Name: _____ Date: _____ Course: _____ Professor: _____

# E5a: Resistivity


Read the lab instructions before answering questions

1. In this lab you will be calculating the resistivity, you will first need to determine the cross sectional area (A) of each wire. If we consider a wire to be a long cylinder; then the cross sectional area would have a circular shape as shown by Figure 2 in the instructions. Use equation (5) to calculate the cross sectional area for each wire.

   Note: Write down the areas in scientific notation and have 7 digits.

| Material | Diameter (m) | Cross – Sectional Area ($m^2$) |
|---|---|---|
| Brass | 0.000508 | $A_1 =$ |
| | 0.000813 | $A_2 =$ |
| | 0.001016 | $A_3 =$ |
| | 0.001270 | $A_4 =$ |
| Copper | 0.001016 | $A_6 =$ |
| Nichrome | 0.001016 | $A_7 =$ |
| Stainless Steel | 0.001016 | $A_8 =$ |

2. A student Mei who is doing the experiment measures a voltage V = 0.094954 V and a current I = 1.0747 A, then she uses equation (2) to calculate the resistance R. What value does Mei determine for R?

3. Mei puts in her values and constructs a graph which gives her a slope of $0.0980244\,\frac{\Omega}{m}$. She then uses equation (7) and the cross sectional area of $A_1$ (from the calculations on question #1) to calculate the resistivity of the wire. What is the value of the resistivity that she calculates?