Name:_____   Mods:_____

Partner:_____   Date:_____

Lab: ALUMINUM FOIL THICKNESS

Purpose: The purpose of this activity is to relate the size of an aluminum atom to the thickness of a piece of aluminum.

Procedure:

1. Mass a cylinder of aluminum metal.
2. Measure the volume of the cylinder by displacement
3. Obtain a piece of aluminum foil
4. Measure the length and width of the piece of aluminum foil to the nearest 0.1 cm.
5. Mass the piece of aluminum foil

Data:

A. Mass of metal cylinder	16.02g
B. Volume of water in graduated cylinder	43.0 m L
C. Volume of water plus metal cylinder	49.0 mL
D. Volume of metal cylinder (C-B)	
E. Length of aluminum	15.0 cm
F. Width of aluminum	14.5 cm
G. Mass of aluminum foil	1.00g
H. Density of aluminum (A/D)	
I. Volume of foil (G/H)	
J. Height of foil (V = L x W x H)	
K. Moles of aluminum in foil (convert G to moles)	
L. Atoms of aluminum foil	
M. Atoms thick of Aluminum foil	

Calculations:

1. Determine the density of aluminum. Record in H.
$$D = M (A)/V (D)$$

2. Find the volume of the foil and record it in I.
$$V = M (G)/D (H)$$

3. Find the height (thickness) of the foil and record it in J.
$$V = l \ x \ w \ x \ h$$

Analysis:

One aluminum atom is 2.5×10^{-8} cm thick. Find the thickness of the foil in atoms.

$$\textbf{Number of Atoms thick} = \textbf{height (J)} \quad x \quad \frac{\textbf{1 atom}}{\textbf{2.5 x 10}^{-8}\textbf{cm}}$$

Calculate the number of moles of aluminum and the total number of atoms of aluminum in your piece of aluminum foil.

Conclusion: