

NAN 242 100 – Nanofabrication of Thin Films

Welcome to NAN 242 – Nanofabrication of Thin Films. The goal of this course is to introduce the techniques used in thin film fabrication and testing and to explore how nanomaterials affect these processes. The course will have both lectures and labs.

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Lectures will be held Tuesdays 8 – 10 AM and Thursdays 8 – 11 AM at Ardmore 257 (possibly to be changed to the WFU Center for Nanotechnology (Nanotech)).

Lecture notes and other material will be handed out in class and also posted online at the class web site at <http://www/wfu.edu/~ucerkb/Nan242.html>.

Labs will be held at the WFU Nanotechnology Center, WFU Physics Dept., or FTCC.

Course Outline

1. Introduction
2. Basic solid state physics
3. Vacuum technology
4. Deposition techniques
5. Vacuum evaporation
6. Sputtering
7. CVD
8. Thin film growth
9. Basic E&M
10. Optics
11. Optical spectroscopy
12. Electron, x-ray and ion spectroscopy
13. Microscopy
14. Electrical and mechanical measurements
15. Special topics

Labs

1. Doctor blade
2. Vacuum evaporation
3. Spin coating
4. Spectrophotometer
5. Photoluminescence
6. 4-point probe
7. AFM

Grading

- 3 midterms (15% each) : 5 questions / 45 min. – announced a week in advance
- 1 lab report (25%) : take home for two weeks, a short summary of each lab
- 1 final (30%): 10 questions, 3 hours, April 29, 2010, 8:30 AM

While there will be no regular office hours, one-on-one meetings can be arranged by appointment. I can be contacted through e-mail or phone.