

PHYS5350 Techniques in Materials Characterization

Course information | [Notice board](#) | [Download area](#) | [Discussion Forum](#)



PHYS5350 Techniques in Materials Characterization

Principles and operation of materials characterization techniques using photon, electron, atom and ion sources. This course also provides experiments on microstructural analysis of materials for practice and illustration of selected subject matters as well as presentations.

Lecturer

- **Prof. Lu Xinhui**
Office: Rm G11, Tel: 39436350, Email: xinhui.lu@cuhk.edu.hk

Teaching Assistant(s)

- **Mr. CHAN Pok Fung**
Office: SC 315, tel: 6117 6102, Email: cpssunnychan@hotmail.com
Consultation hours: Tue 10:30-12:15
- **Miss.XU Luhang**
Office: SC 315, tel: 5421 8713, Email: 1155156650@link.cuhk.edu.hk
Consultation hours: Mon 13:30-15:15
- **Mr. LI Shi Ang**
Office: SC 315, tel: 9147 1729, Email: 1155144909@link.cuhk.edu.hk
Consultation hours: Tue 13:30-15:15

Lecture Class

- **Wed 12:30-14:15 (Lady Shaw Bldg LT2)**
- **Fri 11:30-12:15 (Science Centre L2)**

Tutorial Class

- **Fri 12:30-13:15 (Science Centre L2)**

Textbook(s)

See reference

Reference Books

- P. E. F. Flewitt and R. K. Wild, **Physical Methods for Materials Characterization**, Institute of Physics (IOP) Publishing Ltd., 2nd ed. 2003
- C. R. Brundle, C. A. Evans Jr., and S. Wilson, **Encyclopaedia of Materials Characterization**, Butterworth-Heinemann & Manning Publications Co., 1992
- J. C. Riviere, **Surface Analytical Techniques**, Clarendon Press, Oxford, 1990
- D. A. Skoog,, F. J. Holler, and T. A. Nieman, **Principles of Instrumental Analysis**, 5th ed.,Saunders College Publishing, 5th ed. 1998
- B. D. Cullity, **Element of X-ray Diffraction**, 2nd ed., Addison-Wiley Publisher, 1978
- P. B. Hirsch, H. Howie, R. B. Nicholson, D. W. Pashley, and M. J. Whelan, **Electron Microscopy of Thin Crystals**, Butterworths, 1965
- H. E. Duckworth, R.C. Barbar, and V.S.Venkatasubramanian, **Mass Spectroscopy**, 2nd ed. Cambridge University Press, 1986
- C. N. Banwell, E. M. McCash. **Fundamentals of Molecular Spectroscopy**, 4th ed. London, New York : McGraw-Hill, 1994
- W. Czanderna, T. E. Madey, and C. J. Powell, **Beam effects, surface topography and depth profiling in surface analysis**, Kluwer Academic, New York, 2002

Assessment Scheme

Homework	20%
Labs	25%
Presentation	25%
Final Exam	30%

Course Outline

- Introduction
 - Photon beam techniques
 - Electron beam techniques
 - Particle beam techniques
 - Mass spectroscopy
 - Chromatography
-