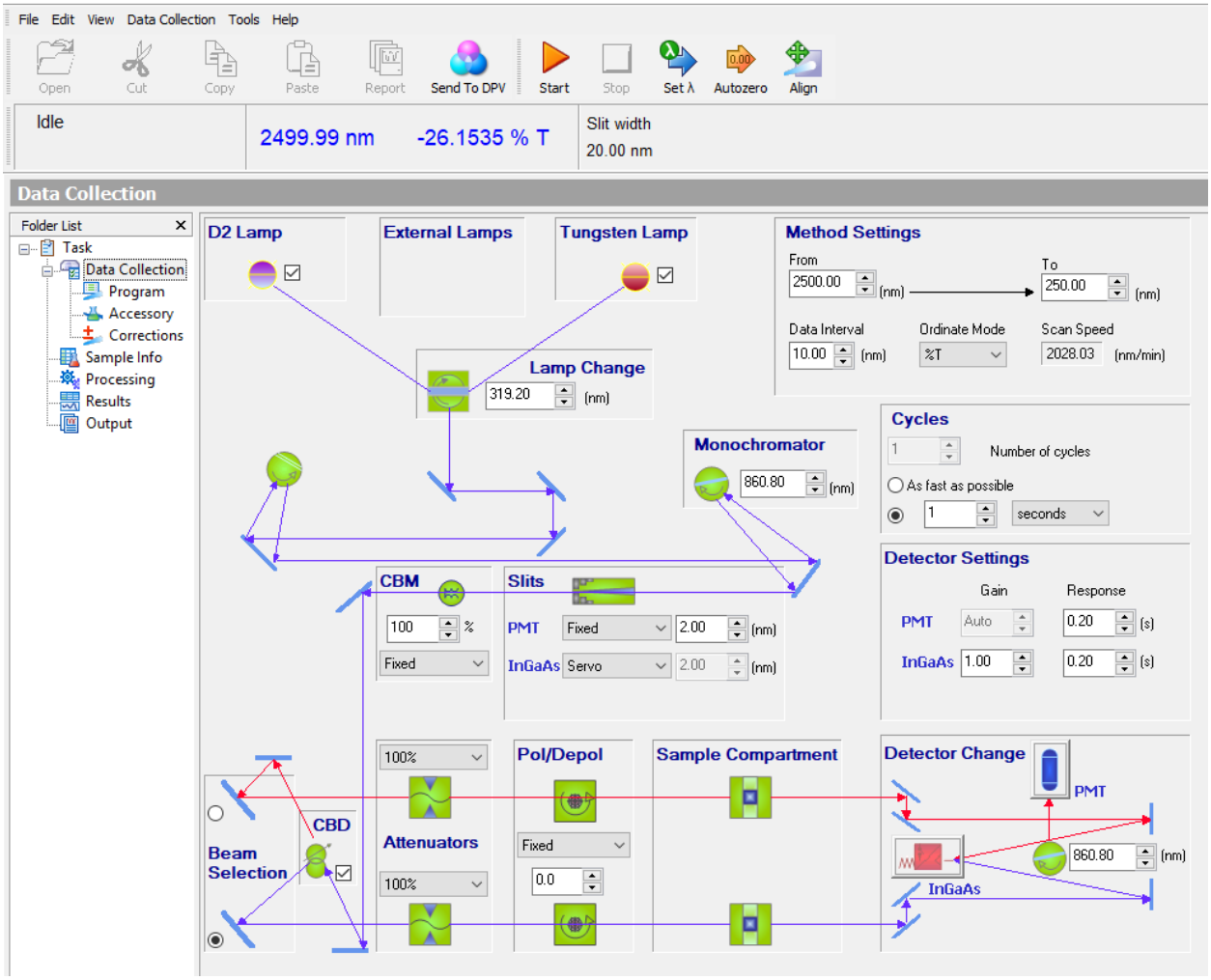
Integrating Sphere



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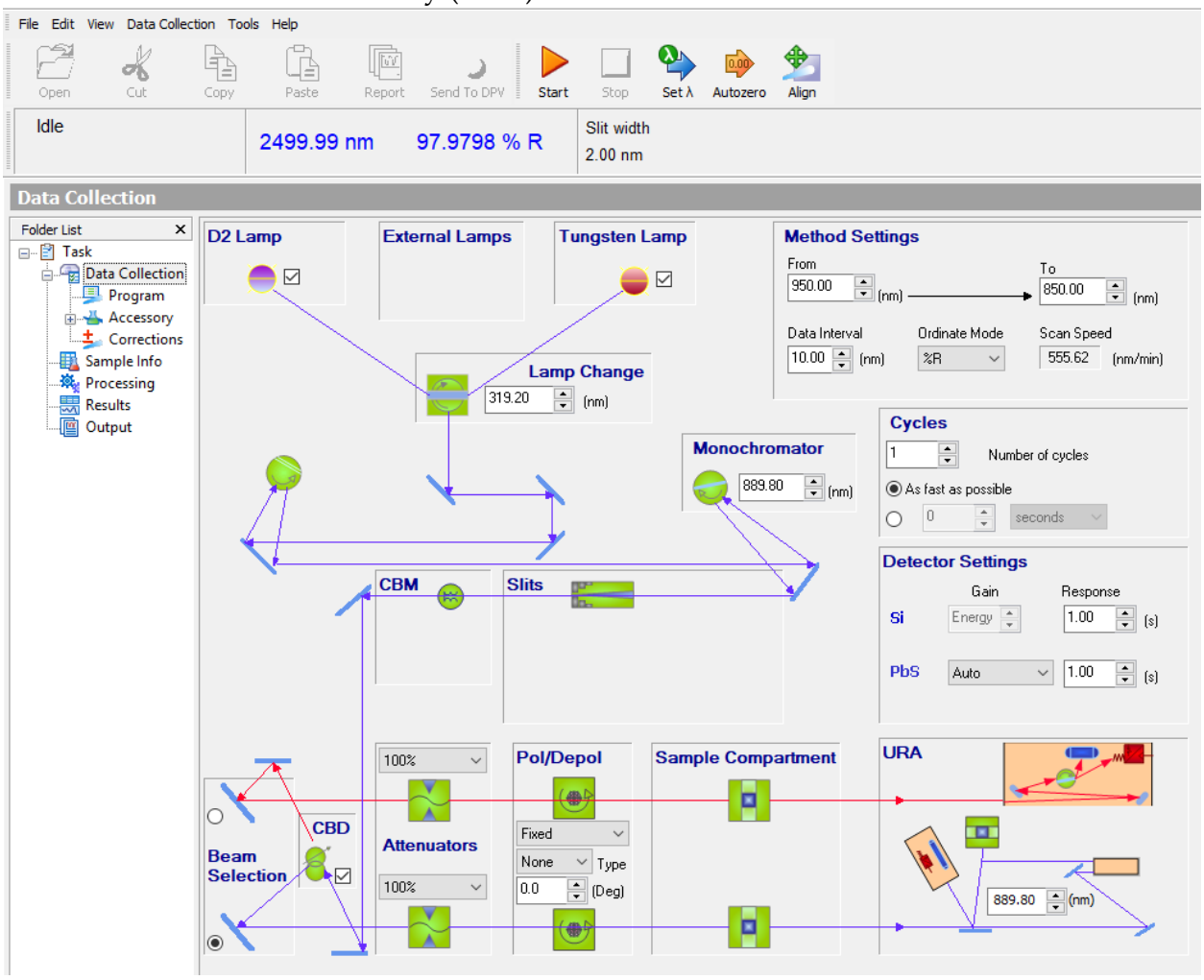
Universal Reflectance Accessory (URA)



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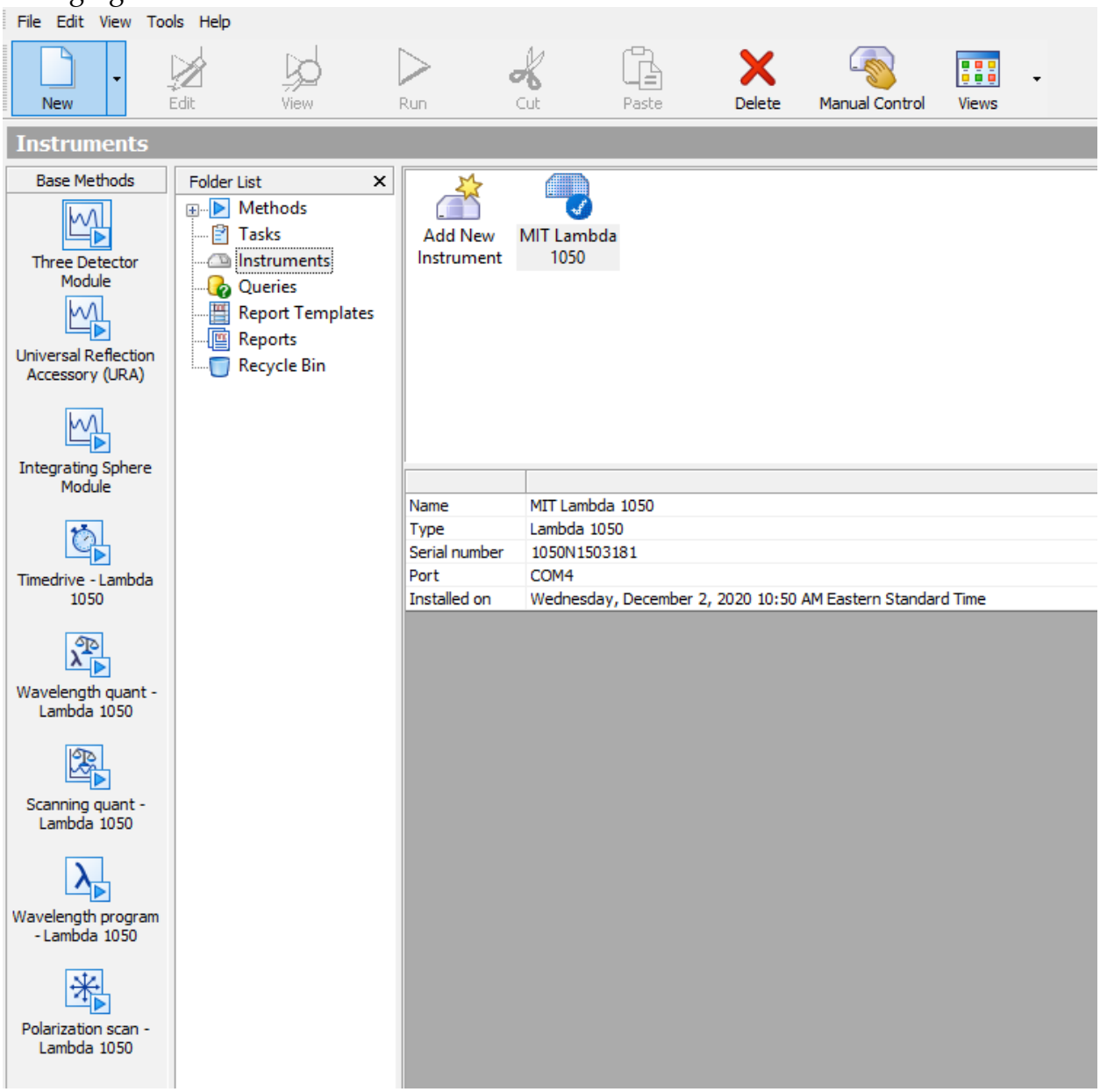
Changing Beam Size - Choose Instrument



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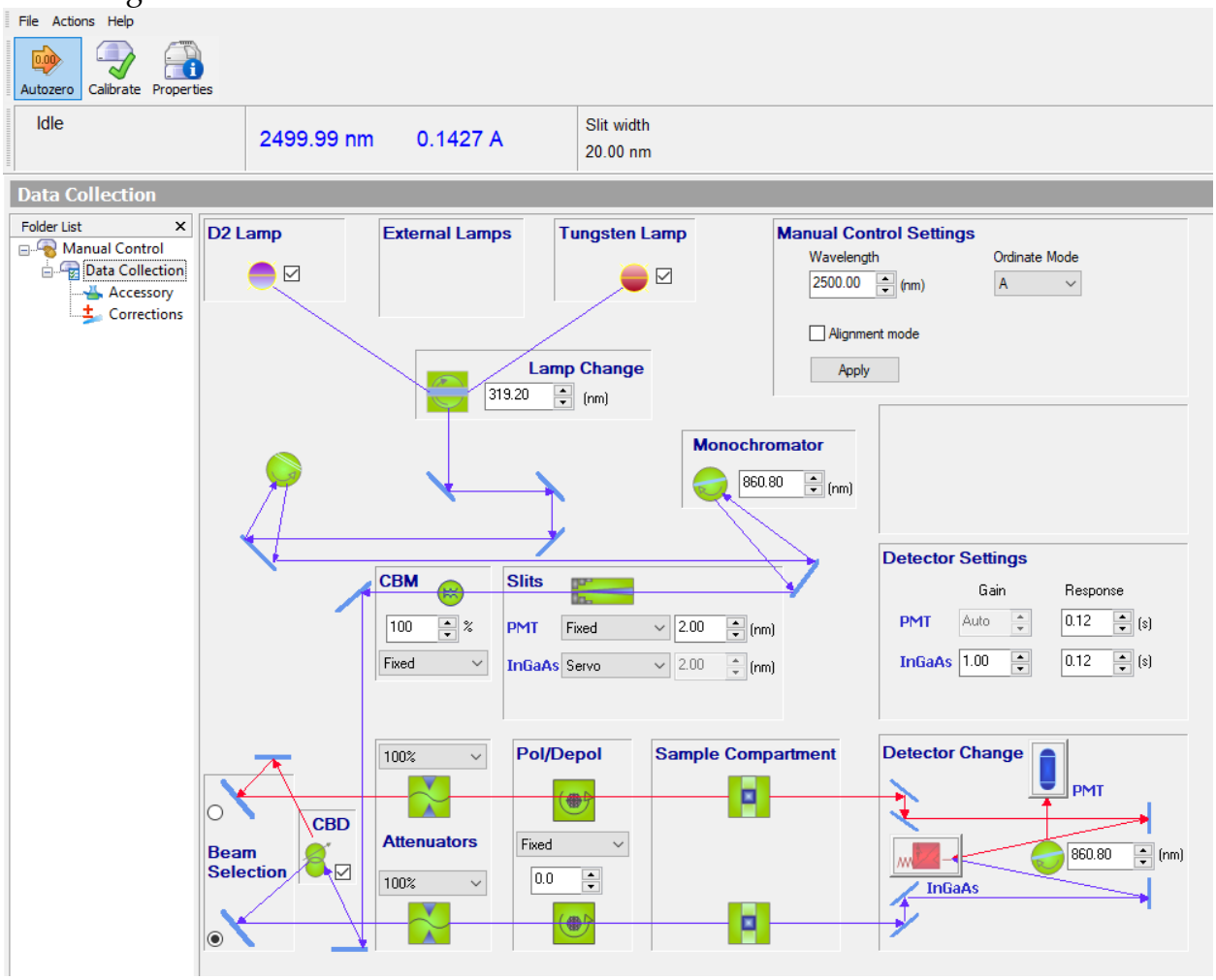
Enter Alignment Mode – Choose CBM Size



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