

# **ENGINEERING LAB WRITE-UP (group)**

## **DUE MONDAY February 19, at the BEGINNING of class**

Here's an outline for the write-up. **Each team of 3-4 students (assuming you worked with others) should produce one report**, describing all devices they came up with, and all experiments performed. Suggested length is 4-6 pages, typed (excluding the size of any photographs). This is short; you will be given credit for expressing the essential information in a concise manner. You'll need to work together on this writeup--that's part of the experience; in industry, most designs and prototypes are done by teams.

### **Abstract (<75 words)**

How the devices were made, what characterizations were performed, one or two most interesting results.

### **Introduction**

*Brief* background on the type of devices made (e.g. chrome on glass, patterned by photolithography, approximate sizes, ...). Theory behind operation of the device.

### **Design decisions**

Explain why you chose the film thickness, the pattern, the characterization technique you did (hopefully not all will be "TA suggested it"). Report on whether these choices panned out, and what you'd do differently if you were to repeat this lab. In a more extensive engineering design project such as the students in ENGS 21 spend a term on, you would put together a decision matrix weighing various options before proceeding to make a device (ENGS 21 is a great course--ask your TAs about it).

### **Fabrication procedures and results**

Brief discussion of how your chip was fabricated (e.g. what is photoresist and how did it allow you to pattern the films). What was the result? Did you observe any process induced defects? You might include a photomicrograph of an appropriate part of your sample as an appendix.

### **Testing procedures**

This will be the bulk of your report. Describe the equipment you used, results you obtained, at least one experiment per person. Don't transcribe the 'manuals' we gave you, but at least make it clear how/why each piece of equipment is used for each function (e.g. why used oscilloscope for ac measurements, if you did). Do show circuit diagrams for your electrical experiments or experimental setup diagrams and sketches of patterns observed for optical work.

### **Summary/ conclusion**

Results of your characterization, design changes you'd make if you had another go at it, etc. We also welcome feedback on how you liked and/or didn't like about this lab.