Contents

1 Startup

2 Baseline and reference check
   2.1 Baseline setting
      2.1.1 Measure Tab
      2.1.2 Focus the camera/optics
   2.2 Measurement on the standard SiO$_2$ sample
      2.2.1 Step 1
      2.2.2 Step 2
      2.2.3 Step 3
      2.2.4 Measurement

3 Measurement on Sample
   3.1 Step 1
   3.2 Step 2
   3.3 Step 3
   3.4 Creating/editing measurement recipes
   3.5 Measuring your sample and reviewing data

4 Leaving the tool in an “idle” state

5 Appendix
1. Startup
   • Turn on light source on the front panel of the F 40 UV by depressing the “light source” button. Please allow 5 minutes of warm-up time.
   • Start the FILMeasure software on the computer by double clicking the icon on the desktop.

2. Baseline and Reference Check
   • The F40 UV should be baselined and referenced checked before the start of each run, or after switching to a different type of film to be measured.

2.1. Baseline Settings
   2.1.1. Measure Tab
   • Select the “Measure Tab” at the top of the screen
   2.1.2. Focus the camera/optics
   • Place the 4” Filmetrics “Focus/Reference” wafer on the measurement stage and ensure that the “Focus” field is underneath the objective lens.
   • Select the “Live Video” Tab in the “Measure” menu. In the “Live Video” menu, change the focus slider to the highest magnification.
   • Adjust the camera focus with the z-axis micrometer on the measurement stage.

2.2. Measurement of the Standard SiO₂ sample
   2.2.1. Step 1
On the “Focus/Reference” wafer, move the area designated as “SiO₂” underneath the objective lens.
Focus on the area using the “Live Video” focusing procedure as outlined in 2.1.2 if necessary.
Click on the “Baseline” radio button. A “Sample Reflectance” dialog box will appear.
Click the “Take Sample Reflectance” radio button in the dialog box.
2.2.2. Step 2

The dialog box for Step 2 will open when Step 1 is complete.
The “Reference” field on the “Focus/Reference” wafer should be placed under the objective lens.
Focus on the area using the “Live Video” focusing procedure as outlined in 2.1.2 if necessary.
Choose “Si” from the pull-down menu of the “Reflectance Standard” box.
Click the “Take Reflectance Standard” button

2.2.3. Step 3

The dialog box for Step 3 will open when Step 2 is complete.
Place the 45°-angled reflectance substrate underneath the objective lens.
Click the “Take Background” button.
After the background measurement is complete, click “Finish”.

2.2.4. Measurement

- On the “Focus/Reference” wafer, move the area designated as “SiO$_2$” underneath the objective lens.
- Click the down arrow on the box above the “Edit Recipe” button.
- Select the “SiO$_2$ on Si” from the dialog box, and click “OK”.
- Click “Measure” to measure the thickness of the standard, which should be 10080 Å.
- The measurement should be within ±42 Å of the expected thickness.
- Remove the “Focus/Reference” wafer.

3. Measurement on Sample-Note: If the measurement substrate is blank Si, skip to 3.3, and go to 3.4 for measurement

3.1. Step 1

- Click “Baseline”. The “Take Sample Reflectance” Dialog Box Appears.
- Place the sample beneath the objective lens.
- Focus on the area using the “Live Video” focusing procedure as outlined in 2.1.2 if necessary.
- Click the “Take Sample Reflectance” button.

3.2. Step 2

- The dialog box for Step 2 opens when Step 1 is complete
- Place the substrate underneath the objective lens
Focus on the “reference” field using the “Live Video” focusing procedure as outlined in 2.1.2 if necessary.

Choose the substrate material from the pull down menu of the “Reflectance Standard” box.

Click the “Take Reflectance Standard” button.

3.3. Step 3

The dialog box for Step 3 opens when Step 2 is complete.

Place the 45° angled reflectance substrate underneath the objective lens.

Click the “Take Background” button.

Click “Finish” when done.

3.4. Creating/Editing Measurement Recipes

Select the desired recipe from the pull-down menu above the “Edit Recipe” button and click “OK”.

Click “Edit Recipe” to open the “Edit Recipe” dialog box.

Click “Film Stack” to add, remove, or change the film types in the stack to be measured.

When edits are finished, click “Apply” then “OK” to apply changes temporarily.

To save an edited recipe, click “Apply” then “Save Recipe as a Different Filename” (disk with pencil icon), change the filename, then click “OK”.

3.5. Measuring your Sample and Reviewing the Data

Place sample beneath the objective lens.

Use the “Live Video” focusing procedure as outlined in 2.1.2 if necessary.
• Select the desired measurement recipe, edit and/or “Save As” as desired.

• Use the live feed and the x- and y- micrometers to locate the area of interest.
  o Use the “Center” tab to move the spot measurement location to the center of the live video display.
  o Use “Settings” to adjust the spot size for measuring.
  o Use “Zoom” to locate smaller areas/features to be measured.
  o Click “Measure”. The thickness measurement results should be located in the lower right-hand side of the screen.

4. Leaving the tool in an “Idle” state

• Turn off light source only. Do not close FILMeasure software or turn off measurement computer or system main power.

5. Appendix