



LEYDEN JARS AND CAPACITORS

Storing charge

ELECTROPHORUS

- Storing charge on the film canister capacitors



LEYDEN JARS

- Store charge and can be discharged by connecting outside conductor with inside conductor
- Alternating series of conductor, insulator, conductor
- Precursor to modern capacitors



WHERE IS THE CHARGE STORED ON A CAPACITOR?

- Demo showing where charge is stored.
- Taking apart Leyden Jars to show charge location.
- Not in the conductor but stored in the insulator.



FACTORS AFFECTING CAPACITANCE

- Area
- Distance between conductors.
- Dielectric material between conductors.



DIELECTRICS

- **Non-conductor between conductors**
- **Typical dielectrics (from weakest to strongest dielectric constant):**
- **Air, paper, wax, teflon, rubber, pvc, glass, bakelite, mica, silicon**



LARGE ICE CREAM BUCKET

- Homemade Leyden Jar and capacitor.
- Mighty big shock.
- Caution: some static electricity can be dangerous if enough charge is built up.



SHOW CAPACITORS

- Store charge by wrapping many layers of conductor, insulator, conductor.
- Units of Farads
- Once again it is common for capacitance to be in microfarads.
- $C \text{ (Farads)} = \frac{Q \text{ (Coulombs)}}{V \text{ (Volts)}}$



USES OF CAPACITORS

- Speakers
- Disposable Cameras
- Electronics such as computers
- Memory
- Strobe lights
- Auto tuning
- Tasers
- Microwaves
- Power supply filters



ELECTROSTATICS STUDY SHEET

- Problems 3-6, more on the back.



QUIZ TOMORROW

○ Covers

- Conductors, Insulators, and Semiconductors
- Polarization
- Path of least resistance
- Charge location
- Electric fields
- Coulomb and his law
- Electrophorus
 - Alessandro Volta

