

Name _____

Section _____ Date _____

Report for Experiment 11

Aluminum Atoms

Prelaboratory Questions

1. What measurements will you need in order to determine the thickness of a piece of aluminum foil?

Data/Observations

Data Table

Mass of aluminum block _____ g

Volume of water in graduated cylinder _____ mL

Volume of water with aluminum block _____ mL

Aluminum foil

Width _____ cm

Length _____ cm

Mass of aluminum foil _____ g

Analysis and Conclusions

1. Calculate the volume of the aluminum block by using the water displacement method.

2. Since both the aluminum block and the aluminum foil are pure elemental aluminum, we would expect the ratio of the mass to the volume to be the same for both.

$$\frac{\text{mass of block}}{\text{volume of block}} = \frac{\text{mass of foil}}{\text{volume of foil}}$$

Use this relationship and your data to find the volume of the aluminum foil.

3. Calculate the thickness of the aluminum foil. (Hint: Think about how you would calculate the volume of a cube from its measurements. Think of the foil as a very thin cube.)

4. One aluminum atom has a diameter of 2.50×10^{-8} cm. How many atoms thick is the aluminum foil.

5. What are some possible sources of error in your experiment?