P #30

Ch 19 - Pg 614

$m = 2.18 \times 10^{-26}$ kg
$q = 1.6 \times 10^{-19}$ C (singly charged)

$B = .93$ T
$E = 950$ V/m

Find velocity: particle travels with constant velocity through "velocity selector"

$F_B = F_e$ (to cancel F_B)

$q \cdot v \cdot B = q \cdot E$

$v \cdot (.93\text{T}) = 950$ V/m

$v = 1022$ m/s

Find radius: $F_B = F_c$ (for circular path)

$$q \cdot v \cdot B = \frac{m \cdot v^2}{r}$$

$$(1.6 \times 10^{-19}\text{C})(.93\text{T}) = \frac{(2.18 \times 10^{-26}\text{kg}) \cdot (1022\text{m/s})}{r}$$

$$\boxed{r = 1.5 \times 10^{-4}\text{ m}}$$