

# META VIS METALLURGICAL MICROSCOPE



## STANDARD OPERATING PROCEDURES (SOPs) 2021 (v.1)

### NCPRE FABRICATION LAB

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# INTRODUCTION

Metavis Metallurgical Microscopes are suitable for Metallography, Precision Engineering, Engineering Institutes and Industries. Metavis Metallurgical Microscopes are used for industrial, scientific research and teaching applications. MVMS U300 is an Upright Model, suitable for moulded samples. The Metavis Microscopes are equipped with plan achromatic objectives, widefield eyepiece, and polarizer. The Microscope is equipped with large stage with coaxial controls with coarse and fine movements for precise focusing. It provides clear and high contrast images, convenient operations. Due to Trinocular head design along with C-Mount Adaptor the Microscope can be upgraded with Digital cameras to function as a standalone digital microscope or a complete image analyzer.

## SYSTEM SPECIFICATIONS

### A) Microscope Details

- **Type:** Upright
- **Model:** MVMS U300
- **Eye Piece:** Wide Field WF 10X/18mm
- **Objective (infinity corrected):** Plan Achromatic 5X/0.12  
Plan Achromatic 10X/0.25  
Plan Achromatic 20X/0.40  
Plan Achromatic 50X/0.70
- **Eye Piece Tube:** Trinocular, inclined at 30 degrees (Analyzer with field diaphragm to switch)
- **Vertical illumination unit:**
  - a. 6V/30W, Halogen lamp, adjustable brightness
  - b. Vertical illumination with field diaphragm polarizer/ Analyzer is supplied
- **Focus System:** Stage adjustable, coaxial coarse/ fine focus system, with tension adjustable and limit stopper, minimum division of fine focusing of 2 micrometers.
- **Filters:** Blue, Green, Yellow, White (Ground glass). !!!!
- **Stage:** Three layer mechanical, Size: 210mm X 40mm, moving range : 75mm X 50mm
- **CCD adapter:** Travel range: 75mm X 50mm in built
- **Objective:** Plan achromatic 100X/ 0.80 (dry)
- **Reduction Lens:** 0.5X Reduction Lens

## B) DigitalCMOSCamera Details

- **Pixel:**1.3 MP
- **PCInterface:** USB2.0 Direct show &Twain
- **Sensor:** ½.2", SupercolorCMOS
- **DynamicRange:**68db
- **Color:** Max 1.64 Million 24BitColor
- **Sensitivity:** 1.2V/Lux–Sec@550nm
- **WhiteBalance:** Automatic /Manual
- **PowerSource:** FromUsb 2.0 {Prt}
- **ImageControl:** Color – Brightness/ Gamma Correction /Exposure– SharpnessAdjustment/Auto,50/60 Hz Light AutoDetection

## C) System Provider:

Medimage Technologies Pvt.ltd

3A, Type II, Industrial Estate

Kukatpally, Hyderabad -500072, INDIA.

Ph: +91 40 2307 5680, + 91-9391045211

Fax: +91 40 2307 0848

Email: [info@metavis.com](mailto:info@metavis.com)

Web site: [www.metavis.com](http://www.metavis.com)

## SAFETY PRECAUTIONS

- **Safety Symbols**

		
Electric shock hazard	Optical radiation	Pinch points

- Do not touch the any part of the microscope with bare hands.
- Keep the stage of the microscope clean.
- Avoid touching optical parts.

## TRAINING POLICY

- Contact the System Owner
- You need to attend at least two sessions with any authorized user/ SO
- After that you need to attend one or two hands-on sessions.
- An authorization will be given after clearing the AU test

## CLEANING METHOD

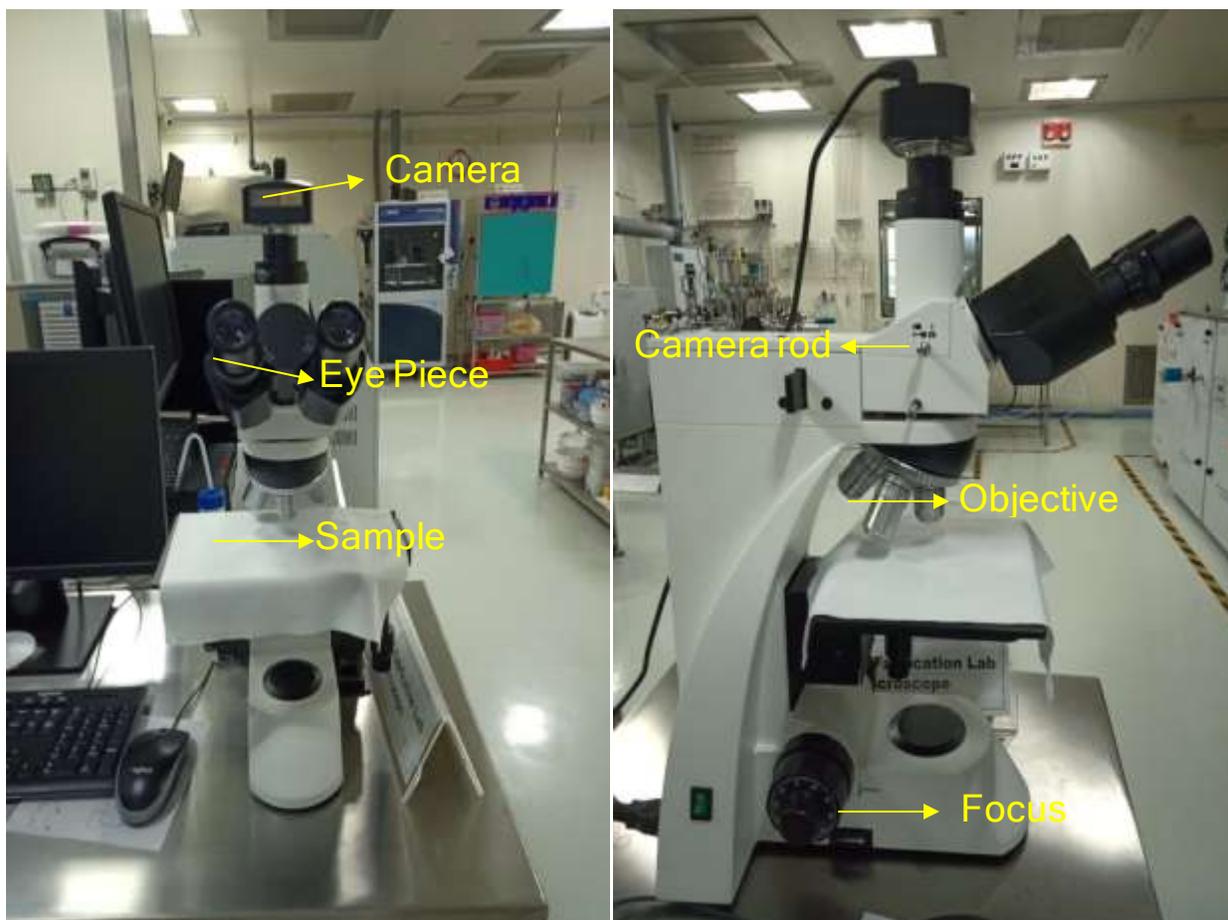
Your microscope's performance relies on its optics, lenses and filters being kept free from any contaminants.

- Cleaning of the outer walls of the microscope, computer and table can be done using IPA and lint free cloth (Avoid touching the optical parts).
- Removable Optical parts can be firstly cleaned with low pressure N2 flow to remove the dust and particles.

## STANDARD OPERATING PROCEDURE

### 1. Completely Installed System:





## 2. Procedure for turning ON the Microscope.

- Switch ON computer and turn ON the microscope mains.
- The camera connection is already made, users are not allowed to disturb the assembly.
- Turn ON the halogen lamp using green switch provided at the bottom of the right side of the microscope.
- Keep sample on the base.
- Adjust the illumination intensity and illumination window by adjusting the knob provided near to the lamp assembly.
- Select the proper objective as 5 xs, 10 xs, 20 xs, and 60 xs **or as required**.
- Focus the sample with focus knob situated on the left side of the microscope. At this moment camera rod should be in PUSH IN position.
- View and adjust the image from eyepiece.

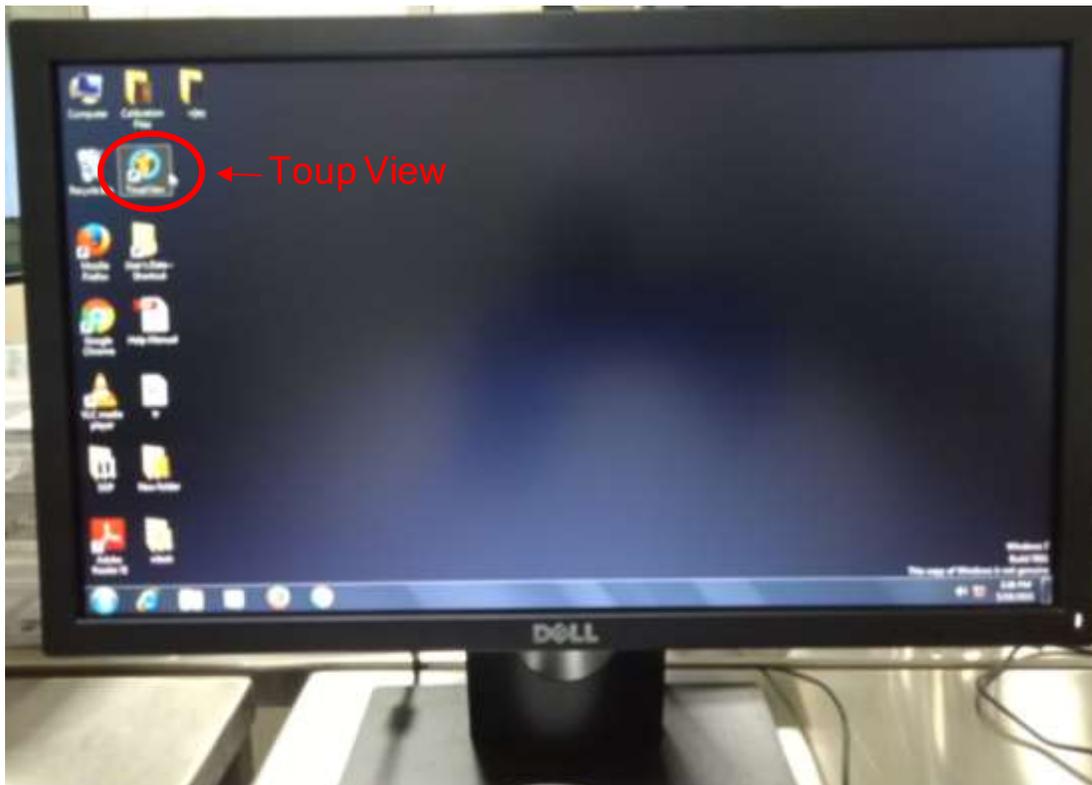
**Note:** PULL OUT camera rod: Enables camera with software interface.

PUSH IN camera rod: Disables camera from software interface

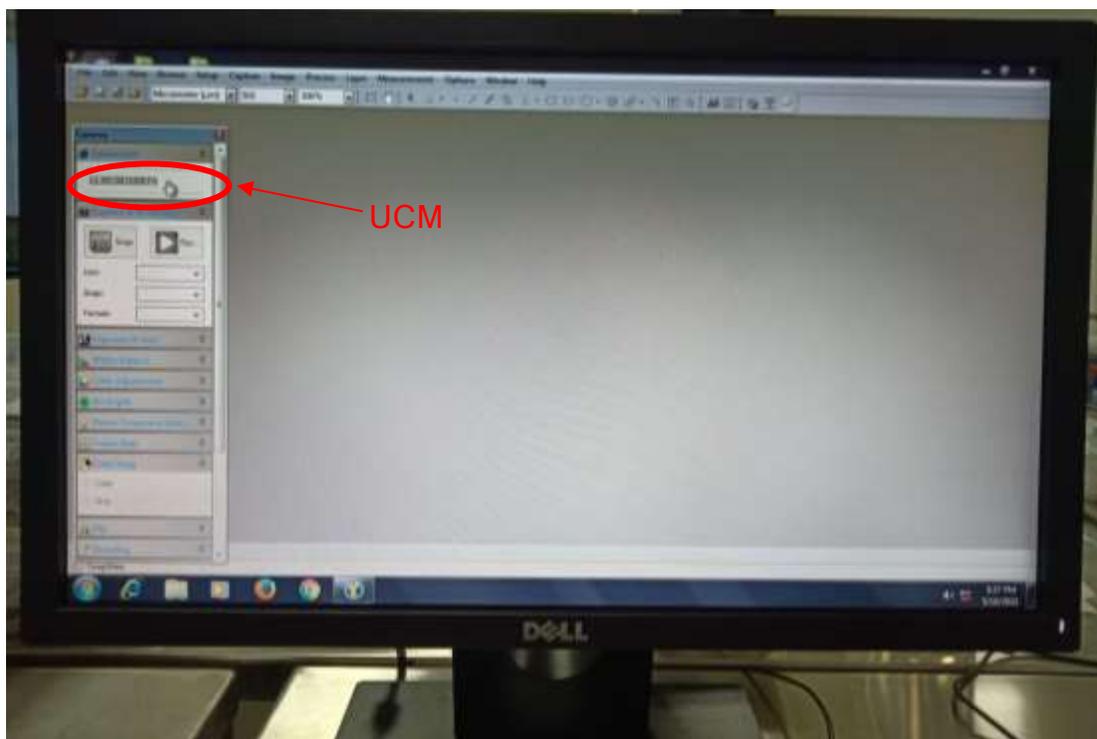
- Now, pull out the Camera Rod near Eye piece to view the image of the sample in the software. As shown in following figure.



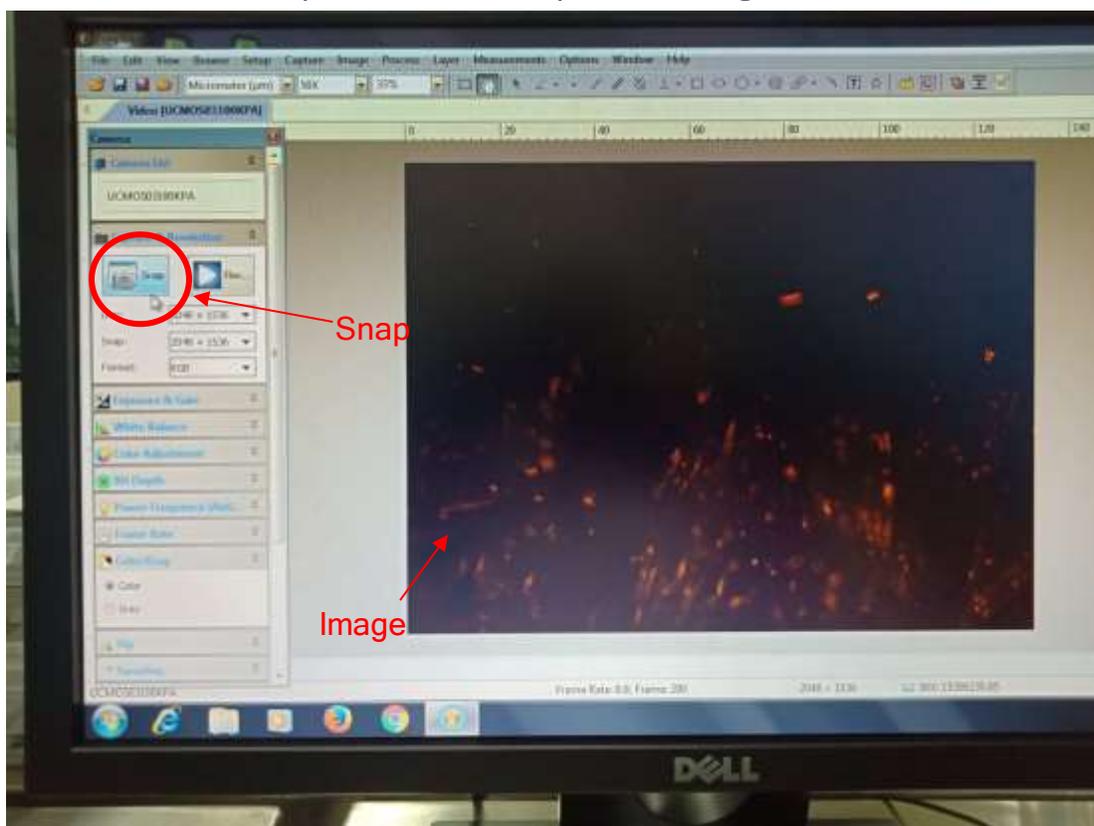
- To view the image on the computer Open “TOUP View” software in computer. A new window will open.



- In that window UCM option will appear at the left side bar. Click on the UCM option.
- Focus if image is not clear on the screen of computer.
- Use suitable filter to get cooler and neutral image.



- Click on the SNAP option to take snap of the image.



- Once image is captured, we can measure the dimensions of desire part of the sample which is appeared on the screen.
- We can save the images of the samples taken.

### 3. Procedure for turning OFF the Microscope.

- Close the Toup View Software
- Push the Camera rod inside
- Move objective to 5Xs if changed
- Take out the sample
- Switch off the microscope
- Clean the surface
- Make a Log Entry.

## ADVANTAGES OF USING FILTERS:



- **Blue Filter**  
A typical use would be a blue filter when using low levels of light in a brightfield application. When low levels of light are used, you usually get a yellowing effect because the lamp is turned low. The blue filter brings the light back to a more natural white light.
- **Green filter**  
They are often placed in the light path to improve the performance of achromat and planachromat objectives. When using phase contrast the best images are often produced in green light.
- **Yellow Filter**  
A typical use would be a yellow filter when the microscopy images are blue. The yellow filter brings the light back to a more natural white light.
- **Gray filter**  
These filters are neutral gray in color and designed to reduce transmitted light intensity evenly across a portion or the entire wavelength spectrum without introducing a significant change in color temperature.