

PHYSICS 114 Contemporary Physics II – Homework 5 :: Chapter 14

1. Mulliken oil drop experiment. The mulliken oil drop experiment consists of charging oil drops using x-ray bursts and then “floating” them in an applied electric field by adjusting the electric field until it balances the weight of the drop. Performing this experiment on a drop of $1.64 \times 10^{-4} \text{ cm}$ radius, you find that you need an electric field of $1.92 \times 10^5 \text{ N/C}$. The density of oil is 0.851 g/cm^3 . How many electrons are on your drop?

Problems 53, 54, 61, 63, 64