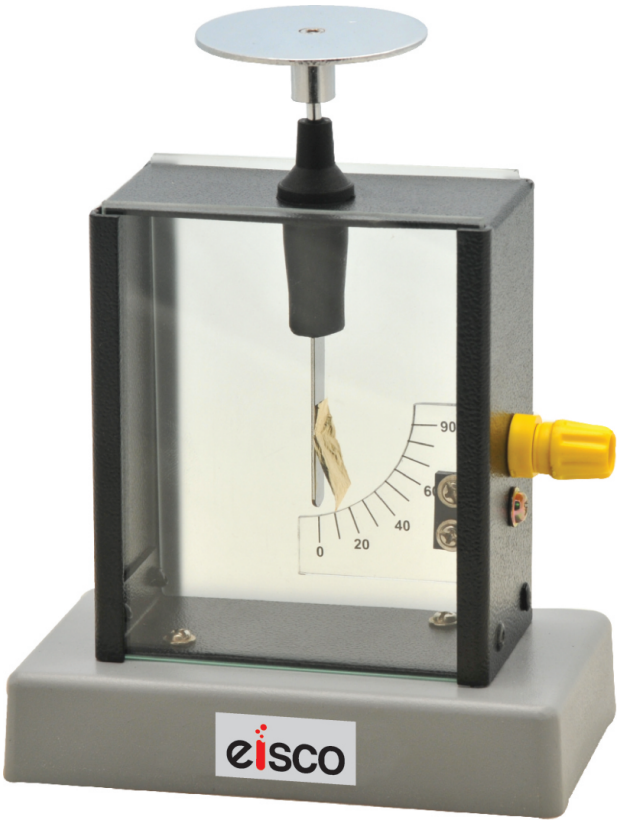
eisco

Trust | Deliver | Learn

GOLD LEAF ELECTROSCOPE

CAT NO. PH0916B



Experiment Guide

INTRODUCTION:

The primary purpose of the apparatus is to detect the presence of and measure the magnitude of a static electric charge. A charge is either induced or conducted through the metal plate on the top of the device. The gold leaf mounts to the central rod, and deflects due to the charge on the metal plate.

INSTRUCTIONS TO MOUNT GOLD LEAF TO ELECTROSCOPE:

Before beginning your experiments with your electroscope, the gold leaf foil must be attached to the electroscope.

Note : Wearing a face mask while attaching the gold foil will help prevent the gold foil from being affected by the moisture and air circulation caused by your breath.

1. Cut two pieces of paper that are of similar size to the gold leaf. Sandwich the gold foil between the paper as shown in figure 1.
2. Cut a small piece of electrical or Scotch tape to about 0.5 inches or 1.2 cm in length. This length will be able to wrap around the circumference of the metal leaf already attached to the electroscope.
3. While your gold leaf is in the paper, cut the foil lengthwise into 2 small strips, about 0.25 inches (0.6 cm) wide. See Figure 1.

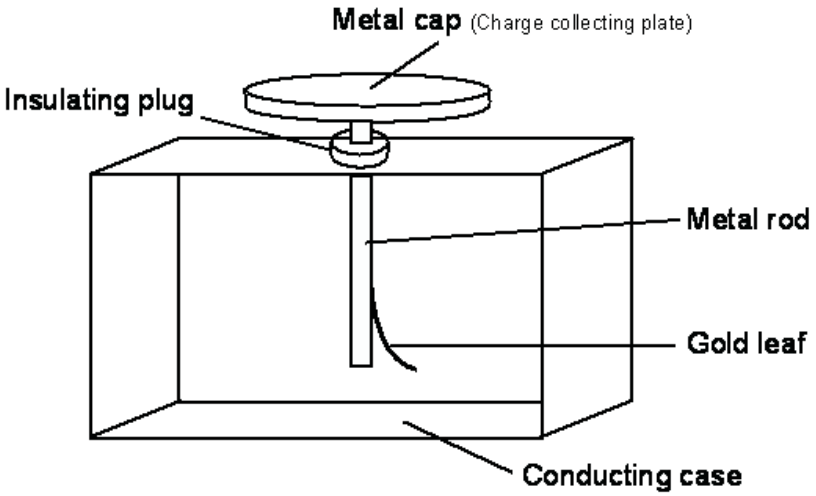
Figure 1

4. Remove glass plates from both sides of the electroscope.
5. Slide down one side of paper on the fold leaf 0.25 inches or less to expose the gold leaf's paper backing.
6. Apply tape to the backing
7. Pick up gold leaf via the attached tape, letting the 2 pieces of paper slide away.
8. Tape the gold leaf to the metal leaf in the electroscope so that the bottom edge of the tape is level with the 90 degree mark on the protractor attached inside the electroscope. See Figure 2.
9. Slide glass plates back into place on both side of the electroscope.

Figure 2

Note: the gold foil is extremely thin and reacts to even the slightest electrical charge. Attempt to cut and mount the gold leaf without touching it with your hands.

METHOD OF USE:



The outside of the box is metal and helps keep charge out of the inside of the box, while the two glass plates allow us to see what the foil leaves are doing as well as keep breezes and drafts from blowing the leaves around and creating misleading results.

The metal cap collects the charge.

Any charge brought near to or touching the metal cap will be evenly distributed along the metal rod and the gold leaf.

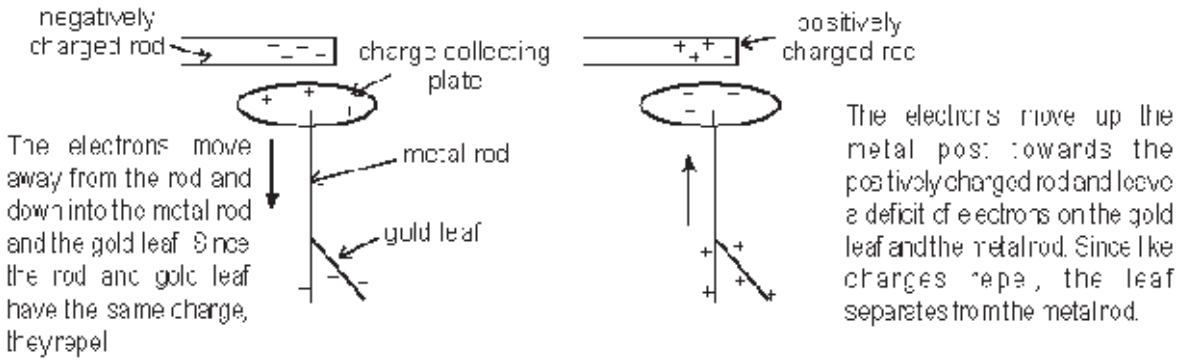


Diagram 2

Notice that the rod is not touching the charge collecting plate. Once the rod is removed from the area of the electroscope, the gold leaf falls back down.

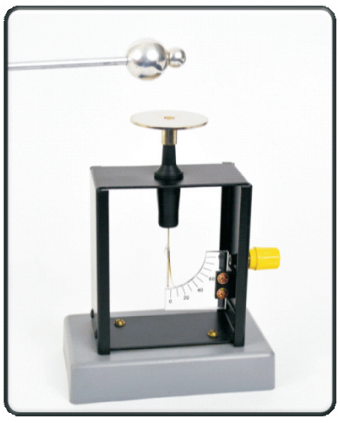


Diagram 3

TROUBLESHOOTING:

Sometimes the weather conditions are not optimal. If you are having a difficult time getting charges on objects, here are some tips to try.

1. Plan to do static electricity experiments on a day with very low humidity. About 70% humidity or less is ideal.
2. Dry the air around the apparatus with a hot hair dryer before conducting experiments.
3. Make sure no apparatus is wet when in use.
4. Someone with sweaty palms will not be able to get a good charge on a charging rod. Use talcum powder to dry off hands and reduce moisture.
5. Clean all metal conductors with rubbing alcohol at least once a year. Apply a small amount of rubbing alcohol to a clean dry cloth and then rub the metal surfaces so they are moist but not damp. Let the rubbing alcohol evaporate off before using the apparatus. Oil from students' hands can build up on the metal causing an insulating layer and making charge difficult to transfer.
6. Charge can easily be removed by objects that are near to it. Make sure that no other objects (hands, hair, books, etc.) are near the apparatus when in use. Once charge is on an object make sure your hand touches no metal parts of the apparatus. Use insulating wands to prevent charge from being accidently transferred.

In the event that the gold leaf tears or deteriorates from repeated use, aluminum foil will work with this electroscope as well. Aluminum foil between .006mm to 0.12mm thick works best, but if you can't find aluminum that thin you can buy aluminum foil from the grocery store and pound it with a rubber mallet and then cut strips and mount as described above.

Manufactured by :
eISCO
Trust | Deliver | Learn
www.eiscolabs.com

U.S. Distributor :
Eisco Scientific
850 St Paul St, Suite 15, Rochester, NY 14605
Website : www.eiscolabs.com