

Types of Reactions Lab Assessment

Block B4

Lab L1	Instrument Usage
0	Cannot identify instrumentation by name and therefore cannot use it when instructed.
1	Can identify instrumentation, but frequently does not know how to properly use it.
2	Can properly identify and use instrumentation, but may not know when to use it unless directly instructed.
3	Can properly identify and use instrumentation and knows when to use it without instruction.
4	Consistent with skill and overlap of Lab L2 & L3

Lab L2	Following Protocol
0	Student does not follow procedures given, either by not performing any lab exercise or by performing the incorrect exercise. Proper safety techniques are ignored.
1	Student knows to follow the lab procedure provided and is very dependent upon the directions or instructor to complete the task and makes frequent errors in following or executing the directions given. Proper safety techniques are frequently forgotten.
2	Student safely follows the lab procedure provided with limited instructor help, while still making minimal errors in following or executing the directives given.
3	Student safely & successfully executes laboratory procedures independently with minimal error.
4	Consistent with the skill and overlap of L1 and L3.

A new metallic element, Walshium (Wa), has just been created in lab by chemists!

- 1) You want to react Wa with an aqueous solution of copper (II) nitrate, so you try to make the solution from a provided procedure. In great detail, describe how you would create the solution if given the following directions:

Dissolve 5.00g of copper (II) nitrate in enough water to create a 50.0mL solution.

Before you begin, put on safety goggles and an apron.

1. Turn on the balance and place a weigh boat on it. Tare, or zero out, the balance with the tare button. Weigh out exactly 5.00g of copper (II) nitrate into the weigh boat.
2. Quantitatively transfer the 5.00g of copper (II) nitrate into a clean 50.0 mL volumetric flask. (Make sure to get all of the 5.00g from the weighboat to the flask).
3. Carefully pour distilled water into the volumetric flask until the bottom of the meniscus touches the 50.0 mL line.
4. Swish/swirl the flask until all of the copper (II) nitrate has dissolved into the water.
5. You can then transfer the solution into a beaker (100 mL would work) to add Wa and observe the reaction.

6. After the reaction is done, dispose of the products (whether down the sink, wash down, or waste beaker) and clean all equipment with distilled water.

Beautiful!

chemical safety?

Thank you!

Lab L3	Recording and Analyzing Data and Observations
0	No critical data or observations are recorded during laboratory procedures, therefore not allowing for any analysis of the work performed.
1	Some data values are recorded accurately with units, others were omitted. Observations are absent or minimal.
2	All critical data values are recorded accurately with units. Observations are thorough, descriptive, and complete.
3	Level 2 skill with the ability to properly analyze the information by identifying trends, performing calculations, etc.
4	Level 3 skill with the ability to form a well-founded conclusion (CER) based upon the analysis.

2) A pure sample of Wa is exposed to the solutions below. In CER format, form a conclusion regarding the reactivity of Wa compared to the other metals used in the experiment.

		Wa(NO ₃) ₂	Fe(NO ₃) ₂	Cu(NO ₃) ₂	LiNO ₃
2	Wa	No Reaction	Dark grey solid collects on the surface of the Wa	Brown/orange solid collects on the surface of the Wa	No Reaction
3	Fe	No Reaction	No Reaction	Brown/orange solid collects on the surface of the Fe	No Reaction
4	Cu	No Reaction	No Reaction	No Reaction	No Reaction
	Li	Black solid collects on the surface of the Li	Dark grey solid collects on the surface of the Li	Brown/orange solid collects on the surface of the Li	No Reaction

the best I received!

Wa is the second most reactive element out of the four listed above. It is right behind Li and above Fe in how reactive it is. The evidence for this is lithium had 3 reactions occur when combined with other compounds, the metal changed color which indicated that a reaction occurred. ^{Good} Lithium had the most reactions occur. Next, Wa had 2 reactions occur. The metal changed color twice when mixed with other compounds. The color changes indicated that a reaction occurred. Next, Fe had 1 reaction occur so the color changed one time with Cu(NO₃)₂. Lastly, Cu had no reactions occur so it means it was the least reactive. Wa reacted with Fe(NO₃)₂ and Cu(NO₃)₂ so it was the second most reactive element. The reasoning behind why it only reacted with 2 other compounds was because it was more reactive than Fe and Cu. Wa was ^{more} reactive to kick out Fe and Cu out of their preferred states and replace them, making a reaction occur.