

Phys 2426 Lec 2 post-powerpoint

0.5 g styrofoam bead

~50% of mass is protons

$$N_p = \frac{m}{m_p} = \frac{0.25 \times 10^{-3} \text{ kg}}{1.67 \times 10^{-27} \text{ kg}} = 1.5 \times 10^{23}$$

$$Q_p = N_p e = (\dots) (1.6 \times 10^{-19} \text{ C})$$

= 24000 C = charge of all
protons in 0.5g ball

$$Q_e = -24000 \text{ C}$$

We said $Q = 50 \text{ nC}$

After "charging"

$$Q_p = 24000 \text{ C}$$

$$Q_e = -(24000 - 50 \times 10^{-9}) \text{ C}$$

IF $E > 10^6 \text{ N/C}$, air molecules are ionized.

Book: Serway & Jewett