

Forensic Project for PMB 185, F 2016

Due: 12/9/16

The Forensics Project is a microscope characterization of an unknown powder. The powder will be a mixture of several different sample types and it is your job to identify as many components as you can using the microscope techniques that you have learned this semester. Each student will get a different white powder, and each student is required to submit their own Project Report describing the contents of the unknown. The unknown samples will be handed out in class.

The unknown sample must be analyzed using any or all of the microscopy techniques up to and including Widefield Fluorescence Microscopy. To do so you may use any microscopes you wish, but it might be easier to use the ones we will have available in room 203, GPBB. There we will have several microscopes set up so you can perform Brightfield, Darkfield, PLM, Phase Contrast, DIC, and/or Epifluorescence Microscopy. A sampling of fluorescent probes will also be available in 203 GPBB in a labeled freezer.

The room will be open 8AM-5PM, M-F from November 11, 2016 through December 2, 2016. You may use the lab and microscopes at any time during that period. Neither Denise nor myself will be in the room at any particular times, so you will be on your own. If, however, you run into problems please go to the Teaching Lab on the same level in GPBB and ring the doorbell. Someone will come out to assist you. You will each have your own access code to this room. We will explain how to get access in the lecture.

The Assignment: Using your knowledge of the different microscopes techniques, analyze your unknown sample and describe its components. Your report should contain:

1. The microscope techniques you found useful in analyzing your sample:
 - a. Explain the optical basis of the technique
 - b. Why these techniques were appropriate for your sample
2. Results. Results should include:
 - a. A description of your findings
 - b. Hand-drawn images or digital photos
 - c. Conclusions about what is in your sample based on your data. **This is important.**
If you say something is in your powder then include a drawing or photo to prove your point.
3. Also include a brief description of microscope techniques that you tested but did not use, and why you didn't use it.

Format: Please write a short paper using the standard scientific format:

1. Abstract
2. Introduction
3. Findings/Results
4. Discussion
5. Conclusion
6. References

Make your report to be as short as possible. You may submit it any way you wish (bCourses, Hand-Deliver).