Chemistry
Lab Report Guidance for Periodic Trends Lab

The following information may help you in writing your lab report on the periodic trends lab. It is broken down by sections. Note the mandatory questions for the discussion section.

Title

- **Introduces the concept of the lab. For us, it can also be funny.**

Subtitle

- **Your name.**
- **The names of your lab partner(s).**
- **The date of submission.**

Introduction/Background

- **Background information about the lab.**
- **Your introduction should begin with a single sentence that tells the reader what the lab is about. This can be repetitive with the purpose.**
- **Imagine you are explaining this lab to another junior who is taking chemistry but has not gotten to periodic properties yet. What would they need to know in order to understand this lab experiment? I want you to show me that you understand how all of the periodic properties topics relate to this lab. This is where you show that you have a full, integrated understanding of periodic properties.**
- **Step by step, in logical paragraphs, explain how you will accomplish your purpose. This is not a repeat of the procedure, but an outline of the logic behind the experiment.**
- **As you go through these explanations, provide background information to your reader. For example, at some point you will need to mention ionization energy. When you do, you will need to define it in a clear and concise manner.**
- **Use your own words. Avoid copying entire sentences from the internet - Turnitin will tell me if you do. It is always good to do searches on the internet to help yourself understand, but state your understanding in your own words.**
- **Make an effort to make your introduction readable and easy to understand. I strongly suggest you hand write an outline before typing. This will ensure you touch on all topics and help you organize your thoughts. Poorly written introductions always get lower grades.**
- **Any facts you take from class lessons do not need citations. If you take any citations from the internet or other sources, be sure to cite them. Use of other sources is encouraged, but citation is a must.**

Purpose

- **Try to make this a single sentence statement like the one reviewed in class**

Materials and Methods

- **Include a list of materials used**
- **Include a numbered procedure. Each step can be brief, but all steps need to be included.**
- **At your discretion, include photos or diagrams of apparatus here.**

Results

- **This is where the data goes. Do not include any interpretation.**
- **Try to summarize your data in one table. Below is something you might consider for this lab.**

	Ca		Mg		Al	
	with H_2O	with HCl	with H_2O	with HCl	with H_2O	with HCl
Observations						
Litmus Test						
Flame Test						
Temperature						

Discussion

- **This is a key section where you discuss the results and their meaning as it relates to the purpose of your experiment. You heard a popping sound during the flame test - so what? What does that mean? It means hydrogen gas was exploding. Great - so what? It means the reaction was occurring, which means that the ionization energy was low enough for a reaction to occur under these conditions.**
- **Most of the paragraphs in the discussion section begin with a mention of data (use of evidence), then explains how the data is being interpreted, and finish by describing what this means in terms of the overall purpose of the experiment.**
- **Some people like to write the results and discussion section before any other section of the lab. It often helps illustrate the necessary components for every other section.**

Conclusion

- **This should be brief and relate back to the purpose of the lab. What was accomplished? What was learned?**

Citations

- **List of citations according to APA style**

MANDATORY DISCUSSION QUESTIONS

1) **Write a balanced chemical equation for each of the six reactions you conducted.**
2) **Using your data as examples, explain the periodic trends for ionization in groups & periods.**
3) **The word "alkaline" means the same as "basic", which means it decreases $[H^+]$. Using your data, explain why Ca and Mg are called "alkaline earth metals" and Al is not.**
4) **Using your data, explain why we collected all of the metal waste instead of flushing it down the drain.**
5) **The first ionization energies of Ca, Mg & Al are 590, 738 and 578 kJ/mol. The Ca and Mg data are consistent with your data, but the Al data is not. Explain how both your experimental data and the first ionization energies data can be correct. You will need to review class notes and search the internet to answer this question.**