

Tech Highlight

Desktop Lab

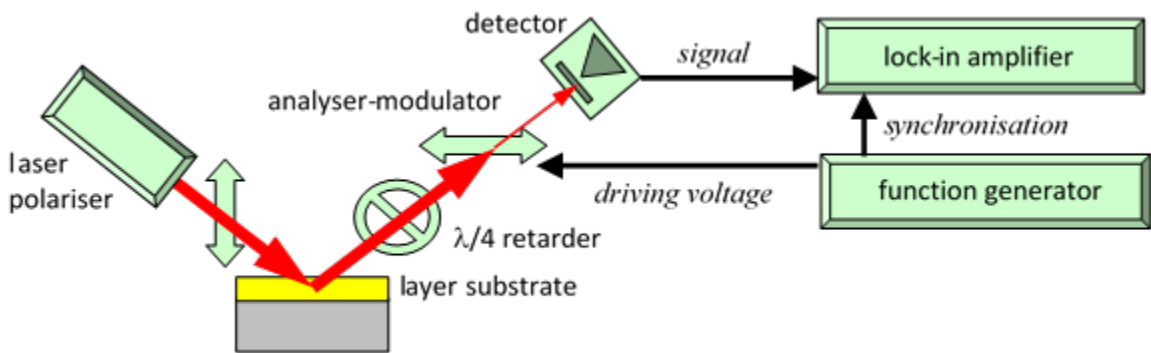
Ellipsometry is an optical technique which measures the change in polarisation of light, to determine optical constants of surfaces and the change in thickness of ultra-thin films. In the electronics industry, it is used to measure the thickness of oxidation on silicon surfaces for wafer preparation. However, it requires the use of bulky lab equipment.

Imagine being able to use a portable device, with an increased sensitivity level that can measure ultra-thin films down to the molecular level, in real-time, right at your desk.

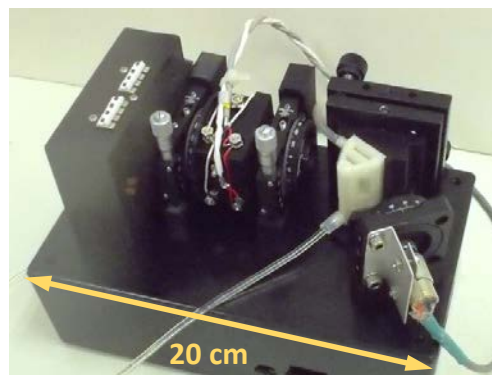
IMRE scientist, Dr Nikolai Yakovlev, has come up with a Precision Ellipsometry (PREL) system that incorporates a polarisation modulator, which enables the measuring of molecular layers to sub-nanometre precision. Built into a battery-powered compact device at a relatively low cost, it can be a convenient way to bring lab equipment-capabilities to a non-laboratory setting. The device can be used to measure the deposition of ultra-thin films in various mediums such as gas, liquid and vacuum. It has been successfully used in IMRE for research into the formation and bio-degradation of polymer layers.

Its features of portability, increased accuracy and low production cost have attracted interest from pharmaceutical companies for industry applications, and from educational institutions for teaching purposes. The device could also be potentially used in the MedTech sector for measuring the affinity of antibodies to antigens.

For more information, please contact industry@imre.a-star.edu.sg



Schematic diagram of PREL system



Prototype of the PREL device