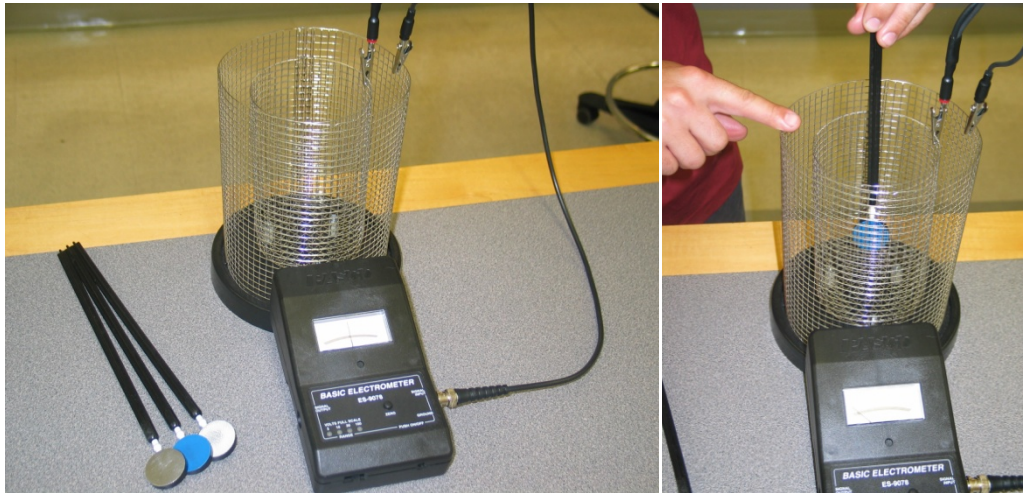


## Measuring Charge by Measuring Potential Difference



**Purpose:** To show that measuring the potential difference (i.e. voltage) between two concentric cages, provides a measure of the charge within (or on) the inner cage.

**Location:** room 146; shelf L6

Connect the black lead from the electrometer to the outer cage and the red to the inner cage. Turn the electrometer on. Use a finger to short across the cages while zeroing the electrometer.

Rub the blue and the white surfaces together, and, with your finger on the outer cage, insert the blue surface into the cage as shown, set the optimum range, and measure the induced voltage difference. Remove the surface and note the voltage reading.

Reinsert the blue surface, but this time touch the inner cage with the surface, permitting charge to transfer to it. Note the reading. Remove and reinsert the blue surface again. (The reading should remain unchanged.) Finally, short the cages with your finger to bleed the charge off and re-zero the electrometer.

This shows that the potential difference across the cages is a measure of the charge on the blue surface whether it's on the inner cage or induced by the blue surface within.