P #31

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$q = 1.60 \times 10^{-19} C$ (singly charged)
$V = 250 V$
$m = 2.50 \times 10^{-26} kg$
$B = .500 T$

Find KE:

$KE = U_e = q \cdot V$

$= (1.60 \times 10^{-19} C)(250 V)$

$KE = 4.0 \times 10^{-17} J$

Find v:

$KE = \frac{1}{2} \cdot m \cdot v^2$ so $(4.0 \times 10^{-17} J) = \frac{1}{2} \cdot (2.50 \times 10^{-26} kg) \cdot v^2$

$v = 5.7 \times 10^4 m/s$

Find r:

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

so $\frac{(2.5 \times 10^{-26} kg) \cdot (5.7 \times 10^4 m/s)}{r} = (1.6 \times 10^{-19} C) \cdot (5$

$r = .0177 m$