HOMEWORK ASSIGNMENT #5
Due Thursday, April 15 (in class)

Problem 1: FED Technology
a) Why are multiple (>>100) emitters (microtips) employed per pixel in commercial FEDs?
b) Why must a high vacuum (10^{-6} Torr or better) be maintained within an FED?
c) What are the advantages of using a low anode voltage? What are the disadvantages?

Problem 2: FED Cathode Design
a) Why is low voltage (<20 V) operation desirable?
b) Describe 5 approaches to decreasing the operating voltage of a field emitter array.

Problem 3: Plasma Display Technology
a) Color PDPs employ a Xe/Ne gas mixture. What role does each gas (Xe,Ne) play in the light emission
    process?
b) Why is screen printing employed in the fabrication of large PDPs? What are the disadvantages of screen
    printing as compared to photolithography?

Problem 4: Plasma Display Driving Schemes
a) Why are higher drive voltages generally required in DCPDPs as compared to ACPDPs? (Give 2 reasons.)
b) Consider an HDTV (1920 x 1080 pixels) ACPDP employing the conventional address-display separation
    driving scheme: How many data drivers (connected to the address electrodes) are required? How many
    scan+sustain drivers are required?
c) The number of scan+sustain drivers in an ACPDP can be drastically reduced (to reduce cost) by using
    AND logic in addressing the cells, as described in the article "Advancements in Plasma Panels" by S.
    Mikoshiba. How many electrodes are connected to each scan+sustain driver in an HDTV (1920 x 1080
    pixels) ACPDP employing this driving scheme?

Research Paper/Proposal Progress Report
a) Will you be teaming up with another student? If so, please indicate which student.
b) What general topic are you planning to investigate?