

# Resistivity Lab

## Procedure

Make a chart with Quantity Measured/Symbol for Measurement/Instrument Used. Briefly, but completely, describe the procedure for this lab – and include labeled sketches.

## Data

Record voltage and length values, with current, diameter (2.38, 3.18, 3.97, 4.76 mm) and area used for Part 1. Record voltage, diameter values and calculated area, along with current and length used for Part 2. Use proper headings and units.

## Graphs

Using appropriate scales, labels and units, graph Voltage ( $\Delta V$ ) vs. Length ( $L$ ). Then graph the linearized version of Voltage ( $\Delta V$ ) vs. Area ( $A$ ). Find the best fits lines of the graphs.

## Questions

- 1) Using the resistivity formula and Ohm's Law, show how to find a linearized relationship between  $\Delta V$  vs  $L$  and  $A$ .
- 2) Find the slopes of both of your linear graphs, with correct units. Show your work.
- 3) Use your slopes, along with the current and constant area (for Part 1) or length (for Part 2), to calculate the resistivity of brass for both parts of the lab. Show your work.
- 4) According to Vernier, the accepted value for the resistivity of the brass rods is  $6.6 \times 10^{-8} \Omega \cdot m$ . Find the percent error for each of your values from question #3.
- 5) Which part gave you a more accurate result? Explain why that method worked better.

## Error Analysis

Thoroughly explain what the main sources of error are for this lab, and how you would correct them.

