Capacitor Dielectric Lab

Procedure

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

Data

    Record your capacitance readings, along with the distances between and sizes of the aluminum sheets for the two parts, in separate tables, with proper headings and units.

Graphs

    Using appropriate scales, labels and units, graph Capacitance (**C**) vs. Distance (**d**). On a separate graph, graph Capacitance (**C**) vs. Area (**A**). If necessary, figure out how to linearize this data, create a new data table and graph your linearized data. Find the best fits lines of any linear graphs.

Questions

    1) Derive the formula for the capacitance of a parallel plate capacitor with charge **Q** on plates of area **A** which are a distance **d** apart. Use diagrams and show every step.

    2) Find the slopes of both of your linear graphs, with correct units. Show your work.

    3) Use your slopes to calculate the dielectric constant of the paper from both parts of the lab. Show your work.

    4) Using the accepted value for the dielectric constant from the book, 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.

FLUX

CAPACITOR
1.12 Gigawatts