

# NanoSpec Operation Manual



## Overview

The NanoSpec is a metrology tool that is able to measure thickness of transparent thin films (photoresists, oxides, etc) on silicon wafers. It uses reflectometry or measurement of reflected light to determine film thicknesses based on interference effects. Using measurement algorithms the Nanospec compares a bare silicon wafer to the sample being tested to yield thickness information without causing damage to the sample.

## Operation

1. The NanoSpec should be on and ready to measure. If a red digital number is being displayed on the front of the scope indicating the intensity you may proceed to step number 2. If not, follow the “Nanospec Start-up” section below.
2. Make sure lamp is turned on at the back of the scope. The switch is located on the back of the NanoSpec computer.
3. Press and hold the calibration button for a few seconds until the Nanospec printer begins to print. Follow and answer the printout accordingly.
4. **PRINT FILM MENU?** Push “No”. The film menu is displayed on the Nanospec.
5. **ENTER FILM TYPE:** Using the film menu type in the corresponding number and press enter.
6. **ENTER OBJ LENS:** Type 1 and press enter for 10X objective.
7. **NEW REF WAFER?** Push “YES”. It only takes a minute and it assures accurate measurements.
8. Focus on the bare reference wafer and then push measure.
9. Enter sample number if you wish. Focus on sample and then press measure. Continue to focus and measure on different areas of the sample until you are satisfied.

## Nanospec Start-up

1. Turn OFF the red AC power switch located on the back of the NanoSpec computer. Wait a few seconds and then turn ON the red AC power switch.
2. The lamp switch located in back of the NanoSpec computer should also be in the ON position.
3. Follow the start-up menu prompts from the computer print out and answer the questions.
4. **IS WAVELENGTH 480?** Read the wavelength display on the front of the scope. If 480, push “YES”. If not, push “NO” and then enter in the current wavelength and press enter.
5. **DATA BANK OPTON?** Push “NO”

6. **REFR INDEX OPTION?** Push “YES” – this allows for manual input of refractive index values.
7. Next rotate the objectives to a midpoint to eliminate light from coming through. Adjust the zero intensity from 0.5 – 1.0. Adjust the zero with the knobs behind the microscope. There is a cover that prevents accidental adjustments (do not remove). It may be required to use a screw driver or tweezers to reach the proper knobs.
8. Rotate the 10X objective back into place and adjust the intensity from 31.0 – 32.0 and then push enter. Adjust the intensity with the knobs behind the microscope head if required. There is a cover that prevents accidental adjustments (do not remove). It may be required to use a screw driver or tweezers to reach the proper knobs.
9. NanoSpec start-up is now complete and you may proceed to step number 3 in the “Operation” section.