

Nanocalc 2000 Spectroscopic Reflectometer

(Located at Prof. Akins Lab)

This spectrometer measures the reflectance or transmittance of the film and estimate the film thickness. Look for Nathan to get the access to the equipment. It is located at the Room No. 1120.

Operator's Manual

1. Turn on the computer and the monitor.
2. Turn on the power supply and toggle the shutter switch to ON.
3. Gently uncover the red cap from the optical fiber head. When power is on, you will see the bright ring of light coming out of the head.
4. Bring up the microscope stage close to the head about 3 mm apart.
5. Click the "NanoCalc" icon on the desktop to start the program.
6. Place a reference sample on region where the substrate is revealed. The reference sample should be the exactly same substrate you used to deposit the films.
7. Click the "Edit Structure" and select models for different materials as necessary. You will have to select proper category to find the models. If the software does not have a model for your materials, you will have to create one for your own. To do so, you need to know all the Cauchy's coefficients of the target material or at least three different refractive indices at different wave length between 550 nm and 1000 nm.
8. Click the box for "Continuous" mode and click "Reference" icon.
9. Adjust the signal attenuator to get the maximum intensity of reflectance located between 0.8 to 0.9.
10. Now unclick the box for continuous measurement. Click "Reference" to get the reflectance data.
11. Now place your sample and click "Measurement". You will get reflectance spectrum.

12. Click "Edit Structure" and input the approximate value. Select narrow band option and click "OK".
13. Click "Analyze" to get the estimated value of film thickness.
14. When you are done, turn off the shutter and power supply. Put the red cap back to the optical fiber head. Bring the stage all the down. Finally, turn off the computer and it monitor.