The Electromagnetic Spectrum and Electronic Structure

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Notice of ADA Accomodation

I have an ADA accommodation to type out my pre-lab report when my disability flares up. This document is a utilization of that accomodation.

1 Question One

> What is the point of this lab? Define the chemical principles we are testing in your own words.

The point of this lab is to explore the electromagnetic spectrum and electronic structure through various experiments. The chemical principles being tested involve spectroscopy, flame tests, and magnetic susceptibility, which help in understanding the behavior of elements and compounds under different electromagnetic conditions.

2 Question Two

> What is the logic of this lab? How do the procedures test the hypothesis that the chemical processes are correct?

The logic of this lab is to observe and analyze the behavior of substances under different conditions to confirm known chemical principles. For instance, using a spectroscope allows for the observation of emission spectra from various light sources, which confirms the presence of specific wavelengths emitted by different elements. Flame tests involve observing the characteristic colors emitted when certain chemicals are heated, providing insights into the electronic structure of atoms. Magnetic susceptibility experiments help in understanding the magnetic properties of materials, which can be related to their electronic configuration.

3 Question Three

> Where are potential problem points in the procedures? Where is it easy to make an error or have something just go wrong?

Potential problem points in the procedures include misalignment of the spectroscope slit with the light source, which can lead to inaccurate data collection. In the flame test, overheating the wire or leaving it in the flame for too long can distort the observed colors. Contamination of chemical bottles during the flame test could lead to inaccurate results. Additionally, in the magnetic susceptibility experiment, disturbances such as leaning against the countertop can affect the balance readings, leading to errors in measurements.

4 Question Four

What are the health and safety hazards for this lab and how do we minimize them?

Health and safety hazards for this lab include potential exposure to chemicals during the flame test and handling of metal powders in the magnetic susceptibility experiment. To minimize these hazards, proper personal protective equipment such as gloves and goggles should be worn. Care should be taken to avoid direct inhalation of chemical fumes and to handle metal powders cautiously to prevent spills or exposure. Proper ventilation should be ensured in the laboratory, and all procedures should be conducted following established safety protocols to minimize risks to students.