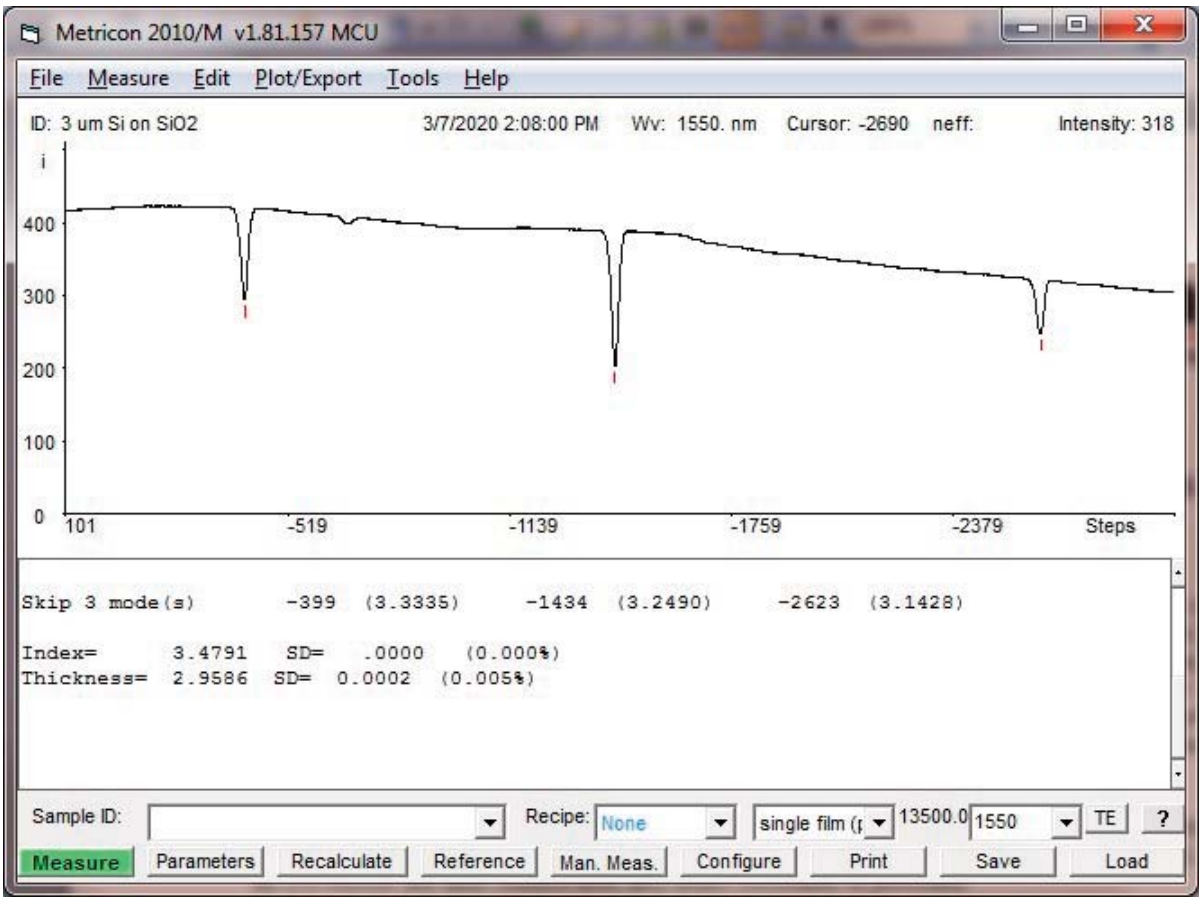
Measuring Index & Thickness
of Silicon Thin Films

The **Metricon Model 2010/M** provides rapid and accurate measurements of thin films of silicon on cladding layers of lower index materials such as SiO2 or bulk fused silica/glasses for wavelengths at which the films are transparent (typically 1100 nm and above). Convenient 30-second measurements can be made with a single prism for sample thicknesses over the 1.4 -3.5 micron thickness range. Thinner films are measurable if two prisms are employed (with each prism used to find a single mode) but typical measurement time increases to ~5 minutes because of the time required to change prisms.



Measurable thickness range using one prism:
Thickness and index can be measured for films in the ~1.4-3.5 micron thickness range. In addition, if approximate thickness is known (+/-20%), index and exact thickness for layers as thin as 0.8 micron can also be measured with a single prism.

Measurable thickness range using two prisms:
Thickness and index can be measured for films in the 0.3-1.4 micron thickness range.

Note: The above limits are for 1550 nm wavelength but measurable ranges are similar for 1310 nm

Waveguide loss measurement:
Loss can be measured for modes with effective index in the ~1.5-3.38 range.

Other wavelengths:
Model 2010/M systems with built-in ~1310 and/or ~1550 nm wavelengths are available from **Metricon**. Model 2010/M systems can also be configured with a port for use with any laser supplied by the user with wavelength >1100 nm.

Please contact **Lambda Photometrics/Metricon** with approximate thickness of silicon layers to be measured to determine which of our four silicon prism types (covering different effective index ranges) are best for your needs. For other very high index (>3.3) films, please provide approximate index and thickness and we will advise about measurability.

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