

ELECTROSTATICS

Now it is ok to use the word charge.

Important

- Code React
- Quiz tomorrow
- Magnetism Study Sheet due tomorrow

Handout

- Electrostatics Study Sheet; Due Friday March 9th
- Sparks and Shocks Handout; Due at end of the period
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Sparks and Shocks

- Sparks and Shocks Handout to be given to students.

Electrostatics

- Electro comes from the Greek word for Amber
- Statics comes from the Greek word for Stationary
- Produced by friction

Charge

- Always conserved
- Fundamental property and force
- Quantized (Robert Millikan)
- Opposite charges attract and same charges repel.
- Neutral objects are attracted to charged objects
- What elementary particle carries charge?

Famous Scientists

- William Gilbert
 - First to write book about electricity and magnetism
- Robert Millikan
 - First to quantize electron's charge.
 - Charge of an electron = 1.6×10^{-19} Coulomb
- Van de Graaff
 - Originally meant for nuclear particle research

$$= 1.6 \times 10^{-19} \text{C}$$

Uses of Static Electricity

- Lightning Rod
- Copy Machine
- VDG
- Medicine
- Smoke precipitator
- Plastic Wrap
- Computer
- Auto Painting

Millikan Oil Drop Experiment

Van De Graaff Generator

- Air breakdown at 3×10^6 Volts/meter
- 390,000 volts
 - Is actually safe only because it is an one time charge. If it was current it would be extremely dangerous.

Quote

- “When I was 5 years old, my mother always told me that happiness was the key to life. When I went to school, they asked me what I wanted to be when I grew up. I wrote down ‘happy’. They told me I didn’t understand the assignment, and I told them they didn’t understand life.” — John Lennon.