

**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  $0.851 \text{ g/cm}^3$ . How many electrons are on your drop?

Problems 14.P.53, 14.P.54, 14.P.61, 14.P.63, 14.P.64, 14.P.67