

**Reading and Problem Assignments for Physics 243
Surface Physics of Materials: Spectroscopy, Fall, 2005
(In order of coverage in lecture)**

Reading:

- Woodruff and Delchar, "Modern Techniques of Surface Science", 2nd Edition--
 - Chapter 1
 - Chapter 2: Sections 2.1, pp.22 (bottom)-23(top) on Wood notation for surface structures, 2.4, and 2.5 (pp. 31-37)
 - Chapter 6: 6.1 and 6.9
 - Chapter 3: Sections 3.1, 3.2, 3.3, 3.5

- Attwood, Excerpt on synchrotron radiation from the book "Soft X-Rays and Extreme Ultraviolet Radiation"

- Zangwill, "Surface Physics"--
 - Chapter 1: Everything except "The roughening transition"
 - Chapter 3: pp. 28-34, pp. 49-52 on STM
 - Pages 85-86, 192-196, 204-212
 - Chapter 2: All
 - Chapter 4: Introduction, with lighter reading of *The jellium model, One-dimensional band theory, and Three-dimensional band theory*, and detailed reading of *Photoelectron spectroscopy, Metals, and Alloys*
 - Chapter 10: pp. 244-249 on bond lengths, no ion scattering

- Desjonqueres and Spanjaard, "Concepts of Surface Physics", excerpts handed out in class:
From Chapter 6, on adsorption isotherms, from Appendix on STM current calculation

- Fadley, "Basic Concepts of XPS"--
All of it eventually, but in this order: Sections III. A.-C., Sections I and II, then the rest of Section III, then all of remaining sections.

- Fadley, "The Study of Surface Structures by Photoelectron Diffraction and Auger Electron Diffraction", pages 421-450, with other examples and exercises with the EDAC web program in lecture

Problem assignments:

First assignment—due Thursday, Nov. 4: All of PS 1, all of PS 2 minus 2.5, plus problems 3.1, 3.2, and 5.1.

Second assignment—due Monday, Dec. 12: In order covered in lecture: 4.6, 4.2, 2.5, 3.3, 5.5, 4.1, 4.7, 4.3, 4.4, 5.2, 5.3, 5.4, 5.6, 5.7, 4.5