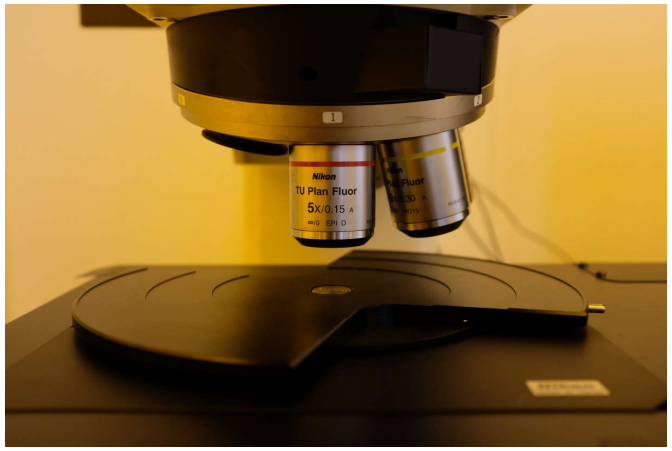
1

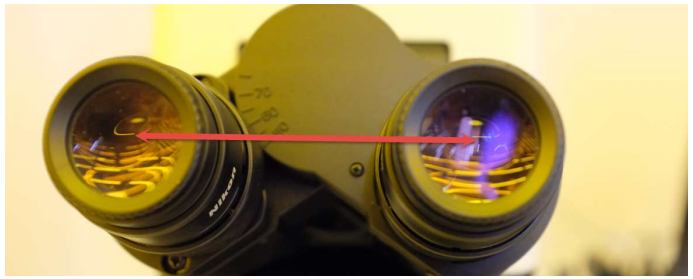
Nikon LV200

ALWAYS start and **end** with lowest power objective!

Goal – Do NOT touch sample with objective lens.
Why? – To avoid lens damage or sample damage (100x objective is $6K)
Lower power objectives generally have longer working distances (20X is an exception)



- **Adjust intraocular distance**



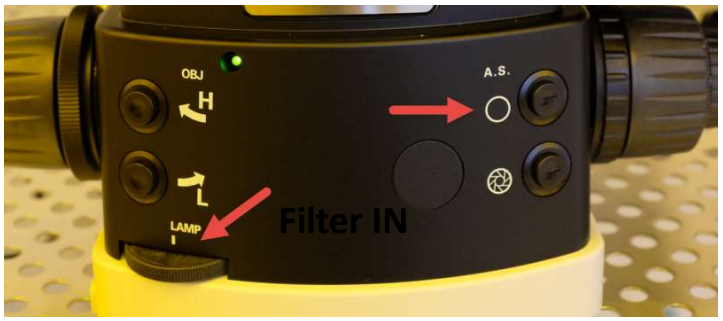
- **Adjust eyepiece focus if needed**



Place sample on stage

2

- Turn on LED lamp
- Make sure Aperture is fully open



- Insert filter if using light sensitive resist
- Pull out Focusing Target rod to use Focusing Target

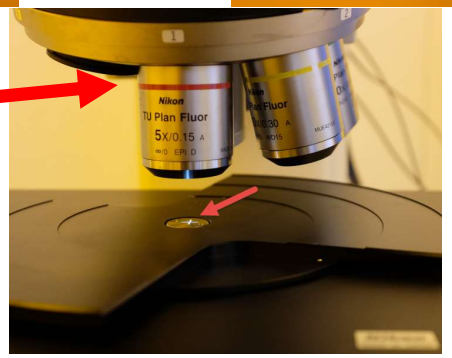
Filter IN



Filter OUT



- Focus on substrate using focus target and lowest power objective



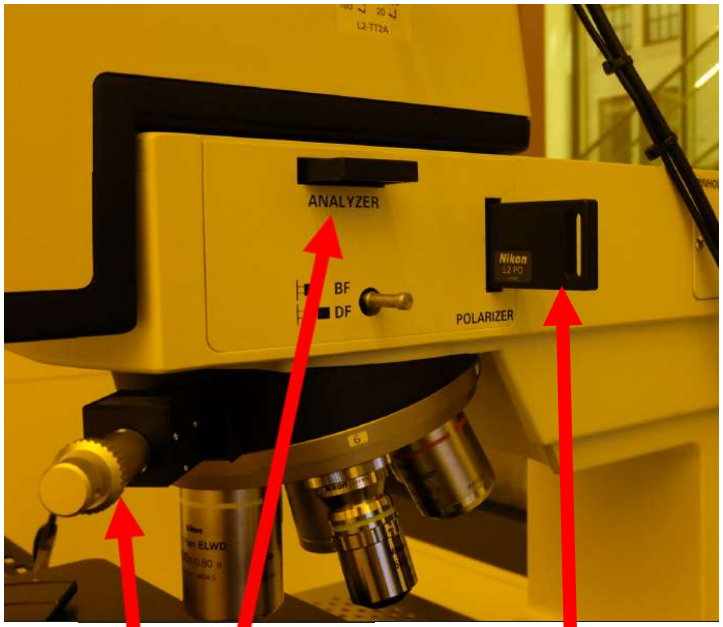
If NOT using DIC



Analyzer and DIC prism should be OUT

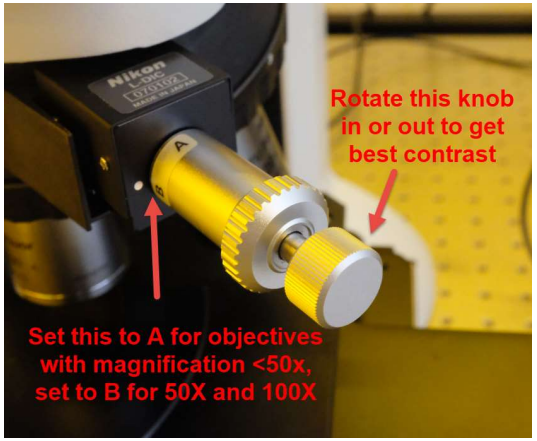
Polarizer can be IN or OUT

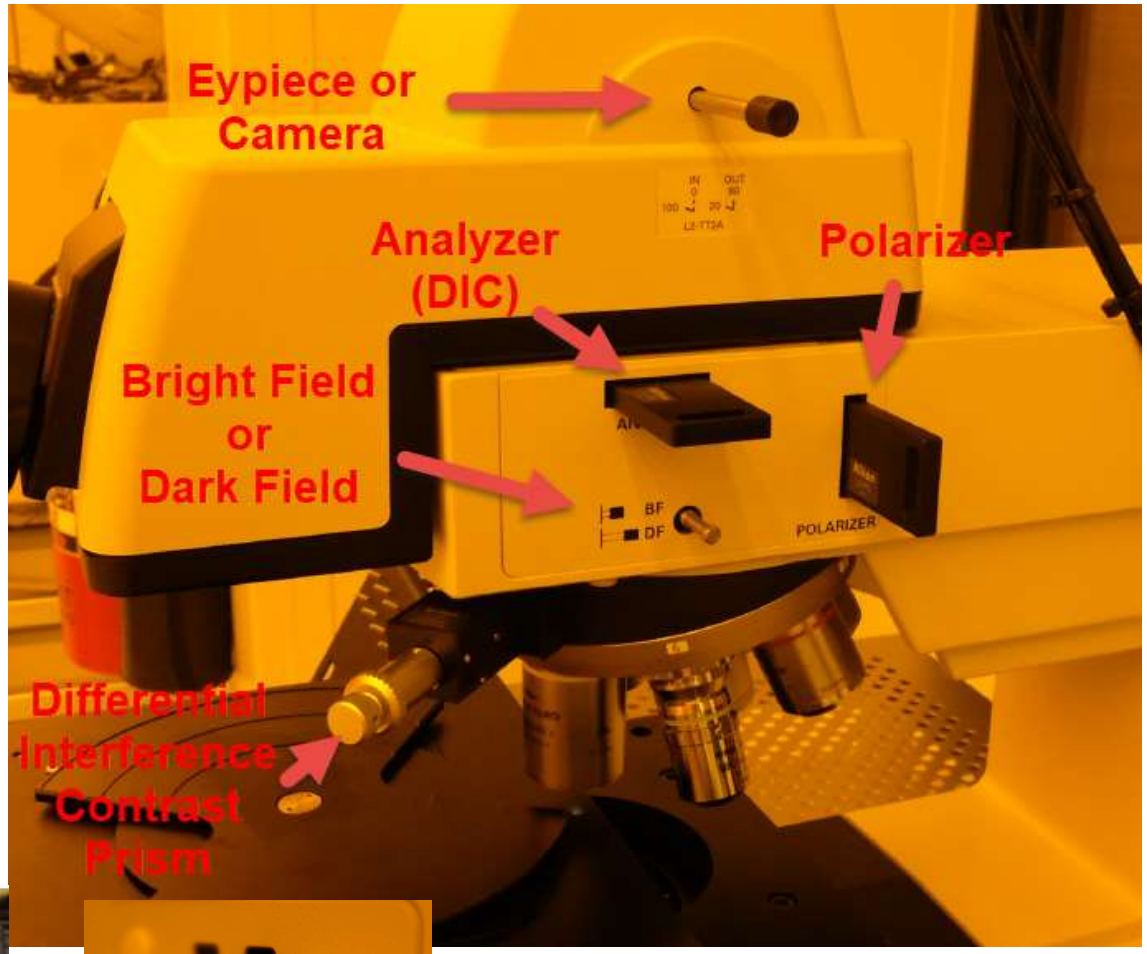
If using DIC



Analyzer and DIC prism should be IN

Polarizer should be IN





Aperture Stop

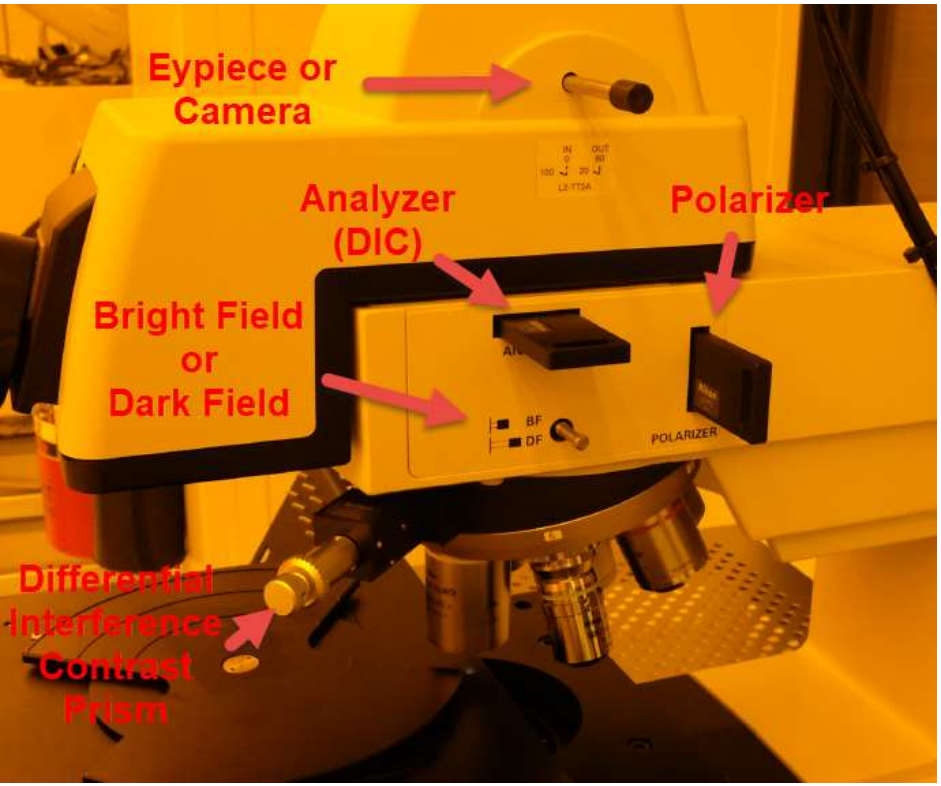




Focus Target rod in
i.e. Focus Target not
in light path

Steps to get an image

1. Rotate lowest power objective into place
2. Set mirror to Eyepiece or Camera
3. Push BF/DF rod in for Bright Field
4. Pull Analyzer, Polarizer and DIC Prism out of light path
5. Open Aperture stop
6. Pull out Focus Target rod to focus.





Aperture Stop
Limits ANGLE of illuminating light. Fully open = best resolution. Closing Aperture stop reduces stray light and can increase contrast for some spatial frequencies.

Polarizer
Limits illumination light polarization. Rotate to round dot for DIC. This can increase contrast, it will also reduce illumination light by 50%. Push in for DIC use.

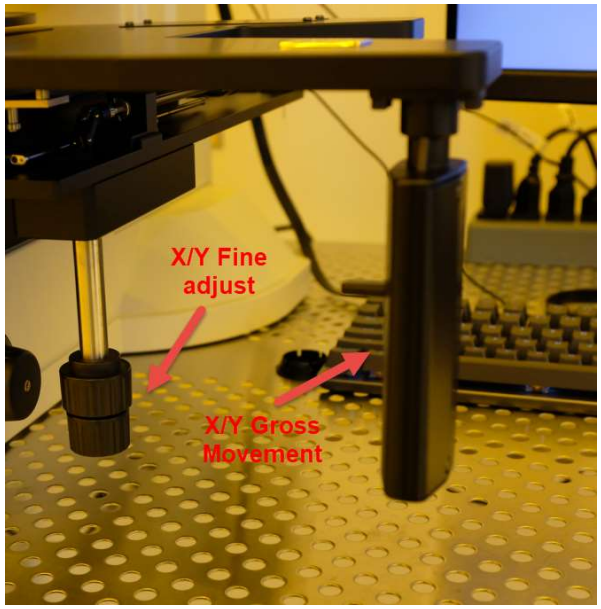
Eyepiece/Camera
Mirror that directs either 100% of light to eyepiece or 80% to camera and 20% to eyepiece.

Analyzer (DIC)
Push in to light path for **D**ifferential **I**nterference **C**ontrast. DIC highlights very small changes in height. Useful for edges and finding roughness.

Bright Field/Dark Field
When out (DF), illumination light travels outside the lens and illuminates the substrate at angles higher than the lens can collect, therefore only scattered light is collected. Useful to find particles and scratches.

DIC Prism
This prism separates the E and O polarized light so they are slightly offset at the substrate. On return the E ray is rotated to O so that interference can occur. Push the polarizer in and rotate knob to change contrast and color.

Move stage in X/Y



Taking Images With Elements Software

- Click on AE (Automatic Exposure) to have software automatically adjust shutter speed for good exposure when changing magnification
- Use Manual Exposure with maximum lamp illumination to reduce vibrations in image
- Fast shutter speed (<100mS) makes it easier to focus
- Focus using camera image not eyepiece for best image focus

NB: This only works for the microscope with the white camera and DIC

Does the focus drift?

- Adjust the Torque ring counter clockwise



Is the stage stuck?

- Adjust the Clamp ring clockwise

