

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

DEPARTMENT OF CHEMICAL ENGINEERING

PG Research lab

STANDARD OPERATING PROCEDURE

Polarization Microscope

- Switch on the microscope. Firstly, decide what we want to do.
- Transmitted or Incident Light (Two options available)
- First, we start focusing with 5x and condenser top must be taken out with the help of condenser out switch situated left side below the stage sample.
- **Note:** Beam splitter (0-0 for only eyepiece)
 - (50-50 for eyepiece and camera)
 - (100-100 Only camera)

Bright Field

1. Silver color condenser turret should be in BF position (front). If we use 10x and above then condenser turret should be in path by using button.
2. Aperture variant as requirement (for increasing /decreasing light)
3. Fluorescence filter should be in 4 (BF).
4. One of the Analyzer / Polarizer placed below must be out.
5. DIC prism should be out.

Dark field

- Insert Dark field slider between Polarizer and condenser.
- Other all parameters are similar as BF.

Polarized Light

- Analyzer and Polarizer both to be in path.
- Vary analyzer knob up to when we get complete black out.
- In DIC slot placed compensator should be inserted for mineral sample
(We have two compensator λ and $\lambda/4$)
- DIC must be out.

DIC

- DIC objective 10x, 20x, 40x. It is used to see 3D effects.
- First, we select objective like 10x.
- Condenser turret according to objective. (10/20/40x)
- Insert DIC prism.
- Analyzer 90 and polarizer should be in path.
- Note: DIC prism knob to be adjusted for different kind of 3D effects after completing DIC Set Bright Field setting.

Fluorescence

- Lamp should be ON before 15 minutes.
- Incident light path should be used.
- Switch over to incident light.
- Fluorescence light should be ON from power supply.
- LED and Fluorescence switch should be in out position.
(When In – Mineral sample, Out- Fluorescence sample)

Note about Filters

- 1- No Filter
- 2- E4 (432 -440 Ex and 470 EM)
- 3- N 2.1
- 4- A (360+-40 EX and 425 EM)
- 5- Y 5 (590 -650 EX and 660-738 EM)

- Filter should be placed in path after knowing excitation and emission energy information we get from user side.
- Incident Light Polarizer should be taken out.
- Condenser top out.
- DIC should be out.

Software:

- After capturing image, if we want to put all image in single place, select all captured image ---right click----overlay.
- Intensity measurement - After selecting image -----Quantify ----tool-----intensity.
- Line profile: Select line and put it in image area.

Field Diaphragm: If we are not getting uniform light in area then we use for centering of light.

ALF: Day light filter (It changes light from white to yellow)

BG 20: For reducing 20 % light.