Have I written a good Discussion and Conclusions section?

Remember, the primary purpose of the *Discussion and Conclusions* section is to address the overriding question: "What to my results mean?" If you keep this theme in mind and develop a philosophy based on the questions below, you will be well on your way to writing a solid lab notebook.

When you think you have completed your *Discussion* section, ask yourself the following questions. If your answer to any of these questions is anything other than a "Yes, I'm absolutely sure I have," you're not finished.

1. Have I discussed my results in the context of the Statement of Purpose for the experiment?

2. Have I justified any assertions or conclusions I've drawn from my results?

3. Have I discussed the *quality*** of my results and identified aspects of the experiment that limit quality? What solutions can I pose to address these issues?

**"Quality" can mean a few different things, depending on the type of experiment. For instance:

- If you are doing a quantitative measurement where the primary goal of the experiment is to determine a <u>value</u> for some parameter, quality refers to the uncertainty of your result as reflected by the accuracy and precision of your data. A statistical analysis such as a confidence limit and/or comparison to a known value is useful here. How does your result compare to the "true value", if known? What aspects of the experiment limit the confidence in your result? What uncertainty do you expect? How does your experimentally determined uncertainty compare? What might you do to improve things?

- If you are trying to prepare a compound through a synthetic scheme, quality typically refers to the effectiveness of the method in terms of the yield of your <u>product</u>. What aspects of the experiment limit yield? What might you do to improve things?

- You may run an experiment to characterize a material or a system. In this case, look for place where the experiment may limit your ability to make a definitive <u>judgment</u> about your system. What aspects of the experiment limit the confidence in my assertions? What might you do to improve things?

Individual experiments may have aspects of each of these items. If so, be sure to address all of them in your *Discussion* section.