

# Formal Lab Assignment

## Optical Spectroscopy

(Dated: March 25, 2008)

### I. FORMAL LAB ASSIGNMENT

Below is the assigned topics to be covered in your formal lab report with the general point break down. Your lab report must cover each item else a significant portion of your points will be taken away.

**There should be at least 2 citations** in this paper covering the material at hand. Wikipedia is allowed but please be very careful in citing the web page. Please use MLA citation when doing this report.

**HINT:** your professor is a spectroscoper.

1. Abstract. (10 points)

2. Introduction: (20 points)

- What is optical spectroscopy.
- Where is optical spectroscopy used? List at least four examples from either medical/pharmaceuticals or industrial fields (you will want to cite these).

3. Theory: (20 points)

- Describe how diffraction spectroscopy works, focus on the lab apparatus at hand. A hint would be to discuss the general workings of each individual piece of the apparatus.
- Give a qualitative description on how one would predict atomic and molecular spectra. **There will be an undisclosed number of bonus points for people who can list and describe molecular spectroscopy in further detail.**

4. Experiment: (40 points)

Use your lab work to discuss the shortcomings and difficulties of spectroscopy. This should include the following:

- What do impurities do to a sample's spectra.
- What are some experimental concerns involved in performing a spectroscopy experiment.
- Provide some possible solutions to the problems you listed above.

5. Conclusions. (10 points)

**Bonus 5 points if you can derive the diffraction equation from scratch**