EF Experiment

Small V - Foil lies on lower plate
Bigger V - Foil jumps up and connects washers

Demo I

Charged Ions

Electroscope

Mar 4 2005
web.mit.edu/8.02x/www

EF Experiment

Bigger V - Foil jumps up and connects washers

Make sure that foil is clean, flat and not too smooth
Start with foil flat on lower washer and min HVPS voltage
Slowly turn up HVPS until foil jumps
Foil jumps when \( V = V_{\text{jump}} \) such that electrostatic force balances weight of foil
Repeat experiment several times for each foil to get consistent \( V_{\text{jump}} \)
Repeat with foils folded to have 1, 2, 3 layers

Demo I

Ions discharge Electrooscope

Charged Ions

Electroscope

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Demo I

Neutral molecules:
Pos. and neg. charges move together -> No current!

Ions:
Pos. and neg. charges move separately -> Current \(|I| > 0\)!

Demo II

Solid glass: Potential charge carriers are stuck!
Demo II

Molten glass: Charge carriers become mobile ->
Current flows -> Bulb lights up!