



**Neu Vorlesungskurs als Wahlveranstaltung
 für Module 40185, 40184 und 40327**

SS 2021

Modern Analytic Methods in Thin Film Technologies

WHO?
Dr. R. Muydinov

HOW?
online

WHEN?
Termine

- ✓ basics of thermodynamics
- ✓ basic knowledge in solid state chemistry and physics
- ✓ interaction of matter with irradiation
- ✓ overview of analytical methods for thin films
- ✓ investigation of the interfaces
- ✓ characterisation of thin film devices

SECTIONS

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Physics and Chemistry of solids

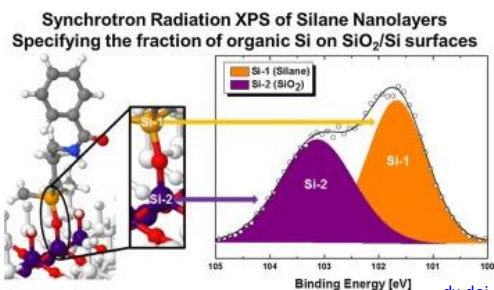
- chemical consideration (composition, stability, doping, defect chemistry)
- structural consideration (crystalline structures, diffusion, conductivity)
- examples of the functional materials (semiconductors, superconductors, magnetic materials etc.)

Physical Characterization Methods

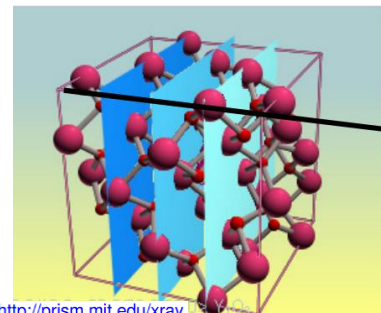
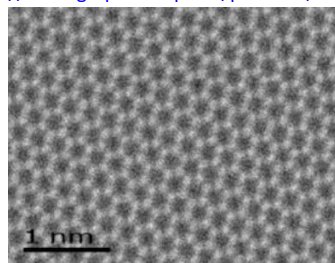
- characterisation of composition (EDX, EPMA, XPS etc.)
- characterisation of structure (diffraction methods, Raman spectroscopy etc.)
- characterisation of electronic structure (UPS, Auger spectroscopy, EXAFS/XANES etc.)
- characterisation of the functional (electrical, optical, magnetic etc.) properties

Special Characterization Techniques

- characterisation of interfaces (SPV, TRPL, impedance spectroscopy etc.)
- performance of thin film devices (solar cells, LEDs, sensors, transistors etc.)
- *in-situ* methods



http://www.graphenesq.com/products/acc_grid.asp



<http://prism.mit.edu/xray>

[dx.doi.org/10.1016/j.apsusc.2015.12.052](https://doi.org/10.1016/j.apsusc.2015.12.052)