CSIR-NCL Integrative Skill Initiative

Online Skill Development Course in

Optical Characterization of Thin Films using Spectroscopic Ellipsometry

Online Course Code: SDP_NCL-39_2021

Duration: 22nd to 25th March, 2021 (4 days)

Number of Participants: 50 Max.; ***First come first serve***.

Eligibility: Postgraduate degree in science or undergraduate engineering streams

Course Fees for different categories :

- Students: Rs. 500/-
- Faculties: Rs. 2,000/-
- Industry Participants: Rs. 5,000/-

Participants can make payment by DD only. For details see SDP website

About the course: The course includes- basic training on spectroscopic ellipsometer analysis of thin films. This extensive course will provide a theoretical and experimental raining on spectroscopic ellispometer.

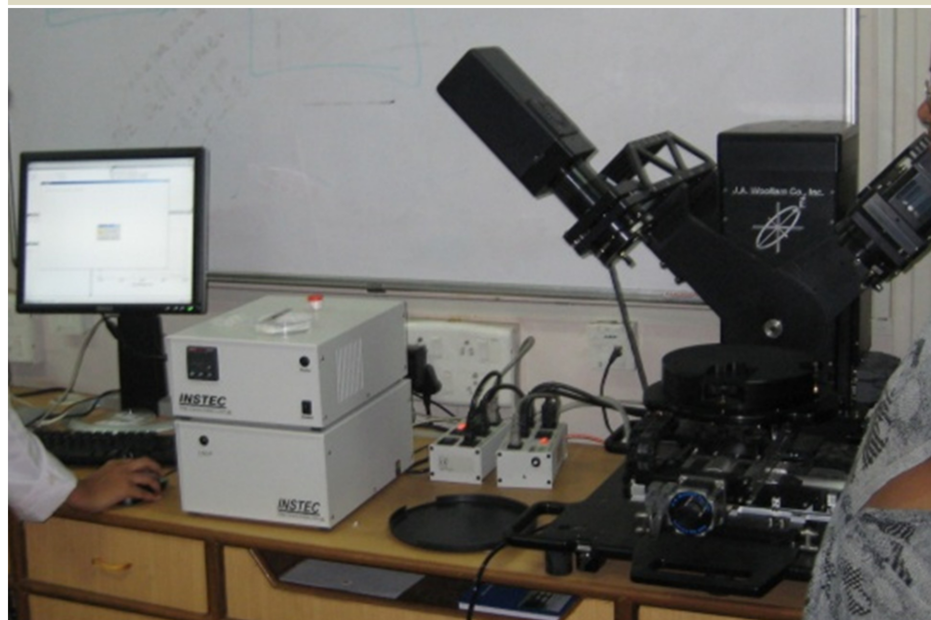
Online Course Content: This programme includes spectroscopic ellipsometry which is a very important surface science technique for optical properties, very useful metrology tool in electronic industry, silicon fabrication labs, optical devices etc. It is also immensely popular in the photonics, polymer, and opthelmic industries as well. This technique can give the individual film thickness, bandgap, refractive index, surface/interfacial roughness, and porosity for the thin films coated on a substrate. Students will learn in-depth data analysis, and sample preparation technique. Live video demonstrations will be conducted with emphasis on real-time interactive sessions.

Course Instructor: Dr. Pankaj Poddar, Senior Principal Scientist, CSIR-NCL

Apply Online: https://nclsdp.ncl.res.in/

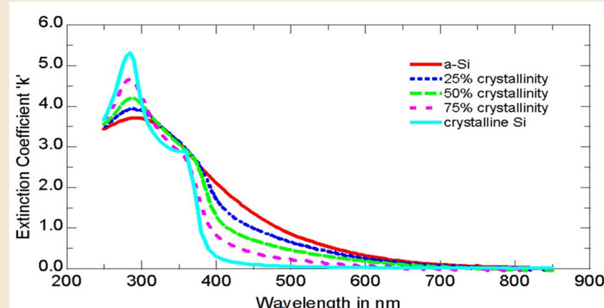
Mailing Address

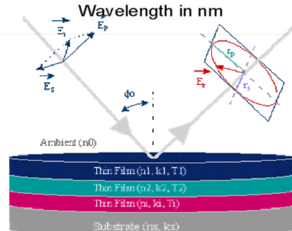
Coordinator,
CSIR-NCL Skill Development Program,
CMC Division, CSIR- National Chemical Laboratory, Dr. Homi Bhabha Road, Pune-411008, India.
Email: ncl.sdtc@ncl.res.in



Semiconductors: Refractive Index

Polycrystalline Silicon: Optical constants change with crystallinity.





Optical Measurements

Ellipsometry:

- Measures the polarization change (Ψ and Δ) when light reflects from a surface.

$$\rho = \tan(\Psi)e^{i\Delta} = \frac{\tilde{R}_p}{\tilde{R}_s}$$

- Can determine optical constants and film thickness (n,k,t).