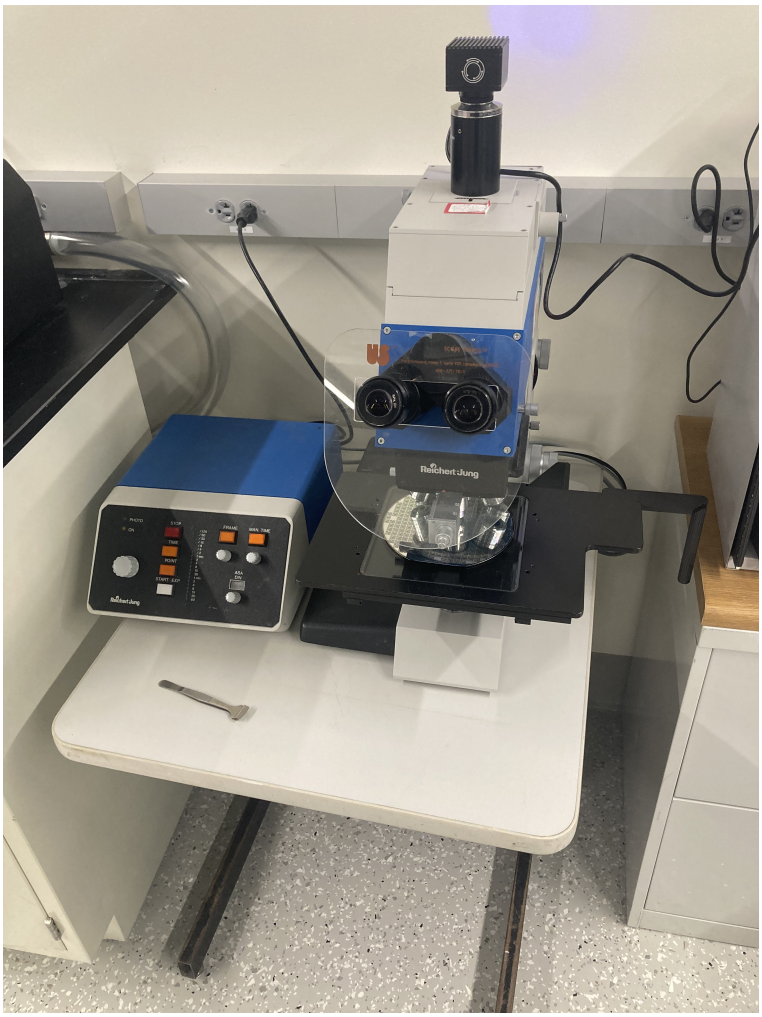
THE UNIVERSITY OF VERMONT
COLLEGE OF ENGINEERING &
MATHEMATICAL SCIENCES

Polyvar MET Microscope

Jackson Anderson

October 5, 2023



1 Revision History

Version	Date	Author[s]	Changelog
1.0.0	10/2023	JA	Initial Release

2 Process Overview

The Reichert-Jung Polyvar MET microscope provides brightfield and darkfield capability in transmission and reflection with total magnifications from 40x to 1875x via a 10x eyepiece, objectives from 5x to 150x, and turret-mounted magnification from 0.8x to 1.25x. A green bandpass filter allows for inspection of UV-sensitive films without exposure.

3 Potential Hazards and Engineering Controls

The Polyvar microscope uses a 100W halogen bulb for illumination, which can become quite warm during prolonged operation. This is housed behind a ventilated cover during normal operation. If the bulb burns out during use, do not attempt to change it out. Instead, leave it to cool, tag the tool, and contact staff for a bulb change.

4 Special Handling Procedures, Material Restrictions

When loading or unloading a sample, move the stage out from underneath the objectives to prevent accidental contact with the objective lens surface.

5 Personal Protective Equipment

No additional PPE is required to use this tool.

6 Training

Potential users are expected to review this SOP and demonstrate knowledge of tool in a live session before unsupervised use.

7 Procedure Description

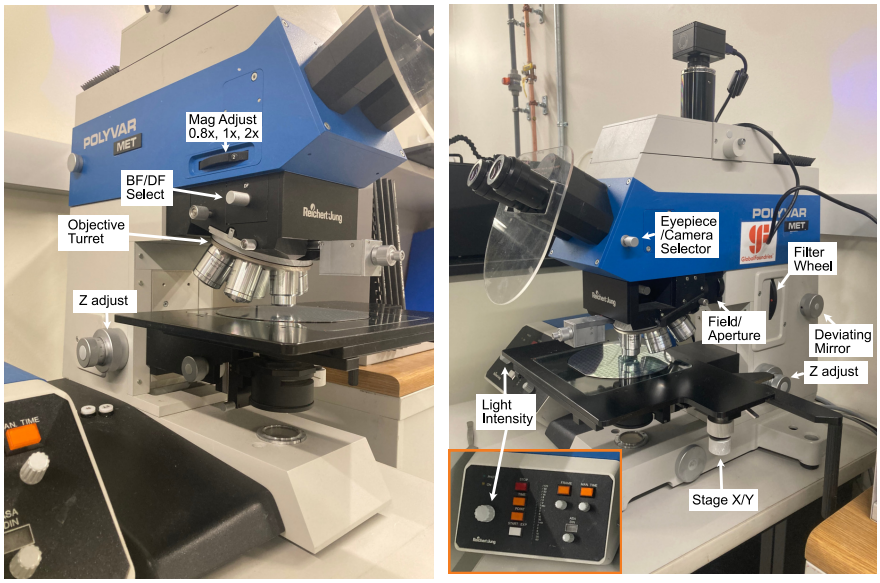


Figure 1: Select microscope controls referenced.

7.1 Loading and Unloading a sample

7.1.1 Using the Stage Z adjust knob, lower the stage away from objective lenses.

7.1.2 Switch the objective turret to the lowest magnification.

7.1.3 Using the Stage X/Y knobs, move the stage towards the operator and away from the objectives.

7.1.4 Place the sample of interest on the stage and move underneath the objectives.

7.2 Reflectance Microscopy

7.2.1 If desired, withdraw the eyepiece/camera selector knob to send all light to the eyepieces. Otherwise, push in the knob to insert the beam splitter and send 80 % of light to the camera for imaging.

7.2.2 Turn on the lamp with the light intensity knob located on the camera/light control box

7.2.3 If light is not visible on top of your sample, but is emitting from under the stage, check that the deviating mirror is set with the black dot facing the stage. If no light is visible at the stage but the lamp glow can be seen at the back of the scope, you may also check that the field and aperture wheels (on the right of the scope in front of the filter wheel) are turned all the way downward (fully open).

7.2.4 Starting at the lowest magnification objective, slowly raise the stage while looking at an edge of your sample to bring the item into focus. Once the sample is well focused, move to a region of interest and switch to a higher magnification objective as needed by rotating the objective turret, being sure to focus the image at each intermediate objective before continuing.

7.2.5 When observation is complete, lower stage, switch to the lowest magnification objective, turn off the light, move the stage outwards, and remove your sample.

7.3 Transmission Microscopy

Procedure to be developed.

7.4 Taking an Image or Video

Procedure in Progress.

7.4.1 If the microscope is equipped with a camera, open the Moticam ImagePlus software on the connected laptop.

7.4.2 On the left side of the screen, press the icon of a screen and eye to open the live imaging module. This opens in another window and may open in the background.

7.4.3 On the right side of the live imaging window, select Moticam S5 Pro Lite from the dropdown if not selected. You should now see an image. If the camera is not listed, try closing the software and disconnecting/reconnecting the USB cable connecting the computer and camera. If this does not work, contact staff for assistance.

8 Signatures of Compliance

I have read and fully understand the above SOP. I will adhere to all stated regulations and safety measures when using this tool/chemical.

Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date

Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date
Print Name	Signature and Date